ClimoBase Users Manual

A climatological database of Dr. Wayne Rouse's data 1984 - 1998:

- **Churchill, MB**
- **Marantz Lake, MB**
- **Inuvik, NWT**

***Note: Pagination will vary from printer to printer. Manually tweak pagination using/deleting page breaks and update the TOC accordingly. Presently, the pagination is correct for an **HP 4Si MX LaserJet** printer

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Table of Contents

1.0 INTRODUCTION 6

2.0 INSTALLATION 6

3.0 CLIMOBASE DATABASE STRUCTURE 8
- **3.1 Daily Archive Files 9**
  - **3.1.1 Naming Convention 9**
  - **3.1.2 Layout and Format 11**
- **3.2 Seasonal Archive Files 12**
  - **3.2.1 Naming Convention 12**
  - **3.2.2 Layout and Format 12**
- **3.3 Control Files 12**
  - **3.3.1 Naming Convention 13**
  - **3.3.2 Layout and Format 13**
  - **3.3.3 VarCodes 15**
    - 3.3.3.1 Variable Codes 16
    - 3.3.3.2 Levels 17
    - 3.3.3.3 Unit Codes 17

4.0 DATABASE EXTRACTION ENGINE 18
- **4.1 Structure of `EXTRACT.EXE` 19**
  - **4.1.1 Modules 19**
  - **4.1.2 Theory of the Extraction Engine 21**
  - **4.1.3 Extraction Output 22**
    - 4.1.3.1 HALFHOUR Output Files 23
    - 4.1.3.2 DAILY Output Files 24
    - 4.1.3.3 SEASONAL Output Files 25
    - 4.1.3.4 LOGFILE Output Files 27

5.0 DATA SETS AVAILABLE 29
- **5.1 Data Set Descriptions 31**
  - **5.1.1 Main 31**
    - 5.1.1.1 1984 31
    - 5.1.1.2 1985 31
  - **5.1.2 Marantz 31**
    - 5.1.2.1 1984 32
    - 5.1.2.2 1985 32
  - **5.1.3 Site1 1987 ..... 32**
  - **5.1.4 Site2 1987 ..... 33**
  - **5.1.5 Site3 1987 ..... 33**
  - **5.1.6 Site4 1987 ..... 34**
  - **5.1.7 Sedge 35**

5.1.7.1 1989 38
5.1.7.2 1990 39
5.1.7.3 1991 39
5.1.7.4 1992 40
5.1.7.5 1993 41
5.1.7.6 1994 41
5.1.7.7 1995 42
5.1.7.8 1996 42
5.1.7.9 1997 43
5.1.8 Willow 44
5.1.8.1 1990 46
5.1.8.2 1991 47
5.1.9 Golf Lake 47
5.1.9.1 1991 48
5.1.9.2 1995 49
5.1.10 Ridge/Beach 49
5.1.10.1 1991 51
5.1.10.2 1996 52
5.1.11 Rocky 1995 53
5.1.12 Eastern Creek 54
5.1.12.1 1991 55
5.1.12.2 1992 55
5.1.12.3 1993 55
5.1.12.4 1994 55
5.1.13 Eastern Creek Basin 56
5.1.13.1 1991 56
5.1.13.2 1992 57
5.1.13.3 1993 57
5.1.13.4 1994 57
5.1.14 Mobile Qg 1994 57
5.1.14.1 Sedge 58
5.1.14.2 Forest 58
5.1.14.3 Lichen 58
5.1.14.4 Willow 59
5.1.15 RCT-1 60
5.1.15.1 1994 60
5.1.15.2 1995 61
5.1.15.3 1996 61
5.1.15.4 1997 61
5.1.15.5 1998 61
5.1.16 RCT-2 61
5.1.16.1 1996 62
5.1.16.2 1997 62
5.1.16.3 1998 63

5.1.17 Eddy **63**
5.1.17.1 1995 63
5.1.17.2 1996 63
5.1.17.3 1997 63
5.1.18 Pfrost **64**
5.1.18.1 1995 65
5.1.18.2 1996 65
5.1.19 Rodney **65**
5.1.19.1 1996 66
5.1.19.2 1997 66
5.1.20 LowTVC **66**
5.1.20.1 1996 67
5.1.20.2 1997 67
5.1.20.3 1998 68
5.1.21 UpTVC **68**
5.1.21.1 1997 68
5.1.21.2 1998 68
5.1.22 Waterhole Lake 1985 ..... **69**

6.0 DATA EXTRACTION SOFTWARE **69**
6.1 Important Files **69**
6.2 Running "Extract.exe" **71**
6.3 Use of Extract.exe" **72**
6.3.1 High Resolution (e.g. ½-hourly) Extractions **73**
6.3.2 Daily Extractions **80**
6.3.3 Seasonal Extractions **83**

7.0 DATA MANAGEMENT **86**
7.1 Importing into a Spreadsheet **86**

Appendix A - ClimoBase Variable List **90**

Appendix B - Listing of "HEADERS.PRN" File **94**

Appendix C - "EXTRACT.FOR" Programme Listing **98**
EXTRACT.FOR **98**
BWCODE1.FOR **111**
BWCODE3.FOR **131**
BWDAY.FOR **147**
BWDAY1.FOR **147**
BWDAY2.FOR **148**
BWHALF.FOR **149**
BWHALF1.FOR **150**
BWHALF2.FOR **150**
BWSCRN1.FOR **151**

BWSEAS.FOR 152
BWSEAS2.FOR 153
BWVARLST.FOR 153
CLEAR.FOR 155
CLRCODE1.FOR 156
CLRCODE3.FOR 176
CLRDAY.FOR 191
CLRDAY1.FOR 192
CLRDAY2.FOR 193
CLRHALF.FOR 193
CLRHALF1.FOR 194
CLRHALF2.FOR 195
CLRSCRN1.FOR 195
CLRSEAS.FOR 196
CLRSEAS2.FOR 197
CONTDAYS.FOR 198
CVARLIST.FOR 199
FIXLABEL.FOR 201
NEWLABEL.FOR 202
OPENSCRN.FOR 203
RE4MAT2.FOR 204
READHEAD.FOR 204
READINI.FOR 205
READUNIT.FOR 206
REFORMAT.FOR 207
SELECTBW.FOR 207
SELECTC.FOR 209
SELSEABW.FOR 211
SELSEASC.FOR 213
SITELIST.FOR 215
SITELSTB.FOR 216

Appendix D - ClimoBase Statistics 218

1.0 INTRODUCTION

ClimoBase is a climatological database providing a central repository for much of the raw field data and basic results collected from a variety of sites, between the years 1984 to 1998, in support of Dr. Wayne Rouse's research. Given that these data originated from many different sources and required varying levels of rescue, their quality cannot be guaranteed. Most of the data in ClimoBase has gone through at least a basic level of automated batch quality control and the majority is believed to be of high quality, however, the onus is on the user to conduct their own due diligence by carefully scrutinizing the data they extract from ClimoBase. During the batch QC process, highly suspicious or irregular data have been flagged as bad/missing using the code -6999. On the other hand, extreme values that could not be readily discounted by available information were normally left intact and their use will be left up to the user's discretion. Users of any data set are encouraged to review the information contained in field books in Dr. Rouse's possession.

The archive data file structure is extremely low level and simplistic such that other database engines may be used to access the data in these files. Due to limitations of the developer, a basic programming language (FORTRAN 77) was used to create an extraction tool which operates in the DOS environment. Given that both FORTRAN and DOS are rapidly becoming obsolete, the portability of the ClimoBase extraction tool to other computers and platforms may become increasingly difficult. If the data in ClimoBase are to have an enduring legacy and be widely distributed, the implementation of Windows compatible database software should be considered. The present solution provided a quick means to gain access to the data, but not necessarily the best and easiest access. With this in mind, the basic archive flat files are of a predictable layout, format and size such that other developers can easily ingest the data into other software.

Users of the ClimoBase extraction tool (Extract.exe) are directed to Section 2 of this manual, which details the installation, and Section 6, which covers the use of this software. Sections preceding 6.0 give data set descriptions and discuss the technical aspects of ClimoBase and the Extract.exe application.

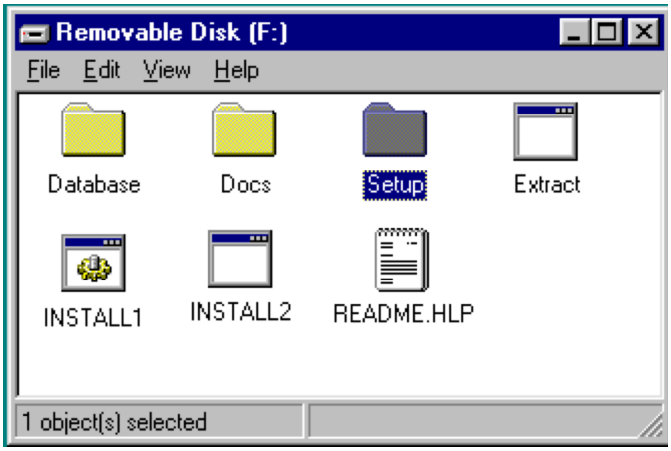
2.0 INSTALLATION

When ClimoBase is used on a PC for the first time, an installation procedure must be followed. This installation process has been tested on the Windows 95 and 98 operating systems. To streamline and simplify the process as much as possible, several batch files are used to automate the installation and reduce the amount of user intervention. The main purpose of the installer programme is to **i)** create the data output directories on the PC where the extracted datafiles are to be saved, and **ii)** copy several system files into the Windows directory to allow Fortran to run and ANSI colour to display properly. On the following page are the contents of the README.HLP on the ClimoBase disk which explains the installation process.

Contents of README.HLP:

```
                        CLIMOBASE INSTALLATION
                        ======================

   Note: This installation procedure is required to be run on your
   PC only once.  The Extractor utility (and this installation) is
   not compatible with Windows2000.

1. If Windows is installed on your C: drive, then double-click
   on INSTALL1 (on the CD-ROM) and follow the on-screen instructions.

2. Otherwise, if Windows is located on another drive and/or is not in
   the C:\Windows\ directory, the installation must be done manually as
   detailed below:

      i) Create the following directories on C Drive:

            C:\DATAOUT\HALFHOUR
            C:\DATAOUT\HALFHOUR\LOGFILES
            C:\DATAOUT\DAILY
            C:\DATAOUT\DAILY\LOGFILES
            C:\DATAOUT\SEASONAL

      ii) From the hidden directory on the ClimoBase disk called
          SETUP, copy the following files to ?:\WINDOWS\COMMAND,
          where ? is the drive letter where Windows resides.
          To gain access to the hidden directory, either use DOS
          or under View in the Window (Options) choose "Show All
          Files".

          Copy:
            ANSI.SYS
            RUN386.EXE
            F77L3.EER
            ENGLISH.EER
          to /WINDOWS/COMMAND/

          Also copy the following:
            INSTALL2.PIF
            EXTRACT.PIF
          to /WINDOWS/PIF/

      iii) Use a text editor to add the following line to your
           CONFIG.SYS file (in the root directory) if it is not
           already there:

            DEVICE=?:\WINDOWS\COMMAND\ANSI.SYS

           where ? is the drive letter where Windows resides.
           Be sure to make a backup of this file first.  If this
           line was required then be sure to reboot your PC to
           have the changes take effect.

      iv) After rebooting double click on the EXTRACT icon to
          run the data extractor.
```

As stated in the instructions above, it is only necessary to do a manual installation if Windows on your PC is not resident on drive `C:` in the directory `C:\Windows\`. Otherwise, the setup is easily accomplished by double-clicking the icon called **INSTALL1** in the open ClimoBase window (opened by double-clicking on either the ZIP-100 disk icon or the CD-ROM icon, depending on what media ClimoBase was distributed on):



If after executing the extraction application (`Extract.exe`) and choosing the colour option, the screen displays strange codes and no colourised text is visible, the `Device=` line was not properly inserted into the `config.sys` file or the computer was not rebooted. If after several attempts the extractor does not display colour, the user has the option of choosing monochrome mode from the first selection screen (option 2).

3.0 CLIMOBASE DATABASE STRUCTURE

The ClimoBase data model needed to be simple for maintenance and integration into software, yet flexible enough to tailor the archive to the unique nature of the climate data being stored, the instrumentation/measurement programme and the sampling regime. As a compromise between these two extremes, the data model was designed with the following features:

- The layout and format of all archive flat files is identical and predictable;
- an individual archive file is based on a 24-hour day and the number of records is dependent on the integration interval (e.g. 15-min., 30-min. or 60-min.);
- the number of fields per record (variables) is limited to a maximum of 110;
- the filename of these files is based on the location, name, terrain type and year of the site. This portion of the filename is the same for a whole data set, with the extension incrementing for each daily file based on the day of year (e.g. `03180198.172`, `03180198.173`, `03180198.174`, etc.);
- each data set may also have one seasonal file attached to it (e.g. `03180198.DAY`) where each record has discrete samples, totals, levels, etc. (e.g. total rainfall, water table position, soil moisture, frost table depth). The number of records in a file is dependent on the number of days in the data set. The layout and format of this seasonal file adheres to that of the daily files;

- each data set has one Control File associated with it (e.g. `03180198.INI`) which contains initialization parameters describing the data set as well as the number, name and order of variables contained in the data set.

The concept of a *Control File* has both benefits and drawbacks. While giving power and flexibility to ClimoBase, it also makes ingest of the data files by other database software difficult. This, coupled with the optional seasonal file, will present challenges to future developers charged with the task of incorporating the data in ClimoBase into modern Windows-compatible software without the use of the Extract utility.

3.1 Daily Archive Files

The foundation of the ClimoBase archive are the daily flat files. All data sets for all years and sites have the same file format. Each record (row) consists of 7-character data fields to a maximum of 110 fields (that is to say, a maximum record length of 770 characters). The fields are therefore space delimited, with no commas, semicolons, tabs, etc. separating fields. For compactness and efficiency, it is permissible for all 7 characters in a field to be occupied. While efficient for software, this fact makes the raw archive files difficult to load and view in spreadsheets. Furthermore, these files have no headers identifying the columns since this is accomplished by the Control Files. Data extracted from ClimoBase using the extractor provided are in a spreadsheet-friendly format with headers giving variable name, units, level, height, etc.

3.1.1 Naming Convention

If a user ever wanted to access the raw daily archive flat files directly, they would have to be able to both mentally construct and decipher the filenames, which are in a coded format. By way of example, the filename `03180198.172` contains the following coded information: **1)** Inuvik, NWT, **2)** LowTVC (lowland), **3)** Sedge fen, **4)** 1998, and **5)** day 172 (June 21). It can be seen that ClimoBase file names are broken down into 5 parts:

- Geographical location (2 digits);
- site name (2 digits);
- terrain type (2 digits);
- year (2 digits);
- day of year (three digits, eg. 005, 027, 123).

From the example above, it can be seen that all filenames are basically an 8-digit filename (comprising 4 pieces of information) followed by a 3-digit “extension”. There are two important cautionary notes. Firstly, this scheme is NOT Y2K compliant since the year occupies only two digits. Presently ClimoBase only contains data up to 1998, but if the need arose, 00 would be reserved to 2000, 01 for 2001, 02 for 2002, etc. Secondly, the day of year portion of the filename (i.e. extension) must be three characters, with zeros being used as place-holders if necessary.

Below is the decomposition of ClimoBase filenames:

##	##	##	##.###
a)	**b)**	**c)**	**d)** **e)**

a) Geographical Location
01=Churchill, MB
02=Marantz L., MB (including Waterhole L.)
03=Inuvik, NWT

b) Site Name (unofficial)

01=Sedge, Site4 (1987)	13=Site2 (1987)
02=Willow	14=Site3 (1987)
03=Beach, Ridge	15=Eastern Creek Basin
04=Rocky	16=Pfrost
05=Twin Lakes	17=Eddy
06=Golf Lake	18=LowTVC (lowland)
07=*reserved*	19=Mobile Qg
08=RCT-1	20=Main (1984,1985)
09=RCT-2	21=Marantz
10=Airport (AES)	22=UpTVC (upland)
11=Eastern Creek	23=Rodney
12=Site1 (1987)	24=Waterhole Lake

c) Terrain Type
01=Sedge fen wetland
02=Willow-birch wetland
03=Lichen-heath
04=Bedrock boulders/Heath
05=Spruce-tammarck forest
06=Tundra lake
07=Creek
08=Various (i.e. a mosaic, e.g. a basin: sedge, willow, lichen-heath, forest, etc.)
09=Sparse vegetation (short grass/sedge, heath spp.)
10=Coastal marsh (tall grass, sandy soils)

d) Year
Two digit year (non-Y2K compliant, use 00 for 2000, 01 for 2001, etc.).

e) Day-of-Year or "DAY"
Three digit day-of-year (sometimes referred to as Julian Day) for daily files of half-hour or hourly data; **or** one seasonal file with the three letter extension "DAY" indicating a file of discrete daily values, usually manually measured once a day (e.g. water table elevation, rain gauge amounts, frost table depth, etc.).

3.1.2 Layout and Format

As stated earlier, each field in an archive flat file is 7 characters wide. The resolution of the data (number of decimal places) is dependent on the variable in that column and varies from column to column. Furthermore, the number of decimal places *within* a column is not strictly enforced. The flag for bad/missing data is "-6999", exactly. Variations are not permitted (e.g. -6999.0, -6999.000, etc.). This is enforced to allow the tight field width of 7 characters. If a vapour pressure was missing, -6999.0000 would occupy far too much space. Given the above, the largest positive number that can be stored is 9999999 and the smallest positive number is .000001. The largest negative number that can be stored is -999999 and the smallest negative number is -.00001.

Each daily archive file contains data for all variables over a 24 hour period. Since the day of year is encoded in the filename, it is not repeated as a column within the data file. Column headers are also omitted since they are printed in the formatted output extractions. The first column of every daily file is time, in minutes, in a 24-hour format with zeros as place holders (e.g. 0015, 0030, 0700, 2300). The number and sequence of variables that follow is totally dependent on what is stipulated in the Control File.

As an example, if a daily file contained hourly data for 6 variables, the file would have 24 records, 6 fields per record (42 characters per line) and a total of 144 pieces of data (fields) per file. Furthermore the file would be 1032 bytes in size. A sample of such a file is given below for the variables: solar time, wind speed, wind direction, dry-bulb, wet-bulb and vapour pressure. Shown here are only the first 4 hours and the last one. The two lines in bold are merely a ruler to show the character position and is not part of the actual data file.

```
0000000001111111111222222222233333333334444444444
1234567890123456789012345678901234567890123456789
   0100   3.32  345.6  17.23  11.78 1.0132
   0200   3.44   343.  17.32  11.79 1.0087
   0300   3.78  332.5  17.56  -6999  -6999
   0400   4.11  340.9  17.87  12.22   1.04
    .      .      .      .      .      .
    .      .      .      .      .      .
    .      .      .      .      .      .
   2400   3.73  -6999  13.15  10.56 1.0997
```

Note that three pieces of data are bad/missing (flagged with -6999), and the free decimal format (e.g. `343.` rather than `343.0`, and `1.04` rather than `1.0400`).

All daily archive files for a particular data set must be the same size with records for all periods (e.g. 48 records per file if the integration interval was 30 minutes). If there are data breaks for periods of less than 24 hours, or the first and last days are partial, place holder records are added to construct a full day (i.e. all fields except Time are set to -6999).

3.2 Seasonal Archive Files

Seasonal archive files are optional and their existence is stipulated in the Control File. There can only be one seasonal data file per data set. These files contain data that are measured discretely at daily, or longer, intervals. The values are daily totals or levels that apply to that day. In most cases a time for the measurement is not given since the measurements are typically of course resolution and vary little over the span of hours. However, in the absence of field books to consult, one can typically assume that the measurements were made between 08:00 - 14:00 local solar time. Variables such as water table location and manual rain gauge amounts were normally measured at the same time each day so such values can be assumed to span 24 hours.

3.2.1 Naming Convention

The seasonal files follow the same naming convention as the daily files, with one exception; the 3 digit extension is always the characters "`DAY`" rather than a day of the year. For the daily file example used in Section 3.1.1, the corresponding seasonal file would have the filename **`03180198.DAY`**.

3.2.2 Layout and Format

The layout and structure of the seasonal files is similar to that of the daily archive files. Each field is 7 characters wide and the columns are headerless. The number, type and sequence of the variables is stipulated in the Control File. A maximum of 80 fields (variables) per record (day) is allowed. The number of records per file is determined by the number of days in the data set. Records must be sequential and increment by one day from start to finish. Since seasonal data sets are typically not contiguous, blank records are used as place holders (all fields, except day-of-year, are set to -6999). Finally, the first column of every seasonal file is always DOY (day-of-year).

3.3 Control Files

Control Files (or initialisation files) are used to describe all aspects of the raw archive files for a data set. There must be a Control File for each data set. Control files contain the following information:

- Year;
- periods per day (i.e. number records in each daily file);
- number of contiguous periods in the data set;
- the start and end day of each contiguous section;
- number of variables;
- number of atmospheric levels (if applicable);
- number of ground temperature levels (if applicable);
- height of each atmospheric level (in metres);
- depth of each ground temperature level (in metres);
- variable code of the variables in the data files, in the proper sequence;
- whether there is a seasonal file (e.g. **`03180198.DAY`**) attached to the data set;
- number of variables in the seasonal file;
- the start/end day of the seasonal data set;

- whether there is a windrose in the data set (and if so, the column it starts in);
- the seasonal variable list, in sequence.

3.3.1 Naming Convention

The Control Files follow the same naming convention as the daily files, with the exception that there is only one file per data set and the 3 digit extension is always the characters "`INI`" rather than a day of the year. For the daily file example used in Section 3.1.1, the Control File file pertaining to this data set would have the filename **`03180198.INI`**.

3.3.2 Layout and Format

A sample layout of a Control File is given on the following page for the 1991 "Ridge" site on a raised beach near Bird Cove, Churchill, Manitoba (filename=`01030391.INI`). Text in **bold** are comments included to assist in the creation, editing and interpretation of the Control Files. The portions with comments are ignored by the extraction software, but the order and exact position of the actual data *is* important. Again, the first three lines are a ruler to show character position and are not part of the actual file.

```
00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000001
00000000011111111112222222222333333333344444444445555555555666666666677777777778888888888999999999990
12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
***   Year   Periods Variables At_Levels Gn_Levels   Contig.
      1991        48        57         6        10         2
***  Start      Stop
       172       204
       210       235
***Atmospheric Level Labels:
    0.70 m    1.00 m    1.30 m    1.70 m    2.00 m    2.50 m
***Ground Temperature Level Labels:
    0.05 m    0.10 m    0.20 m    0.30 m    0.40 m    0.50 m    0.60 m    0.70 m    0.88 m    0.90 m
***VarCode  Description  Number
   0520024  HR (Solar)   1
   1630111  u(1)         2
   1630211  u(2)         3
   1630311  u(3)         4
   1630411  u(4)         5
   1630511  u(5)         6
   1630611  u(6)         7
   1370101  Td(1)        8
   1370201  Td(2)        9
   1370301  Td(3)        10
   1370401  Td(4)        11
   1370501  Td(5)        12
   1370601  Td(6)        13
   1600101  Tw(1)        14
   1600201  Tw(2)        15
   1600301  Tw(3)        16
   1600401  Tw(4)        17
   1600501  Tw(5)        18
   1600601  Tw(6)        19
   0260103  e(1)         20
   0260203  e(2)         21
   0260303  e(3)         22
   0260403  e(4)         23
   0260503  e(5)         24
   0260603  e(6)         25
   0420101  GT(1)        26
   0420201  GT(2)        27
   0420301  GT(3)        28
   0420401  GT(4)        29
   0420501  GT(5)        30
   0420601  GT(6)        31
   0420701  GT(7)        32
   0420801  GT(8)        33
   0420901  GT(9)        34
   0421001  GT(10)       35
   0950008  QgFlat       36
   0580008  K_down       37
   0590008  K_up         38
   0850008  Q*           39
   0890008  Qe           40
   1080008  Qh           41
   0940008  Qg           42
   0070030  BETA         43
   0910008  Qe_BREB      44
   1100008  Qh_BREB      45
   0900008  Qe_AERO      46
   1090008  Qh_AERO      47
   1770006  z0           48
   1340001  T0           49
   0270003  e0           50
   1230030  Ri           51
   1640011  u*           52
   0690030  Lv_WIND      53
   0670030  Lv_TEMP      54
   0680030  Lv_VAP       55
   0240003  e            56
   1670003  VPD          57

------------------------------ DAY File Parameters --------------------------
*Variables
         0
***  Start    Finish  Windrose Gn_Levels
         0         0         0         0
***Ground Temperatures:

***VarCode  Description  Number
```

There are many important features in the example given on the previous page. First of all, the data set is broken into two contiguous chucks (days 172 - 204 and days 210 - 235). The ability of the ClimoBase extractor to handle non-contiguous data sets in this way is a very powerful feature. Up to 4 start/stop sequences are allowed. There are 48 periods per day, therefore the integration interval is 30 minutes. There are 6 atmospheric levels and 10 ground temperature levels. The height/depth labels for each are given on lines 7 and 9, in this example. If the number of either the atmospheric or ground levels was set to zero, the corresponding label line would be blank. Variable codes (VarCode) are used to identify the variables, in the proper sequence, as well as indicate their level (height) for multi-level variables (e.g. T_d, T_w, e, CO2, u, etc.) and units. The annotations next to the VarCodes are comments used to assist in file interpretation and are not required. The VarCodes will be explained in detail in a following section. Finally, at the bottom of this Control file it can be seen that there is no seasonal file associated with this data set since the number of variables is set to zero.

Below is the lower portion of another Control file which *does* have a seasonal file (1993 Sedge site). Note that if the seasonal file does not have daily-sampled ground temperature sensors, the label line is blank, as in the example below.

```
000000000111111111122222222223333333333444444444455555555556666666666677777777778
123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
------------------------------- DAY File Parameters ---------------------------
*Variables
        13
***  Start    Finish  Windrose Gn_Levels
       165       236         6         0
***Ground Temperatures:

***VarCode  Description  Number
   0210030  DOY          1
   0730017  MRG_Rain     2
   1730006  WT           3
   0410006  FT_man       4
   0550028  Humm_H20%    5
   0740019  N            6
   0750019  NE           7
   0250019  E            8
   1260019  SE           9
   1250019  S            10
   1320019  SW           11
   1690019  W            12
   0770019  NW           13
```

A notable feature of this portion of the Control File is the windrose value. A value of zero indicates that there is no windrose information in the data set. A value of greater than zero indicates the column number where the windrose data begins (i.e. “N”: the count of periods having a wind direction in the North 22.5° sector over the course the day).

3.3.3 VarCodes

Variable codes (VarCode) used in the Control Files convey the following information to the extractor:

- The variable code (cross-referenced to type/name in another file);
- the level (for multi-level variables. Any value >0 indicates such a variable);
- unit code (cross-referenced to units in another file);
- the order of the variables in the daily and seasonal archive files.

A VarCode (e.g. `1370501`) has three parts:

137	**05**	**01**
a)	**b)**	**c)**

a) Variable Code

b) Level

c) Unit Code

For the example given above, a Variable code = `137` corresponds to dry-bulb temperature, the Level = 5, and a Unit Code = 01 corresponds to units of °C. From the label information in the Control File, an extracted output file containing this variable code would have a header similar to that below:

```
     Td(5)
    2.00 m
         C
==========
```

The format of extraction output files, as well the files which provide the variable name (**Td** in the above example) and units (**C** in the above example), will be detailed in the sections to follow.

VarCodes are listed vertically in the Control Files, one on each line. The number of VarCodes must match the number of variables given at the top of the Control File. The sequence of the VarCodes is crucial as it gives the order of the variables in the archive files.

3.3.3.1 Variable Codes

When the extraction application is loaded, a file containing a cross-reference table of variable codes with variable names (labels) is loaded into an array for use when the output files are formatted. A portion of this file (`HEADERS.PRN`) is shown on the next page. Again, a ruler (not part of the file) is provided and comments are bolded.

```
00000000011111111112
12345678901234567890
Total Variables:
177
Code    VarName
 001     ALBEDO
 002      ALPHA
 003     AM32_T
 004    AM416_T
 005   Autowell
 006    AVG_MRG
 007       BETA
 008    CLD_cov
 009    CLD_opc
 010        CO2
 011        CO2
 012  CO2(Humm)
 013      CO2/z
 014      CO2mV
 015  CR10_Batt
 016   CS615per
 017        DAY
 018      DEPTH
 019        DIR
 020     DIR_SD
 021        DOY
 022     Dry_GT
 023         dS
 024          e
 025          E
 026          e
 027         e0
 028       eCR7
 029     Encl_T
      .
      .
      .
 170       WEBB
 171     Wet_GT
 172   Willow_Q
 173         WT
 174         WT
 175    wTprime
 176         YR
 177         z0
```

Presently there are 177 individual variables in ClimoBase. Following the 4 character variable code field is an 11 character label field which contains the variable name to be used in the extraction output files. For a complete list of the 177 variables along with a brief description and units, see Appendix A. The whole listing of `HEADERS.PRN` is given in Appendix B.

3.3.3.2 Levels

When the 2 digits in positions 4 and 5 of a VarCode (05 in the example in Section 3.2.3) have a value greater than zero, a multi-level variable is assumed. Examples of such variables are T_d, T_w, e, CO2, u, GT, etc. When such variables are encountered, the variable label obtained from the `HEADERS.PRN` file will have the level appended to the label as follows: Td(3), Tw(5), u(1), CO2(4), etc.

3.3.3.3 Unit Codes

When the extraction application is loaded, a file containing a cross-reference table of unit codes with actual units (labels) is loaded into an array for use when the output files are

formatted. This file (`UNITS.PRN`) is shown below. Again, a ruler (not part of the file) is provided and comments are bolded.

Contents of **`UNITS.PRN`**

```
**000000000111111111222222**
**123456789012345678901234 5**
**Total Units:**
30
  **UnitCode      Units**
        01          C
        02          K
        03        kPa
        04         mm
        05         cm
        06          m
        07        ppm
        08      W m-2
        09 umol mol-1
        10    ppm m-1
        11      m s-1
        12     m2 s-1
        13     m3 s-1
        14  g m-2 d-1
        15 mg m-2 s-1
        16    m s-1 C
        17     mm d-1
        18   RESERVED
        19  Periods/d
        20         mV
        21          V
        22   RESERVED
        23         ms
        24      hh:mm
        25   RESERVED
        26     Tenths
        27    Degrees
        28          %
        29   RESERVED
        30
```

The unit labels occupy 10 character fields. Note that 4 codes have been reserved for the addition of new units (new units could also be appended to the list). Unit code 30 is a label comprised of 10 blanks and is used for dimensionless quantities.

4.0 DATABASE EXTRACTION ENGINE

To extract data from ClimoBase, a software application called **`EXTRACT.EXE`** was created using the FORTARN 77 programming language. Portions of the source code are non-standard FORTRAN as some syntax is based on features and command derivations available in the Lahey F77- EM/32 V5.01 compiler.

The extractor provides a means to navigate through over 50 data sets spanning 15 years. Once the desired data set is located, individual variables can be extracted and output in a space-delimited format that can be easily imported into a spreadsheet for analysis.

Technical issues surrounding the construction of the database engine will be discussed in detail in this section while the actual use of the **`EXTRACT.EXE`** programme will be dealt with in Section 6.

4.1 Structure of **EXTRACT.EXE**

The **EXTRACT.EXE** programme (version 2.0) is the central module of the ClimoBase extractor. The whole application is modular and is comprised of 41 modules (individual programs) with a total of nearly 8100 lines of code. All the modules have been complied together to form a 282 kilobyte DOS-based application called **EXTRACT.EXE**.

Many of the display screen modules (15) are duplicated; one for ANSI colour, another for monochrome. This has been done to handle the situation where a user was unsuccessful at configuring their PC for ANSI colour during the installation procedure. These module pairs are functionally identical except for the use of ANSI colour codes. In addition to these modules pairs, there are 11 modules which are "common" and are not display type dependent.

4.1.1 Modules

In most cases, the filename of a module matches the main subroutine name within it. Most colour-dependent modules have filenames prefixed by "CLR" while the monochrome modules are typically prefaced by "BW". In the following table, brief descriptions of the modules are given. Specific details of programme logic may be deduced from the source code listing in **Appendix C** where the programmes are listed in alphabetical order after **EXTRACT.FOR** (refer to Table of Contents).

Common Filename	B&W Filename	Colour Filename	Subroutine Name	Description
CLEAR.FOR			*=filename*	A worker bee function to clear a B&W screen
	BWCODE1.FOR	CLRCODE1.FOR	*=filename*	Determine filename for Day/halfhour
	BWCODE3.FOR	CLRCODE3.FOR	*=filename*	Determine filename for Seasonal
	BWDAY.FOR	CLRDAY.FOR	*=filename*	Give Daily target path and get 'drive' letter
	BWDAY1.FOR	CLRDAY1.FOR	*=filename*	Get Daily parameters (OUTfile, start, end, etc.)
	BWDAY2.FOR	CLRDAY2.FOR	*=filename*	Get Daily parameters (OUTfile, start, end, etc.) for successive runs
	BWHALF.FOR	CLRHALF.FOR	*=filename*	Give Halfhour target path and get 'drive' letter
	BWHALF1.FOR	CLRHALF1.FOR	*=filename*	Get Halfhour parameters (OUTfile, start, end. etc.)
	BWHALF2.FOR	CLRHALF2.FOR	*=filename*	Get Halfhour parameters (OUTfile, start, end. etc.) for successive runs
	BWSCRN1.FOR	CLRSCRN1.FOR	*=filename*	Determine extraction type (Daily, Halfhour. Seasonal)
	BWSEAS.FOR	CLRSEAS.FOR	*=filename*	Give Seasonal target path and get 'drive' letter
	BWSEAS2.FOR	CLRSEAS2.FOR	*=filename*	Get Seasonal OUTput filename (for successive runs)
CONTDAYS.FOR			*=filename*	Determine contiguous periods and individual start/end periods
	BWVARLST.FOR	CVARLIST.FOR	*=filename*	Variable listing (info. screen)
EXTRACT.FOR			*=filename*	Main extraction programme calling the other subroutines
FIXLABEL.FOR			***FIXLABEL3***	Add height/depth info to header labels
NEWLABEL.FOR			***FIXLABEL***	Reformat variable headers for atmospheric and ground temp level info.
OPENSCRN.FOR			*=filename*	Copyright info and determine display type
RE4MAT2.FOR			***REFORMAT2***	Reformat variable headers for seasonal data
READHEAD.FOR			*=filename*	Load variable Headers
READINI.FOR			*=filename*	Load initialization parameters
READUNIT.FOR			*=filename*	Load variable Units
REFORMAT.FOR			*=filename*	Reformat variable headers for halfhour/daily
	SELECTBW.FOR	SELECTC.FOR	*=filename*	Data selection screen (1 variable at a time) for Halfhour/Daily
	SELSEABW.FOR	SELSEASC.FOR	*=filename*	Data selection screen (1 variable at a time) for Seasonal data
	SITELSTB.FOR	SITELIST.FOR	*=filename*	Details of Site Names (info. screen)

4.1.2 Theory of the Extraction Engine

The ClimoBase extractor engine is found in several modules and in all cases operates in basically the same manner. The more complex version is used for extracting data from the daily files, while a scaled down version extracts data from the seasonal (`*.DAY`) files.

Below is a source code fragment from **`EXTRACT.FOR`** that deals with extracting data for the construction of an output file of half-hourly data:

```
                    .
                    .
                    .
                    DO 25 Flip1=1,Contig2
                        DO 50 Flip=Days2(Flip1,1),Days2(Flip1,2)
                             JD=FLIP
                             IF (JD.LT.10) THEN
                                  WRITE (Day,8) JD  ! Convert jday to a char
                                  Day='00'//Day
                             ELSEIF (JD.LT.100.AND.JD.GT.9) THEN
                                  WRITE (Day,9) JD
                                  Day='0'//Day
                             ELSE
                                  WRITE (Day,10) JD
                            ENDIF

8                           FORMAT (I1)
9                           FORMAT (I2)
10                          FORMAT (I3)
                            PRINT '(20X," *** Extracting data from DAY ",
     +                      i3," ***")', JD
                            infil0=filename//'.'
                            infil1=infil0//DAY   ! Input file #13
                            OPEN (13, FILE=drive//':\DATABASE\'//
     +                      infil1,ACTION='READ')

                            Bad = 0
                            DO 60 loop=1,Per
                                  READ (13,100) (Value(n),n=1,Var)
100                             FORMAT(110A7)
                                  WRITE(14,200) JD, Value(1), Value(Numb)
200                             FORMAT (I11,A11,A12)
                                  IF( Value(Numb).EQ.'  -6999' ) Bad=Bad+1
60                          CONTINUE

                            WRITE (15,69) JD, Bad
69                          FORMAT (2(1X,I11))
                             CLOSE (13)
50                      CONTINUE
25                  CONTINUE
                    CLOSE (14)
                    CLOSE (15)

                    PRINT*, ' '
                    PRINT*, 'Do you want to extract another variable'//
     +              ' from the Climobase archive (Y/N) ? '
                    READ*, Another
                    .
                    .
                    .
```

Before this code is executed, the user has entered parameters that have designated the source drive, the desired geographical area, year, data set, and the variable to be extracted. From this information, the filename of the input, output, Control File and Logfile is constructed and the necessary files opened. Information describing the data set is loaded from the Control File, providing data such as the number of contiguous periods, their start/end days, the number of periods per day, the number of variables and the type and sequence of variables (see Section 3.3 for more details).

The extractor engine has three nested loops. The outer loop sequences the extraction through the required number of contiguous periods (**`FLIP1`**). The next loop (**`FLIP`**) sequences day-by-day through a contiguous period bounded by the start (**`Days2(Flip1,1)`**) and finish (**`Days2(Flip1,2)`**) days. The first day loaded depends on the value specified earlier by the user. The innermost loop (**`loop`**) sequences through the number of periods (**`Per`**) per day (e.g. 48 for half-hourly data). Before a ClimoBase daily archive file is opened, the filename is properly formatted such that the filename extension (day of year) is three digits with leading zeros if necessary. Next the input file is opened and a bad/missing data counter (**`Bad`**) is set to zero. In the innermost loop, one record (all variables) is read into an array using **`READ (13,100) (Value(n),n=1,Var)`**. Immediately following this, the variable that the user specified to be extracted is pulled out of this array and written to the output file. If the data value is flagged as bad/missing (-6999) then the **`Bad`** data counter is incremented. The loop continues until all records for the day being processed have been ingested and the output variable extracted. Upon completion of a day, the innermost loop is exited, the number of bad periods is written to a Logfile, and the daily archive file is closed. At this point the **`FLIP`** loop is incremented for the next day. Once all days for a contiguous period are processed, the **`FLIP`** loop is exited and the extractor moves to the next contiguous period of extraction (**`FLIP1`**) and continues until the final day (specified earlier by the user). Upon completion of **`FLIP1`** the user is given the option of extracting another variable from ClimoBase.

It should be noted that the extraction engine reads and writes data in character format so that the data values in the output file appear exactly as they do in the ClimoBase files. This avoids decimal formatting difficulties that would arise given the wide range of data resolutions and the fact that "-6999" can be interspersed throughout the data.

4.1.3 Extraction Output

Two types of files are output for each variable extraction. The target location of these files depends on the type of extraction being performed (high resolution data, daily averages/totals, or seasonal). All output data are written to **C: drive** on the user's PC in a directory at the root level called DataOut. Within this directory are three more directories: **HALFHOUR** (for high resolution data, e.g. half-hourly), **DAILY** (for daily average/total data computed from the high resolution data) and **SEASONAL** (for seasonal values of discretely measured values).

The user is required to be mindful of the type of extractions that they are doing because they will have to navigate to the proper directory to locate their output data sets. When the user goes to one of these three directories they will find one file for each variable (e.g. 01010194.GT5) and a directory called **LOGFILES** (only within the HALFHOUR and DAILY directories)

The user can identify the contents of a data file and its associated Logfile based on the filename. Refer to Section 3.1.1 to interpret the filename. The extension of the filename (three letters following the period "**.**") was entered by the user as a means to identify the variable extracted and thus should be self explanatory (to at least the user).

4.1.3.1 HALFHOUR Output Files

Although this directory is called HALFHOUR, **all** high resolution data are stored here. Most data sets in ClimoBase are half-hourly, however, hourly and 15-minute data also exist for certain data sets. Below is an example of a half-hourly output file for Sedge 1994 (C:\DataOut\HALFHOUR\01010194.TW4). The value extracted was level 4 wet-bulb temperature for the whole season (days 157 - 238, inclusive). Shown below is only the output for day 165, although in the actual file there would be 3936 records for the days 157 to 238.

A portion of the contents of 01010194.TW4 (in HALFHOUR):

```
DOY  HR(Solar)       Tw(4)
         hh:mm           C
                     1.60 m
===  ========= ===========
165       0030        0.70
165       0100        0.29
165       0130       -6999
165       0200       -6999
165       0230       -6999
165       0300       -6999
165       0330       -6999
165       0400        0.00
165       0430        0.37
165       0500        1.91
165       0530        2.84
165       0600        3.38
165       0630        4.07
165       0700        4.43
165       0730        4.65
165       0800        4.68
165       0830        4.58
165       0900        4.65
165       0930        4.51
165       1000        4.63
165       1030        4.47
165       1100        4.38
165       1130        4.08
165       1200        3.81
165       1230        3.60
165       1300        3.62
165       1330        3.43
165       1400        3.09
165       1430        2.78
165       1500        2.46
165       1530        2.43
165       1600        2.30
165       1630        2.23
165       1700        2.22
165       1730        1.93
165       1800        1.74
165       1830        1.63
165       1900        1.17
165       1930        0.99
165       2000        0.93
```

```
165       2030        0.81
165       2100        0.78
165       2130        0.78
165       2200        0.75
165       2230        0.68
165       2300        0.69
165       2330        0.71
165       2400        0.81
```

The first line of the title has the variable name, the second line the units and the third line the height/depth (if applicable). The corresponding Logfile, which will be discussed later, would be located in C:\DataOut\HALFHOUR\LOGFILES\01010194.TW4 and would indicate that there were 5 bad/missing periods.

4.1.3.2 DAILY Output Files

Extractions that output daily averages/totals derived from the high resolution data are stored in the DAILY directory. Below is an example of a daily output file for Sedge 1994 (C:\DataOut\DAILY\01010194.TW4). The value extracted was level 4 daily average wet-bulb temperature for the whole season (days 157 - 238, inclusive).

Contents of 01010194.TW4 (in DAILY):

```
         AVERAGE
DOY        Tw(4)
               C
          1.60 m
=== ===========
157       3.6108
158       9.3381
159       7.2152
160       9.9775
161       9.4040
162       3.3985
163       1.3746
164       2.6711
165       2.4416
166       3.0533
167       8.6752
168      11.4796
169      12.0219
170      12.9146
171      13.5496
172      11.3746
173      12.3692
174      10.4615
175       5.2340
176       7.6815
177      10.5063
178      12.3694
179       7.2675
180       8.9696
181       8.6258
182       6.9058
183       6.8846
184       5.7900
185       3.8279
```

```
186      5.2948
187      4.9371
188      6.5819
189      8.7519
190     11.2773
191      6.1623
192      6.6721
193     10.9746
194     11.6356
195     11.9169
196      7.8623
197     10.4296
198     13.3156
199     15.5721
200      9.7621
201      7.3302
202     14.1277
203     17.2910
204      9.8225
205      7.1087
206      6.9852
207     12.0402
208      9.9923
209      9.5873
210      9.8135
211      6.2958
212      7.7677
213      9.7302
214      8.2710
215      6.9988
216      8.7985
217     10.6898
218      6.8156
219      6.8762
220      8.8279
221      8.0196
222      4.8210
223      9.1573
224      6.8977
225      5.4754
226      7.3113
227      7.6981
228      7.9360
229      9.9631
230      9.6598
231     13.5273
232      8.6927
233      5.6525
234      8.4050
235     14.9198
236     13.3590
237     11.6375
238      9.1892
```

The first line of the title indicates whether the values are averages or totals, the second line the variable name, the third line the units and the forth line the height/depth (if applicable). The corresponding Logfile, which will be discussed later, would be located

in C:\DataOut\DAILY\LOGFILES\01010194.TW4 and would indicate the number of bad/missing periods for each day.

4.1.3.3 SEASONAL Output Files

Extractions that output a seasonal file of discretely measured daily values are stored in the SEASONAL directory. Below is an example of a seasonal output file for Sedge 1994 (C:\DataOut\SEASONAL\01010194.WT). The value extracted was the water table depth for the whole season (days 157 - 238, inclusive). For seasonal extractions, all days in the data set are extracted by default and a Logfile is not created.

Contents of 01010194.WT (in SEASONAL):

```
DOY          WT
              m
=== ===========
157       0.040
158       0.035
159       0.025
160       0.019
161       0.010
162       0.000
163      -0.010
164      -0.010
165      -0.018
166      -0.040
167      -0.026
168       -6999
169      -0.080
170      -0.081
171      -0.122
172      -0.072
173      -0.092
174      -0.100
175      -0.107
176      -0.127
177      -0.128
178      -0.143
179      -0.143
180      -0.140
181      -0.159
182       -6999
183      -0.186
184      -0.185
185      -0.166
186      -0.085
187      -0.125
188      -0.095
189      -0.144
190      -0.133
191      -0.165
192      -0.177
193      -0.207
194      -0.221
195      -0.246
196      -0.259
197      -0.290
198      -0.310
199      -0.340
200      -0.358
201      -0.366
202      -0.394
```

```
203      -0.404
204       -6999
205      -0.238
206      -0.252
207      -0.293
208      -0.322
209      -0.329
210      -0.360
211      -0.394
212      -0.406
213      -0.422
214      -0.427
215      -0.431
216      -0.436
217      -0.437
218      -0.417
219      -0.434
220      -0.434
221      -0.437
222      -0.419
223      -0.441
224      -0.359
225      -0.301
226      -0.324
227      -0.329
228      -0.277
229      -0.300
230      -0.300
231      -0.318
232      -0.234
233      -0.245
234      -0.249
235      -0.085
236      -0.118
237      -0.124
238      -0.125
```

4.1.3.4 LOGFILE Output Files

A LOGFILE is created whenever a half-hourly or daily extraction is performed. These files inform the user of any bad/missing data. They are given the same filename as the extraction output file that they are associated with. These files are especially important with daily extractions because they tell the user how many values were used in the computation of the average (or total). The Logfiles for half-hour and daily extractions look identical. Below is an example for Sedge 1994 (C:\DataOut\DAILY\LOGFILES\01010194.TW4). The value extracted was level 4 daily average wet-bulb temperature for the whole season (days 157 - 238, inclusive).

Contents of 01010194.TW4 (in DAILY\LOGFILES\):

```
Number of periods/day with bad/missing data flags (-6999).
Note: Number of periods/day = 48

 DOY       Tw(4)
 ===  ==========
 157           0
 158           0
 159           0
 160           0
 161           0
 162           0
 163           0
```

164	2
165	5
166	0
167	0
168	0
169	0
170	0
171	0
172	0
173	0
174	0
175	0
176	0
177	0
178	0
179	0
180	0
181	0
182	0
183	0
184	0
185	0
186	0
187	0
188	0
189	0
190	0
191	0
192	0
193	0
194	0
195	0
196	0
197	0
198	0
199	0
200	0
201	0
202	0
203	0
204	0
205	0
206	0
207	0
208	0
209	0
210	0
211	0
212	0
213	0
214	0
215	0
216	0
217	0
218	0
219	0
220	0
221	0
222	0
223	0
224	0
225	0
226	0
227	0

```
228          0
229          0
230          0
231          0
232          0
233          0
234          0
235          0
236          0
237          0
238          0
```

From the Logfile above, the user would know the there were 2 periods missing from the average for day 164, and 5 periods missing from average for day 165. To find out exactly which time periods are missing, the user could do a half-hourly extraction for these two days and scan the output (e.g. see Section 4.1.3.1).

5.0 DATA SETS AVAILABLE

The data sets are grouped by year in the following list, but within the extraction software they are initially grouped by geographic location (i.e. Churchill, Marantz Lake or Inuvik). The names used in the list are the unofficial site names that were used in the field and are explained below the list. The duration of the data sets is given as well as the raw ClimoBase archive filename (see Section 3.1.1 to decipher).

ClimoBase Release #5: December, 1999

***** Indicates that there is a seasonal file (daily averages/totals) associated with this data set.
^ Indicates that this data set is a seasonal file (`*.DAY`) of **daily** averages/totals.

1998:	**Code:**
*RCT-1 (Days 1-160, 164-301)	01080498
RCT-2 (Days 1-365)	01090198
LOWTVC (Days 1-229)	03180198
UPTVC (Days 1-229)	03220298
1997:	
*RCT-1 (Days 1-365)	01080497
RCT-2 (Days 1-365)	01090197
Eddy (Days 1-43)	01170197
Rodney (Days 1-43)	01230397
*Sedge (Days 155-249) **Missing CO2 data!**	01010197
LOWTVC (Days 1-20, 113-136, 139-365)	03180197
UPTVC (Days 140-365)	03220297
1996:	
*Beach (Days 156-236)	01030396
*RCT-1 (Days 1-167, 179-238, 243-366)	01080496
RCT-2 (Days 167-366)	01090196
Pfrost (Days 1-55, 100-361)	01160196
Eddy (Days 2-53, 181-235, 241-316, 329-366)	01170196
Rodney (Days 162-236, 241-366)	01230396
LOWTVC (Days 143-366)	03180196
*Sedge (Days 156-238) **Not QC'ed, missing data!**	01010196
1995:	
Rocky (Days 178-236)	01040495

*Golf L. (Days 168-173, 178-236) ---------- 01060695
*Sedge (Days 163-237) ---------- 01010195
Eddy (Days 257-289) ---------- 01170195
*RCT-1 (Days 1-174, 178-365) ---------- 01080495
Pfrost (Days 242-365) ---------- 01160195

1994:
*Sedge (Days 157-238) ---------- 01010194
Mobile_Qg-Sedge (Days 170-187) ---------- 01190194
Mobile_Qg-Forest (Days 190-206) ---------- 01190594
Mobile_Qg-Lichen (Days 207-222) ---------- 01190394
Mobile_Qg-Willow (Days 222-238) ---------- 01190294
Eastern Creek (Days 167-238) ---------- 01110794
^Eastern Creek Basin-**daily** (Days 167-238) ---------- 01150894
*RCT-1 (Days 145-365) ---------- 01080494

1993:
*Eastern Creek (Days 168-238) ---------- 01110793
^Eastern Creek Basin-**daily** (Days 171-238) ---------- 01150893
*Sedge (Days 165-236) ---------- 01010193

1992:
*Sedge (Days 160-247) ---------- 01010192
*Eastern Creek (Days 163-239) ---------- 01110792
^Eastern Creek Basin-**daily** (Days 163-239) ---------- 01150892

1991:
*Golf L. (Days 172-236) ---------- 01060691
*Eastern Creek (Days 163-237) ---------- 01110791
^Eastern Creek Basin-**daily** (Days 160-236) ---------- 01150891
Ridge (Days 172-204, 210-235) ---------- 01030391
*Willow (Days 166-235) ---------- 01020291
*Sedge (Days 167-236) ---------- 01010191

1990:
*Sedge (Days 170-234) ---------- 01010190
*Willow (Days 170-236) ---------- 01020290

1989:
Sedge (Days 170-244) ---------- 01010189

1987:
*Site1 (Days 152-227) ---------- 01121087
*Site2 (Days 152-228) ---------- 01130187
*Site3 (Days 152-225) ---------- 01140187
*Site4 (Days 152-225) ---------- 01010187

1985:
*Main (Days 116-262) ---------- 01200985
*Marantz (Days 154-258) ---------- 02210385
^Waterhole Lake-**daily** (Days 166-228) ---------- 02240685

1984:
*Main (Days 135-234) ---------- 01200984
*Marantz (Days 135-231) ---------- 02210384

The site names are described below as well as in the extraction software for reference purposes. Detailed descriptions of each data set are provided in the following section.

Beach & Ridge: energy balance sites on a raised beach 500 m S of Bird Cove
E. Creek Basin: Eastern Creek basin manual measurements (wells & rainfall)
E. Creek: Eastern Creek hydrometrics (seasonal data are current meter sessions)
Eddy: eddy covariance (Qh) energy balance site 100 m N of the Sedge site
Golf L.: energy balance site in the middle of Golf Lake (300 X 500 m)
Low TVC: lowland eddy covariance (Qh) energy balance site near Trail Valley C.
Main: main energy balance site on a sandy/heath upland plateau N of Golf L
Marantz: energy balance site at Marantz L. (thick peat covered w/lichen-heath)
Mobile Qg: Mobile systems (Tsurf, Q* & Qg) at Sedge, Willow, Lichen and Forest
Pfrost: 2.5 m-long permafrost thermocouple rod near the Sedge site
RCT-1: AES permafrost site E of airport terminal (Ta, RH, gnd temps in rock)
RCT-2: AES permafrost site W of the airport in sedge meadow (Qg & gnd temps)
Rocky: energy balance site on bedrock/heath area NE of the A-frame house
Rodney: 2.5 m deep thermistor rod 200 m W of the Beach site (in sand)
Sedge & Site4: energy balance sites on sedge fen terrain N of Twin Lakes
Site1: coastal marsh energy balance site near Hudson Bay
Site2: energy balance site farther inland than Site1, in sedge meadow
Site3: energy balance site farther inland than Site2, in sedge meadow

Upper TVC: upland eddy covariance (Qh) energy balance site near Trail Valley C.
Waterhole L.: seasonal file of energy balance results for Waterhole Lake
Willow: coastal energy balance site over willow/birch vegetation at Bird Cove

5.1 Data Set Descriptions

This Section contains specific details of each data set to provide a context for the data extracted from ClimoBase. If a higher level of detail is required than that provided here, the field books are available from Dr. Rouse.

5.1.1 "Main"

The "Main" site was located 15 km east of Churchill, MB (58° 45´ N, 93° 58´ W), on a sandy raised beach plateau, 500 m north of Golf Lake and 300 m south of Launch road. The energy balance measurements were taken over this dry, well drained and sparsely vegetated terrain. For a more complete description of the vegetation, soils, instrumentation and methods, see Halliwell and Rouse (1989) and D. Halliwell's Ph.D. thesis.

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HALLIWELL, D.H. and W.R. ROUSE. 1989. A comparison of sensible and latent heat flux calculations using the Bowen ratio and aerodynamic methods. J. Atmos. Ocean Technol. 6: 563-574.

HALLIWELL, D.H. 1989. A numerical model of the surface energy balance and ground thermal regime in organic permafrost terrain. Unpublished Ph.D. thesis, McMaster University, Hamilton, Ontario: 195 pp.

5.1.1.1 1984

The data set spans the interval of day 135 to day 234 (14 May to 21 August), 1984, for a total of 100 days. The temporal resolution of the data is 60 minutes for a total of 2400 hourly periods. The data set is contiguous with no data breaks and is of high quality.

5.1.1.2 1985

The data set spans the interval of day 116 to day 262 (26 April to 19 September), 1985, for a total of 147 days. The temporal resolution of the data is 60 minutes for a total of 3528 hourly periods. The data set is contiguous with no data breaks and is of high quality.

5.1.2 Marantz

The "Marantz" site was located near Marantz Lake in Northern Manitoba. The energy balance site was located near an abandoned military installation, east of the CNR line that runs north to Churchill, MB. The energy balance tower was located on a peat plateau (approximately 2 m deep), covered by thick lichen mats. For a more complete description of the vegetation, soils, instrumentation and methods, see Halliwell and Rouse (1989) and D. Halliwell's Ph.D. thesis (bibliography in Section 5.1.1).

5.1.1.1 1984

The data set spans the interval of day 135 to day 231 (14 May to 18 August), 1984, for a total of 97 days. The temporal resolution of the data is 60 minutes for a total of 2328 hourly periods. The data set is contiguous with no data breaks and is of high quality.

5.1.1.2 1985

The data set spans the interval of day 154 to day 258 (4 June to 15 September), 1985, for a total of 105 days. The temporal resolution of the data is 60 minutes for a total of 2520 hourly periods. The data set is contiguous with no data breaks and is of high quality.

5.1.3 Site1 1987

The "Site1" energy balance site was located in a coastal marsh area along the coast of Hudson Bay, near Bird Cove. The predominant vegetation was tall grasses, sedges and reeds.

The data set spans the interval of day 152 to day 227 (1 June to 15 August), 1987, for a total of 76 days. The temporal resolution of the data is 60 minutes for a total of 1824 hourly periods. The data set is contiguous with no data breaks.

Shown below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1*	0.50 m
2*	1.00 m
3*	1.50 m
4*	2.00 m

The reference height for the ambient variables (e and VPD) was 1.5 m. Soil temperature depths below the surface are as follows:

Level	Depth
1	0.05 m
2	0.10 m
3	0.15 m
4	0.20 m
5	0.25 m
6	0.50 m
7	0.75 m
8	1.00 m
9	1.25 m
10	1.50 m

5.1.4 Site2 1987

The “Site2” energy balance site was located in a sedge meadow several kilometres inland from the coast of Hudson Bay. The predominant vegetation was the sedge *Carex aquatilis*.

The data set spans the interval of day 152 to day 228 (1 June to 16 August), 1987, for a total of 77 days. The temporal resolution of the data is 60 minutes for a total of 1848 hourly periods. The data set is contiguous with no data breaks.

Shown below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1*	0.50 m
2*	1.00 m
3*	1.50 m
4*	2.00 m

The reference height for the ambient variables (e and VPD) was 1.5 m. Soil temperature depths below the surface are as follows:

Level	Depth
1	0.05 m
2	0.10 m
3	0.15 m
4	0.20 m
5	0.25 m
6	0.50 m
7	0.75 m
8	1.00 m
9	1.25 m
10	1.50 m

5.1.5 Site3 1987

The “Site3” energy balance site was located in a sedge meadow 10 km inland from the coast of Hudson Bay. The predominant vegetation was the sedge *Carex aquatilis*.

The data set spans the interval of day 152 to day 225 (1 June to 13 August), 1987, for a total of 74 days. The temporal resolution of the data is 60 minutes for a total of 1776 hourly periods. The data set is contiguous with no data breaks.

Shown below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1*	0.50 m
2*	1.00 m
3*	1.50 m
4*	2.00 m

The reference height for the ambient variables (e and VPD) was 1.5 m. Soil temperature depths below the surface are as follows:

Level	Depth
1	0.05 m
2	0.10 m
3	0.15 m
4	0.20 m
5	0.25 m
6	0.50 m
7	0.75 m
8	1.00 m
9	1.25 m
10	1.50 m

5.1.6 Site4 1987

The "Site4" energy balance site was located in a sedge meadow 12 km inland from the coast of Hudson Bay. It was located in the same location as the main "Sedge" (1989 to present). See Section 5.1.7 for soils and vegetation details.

The data set spans the interval of day 152 to day 225 (1 June to 13 August), 1987, for a total of 74 days. The temporal resolution of the data is 60 minutes for a total of 1776 hourly periods. The data set is contiguous with no data breaks.

Shown below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1*	0.50 m
2*	1.00 m
3*	1.50 m
4*	2.00 m

The reference height for the ambient variables (e and VPD) was 1.5 m. Soil temperature depths below the surface are as follows:

Level	Depth
1	0.05 m
2	0.10 m
3	0.15 m
4	0.20 m
5	0.25 m
6	0.50 m
7	0.75 m
8	1.00 m
9	1.25 m
10	1.50 m

5.1.7 Sedge

The site, commonly referred to as the "Sedge" site, is a sedge-dominated fen wetland (58° 40´ N, 93° 49´ W) located approximately 30 km ESE of Churchill, Manitoba, Canada, and 12 km due south of the coast of Hudson Bay. The terrain is overall very flat with a hummock/hollow topography superimposed on top. Given the very small regional gradient, lateral water drainage is very poor and the site is commonly inundated in the spring and throughout the summer subsequent to heavy rain events. Vertical drainage is impeded by i) the silty-clay soils located below 0.25 - 0.35 m, and ii) the frost table which reaches a maximum depth of 1.5 - 1.7 m by late August. The site is underlain by continuous permafrost. Based on the elevation of the site (approx. 22 m a.m.s.l.) and isostatic uplift rates of approx. 1 m/century, the site emerged from Hudson Bay about 2200 years ago.

The dominant vegetation species that comprise the "canopy" is water sedge (*Carex aquatilis*). The canopy is actually very sparse and most hollows are devoid of standing vegetation. The water table is typically at or near the surface and water often pools in the hollows which are occupied by various types of mosses, particularly Sphagnum species. The height of the hummocks normally ranges between 0.3 m and 0.5 m and their drier soils support a wider variety of plant species. In addition to *Carex aquatilis*, other sedge species, grasses, mosses, *Ledum decumbens*, *Betula glandulosa* and heath species such as *Empetrum nigrum*, *Andromeda polifolia*, *Vaccinium uliginosum* and *V. vitis-idaea* are common on hummocks.

The maximum height of the Sedge species is less than 30 cm and the leaf area index is approx. 0.17. The rooting depth of the sedge species is limited to the peat layer and is believed to be approx. 0.15 m as a maximum.

The surface soils are peat and have been classified as Terric Fibric Organic Cryosols (Scott et al., 1987: Arctic & Alpine Res. V19). The thickness of the peat at intermediate flat areas between hummock and hollows is between 0.25 and 0.35 m. This is underlain by a thin layer of carbonate rock shingles, 0.05-0.10 m thick. Beneath the shingle layer is a very deep layer of glacio-marine silty-clay of unknown thickness, but at least 2.5 m deep (maximum depth ever drilled at this site).

Most instrumentation required to measure the radiation and energy balance was mounted on a 3 m EB tripod mast. The sensor type and arrangement was nearly identical for each season. Specific details of the instrumentation at the sedge fen site are given in Wessel and Rouse (1994), Schreader (1995) and Burton et al. (1996). Net all-wave radiation, Q*, was measured with Middleton CN1 net pyrradiometers (Middleton Inc., Medos, Melbourne, Australia). The ground heat flux at each site was determined using calorimetric calculations from soil temperature profiles in conjunction with Middleton CN3 soil heat flux plates using a method given in Rouse (1984) and Halliwell and Rouse (1987). Temperature and humidity profiles, necessary for the measurement of the sensible (Qh) and latent heat (Qe) fluxes, were acquired from 6-level psychrometer systems. These profiles, together with measurements of net radiation and ground heat flux, allowed the convective fluxes to be calculated using the Bowen ratio approach following Rouse et al. (1992). Depending on the year, a 2-6 level wind profile was also measured for use in aerodynamic calculations of Qh and Qe for times when the Bowen ratio method becomes erratic (typically at sunrise and sunset) due to very small humidity gradients or when the Bowen ratio approaches -1. Criteria for the use of the aerodynamic approach and its reliability are developed in detail in Halliwell and Rouse (1989).

Incident and reflected solar radiation (K↓ and K↑, respectively) were measured by Eppley black and white pyranometers (model 8-48, Eppley Laboratories, Newport, Rhode Is.). Rainfall intensity in 1991 was monitored at the Willow site by a tipping bucket rain gauge (Weathertronics model 6010, Sacramento, California) with a resolution of 0.25 mm. In 1990 rainfall intensity was measured on-site. Horizontal wind speed was measured by Gill 3-cup anemometers (model 12102, R. M. Young Co., Traverse City, Michigan). Atmospheric pressure, Pa, was set to a constant of 101.3 kPa since the site was close to sea level.

Vapour pressure, e, was measured by psychrometers and computed based on equations by Lowe (1977) in 1989. From 1990 onwards, e was calculated in the following manner for ClimoBase. Saturated vapour pressure, e*, at the wet-bulb temperature, Tw, was first calculated using,

$$e^*=\exp(aTw/(Tw+b))m$$

where m, a and b are empirically-derived coefficients (Buck, 1981) optimized for the temperature range of 0 to 50 C (m=0.61121, a=17.368 and b=238.88). Vapour pressure in kPa was then obtained from the psychrometric equation:

$$e=e^*-gamma(Ta-Tw)$$

where Ta is the dry-bulb temperature and gamma is the psychrometric constant, which actually varies slightly with Pa and an empirical correction factor involving temperature, which is necessary when psychrometers are used to measure e (Tanner, 1963):

$$gamma=0.00066[1+0.00115(Tw)]Pa$$

The ambient vapour pressure deficit (VPD) was computed as,

$$VPD=e^*-e$$

where e* is calculated using the dry-bulb temperature (Ta) rather than Tw.

The continuously measured variables were logged on a Campbell Scientific CR7 data logger. Variables were sampled every 5 seconds and averages were calculated every 30 minutes. Note that wind direction for 1989-1991 was mistaken computed as ½-hourly averages rather than a vector quantity. These data should be used carefully under northerly winds (may average to near 180°). Wind vectors were used from 1992 onwards. Time stamps associated with the measurements represent the time at the end of the averaging period in local solar time (CST + 15 min or CDT + 1:15).

In addition to continuously measured variables, some variables were manually sampled. The position of the water table relative to the surface (flat, topographically intermediate area) was measured each morning in a 5 cm dia. ABS perforated tube, inserted 0.5 m into the soil. Volumetric soil moisture measurements were periodically obtained (approx. once a week) using 183 cc soil sampling tins and using the oven-drying technique. Samples were weighed before and after drying with an Ohaus digital scale (CT series, model 65081) which has a resolution of 0.1 g and a precision of +/- 0.1 g.

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5.1.7.1 1989

The data set spans the interval of day 170 to day 244 (19 June to 1 September), 1989, for a total of 75 days. The temporal resolution of the data is 30 minutes for a total of 3600 half-hour periods. The data set is contiguous with no data breaks.

Shown below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1*	0.50 m
2*	0.90 m
3*	1.30 m
4*	1.70 m
5*	2.10 m
6*	2.50 m

The reference height for the ambient variables (e and VPD) was 1.7 m. Soil temperature depths below the surface are as follows:

Level	Depth
1	0.05 m
2	0.10 m
3	0.20 m
4	0.30 m
5	0.40 m
6	0.50 m
7	0.60 m
8	0.70 m
9	0.80 m
10	0.90 m

5.1.7.2 1990

The data set spans the interval of day 170 to day 234 (19 June to 22 August), 1990, for a total of 65 days. The temporal resolution of the data is 30 minutes for a total of 3120 half-hour periods. The data set is contiguous with no data breaks except for soil temperatures which have data breaks totaling 9 days: 18-23 July and 18-20 August. Other than limited soil temperature data, the quality of the rest of the data set is excellent.

Shown below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1	0.50 m
2	0.90 m
3*	1.30 m
4*	1.70 m
5*	2.10 m
6*	2.50 m

The reference height for the ambient variables (e and VPD) was 2.1 m. Soil temperature depths below the surface are as follows:

Level	Depth
1	0.05 m
2	0.10 m
3	0.20 m
4	0.30 m
5	0.40 m
6	0.50 m
7	0.60 m
8	0.70 m
9	0.80 m
10	0.90 m

5.1.7.3 1991

The data set spans the interval of day 167 to day 236 (16 June to 24 August), 1991, for a total of 70 days. The temporal resolution of the data is 30 minutes for a total of 3360 half-hour periods. The data set is contiguous with no data breaks. Soil temperature data collection did not begin until 7 July (total of 49 days). Other than the limited soil temperature data, the quality of the rest of the data set is excellent.

Shown below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1	0.40 m
2	0.80 m
3	1.10 m
4*	1.30 m
5*	1.70 m

6*	2.10 m

The reference height for the ambient variables (e and VPD) was 1.7 m. Soil temperature depths below the surface are as follows:

Level	Height
1	0.05 m
2	0.15 m
3	0.25 m
4	0.35 m
5	0.45 m
6	0.55 m
7	0.65 m
8	0.75 m
9	0.85 m

5.1.7.4 1992

The data set spans the interval of day 160 to day 247 (8 June to 3 September), 1992, for a total of 88 days. The temporal resolution of the data is 30 minutes for a total of 4224 half-hour periods. The data set is contiguous with no data breaks and is of high quality.

Shown below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1	0.50 m
2	0.70 m
3*	0.90 m
4*	1.30 m
5*	1.70 m
6*	2.10 m

The reference height for the ambient variables (e and VPD) was 1.7 m. Soil temperature depths below the surface are as follows:

Level	Height
1	0.05 m
2	0.10 m
3	0.20 m
4	0.30 m
5	0.40 m
6	0.50 m
7	0.60 m
8	0.70 m
9	0.80 m
10	0.90 m

5.1.7.5 1993

The data set spans the interval of day 165 to day 236 (14 June to 24 August), 1993, for a total of 72 days. The temporal resolution of the data is 30 minutes for a total of 3456 half-hour periods. The data set is contiguous with no data breaks and is of high quality.

Shown below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1*	0.35 m
2*	0.70 m
3*	1.10 m
4*	1.60 m
5*	2.30 m
6*	3.20 m

The reference height for the ambient variables (e and VPD) was 2.3 m. Soil temperature depths below the surface are as follows:

Level	Height
1	0.05 m
2	0.10 m
3	0.20 m
4	0.30 m
5	0.40 m
6	0.50 m
7	0.60 m
8	0.70 m
9	0.80 m
10	0.90 m

5.1.7.6 1994

The data set spans the interval of day 157 to day 238 (6 June to 26 August), 1994, for a total of 82 days. The temporal resolution of the data is 30 minutes for a total of 3936 half-hour periods. The data set is contiguous with no data breaks and is of high quality.

Shown below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1*	0.35 m
2*	0.70 m
3*	1.10 m
4*	1.60 m
5*	2.30 m
6*	3.20 m

The reference height for the ambient variables (e and VPD) was 2.3 m. Soil temperature depths below the surface are as follows:

Level	Height
1	0.05 m
2	0.10 m
3	0.20 m
4	0.30 m
5	0.40 m
6	0.50 m
7	0.60 m
8	0.70 m
9	0.80 m
10	0.90 m

5.1.7.7 1995

The data set spans the interval of day 163 to day 237 (12 June to 25 August), 1995, for a total of 75 days. The temporal resolution of the data is 30 minutes for a total of 3600 half-hour periods. The data set is contiguous with no data breaks and is of high quality.

Shown below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1	0.35 m
2*	0.70 m
3*	1.10 m
4*	1.60 m
5*	2.30 m
6	3.20 m

The reference height for the ambient variables (e and VPD) was 2.3 m. Soil temperature depths below the surface are as follows:

Level	Height
1	0.05 m
2	0.10 m
3	0.20 m
4	0.30 m
5	0.40 m
6	0.50 m
7	0.60 m
8	0.70 m
9	0.80 m
10	0.90 m

5.1.7.8 1996

The data set spans the interval of day 156 to day 238 (4 June to 25 August), 1996, for a total of 83 days. The temporal resolution of the data is 30 minutes for a total of 3984 half-hour periods. The data set is contiguous with no data breaks and is of high quality.

Shown below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1	0.35 m
2*	0.70 m
3*	1.10 m
4*	1.60 m
5*	2.30 m
6	3.20 m

The reference height for the ambient variables (e and VPD) was 2.3 m. Soil temperature depths below the surface are as follows:

Level	Height
1	0.05 m
2	0.10 m
3	0.20 m
4	0.30 m
5	0.40 m
6	0.50 m
7	0.60 m
8	0.70 m
9	0.80 m
10	0.90 m

5.1.7.9 1997

The data set spans the interval of day 155 to day 249 (4 June to 6 September), 1997, for a total of 95 days. The temporal resolution of the data is 30 minutes for a total of 4560 half-hour periods. The data set is contiguous with no data breaks and is of high quality.

Shown below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1	0.35 m
2*	0.70 m
3*	1.10 m
4*	1.60 m
5*	2.30 m
6	3.20 m

The reference height for the ambient variables (e and VPD) was 2.3 m. Soil temperature depths below the surface are as follows:

Level	Height
1	0.00 m
2	0.05 m
3	0.15 m
4	0.25 m
5	0.35 m
6	0.45 m
7	0.55 m

8	0.65 m
9	0.75 m
10	0.85 m

5.1.8 Willow

The dwarf willow-birch forest, commonly referred to as the "Willow" site, is typical of shrub communities that colonise areas near saturation or flooded such as along creeks and lakes or low-lying areas. The Willow site is located along a portion of the coast of Hudson Bay (58° 46´ N, 93° 53´ W), 20 km east of Churchill, Manitoba, Canada. Lateral water drainage is poor given the flat terrain and the area is commonly inundated in the spring and subsequent to large rain events. The site is approx. 1.5 - 3 m above the high tide level.

An intensive survey of the site revealed that 90 per cent of the surface cover is represented by *Salix candida*, *S. planifolia*, *S. reticulata*, *Betula glandulosa*, Myrica gale and *Carex aquatilis* (Blanken and Rouse, 1994). The survey also found that the average canopy height is 0.43 m (range: 3 - 77 cm), the average tap root depth is 0.11 m (range: 5 - 25 cm) and the average lateral root length is 0.60 m (range: 29 - 126 cm). The leaf are index of the willows and shrubs (excluding the sedges and grass) ranges from near zero to a maximum of about 0.80.

Blanken and Rouse (1995) estimate the site to have emerged from Hudson Bay 250 years ago. Tree rings of *S. planifolia* and *S. candida* at the seaward edge of the site revealed an age of 15 and 19 years, respectively. At the middle of the site (approx. 100 years old) the ages of two *S. planifolia* trees was 32 and 44 years. At the inland edge of the site (approx. 250 years old) a *S. planifolia* was 43 years old and a *Betula glandulosa* shrub was 41 years old. Many of these species are believed to be second or third generation.

Soils consist of a surface organic layer comprised of dense roots and partially decomposed plant litter that extends to depths of 0.20 m. The development of this organic horizon has been aided by thick mats of kelp deposited during tidal surges at the seaward edge. Below the organic horizon are localised pockets of a 6 cm thick limestone shelf consisting of frost shattered rocks. Under this carbonate shingle layer is a deep layer of fine sand which eventually becomes sandy-silt. This layer has occasional inclusions of well-rounded stones (Blanken and Rouse, 1994).

Soil moisture varies with depth and distance from the coast. The highest soil moisture is in the organic layer and sharply decreases in the sand. The water table is typically near the surface within the organic layer and in 1991 it was never more than 20 cm from the surface and often never greater than 10 cm (Blanken and Rouse, 1995).

Most instrumentation required to measure the radiation and energy balance was mounted on a 3 m EB tripod mast. Specific details of the instrumentation at the willow-birch forest are given in Blanken (1992), Blanken and Rouse (1994) and Blanken and Rouse (1995). Net all-wave radiation, Q*, was measured with Middleton CN1 net pyrradiometers (Middleton Inc., Medos, Melbourne, Australia). The ground heat flux was determined using calorimetric calculations from soil temperature profiles in conjunction with Middleton CN3 soil heat flux plates using a method given in Rouse (1984) and Halliwell and Rouse (1987). Temperature and humidity profiles, necessary for the

measurement of the sensible (Qh) and latent heat (Qe) fluxes, were acquired from a 6-level psychrometer system. These profiles, together with measurements of net radiation and ground heat flux, allowed the convective fluxes to be calculated using the Bowen ratio approach following Rouse et al. (1992). A 4-level wind profile was also measured for use in aerodynamic calculations of Qh and Qe for times when the Bowen ratio method becomes erratic (typically at sunrise and sunset) due to very small humidity gradients or when the Bowen ratio approaches -1. Criteria for the use of the aerodynamic approach and its reliability are developed in detail in Halliwell and Rouse (1989).

Incident and reflected solar radiation (Kdown and Kup, respectively) were measured by Eppley black and white pyranometers (model 8-48, Eppley Laboratories, Newport, Rhode Is.). Rainfall intensity in 1990 was monitored at the Sedge site by a tipping bucket rain gauge (Weathertronics model 6010, Sacramento, California) with a resolution of 0.25 mm. In 1991 rainfall intensity was measured on-site. Horizontal wind speed was measured by Gill 3-cup anemometers (model 12102, R. M. Young Co., Traverse City, Michigan). Atmospheric pressure, Pa, was set to a constant of 101.3 kPa since the site was close to sea level. Vapour pressure, e, and ambient vapour pressure deficit (VPD) were measured and computed as at the Sedge site (Section 5.1.7).

The continuously measured variables were logged on a Campbell Scientific CR7 data logger. Variables were sampled every 5 seconds and averages were calculated every 30 minutes. Note that wind direction in 1990-1991 was mistaken computed as ½-hourly averages rather than a vector quantity. These data should be used carefully under northerly wind (may average to near 180°). Time stamps associated with the measurements represent the time at the end of the averaging period in local solar time (CST + 15 min or CDT + 1:15).

In addition to continuously measured variables, some variables were manually sampled. The position of the water table relative to the surface (flat, topographically intermediate area) was measured each morning in a 5 cm dia. ABS perforated tube, inserted 0.5 m into the soil. Volumetric soil moisture measurements were periodically obtained using 183 cc soil sampling tins and using the oven-drying technique. Samples were weighed before and after drying with an Ohaus digital scale (CT series, model 65081) which has a resolution of 0.1 g and a precision of +/- 0.1 g.

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5.1.8.1 1990

The data set spans the interval of day 170 to day 236 (19 June to 24 August), 1990, for a total of 67 days. The temporal resolution of the data is 30 minutes for a total of 3216 half-hour periods. The data set is contiguous with no data breaks and is of high quality.

Instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1	0.50 m
2	0.90 m
3*	1.30 m
4*	1.70 m
5*	2.10 m
6*	2.50 m

The reference height for the ambient variables (e and VPD) was 2.1 m. Soil temperature depths below the surface are as follows:

Level	Depth
1	0.01 m
2	0.04 m
3	0.07 m
4	0.10 m
5	0.15 m
6	0.20 m
7	0.30 m
8	0.40 m

5.1.8.2 1991

The data set spans the interval of day 166 to day 235 (15 June to 23 August), 1991, for a total of 70 days. The temporal resolution of the data is 30 minutes for a total of 3360 half-hour periods. The data set is contiguous with no data breaks except for the soil temperatures which have data breaks totaling 2 days: 20-21 June. Other than the data break in the soil temperature data, the quality of the rest of the data set is excellent.

Instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1	1.00 m
2*	1.25 m
3	1.50 m
4*	1.70 m
5*	2.10 m
6*	2.50 m

The reference height for the ambient variables (e and VPD) was 1.7 m. Soil temperature depths below the surface are as follows:

Level	Depth
1	0.01 m
2	0.04 m
3	0.07 m
4	0.10 m
5	0.15 m
6	0.20 m
7	0.30 m
8	0.40 m

5.1.9 Golf Lake

An energy balance site was located in a in tundra lake in 1991 and 1995. Tundra lakes and ponds are a common feature along coastal areas of the Hudson Bay Lowland. Most of these water bodies are less than 0.5 m deep, and apart from completely calm days, are isothermal (Bello and Smith, 1990). The majority of these features are less than 200 m in diameter and the smaller ponds are ephemeral, poorly defined, and very shallow. The deepest lakes in this area of the Hudson Bay Lowland rarely exceed 2 m, and according to Dredge and Nixon (1979), freeze to the bottom in winter.

The tops of the banks can be elevated above the surroundings by anywhere from 0.3 m around small lakes to over 1 m around parts of large lakes. A thick layer of partially decomposed organic matter accumulates on the bottom of most ponds and lakes to thicknesses of 0.1 - 0.3 m. The sediment is rusty-brown and visually appears to have the texture of sand, yet it is of very small mass and is easily mixed into temporary suspension when disturbed.

Golf Lake (58° 45´ N, 93° 58´ W) was chosen to be representative of a medium-sized tundra lake. The site is approximately 15 km east of Churchill, Manitoba. The energy balance tower was located in the centre of the 550 m X 350 m lake, in 1.2 m of water. The tripod mast extended 2 m above the water's surface. All signals coming from the instruments were

recorded by a Campbell Scientific 21X data logger in an environmental enclosure mounted halfway up the tower. Adjacent to this enclosure was a 12 V battery which powered the psychrometer fans. A solar panel was mounted at the top of mast above the level of the upper anemometer to avoid wind obstruction. Three psychrometers and two anemometers were employed. Net radiation and reflected solar radiation were also measured from the mast. Water surface temperature was measured with a thermocouple and the heat flux across the bottom of the lake was measured with a soil heat flux plate. All instruments were of the same construction, manufacturer and model as those used at the Sedge site with the exception of the anemometers which were pulse-type (model 12102D, R.M. Young Co.). Finally a staff gauge near the shore of the lake was used to measure the daily fluctuation of water level. This was necessary to know the elevation of the instruments above the surface of the lake.

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5.1.9.1 1991

The data set spans the interval of day 172 to day 236 (21 June to 24 August), 1991, for a total of 65 days. The temporal resolution of the data is 30 minutes for a total of 3120 half-hour periods. The input data set is contiguous, and other than the temporary loss of lake surface temperature data between days 196 - 201, inclusive, the quality of the rest of the data set is excellent.

Below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1*	0.50 m
2	1.00 m

3*	1.50 m

The reference height for the ambient variables (e and VPD) was 1.5 m.

5.1.9.2 1995

The data set spans the interval of day 168 to day 236 (17 June to 24 August), 1995, for a total of 65 days. There are 4 days of missing raw data from day 174 to 177 (23 - 26 June), inclusive, due to a data logger failure. Except for the 4 day data break, the data set is contiguous. The temporal resolution of the data is 30 minutes for a total of 3120 half-hour periods.

Below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1*	0.50 m
2	1.00 m
3*	1.50 m

The reference height for the ambient variables (e and VPD) was 1.5 m. Water temperature depths are as follows:

Level	Depth
1	0.10 m
2	0.35 m
3	0.85 m
4	1.20 m
5	1.25 m
6	1.30 m
7	1.35 m

5.1.10 Ridge/Beach

An energy balance site was located on upland lichen-heath terrain in 1991 and 1996. Upland lichen-heath is a terrain type in the Hudson Bay Lowland that normally develops on well-drained plateaus or prominent ridges that were created as a consequence of post glacial isostatic rebound (e.g. eskers and raised beaches). The study site, 20 km east of Churchill, Manitoba and 800 m south of Bird Cove (58° 44´ N, 93° 53´ W), is located on a raised beach complex and was referred to as the Ridge site in 1991 and the Beach site in 1996. Both sites were located in approximately the same location. Vertical and lateral drainage is good from the sandy, sloping terrain. The existence of a seasonal frost table or permafrost likely impedes drainage in deeper soil layers.

These well-drained ridges with poorly developed soils are mostly colonised by xerophytic plants, particularly lichen and heath species (Rouse and Boudreau, 1992). The most dominant lichen species are *Cladina stellaris* and *C. rangiferina*, followed by *Cetraria nivalis*, *Cetraria cucullata*, *Alectoria ochroleuca* and *A. nigricans*. Important heath and mat-forming species that carpet the ridges include *Ledum decumbens*, *Rhododendron lapponicum*, *Dryas integrifolia*, *Arctostaphylos alpina* and *Andromeda polifolia*.

The canopy height is generally less than 5 cm, except for the occasional small shrub. The lack of vascular plants means that a leaf area index is not applicable. Furthermore, since there are so few transpiring plants, the majority of evapotranspiration is directly from the surface. During dry conditions, the lichen and heath can provide a resistance to the transfer of moisture from the soil to the atmosphere.

Isostatic uplift has created a raised beach-ridge complex built of fine sand interspersed with gravel and larger round stones, covered by a thin organic mantle 2 to 5 cm thick. The water and frost tables were not routinely monitored at the Ridge site. The occasional digging of soil pits indicated that the water table was deeper below the surface than at other sites, likely due to the sloping terrain and better drainage through sandy soils. Locating the frost table by manual probing was complicated by contact with rocks in the lower soil layers. Soil temperature probes recently installed at the site, however, indicated that the active layer develops more rapidly and to a greater depth than at the Sedge site.

Most instrumentation required to measure the radiation and energy balance was mounted on a 3 m energy balance tripod mast. The energy balance instrumentation and setup at the Ridge site was virtually identical to that of the Sedge and Willow energy balance sites. Specific details of the instrumentation at the lichen-heath site are given in Boudreau (1993), and Boudreau and Rouse (1995). Net all-wave radiation, Q*, was measured with Middleton CN1 net pyrradiometers (Middleton Inc., Medos, Melbourne, Australia). The ground heat flux was determined using calorimetric calculations from soil temperature profiles in conjunction with Middleton CN3 soil heat flux plates using a method given in Rouse (1984) and Halliwell and Rouse (1987). Temperature and humidity profiles, necessary for the measurement of the sensible (Qh) and latent heat (Qe) fluxes, were acquired from a 6-level psychrometer system. These profiles, together with measurements of net radiation and ground heat flux, allowed the convective fluxes to be calculated using the Bowen ratio approach following Rouse et al. (1992). A wind profile was also measured for use in aerodynamic calculations of Qh and Qe for times when the Bowen ratio method becomes erratic (typically at sunrise and sunset) due to very small humidity gradients or when the Bowen ratio approaches -1. Criteria for the use of the aerodynamic approach and its reliability are developed in detail in Halliwell and Rouse (1989).

Incident and reflected solar radiation (K↓ and K↑, respectively) were measured by Eppley black and white pyranometers (model 8-48, Eppley Laboratories, Newport, Rhode Is.). K↓ was taken from the Willow site (500 m north). Also taken from the Willow site was rainfall intensity, monitored by a tipping bucket rain gauge (Weathertronics model 6010, Sacramento, California) with a resolution of 0.25 mm. Mean horizontal wind speed was measured by Gill 3-cup anemometers (model 12102, R. M. Young Co., Traverse City, Michigan). Atmospheric pressure, Pa, was set to a constant of 101.3 kPa since the site was so close to sea level. Vapour pressure, e, and ambient vapour pressure deficit (VPD) were measured and computed as in Sedge 1990 (Section 5.1.4.1).

The continuously measured variables were logged on a Campbell Scientific CR7 data logger. Variables were sampled every 5 seconds and averages were calculated every 30 minutes. Time stamps associated with the measurements represent the time at the end of the averaging period in local solar time (CST + 15 min., or CDT + 1:15).

<u>Bibliography</u> (*=information on the Ridge/Beach site)

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5.1.10.1 1991

In 1991 the site was know as the Ridge site. The data set spans the interval of day 172 to day 235 (21 June to 23 August), 1991, for a total of 59 days. There are 5 days of missing raw data from day 205 to 209 (24 - 28 July), inclusive, due to a data logger failure. The temporal resolution of the data is 30 minutes for a total of 2832 half-hour periods. Except for the 5 day data break, the data set is contiguous. Soil temperature data does not begin until day 190 (July 9). Other than the data break and limited soil temperature data, the quality of the rest of the data set is excellent.

Below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1	0.70 m
2*	1.00 m
3	1.30 m
4*	1.70 m
5	2.00 m
6	2.50 m

The reference height for the ambient variables (e and VPD) was 1.7 m. Soil temperature depths below the surface are as follows:

Level	Depth
1	0.05 m
2	0.10 m
3	0.20 m
4	0.30 m
5	0.40 m
6	0.50 m
7	0.60 m
8	0.70 m
9	0.80 m
10	0.90 m

5.1.10.2 1996

In 1996 the site was know as the Beach site. The data set spans the interval of day 156 to day 236 (4 June to 23 August), 1996, for a total of 81 days. The temporal resolution of the data is 30 minutes for a total of 3888 half-hour periods. Soil temperature was not measured at this site in 1996. The data set is contiguous with no data breaks and is of high quality.

Below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1	0.35 m
2*	0.70 m
3*	1.10 m
4*	1.60 m
5*	2.30 m
6	3.20 m

The reference height for the ambient variables (e and VPD) was 1.6 m.

5.1.11 Rocky 1995

The “Rocky” site, 13 km east of Churchill (58° 47´ N, 93° 58´ W), was established in 1995 to measure the energy balance over a surface comprised of exposed bedrock and lichen-heath mats. It was located on the high bedrock bluffs near the coast of Hudson Bay, north of “Launch road” and 200 m NE of an old Department of National Defense building. The energy balance data from this site was originally collected to be representative of Environment Canada’s RCT-1 site, located at a bedrock site 400 m east of the Churchill Airport terminal building.

Approximately ¼ of the site had exposed bedrock and boulders with the remainder having poorly developed soils mostly colonised by xerophytic plants, particularly lichen and heath species. The most dominant lichen species are *Cladina stellaris* and *C. rangiferina*, followed by *Cetraria nivalis*, *Cetraria cucullata*, *Alectoria ochroleuca* and *A. nigricans*. Important heath and mat-forming species that carpet the ridges include *Ledum decumbens*, *Rhododendron lapponicum*, *Dryas integrifolia*, *Arctostaphylos alpina* and *Andromeda polifolia*.

The canopy height is generally less than 5 cm, except for the occasional small shrub. The lack of vascular plants means that a leaf area index is not applicable. Furthermore, since there are so few transpiring plants, the majority of evapotranspiration is directly from the surface. During dry conditions, the lichen and heath can provide a resistance to the transfer of moisture from the soil to the atmosphere.

The energy balance tower and instrumentation was basically the same as that employed at the Ridge/Beach sites described earlier. Most instrumentation required to measure the radiation and energy balance was mounted on a 3 m energy balance tripod mast. Net all-wave radiation, Q*, was measured with Middleton CN1 net pyrradiometers (Middleton Inc., Medos, Melbourne, Australia). The ground heat flux was estimated using several Middleton CN3 soil heat flux plates. Temperature and humidity profiles, necessary for the measurement of the sensible (Qh) and latent heat (Qe) fluxes, were acquired from a 6-level psychrometer system. These profiles, together with measurements of net radiation and ground heat flux, allowed the convective fluxes to be calculated using the Bowen ratio approach following Rouse et al. (1992). A 3-level wind profile was also measured for use in aerodynamic calculations of Qh and Qe for times when the Bowen ratio method becomes erratic (typically at sunrise and sunset) due to very small humidity gradients or when the Bowen ratio approaches -1. Criteria for the use of the aerodynamic approach and its reliability are developed in detail in Halliwell and Rouse (1989).

Incident and reflected solar radiation (K↓ and K↑, respectively) were measured by Eppley black and white pyranometers (model 8-48, Eppley Laboratories, Newport, Rhode Is.). Mean horizontal wind speed was measured by Gill 3-cup anemometers (model 12102, R. M. Young Co., Traverse City, Michigan). Atmospheric pressure, Pa, was set to a constant of 101.3 kPa since the site was close to sea level. Vapour pressure, e, and ambient vapour pressure deficit (VPD) were measured and computed as at the Sedge site (Section 5.1.7).

The continuously measured variables were logged on a Campbell Scientific CR7 data logger. Variables were sampled every 5 seconds and averages were calculated every 30 minutes. Time stamps associated with the measurements represent the time at the end of the averaging period in local solar time (CST + 15 min., or CDT + 1:15).

The data set spans the interval of day 178 to day 236 (27 June to 24 August), 1995, for a total of 59 days. The temporal resolution of the data is 30 minutes for a total of 2832 half-hour periods. Soil temperature was not measured at this site. The data set is contiguous with no data breaks and is of high quality.

Below are instrument levels for temperature sensors (T, Tw, e). * indicates a level with an anemometer:

Level	Height
1	0.40 m
2*	0.70 m
3*	1.10 m
4*	1.60 m
5	2.20 m
6	2.90 m

The reference height for the ambient variables (e and VPD) was 2.2 m.

5.1.12 Eastern Creek

Eastern creek is a braided and convoluted water course that has Stygge Lake as its source to the South, and empties into Hudson Bay to the north. It has been artificially channelised near Launch Road (at a point 15 km east of Churchill) where it flows through four large culverts.

All channels of Eastern Creek have nearly vertical peaty banks with gravel stream beds, interspersed with cobbles, that may or may not have loose organic sediment, depending on the water velocity. These channels have effectively sliced through the peatland to expose the gravel and glacio-marine slit below. The banks range in height from less than 0.5 m to more than 0.75 m. The tallest banks are headwaters of the basin at Stygge Lake.

The Eastern Creek data set is made up of hydrometric data. Three stream gauging stations were set up; two at the Eastern Creek sources (Willow Creek and Upper Eastern Creek), and one near the mouth of the creek where it flows under Launch Road and into Hudson Bay (Lower Eastern Creek). At each of these locations a stage recorder was set up to monitor water depth. Periodic manual current metering sessions were used to develop rating curves which were used to derive discharge. Runoff from the Eastern Creek drainage basin was calculated as the difference between the outflow (Lower Eastern Creek) and the inflow (Willow Creek + Upper Eastern Creek). The current metering session data is located in the seasonal archive files.

The water depth recorders used were modified Stevens Type-F stage recorders (Leupold & Stevens Instruments Inc., Beaverton, Oregon). The drum-chart mechanisms were removed and replaced by a 1 kΩ 3-turn potentiometer (Spectrol, model 533) connected to a Campbell CR10 data logger set to local solar time. The apparatus was capable of resolving water fluctuations to better than ±1 mm. A stage recorder was not installed at Willow Creek in 1991 and the unit used in 1992 was an unmodified Stevens recorder. All three installations had the recorder mounted on top of a 1.2 m stilling well (stove pipe, 0.25 m in dia.) which provided a sheltered location for the float.

Measurements by the stage recorders were periodically compared to a fixed reference rod pounded into the stream bed. This comparison ensured that there was no drift in the measurements by the recorder system.

Manual current metering sessions were conducted using a Price-type current meters (No. 622 Type AA, Gurley Co.) that were calibrated prior to the field season. Mean velocity measurements were taken at 0.6Xdepth as the water depth was generally less than 0.75 m. The sampling interval across Willow and Upper Eastern Creek was 0.4 m, and 0.5 m for Lower Eastern Creek (in all cases, finer intervals were used near the banks).

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5.1.12.1 1991

The data set spans the interval of day 163 to day 237 (12 June to 25 August), 1991, for a total of 75 days. Measured discharge data are only available for Upper and Lower Eastern Creek. Willow Creek discharge data were derived from a strong relationship with Upper Eastern Creek (see Boudreau, 1993 for details). The temporal resolution of the data is 15 minutes for a total of 7200 15-minute periods. The data set is contiguous with no data breaks and is of high quality.

5.1.12.2 1992

The data set spans the interval of day 163 to day 239 (11 June to 26 August), 1992, for a total of 77 days. Measured discharge data are available for Upper and Lower Eastern Creek as well as Willow Creek. The temporal resolution of the data is 15 minutes for a total of 7392 15-minute periods. The data set is contiguous with no data breaks and is of high quality.

5.1.12.3 1993

The data set spans the interval of day 168 to day 238 (17 June to 26 August), 1993, for a total of 71 days. Measured discharge data are available for Upper and Lower Eastern Creek as well as Willow Creek. The temporal resolution of the data is 15 minutes for a total of 6816 15-minute periods. The data set is contiguous with no data breaks and is of high quality.

5.1.12.4 1994

The data set spans the interval of day 167 to day 238 (16 June to 26 August), 1994, for a total of 72 days. Measured discharge data are only available for Lower Eastern Creek. Willow Creek discharge data were estimated and Upper Eastern Creek data are unavailable due to frequent data logger failure. The temporal resolution of the data is 15 minutes for a total of 6912 15-minute periods. The data set is not considered to be of high quality because of local interference with the stream course at Lower Eastern Creek (building of rock dams).

5.1.13 Eastern Creek Basin

The Eastern Creek Basin data sets are **seasonal files** containing discretely measured daily data such as water table location and rainfall amounts from a collection network. The network consisted of 18 stations along two transects that ran through the Eastern Creek drainage basin. At each station was a well to measure the water table position relative to the surface, and a standard rain gauge (100 cm^2 orifice). Stations 1 through 10 ran north-south from Launch Road to Stygge Lake, through the middle of the basin (4 km long). Stations 11 through 18 ran west-east between the two bounding ridges, also across the middle of the basin (5.5 km long). The west-east transect was only used in 1991. Refer to Boudreau (1993) to the exact location of these stations (applies to 1991 only).

The experimental watershed (58° 45´ N, 93° 57´ W) is located approximately 11 km east of Churchill, Manitoba and is underlain by continuous permafrost. It is bounded by Stygge Lake (the headwaters) to the south, Launch road to the north, an esker to the west and a raised beach ridge to the east. The approximate area of the watershed is 11.54 km^2.

Much of the basin is a wetland, and most of the lateral drainage during flooded conditions is carried away by branches of Eastern Creek. During drier periods, the baseflow of Eastern Creek is sustained by the slow seepage of water from the peatlands that the extensive Eastern Creek network dissects.

The Eastern Creek basin contains the 5 dominate terrain types found in the coastal region of the Hudson Bay Lowland, in the following coverages; 1) Sedge fen wetlands (46%); 2) Upland lichen-heath ridges/plateaus (18%); 3) lakes and ponds 17%; 4) willow-birch wetlands (15%); and 5) open spruce forest (4%).

<u>Bibliography</u>

BOUDREAU, L.D. 1993. The energy and water balance of a high subarctic wetland underlain by permafrost. unpublished M.Sc. thesis, Geography dept. McMaster Univ. Hamilton, Ontario, Canada. 205 pp.

5.1.13.1 1991

The data set spans the interval of day 160 to day 236 (9 June to 24 August), 1991, for a total of 77 days. Data are discrete daily values.

Of the stations, 8 were sedge sites (stations: 4, 5, 6, 7, 11, 13, 16, 17), 4 forest sites (stations: 2, 8, 15, 18), 3 willow sites (stations: 1, 10, 14) and 3 upland lichen-heath sites (stations: 3, 9, 12). See map in Boudreau (1993) for station locations.

5.1.13.2 1992

The data set spans the interval of day 163 to day 239 (11 June to 26 August), 1992, for a total of 77 days.

Only a north-south transect was used in 1992. The station network was modified from that used in 1991. Station 3 of 1991 was dropped and 4 new stations were added, for a total of 13 stations in 1992. The table below shows the mapping of sites between 1991 and 1992.

1991 Sites	Corresponding 1992 Sites
Station 1	RG1 (on bank next to LEC site)
Station 2	W2 (open forest)
Station 3	
Station 4	W3, RG3 (sedge)
Station 5	W4, RG4 (sedge)
Station 6	W5 (sedge)
Between Station 6 and Station 7	W6 (sedge)
Station 7	W7, RG7 (sedge)
Station 8	W8 (open forest)
Between Station 8 and Station 9	W9 (sedge & upland lichen-heath)
Station 9	W10 (upland lichen-heath)
Station 10	W11, RG11 (in willows next to UEC site)
	W12 (new site in Willows E of UEC)
	W13 (new site in Willows near Willow C.)

In the table above “W” indicates a groundwater well on site and “RG” indicates a manual rain gauge.

5.1.13.3 1993

The data set spans the interval of day 171 to day 238 (20 June to 26 August), 1993, for a total of 68 days. Refer to the table in Section 5.1.13.2 for site locations relative to those of 1991.

5.1.13.4 1994

The data set spans the interval of day 165 to day 238 (14 June to 26 August), 1994, for a total of 68 days. Refer to the table in Section 5.1.13.2 for site locations relative to those of 1991.

5.1.14 Mobile Qg 1994

Mobile Qg is a data set that was used for a soil heat flux experiment on four terrain types (sedge, forest, lichen-heath and willow-birch) in the Churchill, MB area. The apparatus was mobile and was set up at each of the four sites for a period of at least two weeks. Data collected consisted of net all-wave radiation, ground heat flux (2 - 4 cm below the surface) from 15 soil heat flux plates, surface temperatures and ground temperatures from three soil temperature rods (4 levels each). The soil temperature depths of each rod were 0.05, 0.1, 0.2. and 0.3 m. All data are 30-minute averages recorded on a Campbell CR7 data logger in local solar time.

5.1.14.1 Sedge

The sedge data set spans the interval of day 170 to day 187 (19 June to 6 July), 1994, for a total of 18 days. The sensors were located near the main Sedge energy balance site, north of the Twin Lakes forest. The temporal resolution of the data is 30 minutes for a total of 864 30-minute periods. The data set is contiguous with no data breaks and is of high quality. The Qg plates were in the following locations:

Heat Flux Plate Number	Location
QgPlate(1)	below lichen
QgPlate(2)	soil/lichen boundary
QgPlate(3)	5 cm into soil
QgPlate(4)	in dry hummock
QgPlate(5)	in dry hummock w/dwarf birch
QgPlate(6)	near the “wet” ground temp. rod
QgPlate(7)	near the “wet” ground temp. rod
QgPlate(8)	in a deep, wet hollow
QgPlate(9)	in a hollow with more developed soil
QgPlate(10)	?
QgPlate(11)	near “mesic” ground temp. rod
QgPlate(12)	near “mesic” ground temp. rod
QgPlate(13)	?
QgPlate(14)	?
QgPlate(15)	in feather moss

5.1.14.2 Forest

The forest data set spans the interval of day 190 to day 206 (9 July to 25 July), 1994, for a total of 17 days. The sensors were located near the Twin Lakes forest energy balance site (Trent University). The temporal resolution of the data is 30 minutes for a total of 816 30-minute periods. The data set is contiguous with no data breaks and is of high quality. The Qg plate locations were not recorded. Most were in moss or lichen-covered hummocks, with the remainder in moister low-lying areas dominated by sphagnum and/or sedges.

5.1.14.3 Lichen

The Lichen-heath data set spans the interval of day 207 to day 222 (26 July to 10 August), 1994, for a total of 16 days. The sensors were located in an extensive area of lichen mats on a raised beach ridge, 400 m north of Lindy Lake. The temporal resolution of the data is 30 minutes for a total of 768 30-minute periods. The data set is contiguous with no data breaks and is of high quality. For this site, some Qg plates were arranged in a vertical soil profile through homogenous peat to the cobble substrate (**bold** in table below). The lichen covering (*Cladina stellaris*) was approximately 2 cm thick. The Qg plates were in the following locations:

Heat Flux Plate Number	Location
QgPlate(1)	1.5 cm into peat soil beneath 5 cm of *Cladina rangiferina*
QgPlate(2)	4 cm below hummock of *Dryas integrifolia*, 4 cm into peat
QgPlate(3)	under 4 cm of *Cladina rangiferina*
QgPlate(4)	3 cm into peat under an area of *Ledum decumbens*
QgPlate(5)	under an area of *Arcstopholis rubra*, 2 cm below surface
QgPlate(6)	**at peat/stone interface (-25 cm)**
QgPlate(7)	under an area of *Arcstopholis rubra*, 2 cm below surface
QgPlate(8)	under 5 cm of *Cladina stellaris*, 1-2 cm into peat
QgPlate(9)	**-16 cm in soil profile**
QgPlate(10)	1 cm into peat soil beneath 3 cm of *Cladina stellaris*
QgPlate(11)	**in lichen/peat interface (-2 cm)**
QgPlate(12)	**-9 cm in soil profile**
QgPlate(13)	**-21 cm in soil profile**
QgPlate(14)	under flat area of *Empetrum nigrum*, 4 cm under surface
QgPlate(15)	1 cm in soil under 8 cm mat of *C. stellaris, C. rangiferina*

The temperature rods were all located in dry areas. The "dry" temperature rod was inserted into an area of mostly *Cladina stellaris*. The "mesic" rod was inserted into a dry patch of *Arcstopholis rubra*. Finally, the "wet" rod was inserted into an area of mostly *Cladina rangiferina*.

5.1.14.4 Willow

The Willow data set spans the interval of day 222 to day 238 (10 August to 26 August), 1994, for a total of 17 days. The sensors were located near the Willow energy balance site of 1991. The temporal resolution of the data is 30 minutes for a total of 816 30-minute periods. The data set is contiguous with no data breaks and is of high quality. For this site, some Qg plates were arranged in a vertical soil profile through the fibrous peat and sand to the cobble substrate (**bold** in table below). The Qg plates were in the following locations:

Heat Flux Plate Number	Location
QgPlate(1)	3-4 cm into wet, moderately dense peat
QgPlate(2)	4 cm into peat in an area of dense willows
QgPlate(3)	**at peat/sand interface (-23 cm)**
QgPlate(4)	**in fibrous peat (-3 cm)**
QgPlate(5)	5-6 cm into peat in an area of moss and grass
QgPlate(6)	3-4 cm into peat of mossy area w/some birch, Myrica gale
QgPlate(7)	3-4 cm into fibrous peat in an area of dense willows
QgPlate(8)	**in fibrous peat (-13 cm)**
QgPlate(9)	**1 cm above sand/cobble interface (-32 cm)**
QgPlate(10)	4 cm into saturated peat near "wet" ground temp. rod
QgPlate(11)	area of moss and grass
QgPlate(12)	**in sand (-27.5 cm)**
QgPlate(13)	4 cm into peat in an area of moss, very tall grass/sedge
QgPlate(14)	4 cm into fibrous peat in an area of dense willows
QgPlate(15)	4-5 cm into peat in an area of dense willows

The temperature rods were all located in basically wet areas. The “dry” temperature rod was inserted into an area of dense willows. The “mesic” rod was inserted into a moist area of moss and tall grass. Finally, the “wet” rod was inserted into an area similar to that of the first rod (i.e. the one labelled “dry”).

5.1.15 RCT-1

RCT-1 is an Environment Canada permafrost site that was first installed in late September, 1973 and consisted of a thermocouple cable, then was automated by means of a data logger in 1985 (upgraded to a Campbell 21X in 1993). The station was turned over to McMaster University in 1994, then returned to Environment Canada for maintenance in September of 1999. The station is located 400 m east of the Churchill airport control tower. The temperature sensors are situated in solid Ordovician sandstone with no over burden other than shallow pockets of soil in cracks and depressions on the bedrock surface. Another document identified the rock as quartzite. The rock is of relatively high thermal conductivity. The depth of the active layer at the site exceeds 7.3 m most years and the seasonal amplitude at the lowest sensor is some 3 ºC. Little vegetation is present at the site but large blocks of sandstone create a surface roughness which causes a rather uneven distribution of snow.

Thermocouple temperature sensors are located at the following depths: 0.5, 1.2, 2.0, 2.7, 3.5, 4.3, 5.8, 7.3, 8.8, 10.4, 11.9, and 14.9 metres. The measurements are referenced to the temperature within the Campbell AM32 multiplexer enclosure, located on the surface at the top of the cable, by a precision YSI thermistor. Ground temperatures are instantaneous samples rather than averages.

In addition to ground temperatures, air temperature and relative humidity are also measured. The relative humidity data (from a Campbell 207 probe) are not believed to be of high quality due to degradation of the humicap chip and contamination by salt air. Sensor maintenance was performed annually until 1995, after which point the sensor chip was not replaced until September of 1999. Snow depth measurements were made using an ultrasonic snow temperature sensor, but the data were regarded of such poor quality that they were not included in ClimoBase.

Some of the deeper ground temperatures were sampled once a day at midnight (Central Standard Time). To retrieve these data from ClimoBase, the user is directed to the seasonal files of daily data.

5.1.15.1 1994

The RCT-1 data set spans the interval of day 145 to day 365 (25 May to 31 December), 1994, for a total of 221 days. The temporal resolution of the data is 60 minutes for a total of 5304 60-minute periods. The data set is contiguous with no data breaks and is of good quality. The relative humidity data (from a Campbell 207 probe) are not believed to be of high quality due to degradation of the humicap chip and contamination by salt air.

5.1.15.2 1995

The RCT-1 data set spans the interval of day 1 to day 365 (1 January to 31 December), 1995, for a total of 362 days. The temporal resolution of the data is 60 minutes for a total of 8688 60-minute periods. The data set is contiguous with the exception of a three day data break for days 175 to 177, inclusive (24 June to 26 June). The relative humidity data (from a Campbell 207 probe) are not believed to be of high quality due to degradation of the humicap chip and contamination by salt air.

5.1.15.3 1996

The RCT-1 data set spans the interval of day 1 to day 366 (1 January to 31 December), 1996, for a total of 351 days. The temporal resolution of the data is 60 minutes for a total of 8424 60-minute periods. The data set has the following two data breaks: days 168 to 178, inclusive (16 June to 26 June) and 239 to 242, inclusive (26 August to 29 August). The relative humidity data (from a Campbell 207 probe) are not believed to be of high quality due to degradation of the humicap chip and contamination by salt air.

5.1.15.4 1997

The RCT-1 data set spans the interval of day 1 to day 365 (1 January to 31 December), 1997, for a total of 365 days. The temporal resolution of the data is 60 minutes for a total of 8760 60-minute periods. The data set is contiguous with no data breaks and is believed to be of good quality. The relative humidity data (from a Campbell 207 probe) are not believed to be of high quality due to degradation of the humicap chip and contamination by salt air.

5.1.15.5 1998

The RCT-1 data set spans the interval of day 1 to day 301 (1 January to 28 October), 1998, for a total of 298 days. The temporal resolution of the data is 60 minutes for a total of 7152 60-minute periods. The data set is contiguous with the exception of a three day data break for days 161 to 163, inclusive (10 June to 12 June). The relative humidity data (from a Campbell 207 probe) are not believed to be of high quality due to degradation of the humicap chip and contamination by salt air. The site ceased to function after day 301 due to failure of the data logger's batteries. Without the resources or parts to repair the site when it was inspected February, 1999, the site remained out of commission until resurrected by Environment Canada in September of 1999 (by Dave McNicole and Joe Eley).

5.1.16 RCT-2

RCT-2 is another permafrost site that was originally installed by the NRC but was never automated. The site is located in a sedge-dominated wetland area with hummock and hollow topography. It is located approximately 700 m due west of the midpoint of Churchill's longest (paved) runway, just south of a gravel road along an abandoned railway spur. The area is tundra meadow with a ground cover of sedge and dwarf birch, having marine deposits overlying till.

Depth	Soil Type
0 - 0.8 m	sedge-covered peat
0.8 - 2.4 m	clayey silt with a few stones
2.4 - 4.3 m	large rock fragments and sand
4.3 - 15.2 m	medium sand with some gravel (scattered stones)

Originally the site consisted of a thermocouple cable with 12 sensors extending to a depth of 15.24 metres. The thermocouple leads at the surface were attached to a 12-position rotary switch in a single-ended configuration. In 1996 the switch was removed and constantan extension leads were attached to the individual levels and wired into an AM32 multiplexer. An extension was also soldered onto the copper common lead and sent to the multiplexer. A YSI 44005 precision thermistor was used for the reference temperature within the AM32 enclosure. A Campbell CR10 data logger was used to record the data on Central Standard Time. Ground temperatures are instantaneous samples rather than averages.

In addition to soil temperatures, soil heat flux (3 cm below the surface) was measured with a Middleton heat flux plate and surface temperature was measured by two thermocouple arrays (one array in a hollow, the other on a hummock).

Many soil temperatures had to be flagged as bad (-6999) in ClimoBase during the winter because of erroneous data resulting from malfunctioning of the AM32. At very cold internal temperatures (below approximately -25 ºC), the mechanical solenoids within the multiplexer sometimes stuck, causing bad values and/or “shifting” of the data to successive levels. Furthermore, the fact that the thermocouple measurements are single-ended lowers the accuracy and reliability of the data.

5.1.16.1 1996

The RCT-2 data set spans the interval of day 167 to day 366 (15 June to 31 December), 1996, for a total of 200 days. The temporal resolution of the data is 60 minutes for a total of 4800 60-minute periods. The data set is contiguous and is of good quality spring through fall, but of poorer quality in the winter when the AM32 had a tendency to malfunction during very cold temperatures. Batch and manual quality control procedures flagged most of these bad data but the data should still be carefully scrutinised.

5.1.16.2 1997

The RCT-2 data set spans the interval of day 1 to day 365 (1 January to 31 December), 1997, for a total of 365 days. The temporal resolution of the data is 60 minutes for a total of 8760 60-minute periods. The data set is contiguous and is of good quality spring through fall, but of poorer quality in the winter when the AM32 had a tendency to malfunction during very cold temperatures. Batch and manual quality control procedures flagged most of these bad data but the data should still be carefully scrutinised.

5.1.16.3 1998

The RCT-2 data set spans the interval of day 1 to day 365 (1 January to 31 December), 1998, for a total of 365 days. The temporal resolution of the data is 60 minutes for a total of 8760 60-minute periods. The data set is contiguous and is of good quality spring through fall, but of poorer quality in the winter when the AM32 had a tendency to malfunction during very cold temperatures. Batch and manual quality control procedures flagged most of these bad data but the data should still be carefully scrutinised.

5.1.17 Eddy

The "Eddy" site was an crude eddy covariance site setup over wet tundra, 100 m north of the present Sedge site in Churchill (see Section 5.1.7 for soil and vegetation details). The instrumentation was designed to measure the sensible heat flux (Qh) and net all-wave radiation, estimate the soil heat flux (Qg) based on heat flux plate measurements, and calculate Qe as a residual of the energy balance. The eddy covariance measurements were made with an R. M. Young Co. precision vertical anemometer (4-blade polystyrene prop) and a fine wire E-Type thermocouple. The covariance data was logged on a Campbell Scientific 21X data logger set to an execution interval of 0.1 seconds. 6000 samples are used for each 10-minute Qh average and three of these averages are themselves averaged for each ½ hour. A REBS Q*7 net pyrradiometer, equipped with an aspirator fan, was used for Q* measurements.

The covariance data is archived in its raw format along with the first approximation of Qh. No corrections have been made compensate for anemometer over-speeding. As this site ran throughout the winter, there was the constant threat of frost on the Q* domes and freeze-up of the vertical anemometer. As such the data should be carefully scrutinised.

5.1.17.1 1995

The Eddy data set in 1995 spans the interval of day 259 to day 289 (16 September to 16 October), for a total of 33 days. The temporal resolution of the data is 30 minutes for a total of 1584 30-minute periods. The data set is contiguous but is very limited due to data logger failure.

5.1.17.2 1996

The Eddy data set in 1996 spans the interval of day 2 to day 366 (2 January to 31 December), for a total of 221 days. The temporal resolution of the data is 30 minutes for a total of 10,608 30-minute periods. Other than 1 January, the data set has three major data breaks; days 54 - 180, 236 - 240 and 317 - 328.

5.1.17.3 1997

The Eddy data set in 1997 spans the interval of day 1 to day 43 (1 January to 12 February), for a total of 43 days. The temporal resolution of the data is 30 minutes for a total of 2064 30-minute periods. The data set is contiguous but is very limited due to data logger failure.

5.1.18 Pfrost

The “Pfrost” site was a permafrost site installed at the main Sedge site in Churchill (see Section 5.1.7 for soil and vegetation details). The main purpose of this site was to collect long term measurements of soil temperatures for permafrost studies. Two ground temperature rods were used; one 0.9 metres deep, the other 2.2 metres deep. The short rod is the same one used for the Sedge site, with sensors at 0.05, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9 m. The longer rod was installed in August of 1995 and had 14 sensors; 0.0, 0.5, 0.1, 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0, 2.2 m. Ground temperatures are instantaneous samples rather than averages. Shallow sensors were sampled every 15-minutes while the deepest sensors were sampled every 2 hours.

Rod/Depth	Sampling Interval
Short Rod - 0.05 m	15-minutes
Short Rod - 0.1 m	15-minutes
Short Rod - 0.2 m	15-minutes
Short Rod - 0.3 m	15-minutes
Short Rod - 0.4 m	30-minutes
Short Rod - 0.5 m	30-minutes
Short Rod - 0.6 m	30-minutes
Short Rod - 0.7 m	30-minutes
Short Rod - 0.8 m	30-minutes
Short Rod - 0.9 m	30-minutes
Long Rod - 0.00 m	15-minutes
Long Rod - 0.05 m	15-minutes
Long Rod - 0.1 m	15-minutes
Long Rod - 0.2 m	15-minutes
Long Rod - 0.4 m	30-minutes
Long Rod - 0.6 m	30-minutes
Long Rod - 0.8 m	30-minutes
Long Rod - 1.0 m	60-minutes
Long Rod - 1.2 m	60-minutes
Long Rod - 1.4 m	60-minutes
Long Rod - 1.6 m	120-minutes
Long Rod - 1.8 m	120-minutes
Long Rod - 2.0 m	120-minutes
Long Rod - 2.2 m	120-minutes

Many soil temperatures had to be flagged as bad (-6999) in ClimoBase during the winter because of erroneous data resulting from malfunctioning of the AM32 multiplexer. At very cold internal temperatures (below approximately -25 ºC), the mechanical solenoids within the multiplexer sometimes stuck, causing bad values and/or “shifting” of the data to successive levels.

5.1.18.1 1995

The Pfrost data set spans the interval of day 242 to day 365 (30 August to 31 December), 1995, for a total of 124 days. The temporal resolution of the data is 15 minutes for a total of 11,904 15-minute periods. The data set is contiguous and is of good quality spring through fall, but of poorer quality in the winter when the AM32 had a tendency to malfunction during very cold temperatures. Batch and manual quality control procedures flagged most of these bad data but the data should still be carefully scrutinised.

5.1.18.2 1996

The Pfrost data set spans the interval of day 1 to day 361 (1 January to 26 December), 1996, for a total of 317 days. The temporal resolution of the data is 15 minutes for a total of 30,432 15-minute periods. The data set has a data break from day 56 - 99, inclusive (25 February to 8 April). The data are of good quality spring through fall, but of poorer quality in the winter when the AM32 had a tendency to malfunction during very cold temperatures. Batch and manual quality control procedures flagged most of these bad data but the data should still be carefully scrutinised.

5.1.19 Rodney

A permafrost monitoring site was installed on a raised beach ridge 1 km due south of Bird Cove, Churchill, MB in 1996. The site consisted of one soil heat flux plate inserted into the peat/sand interface (approx. -3 cm) and a 2.2 m deep thermistor rod with 14 levels and was referred to as “Rodney”. YSI 44005 precision thermistors (0.2 ºC interchangeability) were used in the temperature rod and 10 kΩ Philips high tolerance film resistors were used in an AC ½ bridge configuration on the Campbell CR 7 data logger. Resistances in kΩ were logged and one level (2.2 m) was converted to a temperature in °C by the logger for use as a diagnostic tool during site inspections. The equation used was as follows:

$$T(^\circ C) = 321.9484 \times R^{-0.07201} + 0.48182 \times \left[\ln\left(\frac{R}{9.796}\right)\right] - 273.15$$

where *R* is resistance in kΩ.

The site was located 200 m west of the 1996 Beach site and the soil and vegetation descriptions in Section 5.1.10 apply to this site as well. Due to data logger and cable limitations, only 13 of the 14 levels were used. The sensor depths are as follows:

Sensor Level	Depth (m)
Level 1	0.00
Level 2	0.05
Level 3	0.10
Level 4	0.20
Level 5	0.40
Level 6	0.60
Level 7	0.80
Level 8	1.00
Level 9	1.20
Level 10	1.40
Level 11	1.60
Level 12	1.80
Level 13 (not used)	2.00
Level 14	2.20

5.1.19.1 1996

The Rodney data set spans the interval of day 162 to day 366 (10 June to 31 December), 1996, for a total of 201 days. The temporal resolution of the data is 30 minutes for a total of 9648 30-minute periods. The data set is contiguous with the exception of a data break between days 237 to 240, inclusive (24 August to 27 August). As of day 241 (28 August), the sampling interval was changed to 12 hours so that the site could run throughout the winter without over-writing data in memory. Although data exists for only 12:00 and 24:00 CST, -6999 (missing data) placeholders were used for the other time periods (48 ½-hour periods per day, as was the case prior to day 237).

5.1.19.2 1997

The Rodney data set spans the interval of day 001 to day 43 (1 January to 12 February), 1997, for a total of 43 days. The temporal resolution of the data is 30 minutes for a total of 2064 30-minute periods. The data set is contiguous. Although the sampling interval was 12 hours (measurements taken at 12:00 and 24:00 CST), -6999 (missing data) placeholders were used for the other time periods (i.e. 48 ½-hour periods per day). The site got clobbered by a polar bear early in 1997, marking the end of permafrost data collection at this location.

5.1.20 LowTVC

The LowTVC site represents the lowland energy balance site located in Trail Valley Creek (68° 44´ 13´´ N, 133° 30´ 21´´ W), approximately 75 km NNE of Inuvik, NWT. The instrumentation tower was located in the middle of the valley, south of Trail Valley Creek, on a moss and sedge dominated, hummock and hollow terrain.

The area is covered by 25 - 30 cm of peat, followed by silty-clay. The top 10 cm of peat is very loose and fibrous, while below this the peat gradually becomes dense and well decomposed. The plant roots extend to a depth of 20 - 25 cm. The dominant surface cover in hollows and flat areas is *Sphagnum* spp. followed by *Carex* spp. Also present are bog rosemary, ground cranberry, crowberry, Labrador tea, dwarf birch, various

lichen species, blueberry, cotton grass and feather moss (exact Latin species names not determined). On the larger hummocks, the following vegetation may be found: *Cetraria nivalis*, dwarf birch, crowberry, *Cladina stellaris*, liverwort, green moss, *Alectoria nigricans*, ground cranberry, tall grasses and Labrador tea.

The energy balance site was nearly identical to the 1995 Eddy site established in Churchill (see Section 5.1.17); using a crude eddy covariance technique to measure Qh. Typical radiation, temperature (air and surface) and ground heat flux measurements were also collected.

5.1.20.1 1996

The LowTVC data set spans the interval of day 143 to day 366 (22 May to 31 December), 1996, for a total of 224 days. The temporal resolution of the data is 30 minutes (MST) for a total of 10,752 30-minute periods. The data set is contiguous and is of generally good quality, however the same winter associated problems of frost on radiation sensor domes, icing of the vertical anemometer and multiplexer malfunction at cold temperatures exist that were encountered at the Eddy site (see Section 5.1.17 for details).

5.1.20.2 1997

The LowTVC data set spans the interval of day 001 to day 365 (1 January to 31 December), 1997, for a total of 271 days. The temporal resolution of the data is 30 minutes (MST) for a total of 13,008 30-minute periods. The data set has two data breaks: days 21 to 112 (21 January to 22 April) and days 137 to 138 (17 May to 18 May). In addition to the typical radiation, temperature (air and surface) and ground heat flux measurements, a soil temperature rod and a TDR soil moisture probe (Campbell Scientific, model CS615) were installed at the site in 1997 (around day 140). The sensors on the ground temperature thermocouple rod were at the following depths:

Sensor Level	Depth (m)
Level 1	0.02
Level 2	0.05
Level 3	0.10
Level 4	0.15
Level 5	0.25
Level 6	0.35
Level 7	0.45

The data set is of generally good quality, however the same winter associated problems of frost on radiation sensor domes, icing of the vertical anemometer and multiplexer malfunction at cold temperatures exist that were encountered at the Eddy site (see Section 5.1.17 for details).

5.1.20.3 1998

The LowTVC data set spans the interval of day 001 to day 229 (1 January to 17 August), 1998, for a total of 229 days. The temporal resolution of the data is 30 minutes (MST) for a total of 10,992 30-minute periods. The data set is contiguous with no data breaks. Data after 17 August exists but it was not incorporated into ClimoBase because it proved too difficult to obtain the data from McMaster University. The data set is generally of good quality, however the same winter associated problems of frost on radiation sensor domes, icing of the vertical anemometer and multiplexer malfunction at cold temperatures exist that were encountered at the Eddy site (see Section 5.1.17 for details).

5.1.21 UpTVC

The UpTVC site represents the upland energy balance site located on the north side of Trail Valley Creek (68° 44´ 13´´ N, 133° 30´ 19´´ W), approximately 75 km NNE of Inuvik, NWT. The instrumentation tower was located on the top of a prominent ridge dominated by willow, birch and heath species. It was approximately 700 metres east of the lowland site.

The energy balance site was identical to the 1997 LowTVC site with the exception that it had one more soil heat flux plate installed. The ground temperature rod was inserted to the same depths as those used at LowTVC (see Section 5.1.20.2).

5.1.21.1 1997

The UpTVC data set spans the interval of day 140 to day 365 (20 May to 31 December), 1997, for a total of 226 days. The temporal resolution of the data is 30 minutes (MST) for a total of 10,848 30-minute periods. The data set is generally of good quality, however the same winter associated problems of frost on radiation sensor domes, icing of the vertical anemometer and multiplexer malfunction at cold temperatures exist that were encountered at the Eddy site (see Section 5.1.17 for details).

5.1.21.2 1998

The UpTVC data set spans the interval of day 001 to day 229 (1 January to 17 August), 1998, for a total of 229 days. The temporal resolution of the data is 30 minutes (MST) for a total of 10,992 30-minute periods. The data set is contiguous with no data breaks. Data after 17 August exists but it was not incorporated into ClimoBase because it proved too difficult to obtain the data from McMaster University. The data set is generally of good quality, however the same winter associated problems of frost on radiation sensor domes, icing of the vertical anemometer and multiplexer malfunction at cold temperatures exist that were encountered at the Eddy site (see Section 5.1.17 for details).

5.1.22 Waterhole Lake 1985

Details of the location and instrumentation used at Waterhole Lake are given in Bello and Smith (1990). The site is a medium-sized tundra lake in Northern Manitoba. The data set archived in ClimoBase consists of the daily energy balance daily results and spans days 166 to 228 (15 June to 16 August), 1985, for a total of 63 days.

Bibliography:

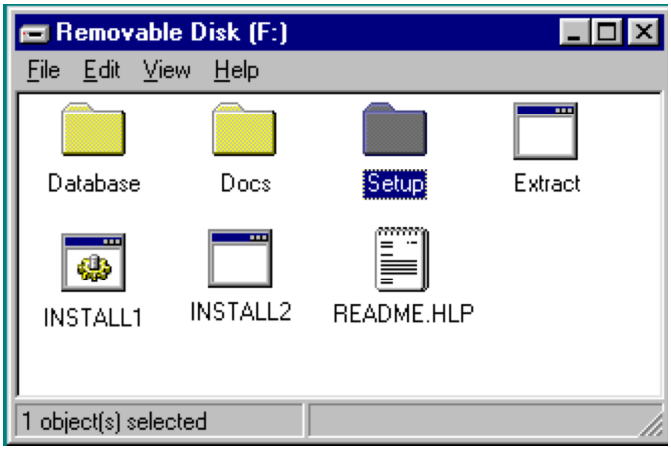
BELLO, R.L. and J.D. SMITH. 1990. The effect of weather variability on the energy balance of a lake in the Hudson Bay Lowlands, Canada. Arctic and Alpine Res. 22: 98-107.

6.0 DATA EXTRACTION SOFTWARE

The utility to extract data from the ClimoBase archive is called "**Extract.exe**". The application is very basic and its processing capabilities are presently limited to computing daily averages and totals. The main function of Extract is to provide the user with an interactive interface to serve as a front-end to the database. Version 2.0 of Extract allows for only 1:1 variable extractions, that is, one variable per output file. Future enhancements may allow for multiple variable extractions from each data set. Extract simply loads the raw ClimoBase archive files and creates a neatly formatted output file for a user-selected variable. These output files have headers and are formatted in such a way that they are easily incorporated into spreadsheets for further analysis.

6.1 Important Files

When the ClimoBase source disk is viewed (either the ZIP-100 or a CD-ROM), the window will resemble the following:



The raw archive files and Control Files are stored in the Database folder. Important documentation including this manual and detailed lists of the data set variables are stored in the Docs folder. System files required during the installation process are located in the Setup folder, although the user has no need to view or access these files.

Files in the "Docs" folder that should be printed out (if not already provided in hard copy):

Word Docs:

ClimoBase Users Manual (HP4Si MX LaserJet.doc (**this manual**)
ClimoBase V5datasets.doc (also in Section 5.0 of this manual)
ClimoBase_Variable_List.doc (also in Appendix A of this manual)

Excel Docs:

ClimoBase Stats.xls (also in Appendix D of this manual)

Files in the "Docs\Data set variables\" folder that should be printed out (if not already provided in hard copy):

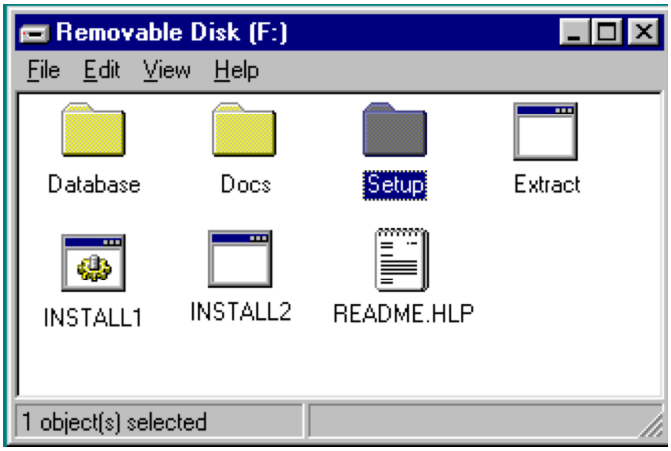
Word Docs:

Variable_Lists (daily files).doc
Varlist_Church84-98_Seasonal.doc
Varlist_Marantz84-85_Seasonal.doc
Varlist_WaterholeLake85_Seasonal.doc

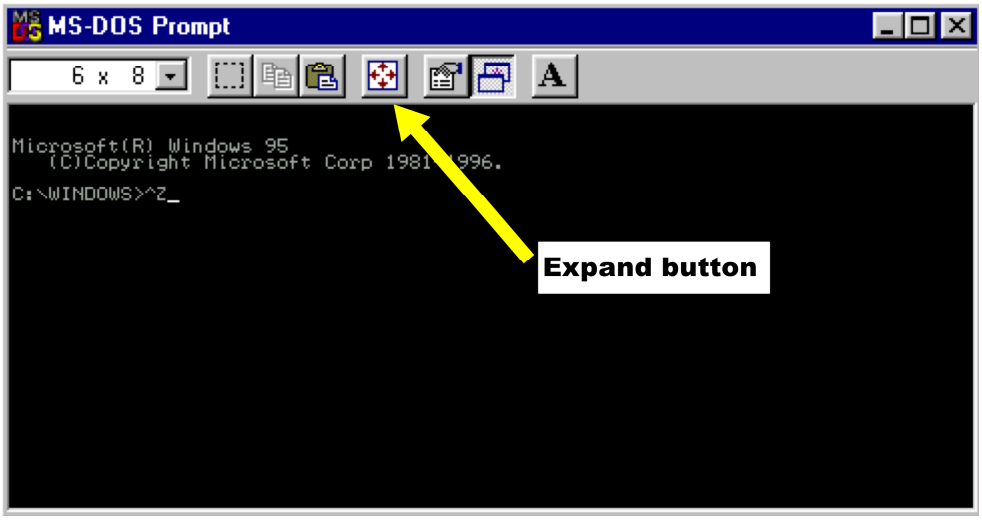
When ClimoBase is being used for the first time on a PC the user will be required to run (double-click) the file called "INSTALL1" and follow the on-screen instructions. The README.HLP Notepad document contains the same setup instructions that are given in Section 2 of this manual.

6.2 Running “Extract.exe”

When the ClimoBase source is viewed (either the ZIP-100 or a CD-ROM), the window will resemble the following:



To run the ClimoBase extraction utility, double-click on the **Extract** application icon. This will automatically raise a DOS window that should occupy the whole screen. If the whole screen is not occupied by the black DOS window, click on the expand button on the toolbar indicated below:



6.3 Use of “Extract.exe”

When the Extract programme is launched, the opening screen will look like this:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************


     ALL DATA IN THIS CLIMATOLOGICAL DATABASE ARE THE PROPERTY OF
               DR. WAYNE R. ROUSE AND MCMASTER UNIVERSIY
                            (c) 1984 - 1999~

    ~Extraction of data is permitted with the consent of Dr. Rouse



Choose from one of the following display tyes:

     1. Colour (PC must be configured for ANSI)
     2. Monochrome (Black & White)



Enter selection (1 or 2):
```

In most cases the user will choose option 1 for colour display. After selecting the display type, the user will be presented with the following screen:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************


Note: If the screen is not clearing properly and colours are not present,
      make sure that ANSI.SYS is in the C:\WINDOWS\COMMAND\ directory.
      Also be sure that "DEVICE=C:\WINDOWS\COMMAND\ANSI.SYS" is in the
      CONFIG.SYS file.  Note that some of the above is performed when the
      INSTALL1.BAT file is run.  If all else fails, restart the extractor
      and choose the B&W display type.


Select: EXTRACTION OPTIONS (for selected variables):

            1) A file of all measured data (e.g. 30-minute values)
            2) A file of daily averages/totals (from hour/minute data)
            3) A Seasonal file of discrete daily values



Enter: Type your selection (1, 2 or 3)
```

If the screen does not appear as above (and with the labels at the left flashing), then it is possible that ANSI colour was not properly configured (see Section 2 for details).

At this stage the user must enter the extraction interval:

1) All measured data (i.e. highest resolution);
2) Daily averages/totals (computed as the average or sum of all measured data on a daily basis);
3) Seasonal (discrete data collected once a day, typically manual measurements).

Regardless of which option is selected, a window similar to the following window is generated:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************



Note: Output files will be written to the C:\DATAOUT\HALFHOUR\ directory.
      Logfiles will be written to the C:\DATAOUT\HALFHOUR\LOGFILES\ directory.
      If these directories do not exist, please create them now
      (press CTRL and C to quit) or run SETUP.BAT

Note: Bad or missing data will be flagged with -6999



 What is the input device (e.g. ZIP100, CD-ROM, HD) drive LETTER (e.g. E)?
```

Next to the first “Note”, the user is informed as to where the output data files will be written. In the example above, output will be directed to HALFHOUR. At this point the user must enter the drive letter where the ClimoBase ZIP-100 or CD-ROM disc resides. This can vary from machine to machine, therefore is not hard-coded.

6.3.1 High Resolution (e.g. ½-hourly) Extractions

If an extraction of all measured data (high resolution) is selected, the user is presented with the following screen (after the drive letter is entered as above):

```
*****************************
*  ClimoBase Extractor V2.0  *
*****************************

   (c) Dale Boudreau, 1999


GEOGRAPHICAL LOCATION OF DATA SETS
----------------------------------

 (1) Churchill, Manitoba, CANADA
 (2) Marantz Lake, Manitoba, CANADA
 (3) Inuvik, N.W.T., CANADA


Enter the location of the data set:
```

At this stage the user beings to narrow down the data set to be operated on. The coarsest level is geographic location. Following this, the data sets are organised by year, but the user is also able to see the data set names (analogous to site names). The available high resolution data sets for Churchill, MB are shown below:

```
OVERVIEW OF DATA SETS AVAILABLE FOR CHURCHILL, MB
-------------------------------------------------

 1) 1984          6) 1991          10) 1995          12) 1997
    Main             Golf L.           Rocky             RCT-1
                     E. Creek          Golf L.           RCT-2
 2) 1985             Ridge             Sedge             Eddy
    Main             Willow            Eddy              Rodney
                     Sedge             RCT-1             Sedge
 3) 1987                               Pfrost
    Site1         7) 1992                           13) 1998
    Site2            Sedge          11) 1996             RCT-1
    Site3            E. Creek          Beach             RCT-2
    Site4                              RCT-1             Sedge
                  8) 1993              RCT-2
 4) 1989             Sedge             Pfrost
    Sedge            E. Creek          Eddy
                                       Rodney
 5) 1990          9) 1994              Sedge
    Sedge            Sedge
    Willow           Mobile Qg
                     E. Creek
                     RCT-1

Enter the code for the desired Year (1-13), or 0 for site name details:
```

The high resolution data sets for Marantz Lake, MB are:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************



          OVERVIEW OF DATA SETS AVAILABLE FOR MARANTZ L., MB
          --------------------------------------------------

       1) 1984
          Marantz

       2) 1985
          Marantz



Enter the code for the desired Year (1-2), or 0 for site name details:
```

Finally, the high resolution data sets for Inuvik, NWT are:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************


         OVERVIEW OF DATA SETS AVAILABLE FOR INUVIK, N.W.T.
         --------------------------------------------------

       1) 1996
          Low TVC

       2) 1997
          Low TVC
          Upper TVC

       3) 1998
          Low TVC
          Upper TVC



Enter the code for the desired Year (1-3), or 0 for site name details:
```

Notice that at the base of each of the above three screens the user can also type **0** which will generate a screen of site name details to help in the selection process. This screen is shown on the following page:

```
                    SITE NAME DESCRIPTIONS
                    ----------------------
Beach & Ridge: energy balance sites on a raised beach 500 m S of Bird Cove
E. Creek Basin: Eastern Creek basin manual measurements (wells & rainfall)
E. Creek: Eastern Creek hydrometrics(seasonal data are current meter sessions)
Eddy: eddy covariance (Qh) energy balance site 100 m N of the Sedge site
Golf L.: energy balance site in the middle of Golf Lake (300 X 500 m)
Low TVC: lowland eddy covariance (Qh) energy balance site near Trail Valley C.
Main: main energy balance site on a sandy/heath upland plateau N of Golf L
Marantz: energy balance site at Marantz L. (thick peat covered w/lichen-heath)
Mobile Qg: Mobile systems (Tsurf, Q* & Qg) at Sedge, Willow, Lichen and Forest
Pfrost: 2.5 m-long permafrost thermocouple rod near the Sedge site
RCT-1: AES permafrost site E of airport terminal (Ta, RH, gnd temps in rock)
RCT-2: AES permafrost site W of the airport in sedge meadow (Qg & gnd temps)
Rocky: energy balance site on bedrock/heath area NE of the A-frame house
Rodney: 2.5 m deep thermistor rod 200 m W of the Beach site (in sand)
Sedge & Site4: energy balance sites on sedge fen terrain N of Twin Lakes
Site1: coastal marsh energy balance site near Hudson Bay
Site2: energy balance site farther inland than Site1, in sedge meadow
Site3: energy balance site farther inland than Site2, in sedge meadow
Upper TVC: upland eddy covariance (Qh) energy balance site near Trail Valley C
Waterhole L.: seasonal file of energy balance results for Waterhole Lake
Willow: coastal energy balance site over willow/birch vegetation at Bird Cove

    Press ANY alpha-numeric key and ENTER to return to the previous screen
```

Pressing any alpha-numeric key followed by the Enter/Return key will return the user to the previous screen to select the data set.

The following examples will assume that the user chose a geographical area of Churchill, MB and the 1994 year (option 9), which would bring up the following screen:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************


                       Churchill, 1994 Data Sets


CODE    SITE NAME     DATA SPAN                  TERRAIN TYPE
---- --------------- ---------  ------------------------------------------

 1)  Sedge            157-238     Sedge-dominated fen wetland
 2)  Mobile Qg Sedge  170-187     Sedge-dominated fen wetland
 3)  Mobile Qg Forest 190-206     Spruce-Tamarack forest
 4)  Mobile Qg Lichen 207-222     Lichen-Heath community (sandy soils)
 5)  Mobile Qg Willow 222-238     Willow-birch community
 6)  Eastern Creek    167-238     River/creek
 7)  RCT-1            145-365     Bedrock covered by boulders and heath


Enter the CODE for the desired data set (1-7): _
```

At this point the user is presented with extra information such as the full site name, the duration of the data set and the terrain type. When a data set is chosen, the user is given several prompts to characterise the extraction output:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************

                       (c) Dale Boudreau, 1999


Enter the output filename suffix (3 characters, e.g. Tw4) or
type LST for a variable list: TW5

What day of the year do you want to begin with? (157-238) 160


What is the final day? (157-238) 230
```

The user is first requested to enter a three character extension which will become a filename suffix to help identify the output file. The user is advised to choose a combination of letters and/or numbers which resembles the variable being extracted (e.g. if level 5 wet-bulb is being extracted, the user may choose TW5 as a suffix). If the user is unsure of the variables available, they may type "**LST**" at this prompt to see a listing of all variables in that data set. For the 1994 Sedge site, typing LST would bring up the following window:

```
                              VARIABLE LIST
                              -------------
 1) HR(Solar)  23) e(1)       45) CO2        67) Hum_GT(2)  89) Qh_BREB
 2) DIR        24) e(2)       46) CO2/z      68) Hum_GT(3)  90) Qe_AERO
 3) DIR_SD     25) e(3)       47) Fc_BREB    69) Hum_GT(4)  91) Qh_AERO
 4) u(1)       26) e(4)       48) Fc_AERO    70) Hol_GT(1)  92) z0
 5) u(2)       27) e(5)       49) Fc_raw     71) Hol_GT(2)  93) Ri
 6) u(3)       28) e(6)       40) Fc         72) Hol_GT(3)  94) Kh
 7) u(4)       29) CO2mV(1)   51) TsHum      73) Hol_GT(4)  95) Lv_WIND
 8) u(5)       30) CO2mV(2)   52) TsHol      74) QgHum      96) Lv_TEMP
 9) u(6)       31) CO2mV(3)   53) Tpool(1)   75) QgFlat     97) Lv_VAP
10) u_SD       32) CO2mV(4)   54) Tpool(2)   76) QgHol      98) Lv_CO2
11) Td(1)      33) CO2mV(5)   55) Tsoil      77) QgPool     99) e
12) Td(2)      34) CO2mV(6)   56) GT(1)      78) QgPlt_AVG 100) VPD
13) Td(3)      35) In_Temp    57) GT(2)      79) K_down    101) Pa
14) Td(4)      36) Out_Temp   58) GT(3)      80) K_up      102) Autowell
15) Td(5)      37) Encl_T     59) GT(4)      81) PARdown   103) TB_Rain
16) Td(6)      38) IRGA_T     60) GT(5)      82) PARup     104) Ts_AVG
17) Tw(1)      39) CO2(1)     61) GT(6)      83) Q*        105)
18) Tw(2)      40) CO2(2)     62) GT(7)      84) Qg        106)
19) Tw(3)      41) CO2(3)     63) GT(8)      85) Qe        107)
20) Tw(4)      42) CO2(4)     64) GT(9)      86) Qh        108)
21) Tw(5)      43) CO2(5)     65) GT(10)     87) BETA      109)
22) Tw(6)      44) CO2(6)     66) Hum_GT(1)  88) Qe_BREB   110)
     Press ANY alpha-numeric key and ENTER to return to the previous screen
```

Again, pressing any alpha-numeric key followed by Enter will return the user to the previous screen. After a suffix has been entered (at least 1 character to a maximum of 3 characters), the user must type in the starting day and ending day of the extraction (for both prompts the full duration of the data set is given on brackets).

After the ending day of the extraction is entered a selection screen appears showing all the variables in that data set. The following example is for the Sedge site (option 1):

```
                        DATA SELECTION SCREEN
                        ---------------------
 1) HR(Solar)  23) e(1)       45) CO2        67) Hum_GT(2)  89) Qh_BREB
 2) DIR        24) e(2)       46) CO2/z      68) Hum_GT(3)  90) Qe_AERO
 3) DIR_SD     25) e(3)       47) Fc_BREB    69) Hum_GT(4)  91) Qh_AERO
 4) u(1)       26) e(4)       48) Fc_AERO    70) Hol_GT(1)  92) z0
 5) u(2)       27) e(5)       49) Fc_raw     71) Hol_GT(2)  93) Ri
 6) u(3)       28) e(6)       40) Fc         72) Hol_GT(3)  94) Kh
 7) u(4)       29) CO2mV(1)   51) TsHum      73) Hol_GT(4)  95) Lv_WIND
 8) u(5)       30) CO2mV(2)   52) TsHol      74) QgHum      96) Lv_TEMP
 9) u(6)       31) CO2mV(3)   53) Tpool(1)   75) QgFlat     97) Lv_VAP
10) u_SD       32) CO2mV(4)   54) Tpool(2)   76) QgHol      98) Lv_CO2
11) Td(1)      33) CO2mV(5)   55) Tsoil      77) QgPool     99) e
12) Td(2)      34) CO2mV(6)   56) GT(1)      78) QgPlt_AVG 100) VPD
13) Td(3)      35) In_Temp    57) GT(2)      79) K_down    101) Pa
14) Td(4)      36) Out_Temp   58) GT(3)      80) K_up      102) Autowell
15) Td(5)      37) Encl_T     59) GT(4)      81) PARdown   103) TB_Rain
16) Td(6)      38) IRGA_T     60) GT(5)      82) PARup     104) Ts_AVG
17) Tw(1)      39) CO2(1)     61) GT(6)      83) Q*        105)
18) Tw(2)      40) CO2(2)     62) GT(7)      84) Qg        106)
19) Tw(3)      41) CO2(3)     63) GT(8)      85) Qe        107)
20) Tw(4)      42) CO2(4)     64) GT(9)      86) Qh        108)
21) Tw(5)      43) CO2(5)     65) GT(10)     87) BETA      109)
22) Tw(6)      44) CO2(6)     66) Hum_GT(1)  88) Qe_BREB   110)
                    Enter a variable code (2 -104):
```

At the base of the screen the user is prompted to enter a variable number (the allowable values are shown in brackets). Note that variable 1 (time) is never an allowable selection since it is included in the output file by default. If the user enters a value outside the allowable range the screen is regenerated and the user is again prompted for a valid variable number.

As an example, if variable code of 21 was chosen (**`Tw(5)`**: level 5 wet-bulb temperature) the extraction begins and the progress is reported on the screen. The lower portion of such a screen is shown on the following page:

```
*** Extracting data from DAY 220 ***
*** Extracting data from DAY 221 ***
*** Extracting data from DAY 222 ***
*** Extracting data from DAY 223 ***
*** Extracting data from DAY 224 ***
*** Extracting data from DAY 225 ***
*** Extracting data from DAY 226 ***
*** Extracting data from DAY 227 ***
*** Extracting data from DAY 228 ***
*** Extracting data from DAY 229 ***
*** Extracting data from DAY 230 ***

Do you want to extract another variable from the Climobase archive (Y/N) ?
```

When the extraction of the variable is complete and the output file has been written, the user is given the opportunity to extract another variable. Answering "N" to this prompt quits the application, exits DOS and returns the user to the Windows desktop. If "Y" is entered the following prompt comes up:

```
Do you want to extract another variable from the Climobase archive (Y/N) ? y

Will you be using the previous data set and the same period (Y/N) ? _
```

If the user wants to do another high resolution data extraction <u>for the same data set</u> (in this example, the 1994 Sedge site), then "Y" should be entered. If this is the case, the next screen that pops up would be:

```
*****************************
*  ClimoBase Extractor V2.0  *
*****************************

   (c) Dale Boudreau, 1999



Enter the output filename suffix (3 characters, e.g. Tw4) or
type LST for a variable list:
```

Note that the user need not re-enter all the initialisation and data set parameters again, greatly speeding up multiple extractions from the same data set (and over the same period; days 160-230 in the above example).

On the other hand, if the user wishes to perform another extraction but from a <u>different data set</u> (i.e. entered "N" at the "**`Will you be using the same data set and the same period`**" prompt) the following screen will be generated:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************


Note: If the screen is not clearing properly and colours are not present,
      make sure that ANSI.SYS is in the C:\WINDOWS\COMMAND\ directory.
      Also be sure that "DEVICE=C:\WINDOWS\COMMAND\ANSI.SYS" is in the
      CONFIG.SYS file.  Note that some of the above is performed when the
      INSTALL1.BAT file is run.  If all else fails, restart the extractor
      and choose the B&W display type.


Select: EXTRACTION OPTIONS (for selected variables):

            1) A file of all measured data (e.g. 30-minute values)
            2) A file of daily averages/totals (from hour/minute data)
            3) A Seasonal file of discrete daily values




Enter: Type your selection (1, 2 or 3) _
```

6.3.2 Daily Extractions

If an extraction of daily data is selected (i.e. option 2 above), the user is presented with the following screen:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************




Note: Output files will be written to the C:\DATAOUT\DAILY\ directory.
      Logfiles will be written to the C:\DATAOUT\DAILY\LOGFILES\ directory.
      If these directories do not exist, please create them now
      (press CTRL and C to quit) or run SETUP.BAT


Note: Bad or missing data will be flagged with -6999




 What is the input device (e.g. ZIP100, CD-ROM, HD) drive LETTER (e.g. E)?
```

The screen above informs the user that the output data file will be written to the DAILY directory. Again the input device drive letter must be entered, which brings up the following screen:

```
*****************************
*  ClimoBase Extractor V2.0  *
*****************************

   (c) Dale Boudreau, 1999


GEOGRAPHICAL LOCATION OF DATA SETS
----------------------------------

 (1) Churchill, Manitoba, CANADA
 (2) Marantz Lake, Manitoba, CANADA
 (3) Inuvik, N.W.T., CANADA


Enter the location of the data set:
```

For the following examples, Inuvik data sets will be used (option 3 above):

```
*****************************
*  ClimoBase Extractor V2.0  *
*****************************


OVERVIEW OF DATA SETS AVAILABLE FOR INUVIK, N.W.T.
--------------------------------------------------

1) 1996
   Low TVC

2) 1997
   Low TVC
   Upper TVC

3) 1998
   Low TVC
   Upper TVC



Enter the code for the desired Year (1-3), or 0 for site name details:
```

Again, the user can enter a **0** at the prompt to get an explanation of what the data set names mean. Choosing option 2 (1997) would bring up the following screen:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************



              Inuvik (Trail Valley Creek), 1997 DataSets


CODE      SITE NAME       DATA SPAN              TERRAIN TYPE
---- ------------------- ---------  ---------------------------------------

 1)       Low TVC          001-365         Sedge-dominated lowland
 2)       Upper TVC        140-365         Willow-birch covered upland




Enter the CODE for the desired data set (1-2):
```

From this point on, the screens are very similar to those for the high resolution extractions (see Section 6.3.1). After entering a data set code above, the user would be asked to enter an output filename suffix, the start day of the extraction, the end day of the extraction, and one additional piece of information; whether averages or totals are to be computed:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************

                       (c) Dale Boudreau, 1999



Enter the output filename suffix (3 characters, e.g. Tw4) or
type LST for a variable list: Qx

What day of the year do you want to begin with? (001-365) 200


What is the final day? (001-365) 300


Do you want AVERAGES (press 1) or TOTALS (press 2)? 1
```

To create the daily output files, the high resolution data (15-minute, 30-minute or hourly) is loaded and used to compute daily averages (option 1 above) or totals (option 2 above). Users will most often require averages, but a total would be useful for tipping bucket rainfall, for instance.

Note: Averages/totals are only computed for "good" data, i.e. bad or missing data that have been flagged in the raw files with -6999 are excluded. As an example, if on a certain day there were 5 periods that were flagged with -6999 for the variable being

extracted, the average would be the sum of the remaining 43 values divided by 43 (in the case of 48 periods per day). To check the integrity of daily extractions the user is encouraged to examine the Logfiles for all the variables they extract.

6.3.3 Seasonal Extractions

If a seasonal data extraction is selected, then the user is presented with the following screen:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************



Note: Output files will be written to the C:\DATAOUT\SEASONAL\ directory.
      If this directory does not exist, please create it now
      (press CTRL and C to quit) or run SETUP.BAT

Note: Bad or missing data will be flagged with -6999



 What is the input device (e.g. ZIP100, CD-ROM, HD) drive LETTER (e.g. E)?
```

The screen above informs the user that the output data file will be written to the SEASONAL directory. Again the input device drive letter must be entered, which brings up the following screen:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************

                       (c) Dale Boudreau, 1999


                  GEOGRAPHICAL LOCATION OF DATA SETS
                  ----------------------------------

                   (1) Churchill, Manitoba, CANADA
                   (2) Marantz Lake, Manitoba, CANADA


Enter the location of the data set:
```

Entering 2 for Marantz Lake data sets would give the following:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************


          OVERVIEW OF DATA SETS AVAILABLE FOR MARANTZ L., MB
          --------------------------------------------------


      1) 1984
         Marantz

      2) 1985
         Marantz
         Waterhole L.


Enter the code for the desired Year (1-2), or 0 for site name details: _
```

While entering 1 for Churchill data sets generates the following screen:

```
            OVERVIEW OF DATA SETS AVAILABLE FOR CHURCHILL, MB
            -------------------------------------------------

   1) 1984       5) 1991              8) 1994            11) 1997
      Main          Golf L.              Sedge               RCT-1
                    E. Creek             E. Creek Basin      Sedge
   2) 1985          E. Creek Basin       RCT-1
      Main          Willow                              12) 1998
                    Sedge                                   RCT-1
   3) 1987                                                  Sedge
      Site1      6) 1992              9) 1995
      Site2         Sedge                Golf L.
      Site3         E. Creek             Sedge
      Site4         E. Creek Basin       RCT-1

   4) 1990       7) 1993             10) 1996
      Sedge         Sedge                Beach
      Willow        E. Creek             RCT-1
                    E. Creek Basin       Sedge


Enter the code for the desired Year (1-12), or 0 for site name details:
```

Again, the user can enter a **0** at the prompt to get an explanation of what the data set names mean. Choosing option 8 above (1994) would bring up the following screen:

```
                    ******************************
                    *  ClimoBase Extractor V2.0  *
                    ******************************


                       Churchill, 1994 Data Sets


CODE    SITE NAME    DATA SPAN                 TERRAIN TYPE
---- --------------- ---------  ---------------------------------------------

 1)  Sedge            157-238     Sedge-dominated fen wetland
 2)  E. Creek Basin   167-238     Entire drainage basin (wells & rainfall)
 3)  RCT-1            145-365     Bedrock covered by boulders and heath


Enter the CODE for the desired data set (1-3):
```

After entering a data set code above, the user is only required to enter an output filename suffix, since by default a variable is extracted for an entire season.

Using the 1994 Sedge site as an example, the following selection screen pops up after the output filename suffix has been entered:

```
                         DATA SELECTION SCREEN
                         ---------------------
 1) DOY        23)           45)           67)           89)
 2) MRG_Rain   24)           46)           68)           90)
 3) WT         25)           47)           69)           91)
 4) FT         26)           48)           70)           92)
 5) Windrose   27)           49)           71)           93)
 6)            28)           40)           72)           94)
 7)            29)           51)           73)           95)
 8)            30)           52)           74)           96)
 9)            31)           53)           75)           97)
10)            32)           54)           76)           98)
11)            33)           55)           77)           99)
12)            34)           56)           78)          100)
13)            35)           57)           79)          101)
14)            36)           58)           80)          102)
15)            37)           59)           81)          103)
16)            38)           60)           82)          104)
17)            39)           61)           83)          105)
18)            40)           62)           84)          106)
19)            41)           63)           85)          107)
20)            42)           64)           86)          108)
21)            43)           65)           87)          109)
22)            44)           66)           88)          110)
                     Enter a variable code (2 -  5):
```

At the base of the screen the user is prompted to enter a variable number (the allowable values are shown in brackets). Note that variable 1 (day of year) is never an allowable selection since it is included in the output file by default. If the user enters a value outside the allowable range the screen is regenerated and the user is again prompted for a valid variable number.

The variable "**Windrose**" is a special case since it actually expands to 8 other variables (N, NE, W, SE, S, SW, W, NW), each representing a 22.5° wind sector. These columns will be created when the output file is written. The number of periods per day that the wind direction was in each of the 8 sectors is listed on each row in the file. Below is a portion of the windrose output for the 1994 Sedge site as found in the `01010194.WND` file (stored in `C:\Dataout\Sesonal\`):

DOY	N Periods/d	NE Periods/d	E Periods/d	SE Periods/d	S Periods/d	SW Periods/d	W Periods/d	NW Periods/d
157	17	3	4	6	4	1	4	9
158	0	0	0	0	7	13	28	0
159	3	25	6	5	0	0	1	8
160	0	0	0	12	25	9	2	0
161	3	12	14	0	0	9	4	6
162	15	33	0	0	0	0	0	0
163	35	4	0	0	0	0	6	3
164	5	1	1	12	0	1	8	20
165	0	13	23	12	0	0	0	0
166	26	2	0	0	0	9	3	8
167	2	2	5	4	2	7	26	0
168	9	3	5	11	1	15	1	3
169	5	2	8	16	2	6	9	0
170	1	3	9	3	8	19	5	0
171	0	0	4	21	23	0	0	0
172	8	6	3	4	5	8	8	6
173	6	3	2	8	11	16	1	1

Note that the sum of each row is 48 since there are 48 periods (½ hours) per day for this data set. Finally, since no computations are performed on seasonal data, a Logfile is not generated.

7.0 DATA MANAGEMENT

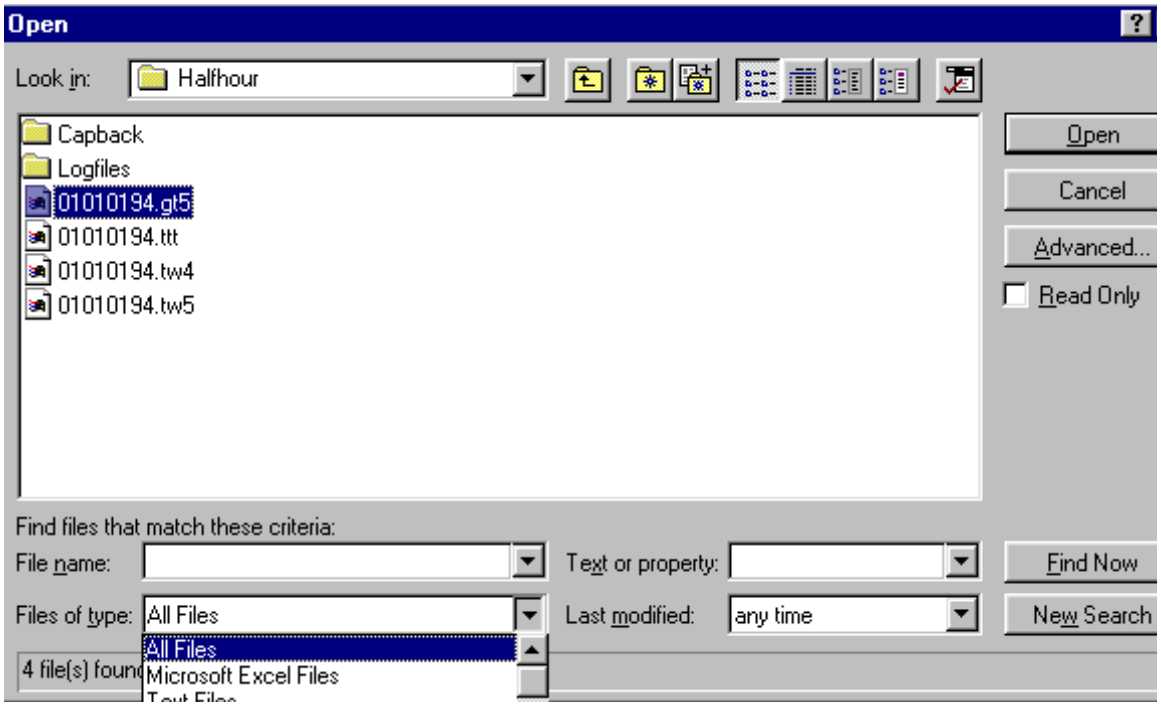
The main purpose of the Extract application is to create neatly formatted and headered output files which can be easily imported into a spreadsheet for further analysis. To keep the format of these output files as generic as possible to facilitate the importation of these data into various software programmes, a plain ASCII format (space-delimited text) was adopted. The data is arranged in columnar format, right-justified.

7.1 Importing into a Spreadsheet

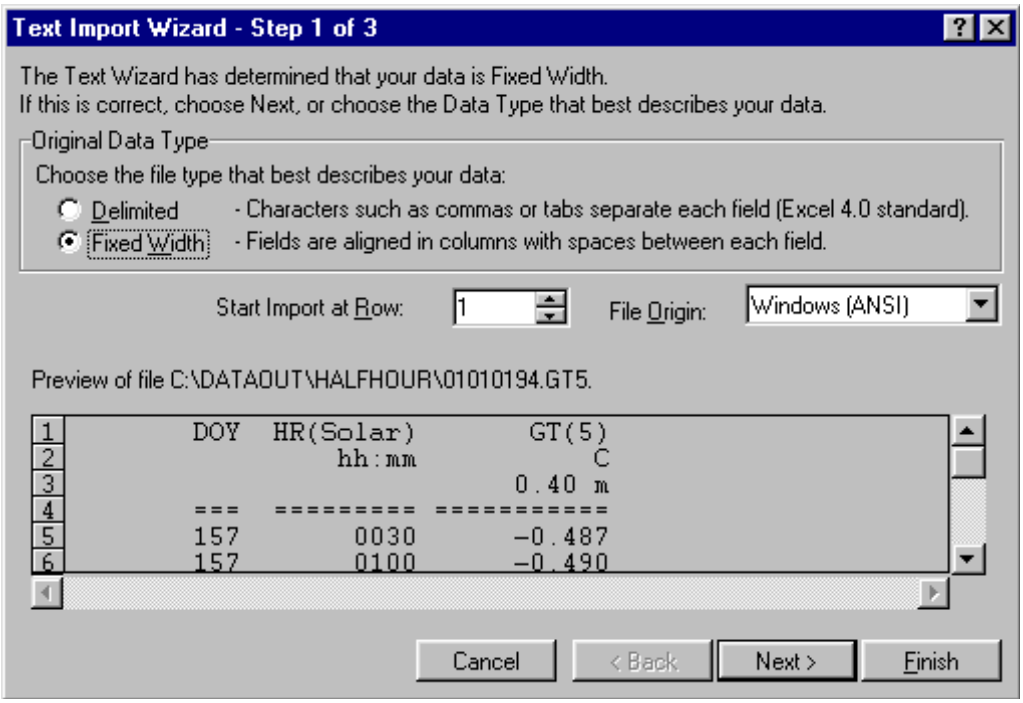
This section will describe how to import ClimoBase output files into Microsoft's Excel spreadsheet. To import ClimoBase output files the user will have to know the target path of the output files:

- High resolution data: **`C:\Dataout\HALFHOUR\`**
- Daily data: **`C:\Dataout\DAILY\`**
- Seasonal data: **`C:\Dataout\SEASONAL\`**

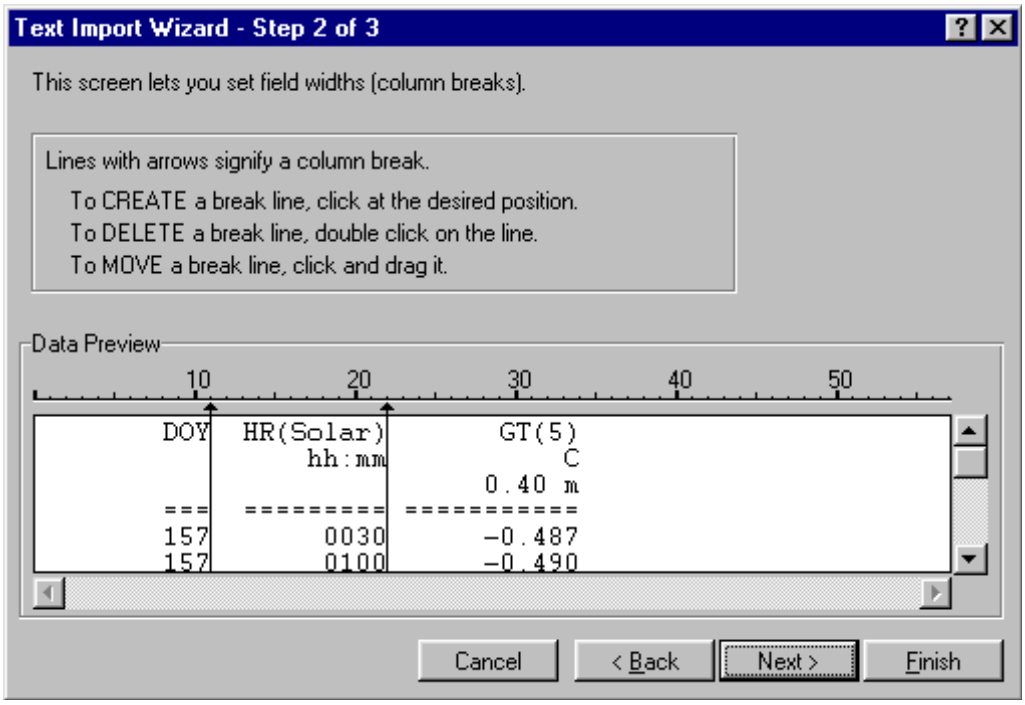
Since **the filename extension of the output files will not be of an established type** (e.g. TXT, PRN, etc.), the software will not recognise the file type and thus will not display the files in the **Open File** selection window. To make the output files visible, the "Files of Type" box must be set to "All Files" as shown below:



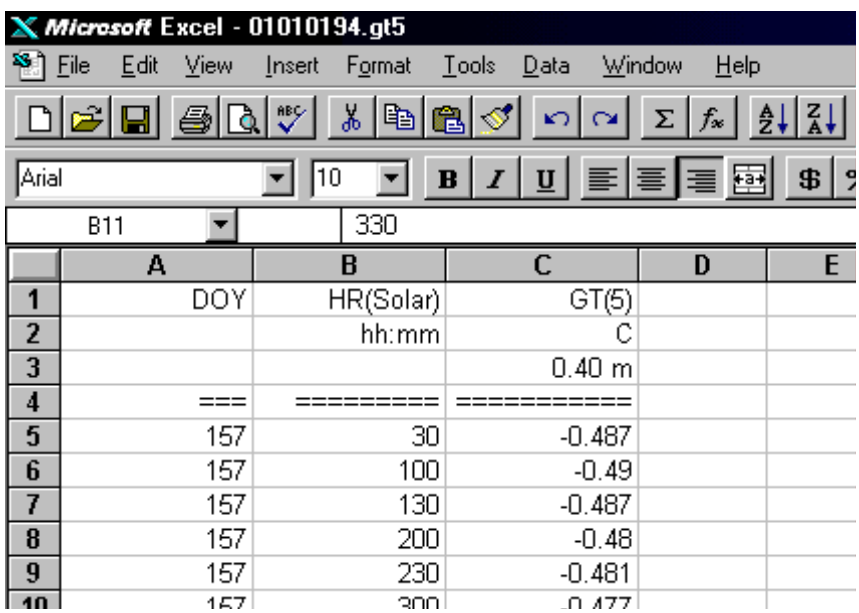
This also applies when using editors to view the contents of the Logfiles. For the following example, the halfhourly file `01010194.GT5` will be used. Upon opening this file, the user is presented with the following screen:



Be sure that the Fixed Width button is toggled **on** (likely done automatically). Clicking **Next** causes the following window to pop up:



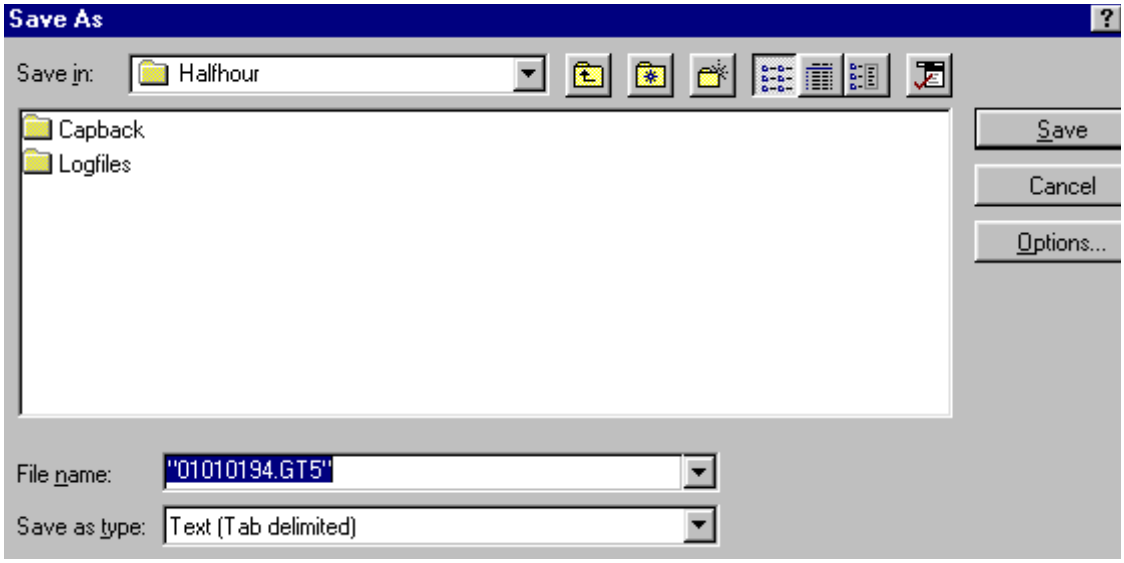
Since all columns are 11 characters wide and right-justified, Excel automatically chooses the correct column divisions. At this point the user can click the **Finish** button which completes the import. After the columns are widened and right-justified, the sheet should resemble the one shown below:



	A	B	C	D	E
1	DOY	HR(Solar)	GT(5)		
2		hh:mm	C		
3			0.40 m		
4	===	=========	==========		
5	157	30	-0.487		
6	157	100	-0.49		
7	157	130	-0.487		
8	157	200	-0.48		
9	157	230	-0.481		
10	157	300	-0.477		

When the time comes to save the spreadsheet, the user may want to change the filename as well as choose another file type to save it under. When Save As is chosen for the File menu, the **Save as Type** will likely be Text as shown below. The user will

likely want to change this to Microsoft Excel Workbook as well as change the filename to something more descriptive.



Note: After data are imported into a spreadsheet, it is advisable that the user use the "Search and Replace" function (called Replace in Excel) under the Edit menu to convert the -6999 flags to blanks (i.e. find all occurrences of -6999 and Replace with nothing).

-The End -

APPENDIX A

ClimoBase Variable List

Rev: 1999/08/05

	VARIABLE	DESCRIPTION	UNITS
1.	ALBEDO	Albedo (K↑/ K↓)	unitless
2.	ALPHA	Preistley-Taylor alpha coefficient (Qe/Qeq)	unitless
3.	AM32_T	Reference temperature (for TC's) of AM32 multiplexer	°C
4.	AM416_T	Reference temperature (for TC's) of AM416 multiplexer	°C
5.	Autowell	Depth of water table (negative values=depth below surface)	mm
6.	AVG_MRG	Average rainfall from several manual rain gauges (E. Creek Basin)	mm
7.	BETA	Bowen ratio (Q_h/Q_e)	unitless
8.	CLD_cov	Cloud cover as observed at the Churchill Weather Station	tenths
9.	CLD_opc	Cloud opacity as observed at the Churchill Weather Station	tenths
10.	CO2	Mean ambient CO_2 concentration	ppm
11.	CO2(#)	Carbon Dioxide concentration at level # (1=bottom)	ppm
12.	CO2(Humm)	Mean ambient CO_2 concentration 0.10 m above a hummock	ppm
13.	CO2/z	Mean CO_2 gradient between 0.35 m and 3.2 m	ppm m^{-1}
14.	CO2mV(#)	Non-linear CO_2 IRGA voltage at level # (1=bottom)	mV
15.	CR10_Batt	Campbell CR10 data logger's battery voltage	V
16.	CS615per	Period measured by the CS615 TDR (soil moisture 0 - 20 cm)	ms
17.	DAY	Day of the month	unitless
18.	DEPTH	Mean depth of Golf Lake (areally weighted)	m
19.	DIR	Wind Direction	°
20.	DIR_SD	Standard deviation of wind direction	°
21.	DOY	Day of the year (Julian Day)	unitless
22.	Dry_GT(#)	Ground temperature at various levels (#) below a dry area	°C
23.	dS	CO_2 storage term	g m^{-2} d^{-1}
24.	e	Ambient vapour pressure at a reference height	kPa
25.	E	Number of periods (48 or 24 per day) with East winds	Periods d^{-1}
26.	e(#)	Vapour pressure at level # (1=bottom)	kPa
27.	e0	Estimated surface vapour pressure (from e profile extrapolation)	kPa
28.	eCR7(#)	Vapour pressure as computed by the CR7 logger (1984-85)	kPa
29.	Encl_T	Insulated IRGA enclosure temperature (@ back of IRGA)	°C
30.	Evap	Evaporation calculated from Q_e and L_v (based on Tair)	mm
31.	FAN_Batt	Voltage of the Q* fan and enclosure heater battery	V
32.	Fc	CO_2 flux after the Webb correction for Q_e was applied	mg m^{-2} s^{-1}
33.	Fc_AERO	CO_2 flux before the Webb corrections (calc. using wind profile)	mg m^{-2} s^{-1}
34.	Fc_BREB	CO_2 flux before the Webb corrections (calc. using K_c from Q_h)	mg m^{-2} s^{-1}
35.	Fc_EC	CO_2 flux (eddy corr.) after the Q_e Webb correction was applied	mg m^{-2} s^{-1}
36.	Fc_ECraw	Eddy correlation CO_2 flux before the Webb corrections	mg m^{-2} s^{-1}
37.	Fc_raw	CO_2 flux before the Webb corrections	mg m^{-2} s^{-1}
38.	Fc_raw2	CO_2 flux before the Webb corrections (post 1995)	g m^{-2} d^{-1}
39.	Frac_JD	Fractional day of year expressed as DOY + a decimal fraction	unitless
40.	FT	Frost table depth as estimated by the zero degree isotherm	m

41. FT_man	Frost table depth as estimated by manual probing	m
42. GT(#)	Ground temperature at level # (1=closest to surface)	°C
43. GTlg(#)	Ground temperature at the Sedge site **long** sensor rod (2.25 m)	°C
44. GTsh(#)	Ground temperature at the Sedge site **short** sensor rod (0.90 m)	°C
45. H20%	CS615 TDR volumetric soil water content (m^3 m^{-3} X 100%)	%
46. HEIGHT	Height of the balloon sonde above the surface (± 5 m)	m
47. Holl_GT(#)	Ground temperature at various levels (#) below a hollow	°C
48. Holl_H20%	Volumetric soil water content (m^3 m^{-3}×100%) beneath a hollow	%
49. HR (CST)	Central Standard Time (Churchill, MB). Format: hh:mm	hh:mm
50. HR (GMT)	Greenwich Mean Time (Universal Co-ordinated Time)	hh:mm
51. HR (MST)	Mountain Standard Time (Inuvik, NWT)	hh:mm
52. HR (Solar)	Solar hour for longitude of site	hh:mm
53. HT(#)	Instrument height of each level (#=1-3) above Golf L. surface	m
54. Humm_GT(#)	Ground temperature at various levels (#) below a hummock	°C
55. Humm_$H_2$0%	Volumetric soil water content (m^3 m^{-3}×100%) beneath a hummock	%
56. In_Temp	Inflow temperature of CO_2 sample at IRGA	°C
57. IRGA_T	Optical bench temperature (exterior) in the IRGA	°C
58. K↑	Reflected solar radiation flux density	W m^{-2}
59. K↓	Incoming solar radiation flux density	W m^{-2}
60. Kh	Turbulent transfer coefficient for sensible heat (eddy conductivity)	m^2 s^{-1}
61. L↓	Incoming long-wave radiation flux density (pyrgeometer)	W m^{-2}
62. L↓_TEMP	Internal temperature of the pyrgeometer (used for correction)	°C
63. LATERAL	Lateral winds: (>270° and <315°) OR (>70° and <136°) (SECTOR #3)	
64. LEC_Q	Discharge at the Lower Eastern Creek gauging station	m^3 s^{-1}
65. LOG_Batt	Campbell data logger's battery voltage	V
66. Lv_CO2	Levels used for CO_2 concentration profile (#=used, 0=not)	unitless
67. Lv_TEMP	Levels used for temperature (dry-bulb) profile (#=used, 0=not)	unitless
68. Lv_VAP	Levels used for vapour pressure (wet-bulb) profile (#=used, 0=not)	unitless
69. Lv_WIND	Levels used for horizontal wind profile (#=used, 0=not)	unitless
70. Mesic_GT(#)	Ground temperature at various levels (#) below a moist area	°C
71. MN	Month	unitless
72. MRG_Avg	Rainfall from a manual rain gauge (when it fell; partitioned w/TB)	mm d^{-1}
73. MRG_Rain	Rainfall recorded by a manual rain gauge	mm d^{-1}
74. N	Number of periods (48 or 24 per day) with North winds	Periods d^{-1}
75. NE	Number of periods (48 or 24 per day) with Northeast winds	Periods d^{-1}
76. NEE	Net ecosystem exchange (analogous to Fc, except includes dS)	g m^{-2} d^{-1}
77. NW	Number of periods (48 or 24 per day) with Northwest winds	Periods d^{-1}
78. OFFSHORE	# periods of offshore winds: >=136° and <=270° (SECTOR #2)	unitless
79. ONSHORE	# periods of onshore winds: >=315° or <=70° (SECTOR #1)	unitless
80. Out_Temp	Outflow temperature of CO_2 sample at IRGA	°C
81. Pa	Atmospheric pressure	kPa
82. PAR↓	Incoming photosynthetically-active radiation	μmol mol^{-1}
83. PAR↑	Reflected photosynthetically-active radiation	μmol mol^{-1}
84. PRECIP	Total precipitation (rainfall and snow water equivalent)	mm
85. Q*	Net all-wave radiation flux density	W m^{-2}
86. Q*(mV)	Net all-wave radiation (before use of calibration multiplier)	mV
87. Qb_Grd	Heat flux through lake bottom sediments based on temp. gradient	W m^{-2}
88. Qb_Plt	Heat flux through lake bottom sediments using a heat flux plate	W m^{-2}

89. Qe	Definitive latent heat flux form the BREB and AERO methods	W m^{-2}
90. Qe_AERO	Latent heat flux calculated from the Aerodynamic ratio method	W m^{-2}
91. Qe_BREB	Latent heat flux calculated from the Bowen ratio method	W m^{-2}
92. QE_calc	Latent heat flux calculated as a residual (Q_e=Q*-Q_g-Q_h_EC)	W m^{-2}
93. Qeq	Equilibrium evaporation	W m^{-2}
94. Qg	Ground (soil) heat flux density	W m^{-2}
95. QgFlat	Flat ground heat flux plate	W m^{-2}
96. QgHeath	Heath ground heat flux plate	W m^{-2}
97. QgHoll	Hollow ground heat flux plate	W m^{-2}
98. QgHumm	Hummock ground heat flux plate	W m^{-2}
99. QgLich	Lichen ground heat flux plate	W m^{-2}
100. QgPlt (Canopy)	Ground heat flux plate below the willow canopy	W m^{-2}
101. QgPlt (Dry)	Dry ground heat flux plate	W m^{-2}
102. QgPlt (Mesic)	Moist ground heat flux plate	W m^{-2}
103. QgPlt (Open)	Ground heat flux plate in an open, *C. aquatilis*-covered area	W m^{-2}
104. QgPlt(#)	Soil heat flux plate (# indicates one of several)	W m^{-2}
105. QgPlt_AVG	Average heat flux plate value (weighted average of several T.U.)	W m^{-2}
106. QgPool	Wet ground heat flux plate in an ephemeral pool	W m^{-2}
107. QgWill	Willow ground heat flux plate	W m^{-2}
108. Qh	Definitive sensible heat flux form the BREB and AERO methods	W m^{-2}
109. Qh_AERO	Sensible heat flux calculated from the Aerodynamic method	W m^{-2}
110. Qh_BREB	Sensible heat flux calculated from the Bowen ratio method	W m^{-2}
111. Qh_EC	Sensible heat flux measured with the eddy correlation technique	W m^{-2}
112. QHnw	Sensible heat flux from eddy cor. system on NW side of tower	W m^{-2}
113. QHse	Sensible heat flux from eddy cor. system on SE side of tower	W m^{-2}
114. Qs	Total heat storage for twin Lakes forest (Qg+canopy?)	W m^{-2}
115. Qw	Heat storage in a water volume (Golf Lake). ½-hr. computation	W m^{-2}
116. Qw_Grd	Heat storage in a water volume based on Qw water+Qb_Grd	W m^{-2}
117. Qw_Plt	Heat storage in a water volume based on Qw water+Qb_Plt	W m^{-2}
118. Qw_Ts	Heat storage in a water volume based only on surface temp, TsGolf	W m^{-2}
119. Qw1.5	Heat storage in a water volume (Golf Lake). 1.5 hr. running mean	W m^{-2}
120. Qw2.5	Heat storage in a water volume (Golf Lake). 2.5 hr. running mean	W m^{-2}
121. RG(#)	Rainfall recorded by a gauge (#=1-18) in the Eastern Creek basin	mm d^{-1}
122. RH	Relative humidity	%
123. Ri	Richardson stability index	unitless
124. RO	Runoff from the Eastern Creek drainage basin, RO=LEC-(UEC+Will)	m^3 s^{-1}
125. S	Number of periods (48 or 24 per day) with South winds	Periods d^{-1}
126. SE	Number of periods (48 or 24 per day) with Southeast winds	Periods d^{-1}
127. SECTOR	Wind direction sector (1=Onshore, 2=Offshore, 3=Lateral)	unitless
128. SNOW	Snowfall accumulation	cm
129. Stg_LEC	Stage (water depth) at the Lower Eastern Creek gauging station	m
130. Stg_UEC	Stage (water depth) at the Upper Eastern Creek gauging station	m
131. Stg_Willow	Stage (water depth) at the Willow Creek gauging station	m
132. SW	Number of periods (48 or 24 per day) with Southwest winds	Periods d^{-1}
133. T_LOG	Campbell data logger's panel temperature	°C
134. T0	Estimated surface temperature (from T profile extrapolation)	°C
135. Tair	Ambient air temperature at a reference height (3.2 m)	°C
136. TB_Rain	Rainfall recorded by a tipping bucket rain gauge	mm

137.	Td(#)	Psychrometer dry-bulb temperature at level # (1=bottom)	°C
138.	Therm(#)	Soil temperature at level (#) as measured manually by thermistors	°C
139.	ThermHR	Solar time at which the thermistors were measured	hh:mm
140.	TIME (solar)	Solar time in the format hh:mm:ss	unitless
141.	Tpool(#)	Temperature of a small ephemeral pool	°C
142.	Tpot.	Potential temperature (adjusted with the DALR=0.0098 °C m^{-1})	°K
143.	Ts(#)	Surface temperature of a certain terrain type	°C
144.	Ts_AVG	Average surface temperature based on several terrain types	°C
145.	Tsea	Ocean temperature (flooded tidal flats) near Half-Way Point	°C
146.	Tsed	Temperature of the lake bottom sediment (in gycha) <-sp.?	°C
147.	TsFlat	Surface temperature on flat ground	°C
148.	TsGolf	Surface temperature of Golf lake	°C
149.	TsHoll	Surface temperature in a hollow	°C
150.	TsHumm	Surface temperature on a hummock	°C
151.	TsLich	Surface temperature of lichen	°C
152.	Tsoil	Soil temperature from psychrometer reference plug (7-10cm deep)	°C
153.	Tsurf (Driest)	Driest ground surface temperature	°C
154.	Tsurf (Dry)	Dry ground surface temperature	°C
155.	Tsurf (Mesic)	Moist ground surface temperature	°C
156.	Tsurf (Wet)	Wet ground surface temperature	°C
157.	Tsurf (Wettest)	Wettest ground surface temperature	°C
158.	Tsurf	Soil surface temperature	°C
159.	TsWill	Surface temperature under willows	°C
160.	Tw(#)	Psychrometer wet-bulb temperature at level # (1=bottom)	°C
161.	Twater(#)	Water temperature at level # (1=closest to surface) in a lake	°C
162.	u	Ambient horizontal wind speed at a reference height	m s^{-1}
163.	u(#)	Anemometer horizontal wind speed at level # (1=bottom)	m s^{-1}
164.	u*	Friction velocity	m s^{-1}
165.	u_SD	Standard deviation of wind speed	m s^{-1}
166.	UEC_Q	Discharge at the Upper Eastern Creek gauging station	m^3 s^{-1}
167.	VPD	Ambient vapour pressure deficit at a reference height	kPa
168.	VPD(#)	Vapour pressure deficit at level # (1=bottom)	kPa
169.	W	Number of periods (max. 48 or 24 per day) with West winds	Periods d^{-1}
170.	WEBB	Webb correction for Q_e and Q_h combined (used after 1995)	g m^{-2} d^{-1}
171.	Wet_GT(#)	Ground temperature at various levels (#) below a wet area	°C
172.	Willow_Q	Discharge at the Willow Creek gauging station	m^3 s^{-1}
173.	WT	Water table level relative to the surface where the well is	m
174.	WT(#)	Water table depth at wells in the Eastern Creek basin (#=1-18)	m
175.	wTprime	(w'T') Fluctuation of vertical wind and temp. about their means	m s^{-1} °C
176.	YR	Year	unitless
177.	z0	Surface roughness	m

APPENDIX B

Listing of "HEADERS . PRN" File:

Code	VarName
001	ALBEDO
002	ALPHA
003	AM32_T
004	AM416_T
005	Autowell
006	AVG_MRG
007	BETA
008	CLD_cov
009	CLD_opc
010	CO2
011	CO2
012	CO2(Humm)
013	CO2/z
014	CO2mV
015	CR10_Batt
016	CS615per
017	DAY
018	DEPTH
019	DIR
020	DIR_SD
021	DOY
022	Dry_GT
023	dS
024	e
025	E
026	e
027	e0
028	eCR7
029	Encl_T
030	Evap
031	FAN_Batt
032	Fc
033	Fc_AERO
034	Fc_BREB
035	Fc_EC
036	Fc_ECraw
037	Fc_raw
038	Fc_raw2
039	Frac_JD
040	FT
041	FT_man
042	GT

Code	VarName
043	GTlg
044	GTsh
045	H20%
046	HEIGHT
047	Hol_GT
048	Hol_H20%
049	HR(CST)
050	HR(GMT)
051	HR(MST)
052	HR(Solar)
053	HT
054	Hum_GT
055	Hum_H20%
056	In_Temp
057	IRGA_T
058	K_down
059	K_up
060	Kh
061	L_down
062	Ldn_Temp
063	LATERAL
064	LEC_Q
065	LOG_Batt
066	Lv_CO2
067	Lv_TEMP
068	Lv_VAP
069	Lv_WIND
070	Mesic_GT
071	MN
072	MRG_Avg
073	MRG_Rain
074	N
075	NE
076	NEE
077	NW
078	OFFSHORE
079	ONSHORE
080	Out_Temp
081	Pa
082	PARdown
083	PARup
084	PRECIP
085	Q*
086	Q*(mV)
087	Qb_Grd
088	Qb_Plt
089	Qe

090 Qe_AERO

Code	VarName
091	Qe_BREB
092	QE_calc
093	Qeq
094	Qg
095	QgFlat
096	QgHeath
097	QgHol
098	QgHum
099	QgLich
100	QgPlt(Can)
101	QgPlt(Dry)
102	QgPlt(Mes)
103	QgPlt(Open)
104	QgPlt
105	QgPlt_AVG
106	QgPool
107	QgWill
108	Qh
109	Qh_AERO
110	Qh_BREB
111	Qh_EC
112	QHnw
113	QHse
114	Qs
115	Qw
116	Qw_Grd
117	Qw_Plt
118	Qw_Ts
119	Qw1.5
120	Qw2.5
121	RG
122	RH
123	Ri
124	RO
125	S
126	SE
127	SECTOR
128	SNOW
129	Stg_LEC
130	Stg_UEC
131	Stg_Will
132	SW
133	T_LOG
134	T0
135	Tair
136	TB_Rain
137	Td

138 Therm

Code	VarName
139	ThermHR
140	TIME(Sol)
141	Tpool
142	Tpot.
143	Ts
144	Ts_AVG
145	Tsea
146	Tsed
147	TsFlat
148	TsGolf
149	TsHol
150	TsHum
151	TsLich
152	Tsoil
153	Ts(Driest)
154	Ts(Dry)
155	Ts(Mesic)
156	Ts(Wet)
157	Ts(Wettest)
158	Tsurf
159	TsWil
160	Tw
161	Twater
162	u
163	u
164	u*
165	u_SD
166	UEC_Q
167	VPD
168	VPD
169	W
170	WEBB
171	Wet_GT
172	Willow_Q
173	WT
174	WT
175	wTprime
176	YR
177	z0

APPENDIX C

Programme Listing:

```
C---------------------|     Last Revised: 1999/08/08
C     EXTRACT.FOR     |
C---------------------|-----Created using Layhey F77- EM/32 V 5.01-----|
C                                                                       |
C     This programme allows the user to extract data from ClimoBase     |
C     and write the output to formatted text files for input to         |
C     spreadsheets or other programmes.                                 |
C                                                                       |
C--------------------- => (c) 1999 Dale Boudreau <= -------------------|

       PROGRAM EXTRACTOR

C     ----------------------INITIALIZATION-----------------------
C     For use with OPENSCRN subroutine:
       INTEGER ScrnType

C     For use with CLRSCRN1 and BWSCRN1 subroutines:
       INTEGER DayHalf

C     For use with CLRHALF, CLRDAY and CLRSEAS subroutines (Also B&W):
       CHARACTER*1 drive

C     For use with CLRHALF1:
       CHARACTER*3 Out

C     For use with READINI subroutine:
       INTEGER loop, Start, Finish, l
       INTEGER Year, Per, Var, DayVar, AtLev, GndLev, Contig1
       INTEGER Days1(10,2), VarCode(110), Index(110), Units(110)
       INTEGER DayCode(80), DayDex(80), DayUnit(80)
       INTEGER DayLevels, Windrose
       CHARACTER*10 AtLabel(30), GndLabel(30), DayLabel(30)

C     For use with READHEAD subroutine:
       CHARACTER*11 HeadLab(250)

C     For use with READUNIT subroutine:
       CHARACTER*10 UnitLab(40)

C     For use with CLRCODE1 subroutine:
       CHARACTER filename*8

C     For use with FIXLABEL subroutine:
       CHARACTER*11 NewHeader(110), NwHeader2(110)
       CHARACTER*10 UnitHead(110)

C     For use with FIXLABEL3 subroutine:
       CHARACTER*11 DayHeader(110), DayHeader2(110)

C     For use with SELECTC:
       INTEGER Numb

C     For use with REFORMAT2
       INTEGER Last
```

```
C     For use with CONTDAYS subroutine:
       INTEGER Contig2, Days2(10,2), Begin, Endd

C     For use with extraction engine
       CHARACTER*7 Value(110)
       INTEGER Flip, n, JD, Flip1, Bad
       CHARACTER infil0*9, infil1*12   ! input files
       CHARACTER*1 Another, Another2
       LOGICAL Done, Same
       CHARACTER Day*3
       INTEGER Mode, m
       REAL Tot, Count, Avg, Value2(110)

C     ------------------------------------------------------------

       CALL OPENSCRN(ScrnType)      ! Copyright and display selection

777    IF ( ScrnType .EQ. 1 ) THEN
           CALL CLRSCRN1(DayHalf)   ! Colour extraction type screen
       ELSE
            CALL BWSCRN1(DayHalf)   ! B&W extraction type screen
       ENDIF

C     Inform the user of the Target output directory and get drive letter

       IF( ScrnType .EQ. 1 ) THEN
           IF(DayHalf .EQ. 1) THEN
                CALL CLRHALF(drive)  ! Colour Halfhour data & drive screen
           ELSEIF(DayHalf .EQ. 2) THEN
                CALL CLRDAY(drive)   ! Colour Daily data & drive screen
           ELSE
                CALL CLRSEAS(drive)  ! Colour Seasonal data & drive screen
           ENDIF
       ELSE
           IF(DayHalf .EQ. 1) THEN
                CALL BWHALF(drive)   ! B&W Halfhour data & drive screen
           ELSEIF(DayHalf .EQ. 2) THEN
                CALL BWDAY(drive)    ! B&W Daily data & drive screen
           ELSE
                CALL BWSEAS(drive)   ! B&W Seasonal data & drive screen
           ENDIF
       ENDIF

       IF( ScrnType .EQ. 1 ) THEN
           IF(DayHalf .LT. 3) THEN
                CALL CLRCODE1(filename) ! Colour Half/Day filename determine
           ELSE
                CALL CLRCODE3(filename) ! Colour Seasonal filename determine
           ENDIF
       ELSE
           IF(DayHalf .LT. 3) THEN
                CALL BWCODE1(filename)  ! B&W Half & Day filename determine
           ELSE
                CALL BWCODE3(filename)  ! B&W Seasonal filename determine
           ENDIF
       ENDIF


       CALL READHEAD(drive, HeadLab)
       CALL READUNIT(drive, UnitLab)

       CALL READINI(drive, filename, Year, Per, Var, AtLev,
     +             GndLev, Contig1, Days1, VarCode, Index, Units,
     +             DayCode, DayDex, DayUnit, DayVar, DayLevels,
```

```
     +             AtLabel, GndLabel, DayLabel, l, Windrose, loop,
     +             Start, Finish)

       CALL FIXLABEL (HeadLab, AtLabel, GndLabel, VarCode, Index,
     +               Var, AtLev, GndLev, NewHeader, UnitHead)


       IF( ScrnType .EQ. 1 ) THEN
C*********************************************************************
C*                      Colour Halfhour Extraction                   *
C*********************************************************************

           IF(DayHalf .EQ. 1) THEN
                Done = .FALSE.
                Same = .FALSE.

555           IF (.NOT.Done) THEN
                    IF (.NOT.Same) THEN
                        CALL REFORMAT(NewHeader, NwHeader2, Var)
                        CALL CLRHALF1(Begin, Endd, Out, Contig1, Days1,
     +                                NwHeader2)
                        CALL SELECTC(NwHeader2, Numb, Var)
                        CALL CONTDAYS(Contig1, Contig2, Start, Finish,
     +                                Begin, Endd, Days1, Days2)
                    ELSE
                        CALL REFORMAT(NewHeader, NwHeader2, Var)
                        CALL CLRHALF2(Out, NwHeader2)
                        CALL SELECTC(NwHeader2, Numb, Var)
                    ENDIF

                    OPEN (15, FILE='C:\DATAOUT\HALFHOUR\LOGFILES\'
     +            //filename//'.'//Out, ACTION='WRITE')
                    WRITE(15,*) 'Number of periods/day with bad/'//
     +            'missing data flags (-6999).'
                    WRITE(15,68) Per
68                  FORMAT ('Note: Number of periods/day =', I3)
                    WRITE(15,*) ' '
                    WRITE(15,67) HEADLAB(21), NewHeader(Numb)
67                  FORMAT (2A12)
                    WRITE(15,*) '         ===  ==========='

                    OPEN (14, FILE='C:\DATAOUT\HALFHOUR\'
     +            //filename//'.'//Out, ACTION='WRITE')
                    WRITE(14,65) HEADLAB(21), NewHeader(1),
     +                       NewHeader(Numb)
                    WRITE(14,65) UNITLAB(30), UNITLAB(Units(1)),
     +                       UNITLAB(Units(Numb))
65                  FORMAT (2A11,1X,A11)

                    IF(AtLev .GT. 0 .OR. GndLev .GT. 0) THEN
                        WRITE(14,66) UnitHead(1), UnitHead(1),
     +                          UnitHead(Numb)
66                    FORMAT (2(1X,A10),110(2X,A10))
                    ENDIF

                    WRITE(14,*) '        ===  ========= ==========='

                    DO 25 Flip1=1,Contig2
                        DO 50 Flip=Days2(Flip1,1),Days2(Flip1,2)
                             JD=FLIP
                             IF (JD.LT.10) THEN
                                  WRITE (Day,8) JD  ! Convert jday to a char
                                  Day='00'//Day
                             ELSEIF (JD.LT.100.AND.JD.GT.9) THEN
```

```
                                 WRITE (Day,9) JD
                                 Day='0'//Day
                              ELSE
                                 WRITE (Day,10) JD
                              ENDIF
8                          FORMAT (I1)
9                          FORMAT (I2)
10                         FORMAT (I3)
                              PRINT '(20X," *** Extracting data from DAY ",
     +                     i3," ***")', JD
                              infil0=filename//'.'
                              infil1=infil0//DAY   ! Input file #13
                              OPEN (13, FILE=drive//':\DATABASE\'//
     +                     infil1,ACTION='READ')

                              Bad = 0
                              DO 60 loop=1,Per
                                 READ (13,100) (Value(n),n=1,Var)
100                            FORMAT(110A7)
                                 WRITE(14,200) JD, Value(1), Value(Numb)
200                            FORMAT (I11,A11,A12)
                                 IF( Value(Numb).EQ.'  -6999' ) Bad=Bad+1
60                         CONTINUE
                              WRITE (15,69) JD, Bad
69                         FORMAT (2(1X,I11))

                              CLOSE (13)
50                       CONTINUE
25                    CONTINUE
                        CLOSE (14)
                        CLOSE (15)

                        PRINT*, ' '
                        PRINT*, 'Do you want to extract another variable'//
     +                ' from the Climobase archive (Y/N) ? '
                        READ*, Another

                        IF (Another .EQ. 'n' .OR. Another .EQ. 'N' ) THEN
                            Done = .TRUE.
                            CALL CLEAR()       ! clear the screen
                            PRINT*, 'Bye.  See you again soon!'
                            PRINT*, ' '
                            PRINT*, 'Remember to pick up your output from '//
     +                    'C:\DATAOUT\HALFHOUR\'
                            PRINT*, ' '
                            STOP
                        ENDIF

                        IF(.NOT.Done) THEN
863                       PRINT*, 'Will you be using the previous data'//
     +                    ' set and the same period (Y/N) ? '
                            READ*, Another2
                            IF (Another2 .EQ. 'y' .OR. Another2 .EQ. 'Y') THEN
                                 Same = .TRUE.
                            ELSEIF (Another2 .EQ. 'n' .OR. Another2 .EQ. 'N') THEN
                                 GOTO 777
                            ELSE
                                 GOTO 863
                            ENDIF
                            GOTO 555
                        ENDIF
                    ENDIF
C                 ************ End of Colour Halfhour Extraction ***********
```

```
C*********************************************************************
C*                        Colour Daily Extraction                    *
C*********************************************************************

          ELSEIF(DayHalf .EQ. 2) THEN
               Done = .FALSE.
               Same = .FALSE.

566          IF (.NOT.Done) THEN
                  IF (.NOT.Same) THEN
                      CALL REFORMAT(NewHeader, NwHeader2, Var)
                      CALL CLRDAY1(Begin, Endd, Out, Contig1, Days1,
     +                           Mode, NwHeader2)
                      CALL SELECTC(NwHeader2, Numb, Var)
                      CALL CONTDAYS(Contig1, Contig2, Start, Finish,
     +                            Begin, Endd, Days1, Days2)
                  ELSE
                      CALL REFORMAT(NewHeader, NwHeader2, Var)
                      CALL CLRDAY2(Out, Mode, NwHeader2)
                      CALL SELECTC(NwHeader2, Numb, Var)
                  ENDIF

                  OPEN (15, FILE='C:\DATAOUT\DAILY\LOGFILES\'
     +          //filename//'.'//Out, ACTION='WRITE')
                  WRITE(15,*) 'Number of periods/day with bad/'//
     +          'missing data flags (-6999).'
                  WRITE(15,78) Per
78              FORMAT ('Note: Number of periods/day =', I3)
                  WRITE(15,*) ' '
                  WRITE(15,77) HEADLAB(21), NewHeader(Numb)
77              FORMAT (2A12)
                  WRITE(15,*) '         ===  ==========='

                  OPEN (14, FILE='C:\DATAOUT\DAILY\'
     +          //filename//'.'//Out, ACTION='WRITE')

                  IF(MODE .EQ. 1) THEN
                      WRITE(14,'("                AVERAGE")')
                  ELSE
                      WRITE(14,'("                  TOTAL")')
                  ENDIF

                  WRITE(14,75) HEADLAB(21), NewHeader(Numb)
                  WRITE(14,75) UNITLAB(30), UNITLAB(Units(Numb))
75              FORMAT (A11,1X,A11)

                  IF(AtLev .GT. 0 .OR. GndLev .GT. 0) THEN
                      WRITE(14,76) UnitHead(1), UnitHead(Numb)
76                  FORMAT (1X,A10,110(2X,A10))
                  ENDIF

                  WRITE(14,*) '        === ==========='

                  DO 26 Flip1=1,Contig2
                      DO 51 Flip=Days2(Flip1,1),Days2(Flip1,2)
                          JD=FLIP
                          IF (JD.LT.10) THEN
                              WRITE (Day,8) JD  ! Convert jday to a char
                              Day='00'//Day
                          ELSEIF (JD.LT.100.AND.JD.GT.9) THEN
                              WRITE (Day,9) JD
                              Day='0'//Day
                          ELSE
                              WRITE (Day,10) JD
```

```
                        ENDIF
                        PRINT '(20X," *** Extracting data from DAY ",
     +                 i3," ***")', JD
                        infil0=filename//'.'
                        infil1=infil0//DAY   ! Input file #13
                        OPEN (13, FILE=drive//':\DATABASE\'//
     +                 infil1,ACTION='READ')

                        Bad = 0
                        Tot = 0
                        Count = 0
                        DO 61 loop=1,Per
                            READ (13,103) (Value2(m),m=1,Var)
103                       FORMAT(110F7.0) !Given max # of variables < 111

                            IF(value2(Numb) .NE. -6999.0) then
                                Tot=Tot+Value2(numb)
                                Count=Count+1.0
                            ENDIF

61                      CONTINUE

                        Avg=-6999.0
                        IF(Count .GT. 0.0) Avg=Tot/Count
                        Bad=Per-Count

                        IF(MODE .EQ. 1) THEN
                            WRITE(14,212) JD, Avg
212                       FORMAT (I11,1X,F11.4)
                        ELSE
                            WRITE(14,213) JD, Tot
213                       FORMAT (I11,1X,F11.2)
                        ENDIF

                        WRITE (15,69) JD, Bad

                        CLOSE (13)
51                    CONTINUE
26                CONTINUE
                    CLOSE (14)
                    CLOSE (15)

                    PRINT*, ' '
                    PRINT*, 'Do you want to extract another variable'//
     +              ' from the Climobase archive (Y/N) ? '
                    READ*, Another

                    IF (Another .EQ. 'n' .OR. Another .EQ. 'N' ) THEN
                        Done = .TRUE.
                        CALL CLEAR()       ! clear the screen
                        PRINT*, 'Bye.  See you again soon!'
                        PRINT*, ' '
                        PRINT*, 'Remember to pick up your output from '//
     +                 'C:\DATAOUT\DAILY\'
                        PRINT*, ' '
                        STOP
                    ENDIF

                    IF(.NOT.Done) THEN
793                   PRINT*, 'Will you be using the previous data'//
     +                ' set and the same period (Y/N) ? '
                        READ*, Another2
                        IF (Another2 .EQ. 'y' .OR. Another2 .EQ. 'Y') THEN
                            Same = .TRUE.
```

```
                        ELSEIF (Another2 .EQ. 'n' .OR. Another2 .EQ. 'N') THEN
                             GOTO 777
                        ELSE
                             GOTO 793
                        ENDIF
                        GOTO 566
                    ENDIF
                ENDIF
C             ************** End of Colour Daily Extraction ************

C*********************************************************************
C*                     Colour Seasonal Extraction                    *
C*********************************************************************
           ELSE
                CALL FIXLABEL3(HeadLab, UnitHead, GndLabel, DayCode,
     +                      DayDex, DayVar, DayLevels, DayHeader,
     +                      DayLabel, DayHeader2, Windrose)
                Done = .FALSE.

588           IF (.NOT.Done) THEN
                    IF( Windrose .GT. 0 ) THEN
                        Last=DayVar-7
                    ELSE
                        Last=DayVar
                    ENDIF

                    CALL REFORMAT2(DayHeader2, NwHeader2, Last)
                    CALL CLRSEAS2(Out, NwHeader2)
                    CALL SELSEASC(NwHeader2, Numb, Last)

                    OPEN (14, FILE='C:\DATAOUT\SEASONAL\'
     +            //filename//'.'//Out, ACTION='WRITE')

                    IF(Windrose .GT. 0 .AND. Numb .EQ. Windrose) THEN
                        WRITE(14,81) DayHeader(1), DayHeader(Windrose),
     +                    DayHeader(Windrose+1), DayHeader(Windrose+2),
     +                    DayHeader(Windrose+3), DayHeader(Windrose+4),
     +                    DayHeader(Windrose+5), DayHeader(Windrose+6),
     +                    DayHeader(Windrose+7)
                            WRITE(14,81) UNITLAB(DayUnit(1)),
     +                    UNITLAB(DayUnit(Windrose)),
     +                    UNITLAB(DayUnit(Windrose+1)),
     +                    UNITLAB(DayUnit(Windrose+2)),
     +                    UNITLAB(DayUnit(Windrose+3)),
     +                    UNITLAB(DayUnit(Windrose+4)),
     +                    UNITLAB(DayUnit(Windrose+5)),
     +                    UNITLAB(DayUnit(Windrose+6)),
     +                    UNITLAB(DayUnit(Windrose+7))
81                        FORMAT (A11,8A12)

                    ELSE
                        WRITE(14,81) DayHeader2(1), DayHeader2(Numb)
                        WRITE(14,81) UNITLAB(DayUnit(1)),
     +                  UNITLAB(DayUnit(Numb))
                    ENDIF

                    IF( DayLevels .GT. 0 ) THEN
                        WRITE(14,76) UnitHead(1), UnitHead(Numb)
82                    FORMAT (1X,A10,110(2X,A10))
                    ENDIF

                    IF(Windrose .GT. 0 .AND. Numb .EQ. Windrose) THEN
                        WRITE(14,*) '     ====== ==========='//
     +                  ' =========== =========== ==========='//
```

```
     +                ' ========== ========== =========='//
     +                ' ==========='
                    ELSE
                        WRITE(14,*) '        === ==========='
                    ENDIF

                    DO 52 Flip=Start, Finish
                        PRINT '(20X," *** Extracting data from DAY ",
     +                i3," ***")', Flip
                        infil1=filename//'.DAY'  ! Input file #13
                        OPEN (13, FILE=drive//':\DATABASE\'//
     +                infil1,ACTION='READ')

                        READ (13,104) (Value(m),m=1,DayVar)
104                   FORMAT(110A7) !Given max # of variables < 111

                        IF(Windrose .GT. 0 .AND. Numb .EQ. Windrose) THEN
                             WRITE(14,215) Value(1), Value(Windrose),
     +                        Value(Windrose+1), Value(Windrose+2),
     +                        Value(Windrose+3), Value(Windrose+4),
     +                        Value(Windrose+5), Value(Windrose+6),
     +                        Value(Windrose+7)
215                       FORMAT (A11,8A12)
                        ELSE
                             WRITE(14,216) Value(1), Value(Numb)
216                       FORMAT (A11,A12)
                        ENDIF
52                  CONTINUE
                    CLOSE (13)
                    CLOSE (14)

                    PRINT*, ' '
                    PRINT*, 'Do you want to extract another variable'//
     +              ' from the Climobase archive (Y/N) ? '
                    READ*, Another

                    IF (Another .EQ. 'n' .OR. Another .EQ. 'N' ) THEN
                        Done = .TRUE.
                        CALL CLEAR()       ! clear the screen
                        PRINT*, 'Bye.  See you again soon!'
                        PRINT*, ' '
                        PRINT*, 'Remember to pick up your output from '//
     +                'C:\DATAOUT\SEASONAL\'
                        PRINT*, ' '
                        STOP
                    ENDIF

                    IF(.NOT.Done) THEN
753                   PRINT*, 'Will you be using the previous data'//
     +                ' set (Y/N) ? '
                        READ*, Another2
                        IF (Another2 .EQ. 'y' .OR. Another2 .EQ. 'Y') THEN
                             GOTO 588
                        ELSEIF (Another2 .EQ. 'n' .OR. Another2 .EQ. 'N') THEN
                             GOTO 777
                        ELSE
                             GOTO 753
                        ENDIF
                    ENDIF
                ENDIF
            ENDIF ! ********** End of Colour Seasonal Extraction **********

        ELSE
C*********************************************************************
```

```
C*                      B&W Halfhour Extraction                      *
C*********************************************************************
          IF(DayHalf .EQ. 1) THEN
               Done = .FALSE.
               Same = .FALSE.

1555          IF (.NOT.Done) THEN
                    IF (.NOT.Same) THEN
                        CALL REFORMAT(NewHeader, NwHeader2, Var)
                        CALL BWHALF1(Begin, Endd, Out, Contig1, Days1,
     +                            NwHeader2)
                        CALL SELECTBW(NwHeader2, Numb, Var)
                        CALL CONTDAYS(Contig1, Contig2, Start, Finish,
     +                            Begin, Endd, Days1, Days2)
                    ELSE
                        CALL REFORMAT(NewHeader, NwHeader2, Var)
                        CALL BWHALF2(Out, NwHeader2)
                        CALL SELECTBW(NwHeader2, Numb, Var)
                    ENDIF

                    OPEN (15, FILE='C:\DATAOUT\HALFHOUR\LOGFILES\'
     +            //filename//'.'//Out, ACTION='WRITE')
                    WRITE(15,*) 'Number of periods/day with bad/'//
     +            'missing data flags (-6999).'
                    WRITE(15,68) Per
                    WRITE(15,*) ' '
                    WRITE(15,67) HEADLAB(21), NewHeader(Numb)
                    WRITE(15,*) '         ===  ==========='

                    OPEN (14, FILE='C:\DATAOUT\HALFHOUR\'
     +            //filename//'.'//Out, ACTION='WRITE')
                    WRITE(14,65) HEADLAB(21), NewHeader(1),
     +                       NewHeader(Numb)
                    WRITE(14,65) UNITLAB(30), UNITLAB(Units(1)),
     +                       UNITLAB(Units(Numb))

                    IF(AtLev .GT. 0 .OR. GndLev .GT. 0) THEN
                        WRITE(14,66) UnitHead(1), UnitHead(1),
     +                            UnitHead(Numb)
                    ENDIF

                    WRITE(14,*) '     ======       ==== ==========='

                    DO 1025 Flip1=1,Contig2
                        DO 1050 Flip=Days2(Flip1,1),Days2(Flip1,2)
                             JD=FLIP
                             IF (JD.LT.10) THEN
                                  WRITE (Day,8) JD  ! Convert jday to a char
                                  Day='00'//Day
                             ELSEIF (JD.LT.100.AND.JD.GT.9) THEN
                                  WRITE (Day,9) JD
                                  Day='0'//Day
                             ELSE
                                  WRITE (Day,10) JD
                             ENDIF
                             PRINT '(20X," *** Extracting data from DAY ",
     +                  i3," ***")', JD
                             infil0=filename//'.'
                             infil1=infil0//DAY   ! Input file #13
                             OPEN (13, FILE=drive//':\DATABASE\'//
     +                  infil1,ACTION='READ')

                             Bad = 0
                             DO 1060 loop=1,Per
```

```
                                READ (13,100) (Value(n),n=1,Var)
                                WRITE(14,200) JD, Value(1), Value(Numb)
                                IF( Value(Numb).EQ.'  -6999' ) Bad=Bad+1
1060                      CONTINUE
                            WRITE (15,69) JD, Bad

                            CLOSE (13)
1050                  CONTINUE
1025              CONTINUE
                    CLOSE (14)
                    CLOSE (15)

                    PRINT*, ' '
                    PRINT*, 'Do you want to extract another variable'//
     +            ' from the Climobase archive (Y/N) ? '
                    READ*, Another

                    IF (Another .EQ. 'n' .OR. Another .EQ. 'N' ) THEN
                        Done = .TRUE.
                        CALL CLEAR()       ! clear the screen
                        PRINT*, 'Bye.  See you again soon!'
                        PRINT*, ' '
                        PRINT*, 'Remember to pick up your output from '//
     +                'C:\DATAOUT\HALFHOUR\'
                        PRINT*, ' '
                        STOP
                    ENDIF

                    IF(.NOT.Done) THEN
783                   PRINT*, 'Will you be using the previous data'//
     +                ' set and the same period (Y/N) ? '
                        READ*, Another2
                        IF (Another2 .EQ. 'y' .OR. Another2 .EQ. 'Y') THEN
                             Same = .TRUE.
                        ELSEIF (Another2 .EQ. 'n' .OR. Another2 .EQ. 'N') THEN
                             GOTO 777
                        ELSE
                             GOTO 783
                        ENDIF
                        GOTO 1555
                    ENDIF
                ENDIF
C             ************ End of Colour Halfhour Extraction ***********

C*********************************************************************
C*                         B&W Daily Extraction                      *
C*********************************************************************
           ELSEIF(DayHalf .EQ. 2) THEN
                Done = .FALSE.
                Same = .FALSE.

1566          IF (.NOT.Done) THEN
                    IF (.NOT.Same) THEN
                        CALL REFORMAT(NewHeader, NwHeader2, Var)
                        CALL BWDAY1(Begin, Endd, Out, Contig1, Days1,
     +                          Mode, NwHeader2)
                        CALL SELECTBW(NwHeader2, Numb, Var)
                        CALL CONTDAYS(Contig1, Contig2, Start, Finish,
     +                           Begin, Endd, Days1, Days2)
                    ELSE
                        CALL REFORMAT(NewHeader, NwHeader2, Var)
                        CALL BWDAY2(Out, Mode, NwHeader2)
                        CALL SELECTBW(NwHeader2, Numb, Var)
                    ENDIF
```

```
                OPEN (15, FILE='C:\DATAOUT\DAILY\LOGFILES\'
     +        //filename//'.'//Out, ACTION='WRITE')
                WRITE(15,*) 'Number of periods/day with bad/'//
     +        'missing data flags (-6999).'
                WRITE(15,78) Per
                WRITE(15,*) ' '
                WRITE(15,77) HEADLAB(21), NewHeader(Numb)
                WRITE(15,*) '         ===  ==========='

                OPEN (14, FILE='C:\DATAOUT\DAILY\'
     +        //filename//'.'//Out, ACTION='WRITE')

                IF(MODE .EQ. 1) THEN
                    WRITE(14,'("               AVERAGE")')
                ELSE
                    WRITE(14,'("                 TOTAL")')
                ENDIF

                WRITE(14,75) HEADLAB(21), NewHeader(Numb)
                WRITE(14,75) UNITLAB(30), UNITLAB(Units(Numb))

                IF(AtLev .GT. 0 .OR. GndLev .GT. 0) THEN
                    WRITE(14,76) UnitHead(1), UnitHead(Numb)
                ENDIF

                WRITE(14,*) '     ====== ==========='

                DO 1026 Flip1=1,Contig2
                    DO 1051 Flip=Days2(Flip1,1),Days2(Flip1,2)
                        JD=FLIP
                        IF (JD.LT.10) THEN
                            WRITE (Day,8) JD  ! Convert jday to a char
                            Day='00'//Day
                        ELSEIF (JD.LT.100.AND.JD.GT.9) THEN
                            WRITE (Day,9) JD
                            Day='0'//Day
                        ELSE
                            WRITE (Day,10) JD
                        ENDIF
                        PRINT '(20X," *** Extracting data from DAY ",
     +                i3," ***")', JD
                        infil0=filename//'.'
                        infil1=infil0//DAY   ! Input file #13
                        OPEN (13, FILE=drive//':\DATABASE\'//
     +                infil1,ACTION='READ')

                        Bad = 0
                        Tot = 0
                        Count = 0
                        DO 1061 loop=1,Per
                            READ (13,103) (Value2(m),m=1,Var)
                            IF(value2(Numb) .NE. -6999.0) then
                                Tot=Tot+Value2(numb)
                                Count=Count+1.0
                            ENDIF
1061                    CONTINUE

                        Avg=-6999.0
                        IF(Count .GT. 0.0) Avg=Tot/Count
                        Bad=Per-Count

                        IF(MODE .EQ. 1) THEN
                            WRITE(14,212) JD, Avg
```

```
                            ELSE
                                 WRITE(14,213) JD, Tot
                            ENDIF

                            WRITE (15,69) JD, Bad

                            CLOSE (13)
1051                  CONTINUE
1026              CONTINUE
                    CLOSE (14)
                    CLOSE (15)

                    PRINT*, ' '
                    PRINT*, 'Do you want to extract another variable'//
     +            ' from the Climobase archive (Y/N) ? '
                    READ*, Another

                    IF (Another .EQ. 'n' .OR. Another .EQ. 'N' ) THEN
                        Done = .TRUE.
                        CALL CLEAR()       ! clear the screen
                        PRINT*, 'Bye.  See you again soon!'
                        PRINT*, ' '
                        PRINT*, 'Remember to pick up your output from '//
     +                 'C:\DATAOUT\DAILY\'
                        PRINT*, ' '
                        STOP
                    ENDIF

                    IF(.NOT.Done) THEN
773                   PRINT*, 'Will you be using the previous data'//
     +                ' set and the same period (Y/N) ? '
                        READ*, Another2
                        IF (Another2 .EQ. 'y' .OR. Another2 .EQ. 'Y') THEN
                             Same = .TRUE.
                        ELSEIF (Another2 .EQ. 'n' .OR. Another2 .EQ. 'N') THEN
                             GOTO 777
                        ELSE
                             GOTO 773
                        ENDIF
                        GOTO 1566
                    ENDIF
                ENDIF
C             ************** End of B&W Daily Extraction ************

C*********************************************************************
C*                        B&W Seasonal Extraction                    *
C*********************************************************************
           ELSE
                CALL FIXLABEL3(HeadLab, UnitHead, GndLabel, DayCode,
     +                      DayDex, DayVar, DayLevels, DayHeader,
     +                      DayLabel, DayHeader2, Windrose)
                Done = .FALSE.

1588          IF (.NOT.Done) THEN
                    IF( Windrose .GT. 0 ) THEN
                        Last=DayVar-7
                    ELSE
                        Last=DayVar
                    ENDIF

                    CALL REFORMAT2(DayHeader2, NwHeader2, Last)
                    CALL BWSEAS2(Out, NwHeader2)
                    CALL SELSEABW(NwHeader2, Numb, Last)
```

```
                  OPEN (14, FILE='C:\DATAOUT\SEASONAL\'
     +            //filename//'.'//Out, ACTION='WRITE')

                  IF(Windrose .GT. 0 .AND. Numb .EQ. Windrose) THEN
                      WRITE(14,81) DayHeader(1), DayHeader(Windrose),
     +                DayHeader(Windrose+1), DayHeader(Windrose+2),
     +                DayHeader(Windrose+3), DayHeader(Windrose+4),
     +                DayHeader(Windrose+5), DayHeader(Windrose+6),
     +                DayHeader(Windrose+7)
                        WRITE(14,81) UNITLAB(DayUnit(1)),
     +                UNITLAB(DayUnit(Windrose)),
     +                UNITLAB(DayUnit(Windrose+1)),
     +                UNITLAB(DayUnit(Windrose+2)),
     +                UNITLAB(DayUnit(Windrose+3)),
     +                UNITLAB(DayUnit(Windrose+4)),
     +                UNITLAB(DayUnit(Windrose+5)),
     +                UNITLAB(DayUnit(Windrose+6)),
     +                UNITLAB(DayUnit(Windrose+7))

                  ELSE
                      WRITE(14,81) DayHeader2(1), DayHeader2(Numb)
                      WRITE(14,81) UNITLAB(DayUnit(1)),
     +              UNITLAB(DayUnit(Numb))
                  ENDIF

                  IF( DayLevels .GT. 0 ) THEN
                      WRITE(14,76) UnitHead(1), UnitHead(Numb)
                  ENDIF

                  IF(Windrose .GT. 0 .AND. Numb .EQ. Windrose) THEN
                      WRITE(14,*) '     ====== ==========='//
     +              ' =========== =========== ==========='//
     +              ' =========== =========== ==========='//
     +              ' ==========='
                  ELSE
                      WRITE(14,*) '     ====== ==========='
                  ENDIF

                  DO 1052 Flip=Start, Finish
                      PRINT '(20X," *** Extracting data from DAY ",
     +              i3," ***")', Flip
                      infil1=filename//'.DAY'  ! Input file #13
                      OPEN (13, FILE=drive//':\DATABASE\'//
     +              infil1,ACTION='READ')

                      READ (13,104) (Value(m),m=1,DayVar)

                      IF(Windrose .GT. 0 .AND. Numb .EQ. Windrose) THEN
                           WRITE(14,215) Value(1), Value(Windrose),
     +                      Value(Windrose+1), Value(Windrose+2),
     +                      Value(Windrose+3), Value(Windrose+4),
     +                      Value(Windrose+5), Value(Windrose+6),
     +                      Value(Windrose+7)
                      ELSE
                           WRITE(14,216) Value(1), Value(Numb)
                      ENDIF
1052              CONTINUE
                  CLOSE (13)
                  CLOSE (14)

                  PRINT*, ' '
                  PRINT*, 'Do you want to extract another variable'//
     +            ' from the Climobase archive (Y/N) ? '
                  READ*, Another
```

```
                    IF (Another .EQ. 'n' .OR. Another .EQ. 'N' ) THEN
                        Done = .TRUE.
                        CALL CLEAR()       ! clear the screen
                        PRINT*, 'Bye.  See you again soon!'
                        PRINT*, ' '
                        PRINT*, 'Remember to pick up your output from '//
     +                 'C:\DATAOUT\SEASONAL\'
                        PRINT*, ' '
                        STOP
                    ENDIF

                    IF(.NOT.Done) THEN
763                   PRINT*, 'Will you be using the previous data'//
     +                ' set (Y/N) ? '
                        READ*, Another2
                        IF (Another2 .EQ. 'y' .OR. Another2 .EQ. 'Y') THEN
                             GOTO 1588
                        ELSEIF (Another2 .EQ. 'n' .OR. Another2 .EQ. 'N') THEN
                             GOTO 777
                        ELSE
                             GOTO 763
                        ENDIF
                    ENDIF
                ENDIF
            ENDIF ! ********** End of B&W Seasonal Extraction **********
        ENDIF

        STOP
        END

        INCLUDE "CLEAR.FOR"     ! A routine to clear the B&W screen
        INCLUDE "OPENSCRN.FOR"  ! Copyright info and determine display type
        INCLUDE "CLRSCRN1.FOR"  ! (Colour) Determine extraction type (D:H:S)
        INCLUDE "BWSCRN1.FOR"   ! (B&W) Determine extraction type (D:H:S)
        INCLUDE "CLRHALF.FOR"   ! (Colour) Give Halfhour target and get 'drive'
        INCLUDE "BWHALF.FOR"    ! (B&W) Give Halfhour target and get 'drive'
        INCLUDE "CLRDAY.FOR"    ! (Colour) Give Daily target and get 'drive'
        INCLUDE "BWDAY.FOR"     ! (B&W) Give Daily target and get 'drive'
        INCLUDE "CLRSEAS.FOR"   ! (Colour) Give Seasonal target and get 'drive'
        INCLUDE "BWSEAS.FOR"    ! (B&W) Give Seasonal target and get 'drive'
        INCLUDE "CLRCODE1.FOR"  ! Colour Day/Half filename determine screen
        INCLUDE "CLRCODE3.FOR"  ! Colour Seaonal filename determine screen
        INCLUDE "READINI.FOR"   ! Load initialization parameters
        INCLUDE "READHEAD.FOR"  ! Load variable Headers
        INCLUDE "READUNIT.FOR"  ! Load variable Units
        INCLUDE "NEWLABEL.FOR"  ! Reformat variable headers for level info.
        INCLUDE "CONTDAYS.FOR"  ! Determine contiguous periods and start/end
        INCLUDE "CLRHALF1.FOR"  ! (Clr) Get Halfhour parameters (start, end...)
        INCLUDE "SELECTC.FOR"   ! (Clr) Data selection screen (1 variable)
        INCLUDE "SELSEASC.FOR"  ! (Clr) Data selection screen (1 var) Seasonal
        INCLUDE "CLRHALF2.FOR"  ! (Clr) Get Halfhour parameters (start, end...)
        INCLUDE "CLRSEAS2.FOR"  ! (Clr) Get Seasonal output filename
        INCLUDE "CLRDAY1.FOR"   ! (Clr) Get Daily parameters (start, end...)
        INCLUDE "CLRDAY2.FOR"   ! (Clr) Get Daily parameters (start, end...)
        INCLUDE "SITELIST.FOR"  ! Colour Details of Site Names
        INCLUDE "FIXLABEL.FOR"  ! Add Height/Depth labels to header labels
        INCLUDE "REFORMAT.FOR"  ! Reformat variable headers for halfhour/daily
        INCLUDE "RE4MAT2.FOR"   ! Reformat variable headers for seasonal
        INCLUDE "CVARLIST.FOR"  ! Colour variable listing

        INCLUDE "BWCODE1.FOR"   ! B&W Day/Half filename determine screen
        INCLUDE "BWCODE3.FOR"   ! B&W Seaonal filename determine screen
        INCLUDE "BWHALF1.FOR"   ! B&W Get Halfhour parameters (start, end...)
```

```
      INCLUDE "SELECTBW.FOR"  ! B&W Data selection screen (1 variable)
      INCLUDE "SELSEABW.FOR"  ! B&W Data selection screen (1 var) Seasonal
      INCLUDE "BWHALF2.FOR"   ! B&W Get Halfhour parameters (start, end...)
      INCLUDE "BWSEAS2.FOR"   ! B&W Get Seasonal output filename
      INCLUDE "BWDAY1.FOR"    ! B&W Get Daily parameters (start, end...)
      INCLUDE "BWDAY2.FOR"    ! B&W Get Daily parameters (start, end...)
      INCLUDE "SITELSTB.FOR"  ! B&W Details of Site Names
      INCLUDE "BWVARLST.FOR"  ! B&W variable listing

C------------------------- End main programme --------------------------


C*********************************************************************
C* Subroutine BWCODE1: B&W Filename determination screen              *
C*********************************************************************

      SUBROUTINE BWCODE1(filename)

      INTEGER Begin, Endd, Numb, Contig1, Var, Loc
      INTEGER Days1(10,2)
      CHARACTER*2 Where, Site, Type, Year
      CHARACTER filename*8

      CALL CLEAR()      ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      print '(25x,'' (c) Dale Boudreau, 1999'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(20x,'' GEOGRAPHICAL LOCATION OF DATA SETS'')'
      PRINT '(20x,'' ----------------------------------''')'
      PRINT*, ' '
      PRINT '(21x,'' (1) Churchill, Manitoba, CANADA'')'
      PRINT '(21x,'' (2) Marantz Lake, Manitoba, CANADA'')'
      PRINT '(21x,'' (3) Inuvik, N.W.T., CANADA'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

555   PRINT*, ' Enter the location of the data set: '
      READ*, Loc

      IF ( Loc .GT. 3 .OR. Loc .LT. 1 ) GOTO 555

      IF(Loc .EQ. 1) THEN
          Where='01'
          CALL YST1B01 (Year, Site, Type)  ! Get Year, Site, Type (Churchill)
      ENDIF
      IF(Loc .EQ. 2) THEN
          Where='02'
          CALL YST1B02 (Year, Site, Type)  ! Get Year, Site, Type (Marantz)
      ENDIF
```

```
      IF(Loc .EQ. 3) THEN
          Where='03'
          CALL YST1B03 (Year, Site, Type)  ! Get Year, Site, Type (Inuvik)
      ENDIF

      filename=Where//Site//Type//Year

      RETURN
      END
C     -----------------------------------------------------

C*********************************************************************
C* Subroutine YST1B01: B&W Get Year, Site, Type for Churchill (01)     *
C*********************************************************************

      SUBROUTINE YST1B01(Year, Site, Type)

      INTEGER Yr
      CHARACTER*2 Year, Site, Type

777   PRINT'(14X,'' OVERVIEW OF DATA SETS AVAILABLE'//
     +' FOR CHURCHILL, MB'')'
      PRINT '(15X,'' ------------------------------------------'//
     +'------ '')'
      PRINT*, ' '

      PRINT '(9X,''1) 1984         6) 1991         10) 1995'//
     +'         12) 1997'')'
      PRINT '(12X,''Main            Golf L.          Rocky           '//
     +' RCT-1'')'
      PRINT '(12X,''                E. Creek         Golf L.         '//
     +' RCT-2'')'
      PRINT '(9X,''2) 1985           Ridge            '//
     +'Sedge            Eddy'')'
      PRINT '(12X,''Main            Willow           Eddy            '//
     +' Rodney'')'
      PRINT '(12X,''                Sedge            RCT-1           '//
     +' Sedge'')'
      PRINT '(9X,''3) 1987                            Pfrost'')'
      PRINT '(12X,''Site1        7) 1992                     '//
     +'     13) 1998'')'
      PRINT '(12X,''Site2           Sedge        11) 1996'//
     +'             RCT-1   '')'
      PRINT '(12X,''Site3           E. Creek         Beach           '//
     +' RCT-2'')'
      PRINT '(12X,''Site4                            RCT-1           '//
     +' Sedge'')'
      PRINT '(25X,''8) 1993            RCT-2'')'
      PRINT '(9X,''4) 1989           Sedge            Pfrost'')'
      PRINT '(12X,''Sedge           E. Creek         Eddy'')'
      PRINT '(45X,''Rodney'')'
      PRINT '(9X,''5) 1990         9) 1994'//
     +'             Sedge'')'
      PRINT '(12X,''Sedge           Sedge'')'
      PRINT '(12X,''Willow          Mobile Qg'')'
      PRINT '(12X,''                E. Creek'')'
      PRINT '(12X,''                RCT-1'')'
      PRINT*, " "
      PRINT*, ' Enter the code for the desired Year (1-13), or'//
     +' 0 for site name details: '
      READ*, Yr

      IF ( Yr .GT. 13 .OR. Yr .LT. 0 ) GOTO 777
```

```
      IF ( Yr .EQ. 0 ) THEN
          CALL SITELSTB()
          GOTO 777
      ENDIF

C     Map code to character years
      IF(Yr .EQ. 1) THEN
          Year='84'
          CALL SITE84B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 2) THEN
          Year='85'
          CALL SITE85B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 3) THEN
          Year='87'
          CALL SITE87B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 4) THEN
          Year='89'
          CALL SITE89B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 5) THEN
          Year='90'
          CALL SITE90B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 6) THEN
          Year='91'
          CALL SITE91B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 7) THEN
          Year='92'
          CALL SITE92B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 8) THEN
          Year='93'
          CALL SITE93B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 9) THEN
          Year='94'
          CALL SITE94B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 10) THEN
          Year='95'
          CALL SITE95B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 11) THEN
          Year='96'
          CALL SITE96B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 12) THEN
          Year='97'
          CALL SITE97B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 13) THEN
          Year='98'
          CALL SITE98B1(Site,Type)
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C***********************************************************************
```

```
C* Subroutine SITE84B1: B&W Get of Site name, Type for Churchill 1984  *
C***********************************************************************

      SUBROUTINE SITE84B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1984 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'----------------------------''))'
      PRINT*, ' '
      PRINT '(''   1)          Main         135-234'//
     +'   Sparse Vegetation (Short grass & heath)'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set: '
      READ*, Sit

      IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='20'
          Type='09'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C***********************************************************************
C* Subroutine SITE85B1: B&W Get of Site name, Type for Churchill 1985  *
C***********************************************************************

      SUBROUTINE SITE85B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
```

```
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1985 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'----------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)          Main         116-262'//
     +'   Sparse Vegetation (Short grass & heath)'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set: '
      READ*, Sit

      IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='20'
          Type='09'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE87B1: B&W Get of Site name, Type for Churchill 1987  *
C*********************************************************************

      SUBROUTINE SITE87B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1987 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'-----------------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)      Site 1       152-227'//
     +'   Coastal Marsh (tall grass/sedge & sandy soils)'')'
      PRINT '(''   2)      Site 2       152-228'//
     +'   Sedge-dominated fen wetland'')'
```

```
      PRINT '('' 3)      Site 3       152-225'//
     +'   Sedge-dominated fen wetland'')'
      PRINT '('' 4)      Site 4       152-225'//
     +'   Sedge-dominated fen wetland (long-term site)'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-4): '
      READ*, Sit

      IF ( Sit .GT. 4 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='12'
          Type='10'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='13'
          Type='01'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='14'
          Type='01'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='01'
          Type='01'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE89B1: B&W Get of Site name, Type for Churchill 1989  *
C*********************************************************************

      SUBROUTINE SITE89B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1989 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '('' ---- ------------------- ---------  -----------'//
     +'-----------------------------'')'
      PRINT*, ' '
      PRINT '('' 1)         Sedge         170-244'//
     +'        Sedge-dominated fen wetland'')'
      PRINT*, ' '
```

```
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set: '
      READ*, Sit

      IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE90B1: B&W Get of Site name, Type for Churchill 1990  *
C*********************************************************************

      SUBROUTINE SITE90B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1990 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'----------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)        Sedge          170-234'//
     +'        Sedge-dominated fen wetland'')'
      PRINT '(''   2)        Willow         170-236'//
     +'        Willow-birch community'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-2): '
      READ*, Sit

      IF ( Sit .NE. 1 .AND. Sit .NE. 2) GOTO 888
```

```
C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='02'
          Type='02'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE91B1: B&W Get of Site name, Type for Churchill 1991  *
C*********************************************************************

      SUBROUTINE SITE91B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1991 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '('' ---- --------------- ---------  -----------'//
     +'-----------------------------------'')'
      PRINT*, ' '
      PRINT '('''   1)   Golf Lake       172-236'//
     +'      Tundra Lake'')'
      PRINT '('''   2)   Eastern Creek   163-237'//
     +'      River/creek'')'
      PRINT '('''   3)   Ridge           172-235'//
     +'      Raised beach deposit (lichen & heath spp.)'')'
      PRINT '('''   4)   Willow          166-235'//
     +'      Willow-birch community'')'
      PRINT '('''   5)   Sedge           167-236'//
     +'      Sedge-dominated fen wetland'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-5): '
      READ*, Sit

      IF ( Sit .GT. 5 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='06'
          Type='06'
      ENDIF
      IF(Sit .EQ. 2) THEN
```

```
          Site='11'
          Type='07'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='03'
          Type='03'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='02'
          Type='02'
      ENDIF
      IF(Sit .EQ. 5) THEN
          Site='01'
          Type='01'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE92B1: B&W Get of Site name, Type for Churchill 1992  *
C*********************************************************************

      SUBROUTINE SITE92B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1992 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'-----------------------------------''')'
      PRINT*, ' '
      PRINT '(''   1)   Sedge           160-247'//
     +'      Sedge-dominated fen wetland'')'
      PRINT '(''   2)   Eastern Creek   163-239'//
     +'      River/creek'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-2): '
      READ*, Sit

      IF ( Sit .NE. 1 .AND. Sit .NE. 2) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
```

```
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='11'
          Type='07'
      ENDIF

      RETURN
      END
C     -----------------------------------------------------

C*********************************************************************
C* Subroutine SITE93B1: B&W Get of Site name, Type for Churchill 1993  *
C*********************************************************************

      SUBROUTINE SITE93B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1993 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '('' ---- --------------- ---------  -----------'//
     +'-----------------------------------'')'
      PRINT*, ' '
      PRINT '('''   1)   Sedge           165-236'//
     +'      Sedge-dominated fen wetland'')'
      PRINT '('''   2)   Eastern Creek   168-238'//
     +'      River/creek'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-2): '
      READ*, Sit

      IF ( Sit .NE. 1 .AND. Sit .NE. 2) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='11'
          Type='07'
      ENDIF

      RETURN
      END
```

```
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE94B1: B&W Get of Site name, Type for Churchill 1994  *
C*********************************************************************

       SUBROUTINE SITE94B1(Site, Type)

       INTEGER Sit
       CHARACTER*2 Site, Type

       CALL CLEAR()
       PRINT*, '                      ******************************'
       print '(23x,''*  ClimoBase Extractor V2.0  *'')'

       PRINT*, '                      ******************************'
       PRINT*, ' '
       PRINT*, ' '
       print '(23x,''   Churchill, 1994 Data Sets'')'
       PRINT*, ' '
       PRINT*, ' '
       PRINT '(''  CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
       PRINT '(''  ---- --------------- ---------  -----------'//
     +'-----------------------------------''')'
       PRINT*, ' '
       PRINT '(''   1)  Sedge            157-238'//
     +'     Sedge-dominated fen wetland'')'
       PRINT '(''   2)  Mobile Qg Sedge  170-187'//
     +'     Sedge-dominated fen wetland'')'
       PRINT '(''   3)  Mobile Qg Forest 190-206'//
     +'     Spruce-Tamarack forest'')'
       PRINT '(''   4)  Mobile Qg Lichen 207-222'//
     +'     Lichen-Heath community (sandy soils)'')'
       PRINT '(''   5)  Mobile Qg Willow 222-238'//
     +'     Willow-birch community'')'
       PRINT '(''   6)  Eastern Creek    167-238'//
     +'     River/creek'')'
       PRINT '(''   7)  RCT-1            145-365'//
     +'     Bedrock covered by boulders and heath'')'
       PRINT*, ' '
       PRINT*, ' '
       PRINT*, ' '
888    PRINT*, ' Enter the CODE for the desired data set (1-7): '
       READ*, Sit

       IF ( Sit .GT. 7 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
       IF(Sit .EQ. 1) THEN
           Site='01'
           Type='01'
       ENDIF
       IF(Sit .EQ. 2) THEN
           Site='19'
           Type='01'
       ENDIF
       IF(Sit .EQ. 3) THEN
           Site='19'
           Type='05'
       ENDIF
       IF(Sit .EQ. 4) THEN
           Site='19'
           Type='03'
```

```
      ENDIF
      IF(Sit .EQ. 5) THEN
          Site='19'
          Type='02'
      ENDIF
      IF(Sit .EQ. 6) THEN
          Site='11'
          Type='07'
      ENDIF
      IF(Sit .EQ. 7) THEN
          Site='08'
          Type='04'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE95B1: B&W Get of Site name, Type for Churchill 1995  *
C*********************************************************************

      SUBROUTINE SITE95B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1995 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '('' ---- --------------- ---------  -----------'//
     +'-----------------------------------''')'
      PRINT*, ' '
      PRINT '(''   1)     Rocky         178-236'//
     +'      Bedrock covered by boulders and heath'')'
      PRINT '(''   2)     Golf Lake     168-236'//
     +'      Tundra Lake'')'
      PRINT '(''   3)     Sedge         163-237'//
     +'      Sedge-dominated fen wetland'')'
      PRINT '(''   4)     Eddy          257-289'//
     +'      Sedge-dominated fen wetland'')'
      PRINT '(''   5)     RCT-1         001-365'//
     +'      Bedrock covered by boulders and heath'')'
      PRINT '(''   6)     Pfrost        242-365'//
     +'      Sedge-dominated fen wetland'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-6): '
      READ*, Sit

      IF ( Sit .GT. 6 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
```

```
      IF(Sit .EQ. 1) THEN
          Site='04'
          Type='04'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='06'
          Type='06'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='17'
          Type='01'
      ENDIF
      IF(Sit .EQ. 5) THEN
          Site='08'
          Type='04'
      ENDIF
      IF(Sit .EQ. 6) THEN
          Site='16'
          Type='01'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE96B1: B&W Get of Site name, Type for Churchill 1996  *
C*********************************************************************

      SUBROUTINE SITE96B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1996 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'-----------------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)     Beach         156-236'//
     +'    Raised beach deposit (lichen & heath spp.)'')'
      PRINT '(''   2)     RCT-1         001-366'//
     +'    Bedrock covered by boulders and heath'')'
      PRINT '(''   3)     RCT-2         167-366'//
     +'    Sedge-dominated fen wetland'')'
      PRINT '(''   4)     Pfrost        001-361'//
     +'    Sedge-dominated fen wetland'')'
      PRINT '(''   5)     Eddy          002-366'//
     +'    Sedge-dominated fen wetland'')'
      PRINT '(''   6)     Rodney        162-366'//
```

```
     +'    Raised beach deposit (lichen & heath spp.)'')'
      PRINT '('' 7)     Sedge         156-238'//
     +'    Sedge-dominated fen wetland'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-7): '
      READ*, Sit

      IF ( Sit .GT. 7 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='03'
          Type='03'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='08'
          Type='04'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='09'
          Type='01'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='16'
          Type='01'
      ENDIF
      IF(Sit .EQ. 5) THEN
          Site='17'
          Type='01'
      ENDIF
      IF(Sit .EQ. 6) THEN
          Site='23'
          Type='03'
      ENDIF
      IF(Sit .EQ. 7) THEN
          Site='01'
          Type='01'
C         REMOVE THIS LINE WHEN DATA ARE AVAILABLE!!!!!!
          GOTO 888
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE97B1: B&W Get of Site name, Type for Churchill 1997  *
C*********************************************************************

      SUBROUTINE SITE97B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1997 Data Sets'')'
```

```
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '('' ---- --------------- ---------  -----------'//
     +'-----------------------------------''')'
      PRINT*, ' '
      PRINT '(''   1)     RCT-1         001-365'//
     +'    Bedrock covered by boulders and heath'')'
      PRINT '(''   2)     RCT-2         001-365'//
     +'    Sedge-dominated fen wetland'')'
      PRINT '(''   3)     Eddy          001-043'//
     +'    Sedge-dominated fen wetland'')'
      PRINT '(''   4)     Rodney        001-043'//
     +'    Raised beach deposit (lichen & heath spp.)'')'
      PRINT '(''   5)     Sedge         155-249'//
     +'    Sedge-dominated fen wetland'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-5): '
      READ*, Sit

      IF ( Sit .GT. 5 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='08'
          Type='04'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='09'
          Type='01'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='17'
          Type='01'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='23'
          Type='03'
      ENDIF
      IF(Sit .EQ. 5) THEN
          Site='01'
          Type='01'
C         REMOVE THIS LINE WHEN DATA ARE AVAILABLE!!!!!!
          GOTO 888
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE98B1: B&W Get of Site name, Type for Churchill 1998  *
C*********************************************************************

      SUBROUTINE SITE98B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type
```

```
      CALL CLEAR()
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1998 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'-----------------------------------''')'
      PRINT*, ' '
      PRINT '(''   1)     RCT-1         001-301'//
     +'    Bedrock covered by boulders and heath'')'
      PRINT '(''   2)     RCT-2         001-365'//
     +'    Sedge-dominated fen wetland'')'
      PRINT '(''   3)     Sedge         ???-???'//
     +'    Sedge-dominated fen wetland'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-3): '
      READ*, Sit

      IF ( Sit .GT. 3 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='08'
          Type='04'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='09'
          Type='01'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='01'
          Type='01'
C         REMOVE THIS LINE WHEN DATA ARE AVAILABLE!!!!!!
          GOTO 888
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine YST1B02: B&W Get Year, Site, Type for Marantz (02)      *
C*********************************************************************

      SUBROUTINE YST1B02(Year, Site, Type)

      INTEGER Yr
      CHARACTER*2 Year, Site, Type

777   CALL CLEAR()
      PRINT*, '                      ******************************'
```

```
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(12X,'' OVERVIEW OF DATA SETS AVAILABLE'//
     +' FOR MARANTZ L., MB'')'
      PRINT '(13X,''-----------------------------------------'//
     +'-------'')'
      PRINT*, ' '

      PRINT '(9X,''1) 1984 '')'
      PRINT '(12X,''Marantz'')'
      PRINT*, ' '
      PRINT '(9X,''2) 1985'')'
      PRINT '(12X,''Marantz'')'

      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the code for the desired Year (1-2), or'//
     +' 0 for site name details: '
      READ*, Yr

      IF ( Yr .NE. 1 .AND. Yr .NE. 2 .AND. Yr .NE. 0 ) GOTO 777

      IF ( Yr .EQ. 0 ) THEN
          CALL SITELSTB()
          GOTO 777
      ENDIF

C     Map code to character years
      IF(Yr .EQ. 1) THEN
          Year='84'
          CALL MARANTZ84B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 2) THEN
          Year='85'
          CALL MARANTZ85B1(Site,Type)
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine MARANTZ84B1: B&W Get of Site & Type for Marantz, 1984    *
C*********************************************************************

      SUBROUTINE MARANTZ84B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()   ! clear the screen
      PRINT*, '                      ******************************'
```

```
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '(22X,''   Marantz L., 1984 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'----------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)        Marantz        135-231'//
     +'     Lichen-Heath community (deep peat)'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set: '
      READ*, Sit

      IF ( Sit .NE. 1) GOTO 888
C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='21'
          Type='03'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine MARANTZ85B1: B&W Get of Site & Type for Marantz, 1985    *
C*********************************************************************

      SUBROUTINE MARANTZ85B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()   ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '(22X,''   Marantz L., 1985 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(''  CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'----------------------------'')'
```

```
      PRINT*, ' '
      PRINT '(''   1)        Marantz        154-258'//
     +'     Lichen-Heath community (deep peat)'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set: '
      READ*, Sit

      IF ( Sit .NE. 1) GOTO 888
C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='21'
          Type='03'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine YST1B03: B&W Get Year, Site, Type for Inuvik, NWT (03)   *
C*********************************************************************

      SUBROUTINE YST1B03(Year, Site, Type)

      INTEGER Yr
      CHARACTER*2 Year, Site, Type

777   CALL CLEAR()   ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(11X,'' OVERVIEW OF DATA SETS AVAILABLE'//
     +' FOR INUVIK, N.W.T.'')'
      PRINT '(12X,''-------------------------------------------'//
     +'-------'')'
      PRINT*, ' '

      PRINT '(9X,''1) 1996 '')'
      PRINT '(12X,''Low TVC'')'
      PRINT*, ' '
      PRINT '(9X,''2) 1997'')'
      PRINT '(12X,''Low TVC'')'
      PRINT '(12X,''Upper TVC'')'
      PRINT*, ' '
      PRINT '(9X,''3) 1998'')'
      PRINT '(12X,''Low TVC'')'
      PRINT '(12X,''Upper TVC'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
```

```
      PRINT*, ' Enter the code for the desired Year (1-3), or'//
     +' 0 for site name details: '
      READ*, Yr

      IF ( Yr .GT. 3 .OR. Yr .LT. 0 ) GOTO 777

      IF ( Yr .EQ. 0 ) THEN
          CALL SITELSTB()
          GOTO 777
      ENDIF

C     Map code to character years
      IF(Yr .EQ. 1) THEN
          Year='96'
          CALL INUVIK96B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 2) THEN
          Year='97'
          CALL INUVIK97B1(Site,Type)
      ENDIF
      IF(Yr .EQ. 3) THEN
          Year='98'
          CALL INUVIK98B1(Site,Type)
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine INUVIK96B1: B&W Get of Site & Type for Inuvik, 1996      *
C*********************************************************************

      SUBROUTINE INUVIK96B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()   ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '(14X,''   Inuvik (Trail Valley Creek), 1996 Data'//
     +'Sets'')'
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(''  CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'----------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)       Low TVC         143-366'//
     +'          Sedge-dominated lowland'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
```

```
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set: '
      READ*, Sit

      IF ( Sit .NE. 1) GOTO 888
C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='18'
          Type='01'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine INUVIK97B1: B&W Get of Site & Type for Inuvik, 1997      *
C*********************************************************************

      SUBROUTINE INUVIK97B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()   ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '(14X,''   Inuvik (Trail Valley Creek), 1997 Data'//
     +'Sets'')'
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(''  CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'----------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)       Low TVC         001-365'//
     +'         Sedge-dominated lowland'')'
      PRINT '(''   2)       Upper TVC       140-365'//
     +'         Willow-birch covered upland'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-2): '
      READ*, Sit

      IF ( Sit .NE. 1 .AND. Sit .NE. 2) GOTO 888
C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='18'
          Type='01'
```

```
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='22'
          Type='02'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine INUVIK98B1: B&W Get of Site & Type for Inuvik, 1998      *
C*********************************************************************

      SUBROUTINE INUVIK98B1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()   ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '(14X,''   Inuvik (Trail Valley Creek), 1998 Data'//
     +'Sets'')'
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(''  CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'----------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)       Low TVC         001-229'//
     +'         Sedge-dominated lowland'')'
      PRINT '(''   2)       Upper TVC       001-229'//
     +'         Willow-birch covered upland'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-2): '
      READ*, Sit

      IF ( Sit .NE. 1 .AND. Sit .NE. 2) GOTO 888
C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='18'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='22'
          Type='02'
      ENDIF

      RETURN
```

```
      END

C*********************************************************************
C* Subroutine BWCODE3: B&W Seasonal filename determination screen      *
C*********************************************************************

      SUBROUTINE BWCODE3(filename)

      INTEGER Begin, Endd, Numb, Contig1, Var, Loc
      INTEGER Days1(10,2)
      CHARACTER*2 Where, Site, Type, Year
      CHARACTER filename*8

      CALL CLEAR()     ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      print '(25x,'' (c) Dale Boudreau, 1999'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(20x,'' GEOGRAPHICAL LOCATION OF DATA SETS'')'
      PRINT '(20x,'' ----------------------------------''')'
      PRINT*, ' '
      PRINT '(21x,'' (1) Churchill, Manitoba, CANADA'')'
      PRINT '(21x,'' (2) Marantz Lake, Manitoba, CANADA'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

555   PRINT*, ' Enter the location of the data set: '
      READ*, Loc

      IF ( Loc .GT. 2 .OR. Loc .LT. 1 ) GOTO 555

      IF(Loc .EQ. 1) THEN
          Where='01'
          CALL YST3B01 (Year, Site, Type)  ! Get Year, Site, Type (Churchill)
      ENDIF
      IF(Loc .EQ. 2) THEN
          Where='02'
          CALL YST3B02 (Year, Site, Type)  ! Get Year, Site, Type (Marantz)
      ENDIF

      filename=Where//Site//Type//Year

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine YST3B01: B&W Get Year, Site, Type for Churchill (01)     *
C*********************************************************************
```

```
      SUBROUTINE YST3B01(Year, Site, Type)

      INTEGER Yr
      CHARACTER*2 Year, Site, Type


777   CALL CLEAR()       ! clear the screen
      PRINT*, ' '
      PRINT '(14X,'' OVERVIEW OF DATA SETS AVAILABLE'//
     +' FOR CHURCHILL, MB'')'
      PRINT '(14X,'' -------------------------------------------'//
     +'------'')'
      PRINT*, ' '

      PRINT '(6X,''1) 1984       5) 1991              '//
     +'8) 1994            11) 1997'')'
      PRINT '(9X,''Main          Golf L.              '//
     +'Sedge               RCT-1'')'
      PRINT '(9X,''              E. Creek             '//
     +'E. Creek Basin      Sedge'')'
      PRINT'(6X,''2) 1985          E. Creek Basin       RCT-1'')'
      PRINT '(9X,''Main          Willow'//
     +'                              12) 1998'')'
      PRINT '(9X,''              Sedge'//
     +'                                   RCT-1'')'
      PRINT '(6X,''3) 1987'//
     +'                                                 Sedge'')'
      PRINT '(9X,''Site1      6) 1992              '//
     +'9) 1995'')'
      PRINT '(9X,''Site2         Sedge                Golf L.'')'
      PRINT '(9X,''Site3         E. Creek             Sedge'')'
      PRINT '(9X,''Site4         E. Creek Basin       RCT-1'')'
      PRINT*, ' '
      PRINT '(6X,''4) 1990       7) 1993             10) 1996'')'
      PRINT '(8X,'' Sedge         Sedge                Beach'')'
      PRINT '(9X,''Willow        E. Creek             RCT-1'')'
      PRINT '(9X,''              E. Creek Basin       Sedge'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the code for the desired Year (1-12), or'//
     +' 0 for site name details: '
      READ*, Yr

      IF ( Yr .GT. 12 .OR. Yr .LT. 0 ) GOTO 777

      IF ( Yr .EQ. 0 ) THEN
          CALL SITELSTB()
          GOTO 777
      ENDIF

C     Map code to character years
      IF(Yr .EQ. 1) THEN
          Year='84'
          CALL SITE84B3(Site,Type)
      ENDIF
      IF(Yr .EQ. 2) THEN
          Year='85'
          CALL SITE85B3(Site,Type)
      ENDIF
      IF(Yr .EQ. 3) THEN
```

```
            Year='87'
            CALL SITE87B3(Site,Type)
        ENDIF
        IF(Yr .EQ. 4) THEN
            Year='90'
            CALL SITE90B3(Site,Type)
        ENDIF
        IF(Yr .EQ. 5) THEN
            Year='91'
            CALL SITE91B3(Site,Type)
        ENDIF
        IF(Yr .EQ. 6) THEN
            Year='92'
            CALL SITE92B3(Site,Type)
        ENDIF
        IF(Yr .EQ. 7) THEN
            Year='93'
            CALL SITE93B3(Site,Type)
        ENDIF
        IF(Yr .EQ. 8) THEN
            Year='94'
            CALL SITE94B3(Site,Type)
        ENDIF
        IF(Yr .EQ. 9) THEN
            Year='95'
            CALL SITE95B3(Site,Type)
        ENDIF
        IF(Yr .EQ. 10) THEN
            Year='96'
            CALL SITE96B3(Site,Type)
        ENDIF
        IF(Yr .EQ. 11) THEN
            Year='97'
            CALL SITE97B3(Site,Type)
        ENDIF
        IF(Yr .EQ. 12) THEN
            Year='98'
            CALL SITE98B3(Site,Type)
        ENDIF

        RETURN
        END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE84B3: B&W Get of Site name, Type for Churchill 1984  *
C*********************************************************************

        SUBROUTINE SITE84B3(Site, Type)

        INTEGER Sit
        CHARACTER*2 Site, Type

        CALL CLEAR()      ! clear the screen
        PRINT*, '                        ******************************'
        print '(23x,''*  ClimoBase Extractor V2.0  *'')'

        PRINT*, '                        ******************************'
        PRINT*, ' '
        PRINT*, ' '
        print '(23x,''   Churchill, 1984 Data Sets'')'
        PRINT*, ' '
        PRINT*, ' '
        PRINT '('' CODE      SITE NAME      DATA SPAN          '//
```

```
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'----------------------------''')'
      PRINT*, ' '
      PRINT '(''   1)          Main         135-234'//
     +'   Sparse Vegetation (Short grass & heath)'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set: '
      READ*, Sit

      IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='20'
          Type='09'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE85B3: B&W Get of Site name, Type for Churchill 1985  *
C*********************************************************************

      SUBROUTINE SITE85B3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1985 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'----------------------------''')'
      PRINT*, ' '
      PRINT '(''   1)          Main         113-265'//
     +'   Sparse Vegetation (Short grass & heath)'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
```

```
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set: '
      READ*, Sit

      IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='20'
          Type='09'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE87B3: B&W Get of Site name, Type for Churchill 1987  *
C*********************************************************************

      SUBROUTINE SITE87B3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()     ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1987 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'-----------------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)      Site 1       152-227'//
     +'   Coastal Marsh (tall grass/sedge & sandy soils)'')'
      PRINT '(''   2)      Site 2       152-227'//
     +'   Sedge-dominated fen wetland'')'
      PRINT '(''   3)      Site 3       152-225'//
     +'   Sedge-dominated fen wetland'')'
      PRINT '(''   4)      Site 4       152-225'//
     +'   Sedge-dominated fen wetland (long-term site)'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-4): '
      READ*, Sit

      IF ( Sit .GT. 4 .OR. Sit .LT. 1 ) GOTO 888
```

```
C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='12'
          Type='10'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='13'
          Type='01'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='14'
          Type='01'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='01'
          Type='01'
      ENDIF

      RETURN
      END
C     -----------------------------------------------------

C*********************************************************************
C* Subroutine SITE90B3: B&W Get of Site name, Type for Churchill 1990  *
C*********************************************************************

      SUBROUTINE SITE90B3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()      ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1990 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '('' ---- ------------------- ---------  -----------'//
     +'----------------------------'')'
      PRINT*, ' '
      PRINT '('''   1)        Sedge          170-234'//
     +'        Sedge-dominated fen wetland'')'
      PRINT '('''   2)        Willow         170-236'//
     +'        Willow-birch community'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-2): '
      READ*, Sit
```

```
      IF ( Sit .LT. 1 .OR. Sit .GT. 2) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='02'
          Type='02'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE91B3: B&W Get of Site name, Type for Churchill 1991  *
C*********************************************************************

      SUBROUTINE SITE91B3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()     ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1991 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'-----------------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)   Golf Lake       172-236'//
     +'      Tundra Lake'')'
      PRINT '(''   2)   Eastern Creek   160-233'//
     +'      River/creek'')'
      PRINT '(''   3)   E. Creek Basin  160-236'//
     +'      Entire drainage basin (wells & rainfall)'')'
      PRINT '(''   4)   Willow          166-235'//
     +'      Willow-birch community'')'
      PRINT '(''   5)   Sedge           166-237'//
     +'      Sedge-dominated fen wetland'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-5): '
      READ*, Sit

      IF ( Sit .GT. 5 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
```

```
          Site='06'
          Type='06'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='11'
          Type='07'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='15'
          Type='08'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='02'
          Type='02'
      ENDIF
      IF(Sit .EQ. 5) THEN
          Site='01'
          Type='01'
      ENDIF

      RETURN
      END
C     -----------------------------------------------------

C*********************************************************************
C* Subroutine SITE92B3: B&W Get of Site name, Type for Churchill 1992  *
C*********************************************************************

      SUBROUTINE SITE92B3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1992 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'-----------------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)   Sedge           160-247'//
     +'      Sedge-dominated fen wetland'')'
      PRINT '(''   2)   Eastern Creek   163-239'//
     +'      River/creek'')'
      PRINT '(''   3)   E. Creek Basin  163-239'//
     +'      Entire drainage basin (wells & rainfall)'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-3): '
```

```
      READ*, Sit

      IF ( Sit .NE. 1 .AND. Sit .NE. 2 .AND. Sit .NE. 3 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='11'
          Type='07'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='15'
          Type='08'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE93B3: B&W Get of Site name, Type for Churchill 1993  *
C*********************************************************************

      SUBROUTINE SITE93B3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1993 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'-----------------------------------''')'
      PRINT*, ' '
      PRINT '(''   1)   Sedge           165-236'//
     +'      Sedge-dominated fen wetland'')'
      PRINT '(''   2)   Eastern Creek   171-238'//
     +'      River/creek'')'
      PRINT '(''   3)   E. Creek Basin  171-238'//
     +'      Entire drainage basin (wells & rainfall)'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-3): '
      READ*, Sit
```

```
      IF ( Sit .NE. 1 .AND. Sit .NE. 2 .AND. Sit .NE. 3 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='11'
          Type='07'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='15'
          Type='08'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE94B3: B&W Get of Site name, Type for Churchill 1994  *
C*********************************************************************

      SUBROUTINE SITE94B3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()     ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1994 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'-----------------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)  Sedge            157-238'//
     +'     Sedge-dominated fen wetland'')'
      PRINT '(''   2)  E. Creek Basin   167-238'//
     +'     Entire drainage basin (wells & rainfall)'')'
      PRINT '(''   3)  RCT-1            145-365'//
     +'     Bedrock covered by boulders and heath'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-3): '
      READ*, Sit

      IF ( Sit .GT. 3 .OR. Sit .LT. 1 ) GOTO 888
```

```
C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='15'
          Type='08'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='08'
          Type='04'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE95B3: B&W Get of Site name, Type for Churchill 1995  *
C*********************************************************************

      SUBROUTINE SITE95B3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1995 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'-----------------------------------''')'
      PRINT*, ' '
      PRINT '(''   1)     Golf Lake     168-236'//
     +'      Tundra Lake'')'
      PRINT '(''   2)     Sedge         163-237'//
     +'      Sedge-dominated fen wetland'')'
      PRINT '(''   3)     RCT-1         001-365'//
     +'      Bedrock covered by boulders and heath'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-3): '
      READ*, Sit

      IF ( Sit .GT. 3 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
```

```
          Site='06'
          Type='06'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='08'
          Type='04'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE96B3: B&W Get of Site name, Type for Churchill 1996  *
C*********************************************************************

      SUBROUTINE SITE96B3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()      ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1996 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'-----------------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)     Beach         156-236'//
     +'    Raised beach deposit (lichen & heath spp.)'')'
      PRINT '(''   2)     RCT-1         001-366'//
     +'    Bedrock covered by boulders and heath'')'
      PRINT '(''   3)     Sedge         156-238'//
     +'    Sedge-dominated fen wetland'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-3): '
      READ*, Sit

      IF ( Sit .GT. 3 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='03'
          Type='03'
```

```
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='08'
          Type='04'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='01'
          Type='01'
C         REMOVE THIS LINE WHEN DATA ARE AVAILABLE!!!!!!
          GOTO 888
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE97B3: B&W Get of Site name, Type for Churchill 1997  *
C*********************************************************************

      SUBROUTINE SITE97B3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1997 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '(''  CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'-----------------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)     RCT-1         001-365'//
     +'    Bedrock covered by boulders and heath'')'
      PRINT '(''   2)     Sedge         155-249'//
     +'    Sedge-dominated fen wetland'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-2): '
      READ*, Sit

      IF ( Sit .LT. 1 .OR. Sit .GT. 2 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='08'
          Type='04'
      ENDIF
```

```
      IF(Sit .EQ. 2) THEN
          Site='01'
          Type='01'
C         REMOVE THIS LINE WHEN DATA ARE AVAILABLE!!!!!!
          GOTO 888
      ENDIF

      RETURN
      END
C     -----------------------------------------------------

C*********************************************************************
C* Subroutine SITE98B3: B&W Get of Site name, Type for Churchill 1998  *
C*********************************************************************

      SUBROUTINE SITE98B3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()     ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''   Churchill, 1998 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '('' ---- --------------- ---------  -----------'//
     +'-----------------------------------'')'
      PRINT*, ' '
      PRINT '('' 1)     RCT-1         001-301'//
     +'    Bedrock covered by boulders and heath'')'
      PRINT '('' 2)     Sedge         ???-???'//
     +'    Sedge-dominated fen wetland'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set (1-2): '
      READ*, Sit

      IF ( Sit .LT. 1 .OR. Sit .GT. 2 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='08'
          Type='04'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='01'
          Type='01'
C         REMOVE THIS LINE WHEN DATA ARE AVAILABLE!!!!!!
          GOTO 888
```

```
      ENDIF

      RETURN
      END
C     -----------------------------------------------------

C*********************************************************************
C* Subroutine YST3B02: B&W Get Year, Site, Type for Marantz (02)      *
C*********************************************************************

      SUBROUTINE YST3B02(Year, Site, Type)

      INTEGER Yr
      CHARACTER*2 Year, Site, Type

777   CALL CLEAR()    ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(12X,'' OVERVIEW OF DATA SETS AVAILABLE'//
     +' FOR MARANTZ L., MB'')'
      PRINT '(13X,''-------------------------------------------'//
     +'-------'')'
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(9X,''1) 1984 '')'
      PRINT '(12X,''Marantz'')'
      PRINT*, ' '
      PRINT '(9X,''2) 1985'')'
      PRINT '(12X,''Marantz'')'
      PRINT '(12X,''Waterhole L.'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the code for the desired Year (1-2), or'//
     +' 0 for site name details: '
      READ*, Yr

      IF ( Yr .LT. 0 .OR. Yr .GT. 2 ) GOTO 777

      IF ( Yr .EQ. 0 ) THEN
          CALL SITELSTB()
          GOTO 777
      ENDIF

C     Map code to character years
      IF(Yr .EQ. 1) THEN
          Year='84'
          CALL MARANTZ84B3(Site,Type)
      ENDIF
      IF(Yr .EQ. 2) THEN
          Year='85'
          CALL MARANTZ85B3(Site,Type)
      ENDIF
```

```
      RETURN
      END
C     -----------------------------------------------------

C*********************************************************************
C* Subroutine MARANTZ84B3: B&W Get of Site & Type for Marantz, 1984    *
C*********************************************************************

      SUBROUTINE MARANTZ84B3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      CALL CLEAR()       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '(22X,''   Marantz L., 1984 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '('' ---- ------------------- ---------  -----------'//
     +'----------------------------'')'
      PRINT*, ' '
      PRINT '('''   1)        Marantz        135-231'//
     +'     Lichen-Heath community (deep peat)'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set: '
      READ*, Sit

      IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='21'
          Type='03'
      ENDIF

      RETURN
      END
C     -----------------------------------------------------

C*********************************************************************
C* Subroutine MARANTZ85B3: B&W Get of Site & Type for Marantz, 1985    *
C*********************************************************************

      SUBROUTINE MARANTZ85B3(Site, Type)

      INTEGER Sit
```

```
      CHARACTER*2 Site, Type

      CALL CLEAR()      ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '(22X,''   Marantz L., 1985 Data Sets'')'
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(''  CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'----------------------------'')'
      PRINT*, ' '
      PRINT '(''   1)        Marantz        154-258'//
     +'     Lichen-Heath community (deep peat)'')'
      PRINT '(''   2)        Waterhole L.   166-228'//
     +'     Tundra lake'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
888   PRINT*, ' Enter the CODE for the desired data set: '
      READ*, Sit

      IF ( Sit .NE. 1 .AND. Sit .NE. 2) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='21'
          Type='03'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='24'
          Type='06'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------


C*********************************************************************
C* Subroutine BWDAY: Paint the second B&W screen and get the 'drive'   *
C*********************************************************************

      SUBROUTINE BWDAY(drive)

      CHARACTER*1 drive

      CALL CLEAR()

      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'
```

```
      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '('' Note: Output files'//
     +' will be written to the C:\DATAOUT\DAILY\ directory.'')'
      PRINT*, '      Logfiles will be written to the'//
     +' C:\DATAOUT\DAILY\LOGFILES\ directory.'
      PRINT*, '      If these directories do not exist,'//
     +' please create them now'
      PRINT*, '      (press CTRL and C to quit) or run SETUP.BAT'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print*, 'Note: Bad or missing data will be flagged with -6999'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

C     Opening input and output files
      PRINT*, ' What is the input'//
     +' device (e.g. ZIP100, CD-ROM, HD) drive LETTER (e.g. E)? '
      READ*, drive

      RETURN
      END


C***********************************************************************
C* Subroutine BWDAY1: B&W User input (dataset, start, end...)          *
C***********************************************************************

      SUBROUTINE BWDAY1(Begin, Endd, Out, Contig1, Days1, Mode,
     +                  NwHeader2)
      INTEGER Begin, Endd, Contig1, Mode
      INTEGER Days1(10,2)
      CHARACTER*3 Out
      CHARACTER*11 NwHeader2(110)

333   CALL CLEAR()     ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      print '(25x,'' (c) Dale Boudreau, 1999'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
```

```
      PRINT*, ' Enter the output filename suffix'//
     +' (3 characters, e.g. Tw4) or'
      PRINT*, ' type LST for a variable list: '
      READ*, Out

      IF(Out .EQ. 'LST' .OR. Out .EQ. 'lst') THEN
          CALL BWVARLST(NwHeader2)
          GOTO 333
      ENDIF

444   PRINT 15, Days1(1,1), Days1(Contig1,2)
15    FORMAT('  What day of the year do you want to begin with? ('
     +,I3.3,'-',I3.3,') ')
      READ*, Begin
      IF ( Begin .LT. Days1(1,1) .OR. Begin .GT. Days1(Contig1,2)) THEN
          GOTO 444
      ENDIF

555   PRINT 20, Days1(1,1), Days1(Contig1,2)
20    FORMAT('  What is the final day? (',I3.3,'-',I3.3,') ')
      READ*, Endd
      IF ( Endd .GT. Days1(Contig1,2) .OR. Endd .LE. Begin ) GOTO 555

560   PRINT*, ' Do you want AVERAGES (press 1) or TOTALS'//
     +' (press 2)? '
      READ*, mode
      IF( Mode .NE. 1 .AND. Mode .NE. 2) GOTO 560

      RETURN
      END


C*********************************************************************
C* Subroutine BWDAY2: B&W User input (dataset, start, end...)        *
C*********************************************************************

      SUBROUTINE BWDAY2(Out, Mode, NwHeader2)

      INTEGER Mode
      CHARACTER*3 Out
      CHARACTER*11 NwHeader2(110)

333   CALL CLEAR()     ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      print '(25x,'' (c) Dale Boudreau, 1999'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the output filename suffix'//
```

```
     +' (3 characters, e.g. Tw4) or'
      PRINT*, ' type LST for a variable list: '
      READ*, Out

      IF(Out .EQ. 'LST' .OR. Out .EQ. 'lst') THEN
          CALL BWVARLST(NwHeader2)
          GOTO 333
      ENDIF

560   PRINT*, ' Do you want AVERAGES (press 1) or TOTALS'//
     +' (press 2)? '
      READ*, Mode
      IF( Mode .NE. 1 .AND. Mode .NE. 2) GOTO 560

      RETURN
      END


C*********************************************************************
C* Subroutine BWHALF: Paint the second B&W screen and get the 'drive'  *
C*********************************************************************

      SUBROUTINE BWHALF(drive)

      CHARACTER*1 drive

      CALL CLEAR()

      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '('' Note: Output files'//
     +' will be written to the C:\DATAOUT\HALFHOUR\ directory.'')'
      PRINT*, '      Logfiles will be written to the'//
     +' C:\DATAOUT\HALFHOUR\LOGFILES\ directory.'
      PRINT*, '      If these directories do not exist,'//
     +' please create them now'
      PRINT*, '      (press CTRL and C to quit) or run SETUP.BAT'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print*, 'Note: Bad or missing data will be flagged with -6999'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

C     Opening input and output files
      PRINT*, ' What is the input'//
     +' device (e.g. ZIP100, CD-ROM, HD) drive LETTER (e.g. E)? '
      READ*, drive

      RETURN
      END
```

```
C*********************************************************************
C* Subroutine BWHALF1: B&W User input (dataset, start, end...)         *
C*********************************************************************

      SUBROUTINE BWHALF1(Begin, Endd, Out, Contig1, Days1, NwHeader2)

      INTEGER Begin, Endd, Contig1
      INTEGER Days1(10,2)
      CHARACTER*3 Out
      CHARACTER*11 NwHeader2(110)

333   CALL CLEAR()       ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      print '(25x,'' (c) Dale Boudreau, 1999'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the output filename suffix'//
     +' (3 characters, e.g. Tw4) or'
      PRINT*, ' type LST for a variable list: '
      READ*, Out

      IF(Out .EQ. 'LST' .OR. Out .EQ. 'lst') THEN
          CALL BWVARLST(NwHeader2)
          GOTO 333
      ENDIF

444   PRINT 15, Days1(1,1), Days1(Contig1,2)
15    FORMAT('  What day of the year do you want to begin with? (',
     +I3.3,'-',I3.3,') ')
      READ*, Begin
      IF ( Begin .LT. Days1(1,1) .OR. Begin .GT. Days1(Contig1,2)) THEN
          GOTO 444
      ENDIF

555   PRINT 20, Days1(1,1), Days1(Contig1,2)
20    FORMAT('  What is the final day? (',I3.3,'-',I3.3,') ')
      READ*, Endd
      PRINT*, ' '
      IF ( Endd .GT. Days1(Contig1,2) .OR. Endd .LE. Begin ) GOTO 555

      CALL CLEAR()       ! clear the screen

      RETURN
      END


C*********************************************************************
C* Subroutine BWHALF2: B&W User input (dataset, start, end...)    *
C*********************************************************************
```

```
      SUBROUTINE BWHALF2(Out, NwHeader2)

      CHARACTER*3 Out
      CHARACTER*11 NwHeader2(110)

750   CALL CLEAR()      ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      print '(25x,'' (c) Dale Boudreau, 1999'')'

      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the output filename suffix'//
     +' (3 characters, e.g. Tw4) or'
      PRINT*, ' type LST for a variable list: '
      READ*, Out

      IF(Out .EQ. 'LST' .OR. Out .EQ. 'lst') THEN
          CALL BWVARLST(NwHeader2)
          GOTO 750
      ENDIF

      CALL CLEAR()      ! clear the screen

      RETURN
      END


C*********************************************************************
C* Subroutine BWSCRN1:  Paint the first B&W screen and get type of    *
C*                      extraction:                                   *
C*                      1. A Seasonal file of discrete daily values   *
C*                      2. A file of daily averages (from hour/minute *
C*                         data)                                      *
C*                      3. A file of ALL measured data (hourly, 30-   *
C*                         minute, 15-minute, etc.)                   *
C*********************************************************************

      SUBROUTINE BWSCRN1(DayHalf)

      INTEGER DayHalf

      CALL CLEAR()       ! clear the screen

      PRINT*, ' '
      PRINT*, ' '
      PRINT*, '                      ******************************'
```

```
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '('' Select: EXTRACTION OPTIONS '//
     +'(for selected variables):'')'
      PRINT*, ' '
      print '(12X'' 1) A file of ALL measured data'//
     +' (e.g. 30-minute values)'')'
      print '(12X'' 2) A file of daily averages/totals'//
     +' (from hour/minute data)'')'
      print '(12X'' 3) Seasonal file of discrete daily'//
     +' values'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
222   print '('' Enter: Type your selection (1, 2'//
     +' or 3) '')'
      READ*, DayHalf
      IF(DayHalf .NE. 1 .AND. DayHalf .NE. 2 .AND. DayHalf .NE. 3) THEN
          GOTO 222
      ENDIF

      RETURN
      END


C*********************************************************************
C* Subroutine BWSEAS: Paint the second B&W screen and get the 'drive'  *
C*********************************************************************

      SUBROUTINE BWSEAS(drive)

      CHARACTER*1 drive

      CALL CLEAR()

      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '('' Note: Output files'//
     +' will be written to the C:\DATAOUT\SEASONAL\ directory.'')'
      PRINT*, '      If this directory does not exist,'//
     +' please create it now'
      PRINT*, '      (press CTRL and C to quit) or run SETUP.BAT'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
```

```
      print*, 'Note: Bad or missing data will be flagged with -6999'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

C     Opening input and output files
      PRINT*, ' What is the input'//
     +' device (e.g. ZIP100, CD-ROM, HD) drive LETTER (e.g. E)? '
      READ*, drive

      RETURN
      END


C*********************************************************************
C* Subroutine BWSEAS2: B&W User input: Output filename               *
C*********************************************************************

      SUBROUTINE BWSEAS2(Out, NwHeader2)

      CHARACTER*3 Out
      CHARACTER*11 NwHeader2(110)

333   CALL CLEAR()      ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  ClimoBase Extractor V2.0  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      print '(25x,'' (c) Dale Boudreau, 1999'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the output filename suffix'//
     +' (3 characters, e.g. Tw4) or'
      PRINT*, ' type LST for a variable list: '
      READ*, Out

      IF(Out .EQ. 'LST' .OR. Out .EQ. 'lst') THEN
          CALL BWVARLST(NwHeader2)
          GOTO 333
      ENDIF

      RETURN
      END


C*********************************************************************
C* Subroutine BWVARLST: B&W Display variables                        *
C*********************************************************************
```

```
      SUBROUTINE BWVARLST(NwHeader2)

      CHARACTER Key
      CHARACTER*11 NwHeader2(110)

444   CALL CLEAR()       ! clear the screen

      PRINT '(26X,''     VARIABLE LIST'')'
      PRINT '(26X,''     -------------'')'

      PRINT 301, NwHeader2(1), NwHeader2(23), NwHeader2(45),
     +           NwHeader2(67), NwHeader2(89)
      PRINT 302, NwHeader2(2), NwHeader2(24), NwHeader2(46),
     +           NwHeader2(68), NwHeader2(90)
      PRINT 303, NwHeader2(3), NwHeader2(25), NwHeader2(47),
     +           NwHeader2(69), NwHeader2(91)
      PRINT 304, NwHeader2(4), NwHeader2(26), NwHeader2(48),
     +           NwHeader2(70), NwHeader2(92)
      PRINT 305, NwHeader2(5), NwHeader2(27), NwHeader2(49),
     +           NwHeader2(71), NwHeader2(93)
      PRINT 306, NwHeader2(6), NwHeader2(28), NwHeader2(50),
     +           NwHeader2(72), NwHeader2(94)
      PRINT 307, NwHeader2(7), NwHeader2(29), NwHeader2(51),
     +           NwHeader2(73), NwHeader2(95)
      PRINT 308, NwHeader2(8), NwHeader2(30), NwHeader2(52),
     +           NwHeader2(74), NwHeader2(96)
      PRINT 309, NwHeader2(9), NwHeader2(31), NwHeader2(53),
     +           NwHeader2(75), NwHeader2(97)
      PRINT 310, NwHeader2(10), NwHeader2(32), NwHeader2(54),
     +           NwHeader2(76), NwHeader2(98)
      PRINT 311, NwHeader2(11), NwHeader2(33), NwHeader2(55),
     +           NwHeader2(77), NwHeader2(99)
      PRINT 312, NwHeader2(12), NwHeader2(34), NwHeader2(56),
     +           NwHeader2(78), NwHeader2(100)
      PRINT 313, NwHeader2(13), NwHeader2(35), NwHeader2(57),
     +           NwHeader2(79), NwHeader2(101)
      PRINT 314, NwHeader2(14), NwHeader2(36), NwHeader2(58),
     +           NwHeader2(80), NwHeader2(102)
      PRINT 315, NwHeader2(15), NwHeader2(37), NwHeader2(59),
     +           NwHeader2(81), NwHeader2(103)
      PRINT 316, NwHeader2(16), NwHeader2(38), NwHeader2(60),
     +           NwHeader2(82), NwHeader2(104)
      PRINT 317, NwHeader2(17), NwHeader2(39), NwHeader2(61),
     +           NwHeader2(83), NwHeader2(105)
      PRINT 318, NwHeader2(18), NwHeader2(40), NwHeader2(62),
     +           NwHeader2(84), NwHeader2(106)
      PRINT 319, NwHeader2(19), NwHeader2(41), NwHeader2(63),
     +           NwHeader2(85), NwHeader2(107)
      PRINT 320, NwHeader2(20), NwHeader2(42), NwHeader2(64),
     +           NwHeader2(86), NwHeader2(108)
      PRINT 321, NwHeader2(21), NwHeader2(43), NwHeader2(65),
     +           NwHeader2(87), NwHeader2(109)
      PRINT 322, NwHeader2(22), NwHeader2(44), NwHeader2(66),
     +           NwHeader2(88), NwHeader2(110)

301   FORMAT ('  1)',A11,' 23)',A11,
     +' 45)',A11,' 67)',A11,
     +' 89)',A11)
302   FORMAT ('  2)',A11,' 24)',A11,
     +' 46)',A11,' 68)',A11,
     +' 90)',A11)
303   FORMAT ('  3)',A11,' 25)',A11,
     +' 47)',A11,' 69)',A11,
```

```
     +' 91)',A11)
304   FORMAT ('  4)',A11,' 26)',A11,
     +' 48)',A11,' 70)',A11,
     +' 92)',A11)
305   FORMAT ('  5)',A11,' 27)',A11,
     +' 49)',A11,' 71)',A11,
     +' 93)',A11)
306   FORMAT ('  6)',A11,' 28)',A11,
     +' 50)',A11,' 72)',A11,
     +' 94)',A11)
307   FORMAT ('  7)',A11,' 29)',A11,
     +' 51)',A11,' 73)',A11,
     +' 95)',A11)
308   FORMAT ('  8)',A11,' 30)',A11,
     +' 52)',A11,' 74)',A11,
     +' 96)',A11)
309   FORMAT ('  9)',A11,' 31)',A11,
     +' 53)',A11,' 75)',A11,
     +' 97)',A11)
310   FORMAT (' 10)',A11,' 32)',A11,
     +' 54)',A11,' 76)',A11,
     +' 98)',A11)
311   FORMAT (' 11)',A11,' 33)',A11,
     +' 55)',A11,' 77)',A11,
     +' 99)',A11)
312   FORMAT (' 12)',A11,' 34)',A11,
     +' 56)',A11,' 78)',A11,
     +'100)',A11)
313   FORMAT (' 13)',A11,' 35)',A11,
     +' 57)',A11,' 79)',A11,
     +'101)',A11)
314   FORMAT (' 14)',A11,' 36)',A11,
     +' 58)',A11,' 80)',A11,
     +'102)',A11)
315   FORMAT (' 15)',A11,' 37)',A11,
     +' 59)',A11,' 81)',A11,
     +'103)',A11)
316   FORMAT (' 16)',A11,' 38)',A11,
     +' 60)',A11,' 82)',A11,
     +'104)',A11)
317   FORMAT (' 17)',A11,' 39)',A11,
     +' 61)',A11,' 83)',A11,
     +'105)',A11)
318   FORMAT (' 18)',A11,' 40)',A11,
     +' 62)',A11,' 84)',A11,
     +'106)',A11)
319   FORMAT (' 19)',A11,' 41)',A11,
     +' 63)',A11,' 85)',A11,
     +'107)',A11)
320   FORMAT (' 20)',A11,' 42)',A11,
     +' 64)',A11,' 86)',A11,
     +'108)',A11)
321   FORMAT (' 21)',A11,' 43)',A11,
     +' 65)',A11,' 87)',A11,
     +'109)',A11)
322   FORMAT (' 22)',A11,' 44)',A11,
     +' 66)',A11,' 88)',A11,
     +'110)',A11)

      PRINT '(6X,''Press ANY alpha-numeric key and ENTER to'//
     +' return to the previous screen '')'
      READ*, key

      RETURN
```

```
      END

C*********************************************************************
C* Subroutine CLEAR: Clears a B&W Display                            *
C*********************************************************************

      SUBROUTINE CLEAR()
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      RETURN
      END

C*********************************************************************
C* Subroutine CLRCODE1: (Colour) Filename determination screen       *
C*********************************************************************

      SUBROUTINE CLRCODE1(filename)

      INTEGER Begin, Endd, Numb, Contig1, Var, Loc
      INTEGER Days1(10,2)
      CHARACTER*2 Where, Site, Type, Year
      CHARACTER filename*8

      print '('' □[2J'')'       ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      print '(25x,'' □[1;34m(c) Dale Boudreau, 1999 □[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(20x,'' □[1;32mGEOGRAPHICAL LOCATION OF DATA SETS'')'
      PRINT '(20x,'' ---------------------------------- □[0m'')'
      PRINT*, ' '
```

```
      PRINT '(21x,'' □[1;34m(1) Churchill, Manitoba, CANADA'')'
      PRINT '(21x,'' (2) Marantz Lake, Manitoba, CANADA'')'
      PRINT '(21x,'' (3) Inuvik, N.W.T., CANADA'')'
      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '

555   PRINT*, ' Enter the location of the data set: □[1;33m'
      READ*, Loc
      print '('' □[0m'')'    ! Turn off colour

      IF ( Loc .GT. 3 .OR. Loc .LT. 1 ) GOTO 555

      IF(Loc .EQ. 1) THEN
          Where='01'
          CALL YST1C01 (Year, Site, Type)  ! Get Year, Site, Type (Churchill)
      ENDIF
      IF(Loc .EQ. 2) THEN
          Where='02'
          CALL YST1C02 (Year, Site, Type)  ! Get Year, Site, Type (Marantz)
      ENDIF
      IF(Loc .EQ. 3) THEN
          Where='03'
          CALL YST1C03 (Year, Site, Type)  ! Get Year, Site, Type (Inuvik)
      ENDIF

      filename=Where//Site//Type//Year

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine YST1C01: (Clr) Get Year, Site, Type for Churchill (01)   *
C*********************************************************************

      SUBROUTINE YST1C01(Year, Site, Type)

      INTEGER Yr
      CHARACTER*2 Year, Site, Type

777   PRINT'('' □[2J'',14X,'' □[1;32mOVERVIEW OF DATA SETS AVAILABLE'//
     +' FOR CHURCHILL, MB'')'
      PRINT '(15X,'' ------------------------------------------'//
     +'------ □[0m'')'
      PRINT*, ' '

      PRINT '(9X,''□[1;31m1) 1984         6) 1991         10) 1995'//
     +'         12) 1997□[1;34m'')'
      PRINT '(12X,''Main            Golf L.          Rocky           '//
     +' RCT-1'')'
      PRINT '(12X,''                E. Creek         Golf L.         '//
     +' RCT-2□[1;31m'')'
      PRINT '(9X,''2) 1985□[1;34m            Ridge            '//
     +'Sedge            Eddy'')'
      PRINT '(12X,''Main            Willow           Eddy            '//
     +' Rodney'')'
      PRINT '(12X,''                Sedge            RCT-1           '//
     +' Sedge□[1;31m'')'
      PRINT '(9X,''3) 1987□[1;34m                             Pfrost'')'
      PRINT '(12X,''Site1        □[1;31m7) 1992                     '//
     +'     13) 1998□[1;34m'')'
      PRINT '(12X,''Site2           Sedge        □[1;31m11) 1996'//
     +'□[1;34m             RCT-1   '')'
      PRINT '(12X,''Site3           E. Creek         Beach           '//
```

```
     +' RCT-2'')'
      PRINT '(12X,''Site4                            RCT-1           '//
     +' Sedge'')'
      PRINT '(25X,''□[1;31m8) 1993□[1;34m             RCT-2□[1;31m'')'
      PRINT '(9X,''4) 1989□[1;34m            Sedge            Pfrost'')'
      PRINT '(12X,''Sedge           E. Creek         Eddy'')'
      PRINT '(45X,''Rodney'')'
      PRINT '(9X,''□[1;31m5) 1990         9) 1994□[1;34m'//
     +'             Sedge'')'
      PRINT '(12X,''Sedge           Sedge'')'
      PRINT '(12X,''Willow          Mobile Qg'')'
      PRINT '(12X,''                E. Creek'')'
      PRINT '(12X,''                RCT-1□[0m'')'

      print '('' □[0m'')'    ! Turn off colour

      PRINT*, ' Enter the code for the desired Year (1-13), or'//
     +' 0 for site name details: □[1;33m'
      READ*, Yr
      print '('' □[0m'')'    ! Turn off colour

      IF ( Yr .GT. 13 .OR. Yr .LT. 0 ) GOTO 777

      IF ( Yr .EQ. 0 ) THEN
          CALL SITELIST()
          GOTO 777
      ENDIF

C     Map code to character years
      IF(Yr .EQ. 1) THEN
          Year='84'
          CALL SITE84C1(Site,Type)
      ENDIF
      IF(Yr .EQ. 2) THEN
          Year='85'
          CALL SITE85C1(Site,Type)
      ENDIF
      IF(Yr .EQ. 3) THEN
          Year='87'
          CALL SITE87C1(Site,Type)
      ENDIF
      IF(Yr .EQ. 4) THEN
          Year='89'
          CALL SITE89C1(Site,Type)
      ENDIF
      IF(Yr .EQ. 5) THEN
          Year='90'
          CALL SITE90C1(Site,Type)
      ENDIF
      IF(Yr .EQ. 6) THEN
          Year='91'
          CALL SITE91C1(Site,Type)
      ENDIF
      IF(Yr .EQ. 7) THEN
          Year='92'
          CALL SITE92C1(Site,Type)
      ENDIF
      IF(Yr .EQ. 8) THEN
          Year='93'
          CALL SITE93C1(Site,Type)
      ENDIF
      IF(Yr .EQ. 9) THEN
          Year='94'
          CALL SITE94C1(Site,Type)
```

```
      ENDIF
      IF(Yr .EQ. 10) THEN
          Year='95'
          CALL SITE95C1(Site,Type)
      ENDIF
      IF(Yr .EQ. 11) THEN
          Year='96'
          CALL SITE96C1(Site,Type)
      ENDIF
      IF(Yr .EQ. 12) THEN
          Year='97'
          CALL SITE97C1(Site,Type)
      ENDIF
      IF(Yr .EQ. 13) THEN
          Year='98'
          CALL SITE98C1(Site,Type)
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE84C1: (Clr) Get of Site name, Type for Churchill 1984*
C*********************************************************************

      SUBROUTINE SITE84C1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1984 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'---------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m         Main         135-234'//
     +'   Sparse Vegetation (Short grass & heath)'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set: □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='20'
```

```
          Type='09'
       ENDIF

       RETURN
       END
C     ------------------------------------------------------

C*********************************************************************
C* Subroutine SITE85C1: (Clr) Get of Site name, Type for Churchill 1985*
C*********************************************************************

       SUBROUTINE SITE85C1(Site, Type)

       INTEGER Sit
       CHARACTER*2 Site, Type

       print '('' □[2J'')'       ! clear the screen
       PRINT*, '                      ******************************'
       print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

       PRINT*, '                      ******************************'
       PRINT*, ' '
       PRINT*, ' '
       print '(23x,''  □[1;33m Churchill, 1985 Data Sets□[0m'')'
       PRINT*, ' '
       PRINT*, ' '
       PRINT '('' □[1;32m CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
       PRINT '(''  ---- ------------------- ---------  -----------'//
     +'---------------------------- □[0m'')'
       PRINT*, ' '
       PRINT '('' □[1;31m  1) □[1;34m         Main         116-262'//
     +'   Sparse Vegetation (Short grass & heath)'')'

       print '('' □[0m'')'    ! Turn off colour
       PRINT*, ' '
       PRINT*, ' '
       PRINT*, ' '
       PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set: □[1;33m'
       READ*, Sit
       print '('' □[0m'')'    ! Turn off colour

       IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
       IF(Sit .EQ. 1) THEN
          Site='20'
          Type='09'
       ENDIF

       RETURN
       END
C     ------------------------------------------------------

C*********************************************************************
C* Subroutine SITE87C1: (Clr) Get of Site name, Type for Churchill 1987*
C*********************************************************************

       SUBROUTINE SITE87C1(Site, Type)

       INTEGER Sit
       CHARACTER*2 Site, Type
```

```
      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                     ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                     ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1987 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m     Site 1       152-227'//
     +'   Coastal Marsh (tall grass/sedge & sandy soils)'')'
      PRINT '('' □[1;31m  2) □[1;34m     Site 2       152-228'//
     +'   Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  3) □[1;34m     Site 3       152-225'//
     +'   Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  4) □[1;34m     Site 4       152-225'//
     +'   Sedge-dominated fen wetland (long-term site)'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-4): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .GT. 4 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='12'
          Type='10'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='13'
          Type='01'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='14'
          Type='01'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='01'
          Type='01'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C***********************************************************************
C* Subroutine SITE89C1: (Clr) Get of Site name, Type for Churchill 1989*
C***********************************************************************

      SUBROUTINE SITE89C1(Site, Type)

      INTEGER Sit
```

```
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1989 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'---------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m        Sedge         170-244'//
     +'        Sedge-dominated fen wetland'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set: □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE90C1: (Clr) Get of Site name, Type for Churchill 1990*
C*********************************************************************

      SUBROUTINE SITE90C1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1990 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
```

```
     +'---------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m       Sedge          170-234'//
     +'        Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  2) □[1;34m       Willow         170-236'//
     +'        Willow-birch community'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-2): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .NE. 1 .AND. Sit .NE. 2) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='02'
          Type='02'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE91C1: (Clr) Get of Site name, Type for Churchill 1991*
C*********************************************************************

      SUBROUTINE SITE91C1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                     ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                     ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1991 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m  Golf Lake       172-236'//
     +'      Tundra Lake'')'
      PRINT '('' □[1;31m  2) □[1;34m  Eastern Creek   163-237'//
     +'      River/creek'')'
      PRINT '('' □[1;31m  3) □[1;34m  Ridge           172-235'//
     +'      Raised beach deposit (lichen & heath spp.)'')'
      PRINT '('' □[1;31m  4) □[1;34m  Willow          166-235'//
```

```
     +'      Willow-birch community'')'
      PRINT '('' □[1;31m  5) □[1;34m  Sedge           167-236'//
     +'      Sedge-dominated fen wetland'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-5): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .GT. 5 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='06'
          Type='06'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='11'
          Type='07'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='03'
          Type='03'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='02'
          Type='02'
      ENDIF
      IF(Sit .EQ. 5) THEN
          Site='01'
          Type='01'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE92C1: (Clr) Get of Site name, Type for Churchill 1992*
C*********************************************************************

      SUBROUTINE SITE92C1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1992 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
```

```
      PRINT '('' □[1;31m  1) □[1;34m  Sedge           160-247'//
     +'      Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  2) □[1;34m  Eastern Creek   163-239'//
     +'      River/creek'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-2): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .NE. 1 .AND. Sit .NE. 2) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='11'
          Type='07'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE93C1: (Clr) Get of Site name, Type for Churchill 1993*
C*********************************************************************

      SUBROUTINE SITE93C1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1993 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m  Sedge           165-236'//
     +'      Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  2) □[1;34m  Eastern Creek   168-238'//
     +'      River/creek'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-2): □[1;33m'
      READ*, Sit
```

```
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .NE. 1 .AND. Sit .NE. 2) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='11'
          Type='07'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE94C1: (Clr) Get of Site name, Type for Churchill 1994*
C*********************************************************************

      SUBROUTINE SITE94C1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1994 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '('' ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m Sedge            157-238'//
     +'     Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  2) □[1;34m Mobile Qg Sedge  170-187'//
     +'     Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  3) □[1;34m Mobile Qg Forest 190-206'//
     +'     Spruce-Tamarack forest'')'
      PRINT '('' □[1;31m  4) □[1;34m Mobile Qg Lichen 207-222'//
     +'     Lichen-Heath community (sandy soils)'')'
      PRINT '('' □[1;31m  5) □[1;34m Mobile Qg Willow 222-238'//
     +'     Willow-birch community'')'
      PRINT '('' □[1;31m  6) □[1;34m Eastern Creek    167-238'//
     +'     River/creek'')'
      PRINT '('' □[1;31m  7) □[1;34m RCT-1            145-365'//
     +'     Bedrock covered by boulders and heath'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-7): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour
```

```
      IF ( Sit .GT. 7 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='19'
          Type='01'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='19'
          Type='05'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='19'
          Type='03'
      ENDIF
      IF(Sit .EQ. 5) THEN
          Site='19'
          Type='02'
      ENDIF
      IF(Sit .EQ. 6) THEN
          Site='11'
          Type='07'
      ENDIF
      IF(Sit .EQ. 7) THEN
          Site='08'
          Type='04'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE95C1: (Clr) Get of Site name, Type for Churchill 1995*
C*********************************************************************

      SUBROUTINE SITE95C1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1995 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m    Rocky         178-236'//
     +'      Bedrock covered by boulders and heath'')'
      PRINT '('' □[1;31m  2) □[1;34m    Golf Lake     168-236'//
     +'      Tundra Lake'')'
```

```
      PRINT '('' □[1;31m  3) □[1;34m    Sedge         163-237'//
     +'      Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  4) □[1;34m    Eddy          257-289'//
     +'      Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  5) □[1;34m    RCT-1         001-365'//
     +'      Bedrock covered by boulders and heath'')'
      PRINT '('' □[1;31m  6) □[1;34m    Pfrost        242-365'//
     +'      Sedge-dominated fen wetland'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-6): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .GT. 6 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='04'
          Type='04'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='06'
          Type='06'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='17'
          Type='01'
      ENDIF
      IF(Sit .EQ. 5) THEN
          Site='08'
          Type='04'
      ENDIF
      IF(Sit .EQ. 6) THEN
          Site='16'
          Type='01'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE96C1: (Clr) Get of Site name, Type for Churchill 1996*
C*********************************************************************

      SUBROUTINE SITE96C1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                     ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                     ******************************'
      PRINT*, ' '
      PRINT*, ' '
```

```
      print '(23x,''  □[1;33m Churchill, 1996 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m    Beach         156-236'//
     +'    Raised beach deposit (lichen & heath spp.)'')'
      PRINT '('' □[1;31m  2) □[1;34m    RCT-1         001-366'//
     +'    Bedrock covered by boulders and heath'')'
      PRINT '('' □[1;31m  3) □[1;34m    RCT-2         167-366'//
     +'    Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  4) □[1;34m    Pfrost        001-361'//
     +'    Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  5) □[1;34m    Eddy          002-366'//
     +'    Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  6) □[1;34m    Rodney        162-366'//
     +'    Raised beach deposit (lichen & heath spp.)'')'
      PRINT '('' □[1;31m  7) □[1;34m    Sedge         156-238'//
     +'    Sedge-dominated fen wetland'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-7): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .GT. 7 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='03'
          Type='03'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='08'
          Type='04'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='09'
          Type='01'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='16'
          Type='01'
      ENDIF
      IF(Sit .EQ. 5) THEN
          Site='17'
          Type='01'
      ENDIF
      IF(Sit .EQ. 6) THEN
          Site='23'
          Type='03'
      ENDIF
      IF(Sit .EQ. 7) THEN
          Site='01'
          Type='01'
C         REMOVE THIS LINE WHEN DATA ARE AVAILABLE!!!!!!
          GOTO 888
      ENDIF
```

```
      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE97C1: (Clr) Get of Site name, Type for Churchill 1997*
C*********************************************************************

      SUBROUTINE SITE97C1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1997 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m    RCT-1         001-365'//
     +'    Bedrock covered by boulders and heath'')'
      PRINT '('' □[1;31m  2) □[1;34m    RCT-2         001-365'//
     +'    Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  3) □[1;34m    Eddy          001-043'//
     +'    Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  4) □[1;34m    Rodney        001-043'//
     +'    Raised beach deposit (lichen & heath spp.)'')'
      PRINT '('' □[1;31m  5) □[1;34m    Sedge         155-249'//
     +'    Sedge-dominated fen wetland'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-5): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .GT. 5 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='08'
          Type='04'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='09'
          Type='01'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='17'
          Type='01'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='23'
          Type='03'
```

```
      ENDIF
      IF(Sit .EQ. 5) THEN
          Site='01'
          Type='01'
C         REMOVE THIS LINE WHEN DATA ARE AVAILABLE!!!!!!
          GOTO 888
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE98C1: (Clr) Get of Site name, Type for Churchill 1998*
C*********************************************************************

      SUBROUTINE SITE98C1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1998 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m    RCT-1         001-301'//
     +'    Bedrock covered by boulders and heath'')'
      PRINT '('' □[1;31m  2) □[1;34m    RCT-2         001-365'//
     +'    Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  3) □[1;34m    Sedge         ???-???'//
     +'    Sedge-dominated fen wetland'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-3): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .GT. 3 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='08'
          Type='04'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='09'
          Type='01'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='01'
```

```
          Type='01'
C         REMOVE THIS LINE WHEN DATA ARE AVAILABLE!!!!!!
          GOTO 888
      ENDIF

      RETURN
      END
C     -----------------------------------------------------

C*********************************************************************
C* Subroutine YST1C02: (Clr) Get Year, Site, Type for Marantz (02)     *
C*********************************************************************

      SUBROUTINE YST1C02(Year, Site, Type)

      INTEGER Yr
      CHARACTER*2 Year, Site, Type

777   print '('' □[2J'')'       ! clear the screen
      PRINT*, '                        ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                        ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(12X,'' □[1;32mOVERVIEW OF DATA SETS AVAILABLE'//
     +' FOR MARANTZ L., MB'')'
      PRINT '(13X,''-------------------------------------------'//
     +'------- □[0m'')'
      PRINT*, ' '

      PRINT '(9X,''□[1;31m1) 1984 □[1;34m'')'
      PRINT '(12X,''Marantz□[1;31m'')'
      PRINT*, ' '
      PRINT '(9X,''2) 1985□[1;34m'')'
      PRINT '(12X,''Marantz'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the code for the desired Year (1-2), or'//
     +' 0 for site name details: □[1;33m'
      READ*, Yr
      print '('' □[0m'')'    ! Turn off colour

      IF ( Yr .NE. 1 .AND. Yr .NE. 2 .AND. Yr .NE. 0 ) GOTO 777

      IF ( Yr .EQ. 0 ) THEN
          CALL SITELIST()
          GOTO 777
      ENDIF

C     Map code to character years
      IF(Yr .EQ. 1) THEN
          Year='84'
          CALL MARANTZ84C1(Site,Type)
      ENDIF
```

```
      IF(Yr .EQ. 2) THEN
          Year='85'
          CALL MARANTZ85C1(Site,Type)
      ENDIF

      RETURN
      END
C     -----------------------------------------------------

C*********************************************************************
C* Subroutine MARANTZ84C1: (Clr) Get of Site & Type for Marantz, 1984  *
C*********************************************************************

      SUBROUTINE MARANTZ84C1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                     ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                     ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '(22X,''  □[1;33m Marantz L., 1984 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'---------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m       Marantz        135-231'//
     +'     Lichen-Heath community (deep peat)'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set: □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='21'
          Type='03'
      ENDIF

      RETURN
      END
C     -----------------------------------------------------

C*********************************************************************
C* Subroutine MARANTZ85C1: (Clr) Get of Site & Type for Marantz, 1985  *
C*********************************************************************

      SUBROUTINE MARANTZ85C1(Site, Type)
```

```
      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '(22X,''  □[1;33m Marantz L., 1985 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '

      PRINT '('' □[1;32m CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'---------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m       Marantz        154-258'//
     +'     Lichen-Heath community (deep peat)'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set: □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='21'
          Type='03'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine YST1C03: (Clr) Get Year, Site, Type for Inuvik, NWT (03) *
C*********************************************************************

      SUBROUTINE YST1C03(Year, Site, Type)

      INTEGER Yr
      CHARACTER*2 Year, Site, Type

777   print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(11X,'' □[1;32mOVERVIEW OF DATA SETS AVAILABLE'//
```

```
     +' FOR INUVIK, N.W.T.'')'
      PRINT '(12X,''-----------------------------------------'//
     +'------- □[0m'')'
      PRINT*, ' '

      PRINT '(9X,''□[1;31m1) 1996 □[1;34m'')'
      PRINT '(12X,''Low TVC□[1;31m'')'
      PRINT*, ' '
      PRINT '(9X,''2) 1997□[1;34m'')'
      PRINT '(12X,''Low TVC'')'
      PRINT '(12X,''Upper TVC□[1;31m'')'
      PRINT*, ' '
      PRINT '(9X,''3) 1998□[1;34m'')'
      PRINT '(12X,''Low TVC'')'
      PRINT '(12X,''Upper TVC'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the code for the desired Year (1-3), or'//
     +' 0 for site name details: □[1;33m'
      READ*, Yr
      print '('' □[0m'')'    ! Turn off colour

      IF ( Yr .GT. 3 .OR. Yr .LT. 0 ) GOTO 777

      IF ( Yr .EQ. 0 ) THEN
          CALL SITELIST()
          GOTO 777
      ENDIF

C     Map code to character years
      IF(Yr .EQ. 1) THEN
          Year='96'
          CALL INUVIK96C1(Site,Type)
      ENDIF
      IF(Yr .EQ. 2) THEN
          Year='97'
          CALL INUVIK97C1(Site,Type)
      ENDIF
      IF(Yr .EQ. 3) THEN
          Year='98'
          CALL INUVIK98C1(Site,Type)
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine INUVIK96C1: (Clr) Get of Site & Type for Inuvik, 1996    *
C*********************************************************************

      SUBROUTINE INUVIK96C1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                     ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'
```

```
      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '(14X,''  [1;33m Inuvik (Trail Valley Creek), 1996 Data'//
     +'Sets[0m'')'
      PRINT*, ' '
      PRINT*, ' '

      PRINT '('' [1;32m CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'---------------------------- [0m'')'
      PRINT*, ' '
      PRINT '('' [1;31m  1) [1;34m      Low TVC         143-366'//
     +'          Sedge-dominated lowland'')'

      print '('' [0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set: [1;33m'
      READ*, Sit
      print '('' [0m'')'    ! Turn off colour

      IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='18'
          Type='01'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine INUVIK97C1: (Clr) Get of Site & Type for Inuvik, 1997    *
C*********************************************************************

      SUBROUTINE INUVIK97C1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' [2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  [1;33mClimoBase Extractor V2.0[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '(14X,''  [1;33m Inuvik (Trail Valley Creek), 1997 Data'//
     +'Sets[0m'')'
      PRINT*, ' '
      PRINT*, ' '

      PRINT '('' [1;32m CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
```

```
     +'---------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m      Low TVC         001-365'//
     +'         Sedge-dominated lowland'')'
      PRINT '('' □[1;31m  2) □[1;34m      Upper TVC       140-365'//
     +'         Willow-birch covered upland'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-2): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .NE. 1 .AND. Sit .NE. 2) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='18'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='22'
          Type='02'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine INUVIK98C1: (Clr) Get of Site & Type for Inuvik, 1998    *
C*********************************************************************

      SUBROUTINE INUVIK98C1(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '(14X,''  □[1;33m Inuvik (Trail Valley Creek), 1998 Data'//
     +'Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '

      PRINT '('' □[1;32m CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '('' ---- ------------------- ---------  -----------'//
     +'---------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m      Low TVC         001-229'//
     +'         Sedge-dominated lowland'')'
      PRINT '('' □[1;31m  2) □[1;34m      Upper TVC       001-229'//
     +'         Willow-birch covered upland'')'
```

```
      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-2): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .NE. 1 .AND. Sit .NE. 2) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='18'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='22'
          Type='02'
      ENDIF

      RETURN
      END


C***********************************************************************
C* Subroutine CLRCODE3: (Colour) Seasonal filename determination screen*
C***********************************************************************

      SUBROUTINE CLRCODE3(filename)

      INTEGER Begin, Endd, Numb, Contig1, Var, Loc
      INTEGER Days1(10,2)
      CHARACTER*2 Where, Site, Type, Year
      CHARACTER filename*8

      print '('' □[2J'')'       ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      print '(25x,'' □[1;34m(c) Dale Boudreau, 1999 □[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(20x,'' □[1;32mGEOGRAPHICAL LOCATION OF DATA SETS'')'
      PRINT '(20x,'' ---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '(21x,'' □[1;34m(1) Churchill, Manitoba, CANADA'')'
      PRINT '(21x,'' (2) Marantz Lake, Manitoba, CANADA'')'
      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '

555   PRINT*, ' Enter the location of the data set: □[1;33m'
      READ*, Loc
      print '('' □[0m'')'    ! Turn off colour

      IF ( Loc .GT. 2 .OR. Loc .LT. 1 ) GOTO 555
```

```
      IF(Loc .EQ. 1) THEN
          Where='01'
          CALL YST3C01 (Year, Site, Type)  ! Get Year, Site, Type (Churchill)
      ENDIF
      IF(Loc .EQ. 2) THEN
          Where='02'
          CALL YST3C02 (Year, Site, Type)  ! Get Year, Site, Type (Marantz)
      ENDIF

      filename=Where//Site//Type//Year

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine YST3C01: (Clr) Get Year, Site, Type for Churchill (01)   *
C*********************************************************************

      SUBROUTINE YST3C01(Year, Site, Type)

      INTEGER Yr
      CHARACTER*2 Year, Site, Type


777   PRINT '('' □[2J'')'       ! clear the screen
      PRINT*, ' '
      PRINT '(14X,'' □[1;32mOVERVIEW OF DATA SETS AVAILABLE'//
     +' FOR CHURCHILL, MB'')'
      PRINT '(14X,'' ------------------------------------------'//
     +'------ □[0m'')'
      PRINT*, ' '

      PRINT '(6X,''□[1;31m1) 1984       5) 1991              '//
     +'8) 1994            11) 1997□[1;34m'')'
      PRINT '(9X,''Main          Golf L.              '//
     +'Sedge               RCT-1'')'
      PRINT '(9X,''              E. Creek             '//
     +'E. Creek Basin      Sedge□[1;31m'')'
      PRINT'(6X,''2) 1985□[1;34m          E. Creek Basin       RCT-1'')'
      PRINT '(9X,''Main          Willow□[1;31m'//
     +'                                12) 1998□[1;34m'')'
      PRINT '(9X,''              Sedge'//
     +'                                     RCT-1□[1;31m'')'
      PRINT '(6X,''3) 1987□[1;34m'//
     +'                                                Sedge'')'
      PRINT '(9X,''Site1□[1;31m      6) 1992              '//
     +'9) 1995□[1;34m'')'
      PRINT '(9X,''Site2         Sedge                Golf L.'')'
      PRINT '(9X,''Site3         E. Creek             Sedge'')'
      PRINT '(9X,''Site4         E. Creek Basin       RCT-1□[1;31m'')'
      PRINT*, ' '
      PRINT '(6X,''4) 1990       7) 1993             10) 1996'')'
      PRINT '(8X,'' □[1;34mSedge         Sedge                Beach'')'
      PRINT '(9X,''Willow        E. Creek             RCT-1'')'
      PRINT '(9X,''              E. Creek Basin       Sedge'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '

      PRINT*, ' Enter the code for the desired Year (1-12), or'//
     +' 0 for site name details: □[1;33m'
      READ*, Yr
```

```
      print '('' □[0m'')'    ! Turn off colour

      IF ( Yr .GT. 12 .OR. Yr .LT. 0 ) GOTO 777

      IF ( Yr .EQ. 0 ) THEN
          CALL SITELIST()
          GOTO 777
      ENDIF

C     Map code to character years
      IF(Yr .EQ. 1) THEN
          Year='84'
          CALL SITE84C3(Site,Type)
      ENDIF
      IF(Yr .EQ. 2) THEN
          Year='85'
          CALL SITE85C3(Site,Type)
      ENDIF
      IF(Yr .EQ. 3) THEN
          Year='87'
          CALL SITE87C3(Site,Type)
      ENDIF
      IF(Yr .EQ. 4) THEN
          Year='90'
          CALL SITE90C3(Site,Type)
      ENDIF
      IF(Yr .EQ. 5) THEN
          Year='91'
          CALL SITE91C3(Site,Type)
      ENDIF
      IF(Yr .EQ. 6) THEN
          Year='92'
          CALL SITE92C3(Site,Type)
      ENDIF
      IF(Yr .EQ. 7) THEN
          Year='93'
          CALL SITE93C3(Site,Type)
      ENDIF
      IF(Yr .EQ. 8) THEN
          Year='94'
          CALL SITE94C3(Site,Type)
      ENDIF
      IF(Yr .EQ. 9) THEN
          Year='95'
          CALL SITE95C3(Site,Type)
      ENDIF
      IF(Yr .EQ. 10) THEN
          Year='96'
          CALL SITE96C3(Site,Type)
      ENDIF
      IF(Yr .EQ. 11) THEN
          Year='97'
          CALL SITE97C3(Site,Type)
      ENDIF
      IF(Yr .EQ. 12) THEN
          Year='98'
          CALL SITE98C3(Site,Type)
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
```

```
C* Subroutine SITE84C3: (Clr) Get of Site name, Type for Churchill 1984*
C***********************************************************************

      SUBROUTINE SITE84C3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                     ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                     ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1984 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'---------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m         Main         135-234'//
     +'   Sparse Vegetation (Short grass & heath)'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set: □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='20'
          Type='09'
      ENDIF

      RETURN
      END
C     ------------------------------------------------------

C***********************************************************************
C* Subroutine SITE85C3: (Clr) Get of Site name, Type for Churchill 1985*
C***********************************************************************

      SUBROUTINE SITE85C3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                     ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                     ******************************'
      PRINT*, ' '
      PRINT*, ' '
```

```
      print '(23x,''  □[1;33m Churchill, 1985 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'---------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m         Main         113-265'//
     +'   Sparse Vegetation (Short grass & heath)'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set: □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='20'
          Type='09'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE87C3: (Clr) Get of Site name, Type for Churchill 1987*
C*********************************************************************

      SUBROUTINE SITE87C3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1987 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m     Site 1       152-227'//
     +'   Coastal Marsh (tall grass/sedge & sandy soils)'')'
      PRINT '('' □[1;31m  2) □[1;34m     Site 2       152-227'//
     +'   Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  3) □[1;34m     Site 3       152-225'//
     +'   Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  4) □[1;34m     Site 4       152-225'//
```

```
     +'   Sedge-dominated fen wetland (long-term site)'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-4): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .GT. 4 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='12'
          Type='10'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='13'
          Type='01'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='14'
          Type='01'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='01'
          Type='01'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE90C3: (Clr) Get of Site name, Type for Churchill 1990*
C*********************************************************************

      SUBROUTINE SITE90C3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1990 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'---------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m       Sedge          170-234'//
     +'        Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  2) □[1;34m       Willow         170-236'//
     +'        Willow-birch community'')'

      print '('' □[0m'')'    ! Turn off colour
```

```
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-2): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .LT. 1 .OR. Sit .GT. 2) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='02'
          Type='02'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C***********************************************************************
C* Subroutine SITE91C3: (Clr) Get of Site name, Type for Churchill 1991*
C***********************************************************************

      SUBROUTINE SITE91C3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1991 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m  Golf Lake       172-236'//
     +'      Tundra Lake'')'
      PRINT '('' □[1;31m  2) □[1;34m  Eastern Creek   160-233'//
     +'      River/creek'')'
      PRINT '('' □[1;31m  3) □[1;34m  E. Creek Basin  160-236'//
     +'      Entire drainage basin (wells & rainfall)'')'
      PRINT '('' □[1;31m  4) □[1;34m  Willow          166-235'//
     +'      Willow-birch community'')'
      PRINT '('' □[1;31m  5) □[1;34m  Sedge           166-237'//
     +'      Sedge-dominated fen wetland'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
```

```
888   PRINT*, ' Enter the CODE for the desired data set (1-5): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .GT. 5 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='06'
          Type='06'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='11'
          Type='07'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='15'
          Type='08'
      ENDIF
      IF(Sit .EQ. 4) THEN
          Site='02'
          Type='02'
      ENDIF
      IF(Sit .EQ. 5) THEN
          Site='01'
          Type='01'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE92C3: (Clr) Get of Site name, Type for Churchill 1992*
C*********************************************************************

      SUBROUTINE SITE92C3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1992 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m  Sedge           160-247'//
     +'      Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  2) □[1;34m  Eastern Creek   163-239'//
     +'      River/creek'')'
      PRINT '('' □[1;31m  3) □[1;34m  E. Creek Basin  163-239'//
     +'      Entire drainage basin (wells & rainfall)'')'

      print '('' □[0m'')'    ! Turn off colour
```

```
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-3): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .NE. 1 .AND. Sit .NE. 2 .AND. Sit .NE. 3 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='11'
          Type='07'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='15'
          Type='08'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE93C3: (Clr) Get of Site name, Type for Churchill 1993*
C*********************************************************************

      SUBROUTINE SITE93C3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                     ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                     ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1993 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m  Sedge           165-236'//
     +'      Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  2) □[1;34m  Eastern Creek   171-238'//
     +'      River/creek'')'
      PRINT '('' □[1;31m  3) □[1;34m  E. Creek Basin  171-238'//
     +'      Entire drainage basin (wells & rainfall)'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-3): □[1;33m'
      READ*, Sit
```

```
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .NE. 1 .AND. Sit .NE. 2 .AND. Sit .NE. 3 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='11'
          Type='07'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='15'
          Type='08'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C***********************************************************************
C* Subroutine SITE94C3: (Clr) Get of Site name, Type for Churchill 1994*
C***********************************************************************

      SUBROUTINE SITE94C3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1994 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m Sedge            157-238'//
     +'     Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  2) □[1;34m E. Creek Basin   167-238'//
     +'     Entire drainage basin (wells & rainfall)'')'
      PRINT '('' □[1;31m  3) □[1;34m RCT-1            145-365'//
     +'     Bedrock covered by boulders and heath'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-3): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .GT. 3 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
```

```
          Site='01'
          Type='01'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='15'
          Type='08'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='08'
          Type='04'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine SITE95C3: (Clr) Get of Site name, Type for Churchill 1995*
C*********************************************************************

      SUBROUTINE SITE95C3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                     ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                     ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1995 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m    Golf Lake     168-236'//
     +'      Tundra Lake'')'
      PRINT '('' □[1;31m  2) □[1;34m    Sedge         163-237'//
     +'      Sedge-dominated fen wetland'')'
      PRINT '('' □[1;31m  3) □[1;34m    RCT-1         001-365'//
     +'      Bedrock covered by boulders and heath'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-3): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .GT. 3 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='06'
          Type='06'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='01'
```

```
          Type='01'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='08'
          Type='04'
      ENDIF

      RETURN
      END
C     -----------------------------------------------------

C*********************************************************************
C* Subroutine SITE96C3: (Clr) Get of Site name, Type for Churchill 1996*
C*********************************************************************

      SUBROUTINE SITE96C3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                    ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                    ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1996 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m    Beach         156-236'//
     +'    Raised beach deposit (lichen & heath spp.)'')'
      PRINT '('' □[1;31m  2) □[1;34m    RCT-1         001-366'//
     +'    Bedrock covered by boulders and heath'')'
      PRINT '('' □[1;31m  3) □[1;34m    Sedge         156-238'//
     +'    Sedge-dominated fen wetland'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-3): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .GT. 3 .OR. Sit .LT. 1 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='03'
          Type='03'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='08'
          Type='04'
      ENDIF
      IF(Sit .EQ. 3) THEN
          Site='01'
          Type='01'
```

```
C         REMOVE THIS LINE WHEN DATA ARE AVAILABLE!!!!!!
           GOTO 888
       ENDIF

       RETURN
       END
C     ---------------------------------------------------

C*********************************************************************
C* Subroutine SITE97C3: (Clr) Get of Site name, Type for Churchill 1997*
C*********************************************************************

       SUBROUTINE SITE97C3(Site, Type)

       INTEGER Sit
       CHARACTER*2 Site, Type

       print '('' □[2J'')'       ! clear the screen
       PRINT*, '                      ******************************'
       print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

       PRINT*, '                      ******************************'
       PRINT*, ' '
       PRINT*, ' '
       print '(23x,''  □[1;33m Churchill, 1997 Data Sets□[0m'')'
       PRINT*, ' '
       PRINT*, ' '
       PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
       PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
       PRINT*, ' '
       PRINT '('' □[1;31m  1) □[1;34m    RCT-1         001-365'//
     +'    Bedrock covered by boulders and heath'')'
       PRINT '('' □[1;31m  2) □[1;34m    Sedge         155-249'//
     +'    Sedge-dominated fen wetland'')'

       print '('' □[0m'')'    ! Turn off colour
       PRINT*, ' '
       PRINT*, ' '
       PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-2): □[1;33m'
       READ*, Sit
       print '('' □[0m'')'    ! Turn off colour

       IF ( Sit .LT. 1 .OR. Sit .GT. 2 ) GOTO 888

C     Map code to character years
       IF(Sit .EQ. 1) THEN
           Site='08'
           Type='04'
       ENDIF
       IF(Sit .EQ. 2) THEN
           Site='01'
           Type='01'
C         REMOVE THIS LINE WHEN DATA ARE AVAILABLE!!!!!!
           GOTO 888
       ENDIF

       RETURN
       END
C     ---------------------------------------------------
```

```
C*********************************************************************
C* Subroutine SITE98C3: (Clr) Get of Site name, Type for Churchill 1998*
C*********************************************************************

      SUBROUTINE SITE98C3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '(23x,''  □[1;33m Churchill, 1998 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE    SITE NAME    DATA SPAN          '//
     +'        TERRAIN TYPE'')'
      PRINT '(''  ---- --------------- ---------  -----------'//
     +'---------------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m    RCT-1         001-301'//
     +'    Bedrock covered by boulders and heath'')'
      PRINT '('' □[1;31m  2) □[1;34m    Sedge         ???-???'//
     +'    Sedge-dominated fen wetland'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set (1-2): □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .LT. 1 .OR. Sit .GT. 2 ) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='08'
          Type='04'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='01'
          Type='01'
C         REMOVE THIS LINE WHEN DATA ARE AVAILABLE!!!!!!
          GOTO 888
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine YST3C02: (Clr) Get Year, Site, Type for Marantz (02)     *
C*********************************************************************

      SUBROUTINE YST3C02(Year, Site, Type)

      INTEGER Yr
      CHARACTER*2 Year, Site, Type
```

```
777   print '('' □[2J'')'       ! clear the screen
      PRINT*, '                     ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                     ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(12X,'' □[1;32mOVERVIEW OF DATA SETS AVAILABLE'//
     +' FOR MARANTZ L., MB'')'
      PRINT '(13X,''-------------------------------------------'//
     +'------- □[0m'')'
      PRINT*, ' '
      PRINT*, ' '

      PRINT '(9X,''□[1;31m1) 1984 □[1;34m'')'
      PRINT '(12X,''Marantz□[1;31m'')'
      PRINT*, ' '
      PRINT '(9X,''2) 1985□[1;34m'')'
      PRINT '(12X,''Marantz'')'
      PRINT '(12X,''Waterhole L.'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the code for the desired Year (1-2), or'//
     +' 0 for site name details: □[1;33m'
      READ*, Yr

      print '('' □[0m'')'    ! Turn off colour

      IF ( Yr .LT. 0 .OR. Yr .GT. 2 ) GOTO 777

      IF ( Yr .EQ. 0 ) THEN
          CALL SITELIST()
          GOTO 777
      ENDIF

C     Map code to character years
      IF(Yr .EQ. 1) THEN
          Year='84'
          CALL MARANTZ84C3(Site,Type)
      ENDIF
      IF(Yr .EQ. 2) THEN
          Year='85'
          CALL MARANTZ85C3(Site,Type)
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine MARANTZ84C3: (Clr) Get of Site & Type for Marantz, 1984  *
C*********************************************************************

      SUBROUTINE MARANTZ84C3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type
```

```
      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '(22X,''  □[1;33m Marantz L., 1984 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;32m CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
      PRINT '(''  ---- ------------------- ---------  -----------'//
     +'---------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m       Marantz        135-231'//
     +'     Lichen-Heath community (deep peat)'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set: □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .NE. 1) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='21'
          Type='03'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------

C*********************************************************************
C* Subroutine MARANTZ85C3: (Clr) Get of Site & Type for Marantz, 1985  *
C*********************************************************************

      SUBROUTINE MARANTZ85C3(Site, Type)

      INTEGER Sit
      CHARACTER*2 Site, Type

      print '('' □[2J'')'       ! clear the screen
      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      print '(22X,''  □[1;33m Marantz L., 1985 Data Sets□[0m'')'
      PRINT*, ' '
      PRINT*, ' '

      PRINT '('' □[1;32m CODE      SITE NAME      DATA SPAN          '//
     +'     TERRAIN TYPE'')'
```

```
      PRINT '('' ---- ------------------- ---------  -----------'//
     +'---------------------------- □[0m'')'
      PRINT*, ' '
      PRINT '('' □[1;31m  1) □[1;34m       Marantz        154-258'//
     +'     Lichen-Heath community (deep peat)'')'
      PRINT '('' □[1;31m  2) □[1;34m       Waterhole L.   166-228'//
     +'     Tundra lake'')'

      print '('' □[0m'')'    ! Turn off colour
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

888   PRINT*, ' Enter the CODE for the desired data set: □[1;33m'
      READ*, Sit
      print '('' □[0m'')'    ! Turn off colour

      IF ( Sit .LT. 1 .OR. Sit .GT. 2) GOTO 888

C     Map code to character years
      IF(Sit .EQ. 1) THEN
          Site='21'
          Type='03'
      ENDIF
      IF(Sit .EQ. 2) THEN
          Site='24'
          Type='06'
      ENDIF

      RETURN
      END
C     -------------------------------------------------------


C*********************************************************************
C* Subroutine CLRDAY: Paint the second colour screen and get 'drive'   *
C*********************************************************************

      SUBROUTINE CLRDAY(drive)

      CHARACTER*1 drive

      print '('' □[2J'')'       ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;31;5mNote:□[0m Output files'//
     +' will be written to the □[1;34mC:\DATAOUT\DAILY\'//
     +' □[0mdirectory.'')'
      PRINT*, '      Logfiles will be written to the'//
     +' □[1;34mC:\DATAOUT\DAILY\LOGFILES\□[0m directory.'
      PRINT*, '      If these directories do not exist,'//
     +' please create them now'
      PRINT*, '      (press CTRL and C to quit) or run SETUP.BAT'
      PRINT*, ' '
      PRINT*, ' '
      print '('' □[1;31;5mNote:□[0m Bad or missing data will be'//
     +' flagged with □[1;31m-6999□[0m'')'
```

```
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

C     Opening input and output files
      PRINT*, ' What is the input'//
     +' device (e.g. ZIP100, CD-ROM, HD) drive LETTER (e.g. E)?□[1;33m '

      READ*, drive
      print '('' □[0m□[2J'')'    ! reset colours and clear the screen

      RETURN
      END


C*********************************************************************
C* Subroutine CLRDAY1: (Colour) User input (dataset, start, end...)    *
C*********************************************************************

      SUBROUTINE CLRDAY1(Begin, Endd, Out, Contig1, Days1, Mode,
     +                   NwHeader2)
      INTEGER Begin, Endd, Contig1, Mode
      INTEGER Days1(10,2)
      CHARACTER*3 Out
      CHARACTER*11 NwHeader2(110)

333   print '('' □[2J'')'       ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      print '(25x,'' □[1;34m(c) Dale Boudreau, 1999 □[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the output filename suffix'//
     +' (3 characters, e.g. Tw4) or'
      PRINT*, ' type □[1;33mLST□[0m for a variable list: □[1;33m'
      READ*, Out

      IF(Out .EQ. 'LST' .OR. Out .EQ. 'lst') THEN
          CALL CVARLIST(NwHeader2)
          GOTO 333
      ENDIF

444   PRINT 15, Days1(1,1), Days1(Contig1,2)
15    FORMAT('  □[0mWhat day of the year do you want to begin with? ('
     +,I3.3,'-',I3.3,') □[1;33m')
      READ*, Begin
      print '('' □[0m'')'    ! Turn off colour
      IF ( Begin .LT. Days1(1,1) .OR. Begin .GT. Days1(Contig1,2)) THEN
          GOTO 444
      ENDIF

555   PRINT 20, Days1(1,1), Days1(Contig1,2)
20    FORMAT('  What is the final day? (',I3.3,'-',I3.3,') □[1;33m')
      READ*, Endd
      print '('' □[0m'')'    ! Turn off colour
```

```
      IF ( Endd .GT. Days1(Contig1,2) .OR. Endd .LE. Begin ) GOTO 555

560   PRINT*, ' Do you want AVERAGES (press 1) or TOTALS'//
     +' (press 2)? □[1;33m'
      READ*, mode
      print '('' □[0m'')'    ! Turn off colour
      IF( Mode .NE. 1 .AND. Mode .NE. 2) GOTO 560

      print '('' □[0m'')'    ! Turn off colour
      print '('' □[2J'')'    ! clear the screen

      RETURN
      END


C*********************************************************************
C* Subroutine CLRDAY2: (Colour) User input (dataset, start, end...)    *
C*********************************************************************

      SUBROUTINE CLRDAY2(Out, Mode, NwHeader2)

      INTEGER Mode
      CHARACTER*3 Out
      CHARACTER*11 NwHeader2(110)

333   print '('' □[2J'')'       ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      print '(25x,'' □[1;34m(c) Dale Boudreau, 1999 □[0m'')'

      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the output filename suffix'//
     +' (3 characters, e.g. Tw4) or'
      PRINT*, ' type □[1;33mLST□[0m for a variable list: □[1;33m'
      READ*, Out

      IF(Out .EQ. 'LST' .OR. Out .EQ. 'lst') THEN
          CALL CVARLIST(NwHeader2)
          GOTO 333
      ENDIF

560   PRINT*, ' □[0mDo you want AVERAGES (press 1) or TOTALS'//
     +' (press 2)? □[1;33m'
      READ*, Mode
      print '('' □[0m'')'    ! Turn off colour
      IF( Mode .NE. 1 .AND. Mode .NE. 2) GOTO 560

      print '('' □[0m'')'    ! Turn off colour
      print '('' □[2J'')'    ! clear the screen

      RETURN
      END


C*********************************************************************
```

```
C* Subroutine CLRHALF: Paint the second colour screen and get 'drive'  *
C***********************************************************************

      SUBROUTINE CLRHALF(drive)

      CHARACTER*1 drive

      print '('' □[2J'')'       ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;31;5mNote:□[0m Output files'//
     +' will be written to the □[1;34mC:\DATAOUT\HALFHOUR\'//
     +' □[0mdirectory.'')'
      PRINT*, '      Logfiles will be written to the'//
     +' □[1;34mC:\DATAOUT\HALFHOUR\LOGFILES\□[0m directory.'
      PRINT*, '      If these directories do not exist,'//
     +' please create them now'
      PRINT*, '      (press CTRL and C to quit) or run SETUP.BAT'
      PRINT*, ' '
      PRINT*, ' '
      print '('' □[1;31;5mNote:□[0m Bad or missing data will be'//
     +' flagged with □[1;31m-6999□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

C     Opening input and output files
      PRINT*, ' What is the input'//
     +' device (e.g. ZIP100, CD-ROM, HD) drive LETTER (e.g. E)?□[1;33m '

      READ*, drive
      print '('' □[0m□[2J'')'    ! reset colours and clear the screen

      RETURN
      END


C***********************************************************************
C* Subroutine CLRHALF1: (Colour) User input (dataset, start, end...)   *
C***********************************************************************

      SUBROUTINE CLRHALF1(Begin, Endd, Out, Contig1, Days1, NwHeader2)

      INTEGER Begin, Endd, Contig1
      INTEGER Days1(10,2)
      CHARACTER*3 Out
      CHARACTER*11 NwHeader2(110)

333   print '('' □[2J'')'       ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'
```

```
      PRINT*, '                      ******************************'
      PRINT*, ' '
      print '(25x,'' □[1;34m(c) Dale Boudreau, 1999 □[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the output filename suffix'//
     +' (3 characters, e.g. Tw4) or'
      PRINT*, ' type □[1;33mLST□[0m for a variable list: □[1;33m'
      READ*, Out

      IF(Out .EQ. 'LST' .OR. Out .EQ. 'lst') THEN
          CALL CVARLIST(NwHeader2)
          GOTO 333
      ENDIF

444   PRINT 15, Days1(1,1), Days1(Contig1,2)
15    FORMAT('  □[0mWhat day of the year do you want to begin with? (',
     +I3.3,'-',I3.3,') □[1;33m')
      READ*, Begin
      print '('' □[0m'')'    ! Turn off colour
      IF ( Begin .LT. Days1(1,1) .OR. Begin .GT. Days1(Contig1,2)) THEN
          GOTO 444
      ENDIF

555   PRINT 20, Days1(1,1), Days1(Contig1,2)
20    FORMAT('  What is the final day? (',I3.3,'-',I3.3,') □[1;33m')
      READ*, Endd
      print '('' □[0m'')'    ! Turn off colour
      IF ( Endd .GT. Days1(Contig1,2) .OR. Endd .LE. Begin ) GOTO 555

      print '('' □[0m'')'    ! Turn off colour
      print '('' □[2J'')'    ! clear the screen

      RETURN
      END


C*********************************************************************
C* Subroutine CLRHALF2: (Colour) User input (dataset, start, end...)   *
C*********************************************************************

      SUBROUTINE CLRHALF2(Out, NwHeader2)

      CHARACTER*3 Out
      CHARACTER*11 NwHeader2(110)

750   print '('' □[2J'')'       ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      print '(25x,'' □[1;34m(c) Dale Boudreau, 1999 □[0m'')'

      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the output filename suffix'//
```

```
     +' (3 characters, e.g. Tw4) or'
      PRINT*, ' type □[1;33mLST□[0m for a variable list: □[1;33m'
      READ*, Out

      IF(Out .EQ. 'LST' .OR. Out .EQ. 'lst') THEN
          CALL CVARLIST(NwHeader2)
          GOTO 750
      ENDIF

      print '('' □[0m'')'    ! Turn off colour
      print '('' □[2J'')'    ! clear the screen

      RETURN
      END


C*********************************************************************
C* Subroutine CLRSCRN1: Paint the first colour screen and get type of  *
C*                      extraction:                                    *
C*                      1. A Seasonal file of descrete daily values    *
C*                      2. A file of daily averages (from hour/minute  *
C*                         data)                                       *
C*                      3. A file of ALL measured data (hourly, 30-    *
C*                         minute, 15-minute, etc.)                    *

C*********************************************************************

      SUBROUTINE CLRSCRN1(DayHalf)

      INTEGER DayHalf

      print '('' □[2J'')'       ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      print '('' □[1;31;5mNote:□[0m If the screen is not clearing'//
     +' properly and colours are not present, '')'
      PRINT*, '      make sure that ANSI.SYS is in the C:\WINDOWS\'//
     +'COMMAND\ directory.'
      PRINT*, '      Also be sure that "DEVICE=C:\WINDOWS\COMMAND\'//
     +'ANSI.SYS" is in the '
      PRINT*, '      CONFIG.SYS file.  Note that some of the above'//
     +' is performed when the'
      PRINT*, '      INSTALL1.BAT file is run.  If all else fails, '//
     +'restart the extractor'
      PRINT*, '      and choose the B&W display type.'
      PRINT*, ' '
      PRINT*, ' '
      print '('' □[1;31;5mSelect:□[0m EXTRACTION OPTIONS '//
     +'(for selected variables):'')'
      PRINT*, ' '
      print '(12X'' □[1;34m1) A file of □[1;33mall□[1;34m measured'//
     +' data (e.g. 30-minute values)'')'
      print '(12X'' 2) A file of □[1;33mdaily□[1;34m averages/'//
     +'totals (from hour/minute data)'')'
      print '(12X'' 3) A □[1;33mSeasonal□[1;34m file of discrete'//
     +' daily values□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
```

```
      PRINT*, ' '
222   print '('' □[1;31;5mEnter:□[0m Type your selection (1, 2'//
     +' or 3)□[1;33m '')'
      READ*, DayHalf
      IF(DayHalf .NE. 1 .AND. DayHalf .NE. 2 .AND. DayHalf .NE. 3) THEN
          GOTO 222
      ENDIF

      print '('' □[0m□[2J'')'    ! reset colours and clear the screen

      RETURN
      END


C*********************************************************************
C* Subroutine CLRSEAS: Paint the second colour screen and get 'drive'  *
C*********************************************************************

      SUBROUTINE CLRSEAS(drive)

      CHARACTER*1 drive

      print '('' □[2J'')'       ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT '('' □[1;31;5mNote:□[0m Output files'//
     +' will be written to the □[1;34mC:\DATAOUT\SEASONAL\'//
     +' □[0mdirectory.'')'
      PRINT*, '      If this directory does not exist,'//
     +' please create it now'
      PRINT*, '      (press CTRL and C to quit) or run SETUP.BAT'

      PRINT*, ' '
      PRINT*, ' '
      print '('' □[1;31;5mNote:□[0m Bad or missing data will be'//
     +' flagged with □[1;31m-6999□[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

C     Opening input and output files
      PRINT*, ' What is the input'//
     +' device (e.g. ZIP100, CD-ROM, HD) drive LETTER (e.g. E)?□[1;33m '

      READ*, drive
      print '('' □[0m□[2J'')'    ! reset colours and clear the screen

      RETURN
      END
```

```
C*********************************************************************
C* Subroutine CLRSEAS2: (Colour) User input: Output filename          *
C*********************************************************************

      SUBROUTINE CLRSEAS2(Out, NwHeader2)

      CHARACTER*3 Out
      CHARACTER*11 NwHeader2(110)

333   print '('' □[2J'')'       ! clear the screen

      PRINT*, '                      ******************************'
      print '(23x,''*  □[1;33mClimoBase Extractor V2.0□[0m  *'')'

      PRINT*, '                      ******************************'
      PRINT*, ' '
      print '(25x,'' □[1;34m(c) Dale Boudreau, 1999 □[0m'')'
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '

      PRINT*, ' Enter the output filename suffix'//
     +' (3 characters, e.g. Tw4) or'
      PRINT*, ' type □[1;33mLST□[0m for a variable list: □[1;33m'
      READ*, Out

      IF(Out .EQ. 'LST' .OR. Out .EQ. 'lst') THEN
          CALL CVARLIST(NwHeader2)
          GOTO 333
      ENDIF

      print '('' □[0m'')'    ! Turn off colour
      print '('' □[2J'')'    ! clear the screen

      RETURN
      END


C*********************************************************************
C* Subroutine CONTDAYS: Determine contiguous periods after user input  *
C*********************************************************************

      SUBROUTINE CONTDAYS(Contig1, Contig2, Start, Finish, Begin, Endd,
     +                    Days1, Days2)

      INTEGER loop, Contig1, Contig2, Start, Finish, Begin, Endd
      INTEGER Days1(10,2), Days2(10,2)

      Days2(1,1) = 0

      IF(Contig1 .EQ. 2) THEN
          IF(Begin .GT. Days1(1,2) .AND. Begin .LT. Days1(2,1)) THEN
               Begin = Days1(2,1)
          ENDIF
          IF(Endd .GT. Days1(1,2) .AND. Endd .LT. Days1(2,1)) THEN
               Endd = Days1(1,2)
               IF( Endd .LT. Begin) Endd = Days1(2,2)
          ENDIF
      ENDIF

      IF(Contig1 .EQ. 3) THEN
          IF(Begin .GT. Days1(1,2) .AND. Begin .LT. Days1(2,1)) THEN
```

```
            Begin = Days1(2,1)
        ENDIF
        IF(Begin .GT. Days1(2,2) .AND. Begin .LT. Days1(3,1)) THEN
            Begin = Days1(3,1)
        ENDIF
        IF(Endd .GT. Days1(1,2) .AND. Endd .LT. Days1(2,1)) THEN
            Endd = Days1(1,2)
            IF( Endd .LT. Begin) Endd = Days1(2,2)
        ENDIF
        IF(Endd .GT. Days1(2,2) .AND. Endd .LT. Days1(3,1)) THEN
            Endd = Days1(2,2)
            IF( Endd .LT. Begin) Endd = Days1(3,2)
        ENDIF
    ENDIF

    IF(Contig1 .EQ. 4) THEN
        IF(Begin .GT. Days1(1,2) .AND. Begin .LT. Days1(2,1)) THEN
            Begin = Days1(2,1)
        ENDIF
        IF(Begin .GT. Days1(2,2) .AND. Begin .LT. Days1(3,1)) THEN
            Begin = Days1(3,1)
        ENDIF
        IF(Begin .GT. Days1(3,2) .AND. Begin .LT. Days1(4,1)) THEN
            Begin = Days1(4,1)
        ENDIF
        IF(Endd .GT. Days1(1,2) .AND. Endd .LT. Days1(2,1)) THEN
            Endd = Days1(1,2)
            IF( Endd .LT. Begin) Endd = Days1(2,2)
        ENDIF
        IF(Endd .GT. Days1(2,2) .AND. Endd .LT. Days1(3,1)) THEN
            Endd = Days1(2,2)
            IF( Endd .LT. Begin) Endd = Days1(3,2)
        ENDIF
        IF(Endd .GT. Days1(2,2) .AND. Endd .LT. Days1(4,1)) THEN
            Endd = Days1(3,2)
            IF( Endd .LT. Begin) Endd = Days1(4,2)
        ENDIF
    ENDIF


    Contig2 = 1
    DO 100 loop= 1,contig1
        IF( Begin .GE. Days1(loop,1) .AND. Begin .LE. Days1(loop,2) )
     +     Days2(1,1) = begin

        IF( Days2(1,1) .GT. 0 .AND. Contig2 .GT. 1 )
     +     Days2(Contig2,1) = Days1(Loop,1)

        IF(Endd .LE. Days1(loop,2) ) THEN
            Days2(Contig2,2) = Endd
            GOTO 200
        ENDIF

        IF( Days2(1,1) .GT. 0 ) THEN
            Days2(Contig2,2) = Days1(loop,2)
            Contig2 = Contig2 + 1
        ENDIF
100   CONTINUE

200   RETURN
      END
C---------------------- End of CONTDAYS Subroutine --------------------
```

```
C*********************************************************************
C* Subroutine CVARLIST: (Colour) Display variables                   *
C*********************************************************************

      SUBROUTINE CVARLIST(NwHeader2)

      CHARACTER Key
      CHARACTER*11 NwHeader2(110)

444   print '('' □[2J'')'       ! clear the screen

      PRINT '(26X,'' □[1;32m    VARIABLE LIST'')'
      PRINT '(26X,''     ------------- □[0m'')'

      PRINT 301, NwHeader2(1), NwHeader2(23), NwHeader2(45),
     +           NwHeader2(67), NwHeader2(89)
      PRINT 302, NwHeader2(2), NwHeader2(24), NwHeader2(46),
     +           NwHeader2(68), NwHeader2(90)
      PRINT 303, NwHeader2(3), NwHeader2(25), NwHeader2(47),
     +           NwHeader2(69), NwHeader2(91)
      PRINT 304, NwHeader2(4), NwHeader2(26), NwHeader2(48),
     +           NwHeader2(70), NwHeader2(92)
      PRINT 305, NwHeader2(5), NwHeader2(27), NwHeader2(49),
     +           NwHeader2(71), NwHeader2(93)
      PRINT 306, NwHeader2(6), NwHeader2(28), NwHeader2(50),
     +           NwHeader2(72), NwHeader2(94)
      PRINT 307, NwHeader2(7), NwHeader2(29), NwHeader2(51),
     +           NwHeader2(73), NwHeader2(95)
      PRINT 308, NwHeader2(8), NwHeader2(30), NwHeader2(52),
     +           NwHeader2(74), NwHeader2(96)
      PRINT 309, NwHeader2(9), NwHeader2(31), NwHeader2(53),
     +           NwHeader2(75), NwHeader2(97)
      PRINT 310, NwHeader2(10), NwHeader2(32), NwHeader2(54),
     +           NwHeader2(76), NwHeader2(98)
      PRINT 311, NwHeader2(11), NwHeader2(33), NwHeader2(55),
     +           NwHeader2(77), NwHeader2(99)
      PRINT 312, NwHeader2(12), NwHeader2(34), NwHeader2(56),
     +           NwHeader2(78), NwHeader2(100)
      PRINT 313, NwHeader2(13), NwHeader2(35), NwHeader2(57),
     +           NwHeader2(79), NwHeader2(101)
      PRINT 314, NwHeader2(14), NwHeader2(36), NwHeader2(58),
     +           NwHeader2(80), NwHeader2(102)
      PRINT 315, NwHeader2(15), NwHeader2(37), NwHeader2(59),
     +           NwHeader2(81), NwHeader2(103)
      PRINT 316, NwHeader2(16), NwHeader2(38), NwHeader2(60),
     +           NwHeader2(82), NwHeader2(104)
      PRINT 317, NwHeader2(17), NwHeader2(39), NwHeader2(61),
     +           NwHeader2(83), NwHeader2(105)
      PRINT 318, NwHeader2(18), NwHeader2(40), NwHeader2(62),
     +           NwHeader2(84), NwHeader2(106)
      PRINT 319, NwHeader2(19), NwHeader2(41), NwHeader2(63),
     +           NwHeader2(85), NwHeader2(107)
      PRINT 320, NwHeader2(20), NwHeader2(42), NwHeader2(64),
     +           NwHeader2(86), NwHeader2(108)
      PRINT 321, NwHeader2(21), NwHeader2(43), NwHeader2(65),
     +           NwHeader2(87), NwHeader2(109)
      PRINT 322, NwHeader2(22), NwHeader2(44), NwHeader2(66),
     +           NwHeader2(88), NwHeader2(110)

301   FORMAT (' □[1;31m 1)□[1;34m',A11,' □[1;31m23)□[1;34m',A11,
     +' □[1;31m45)□[1;34m',A11,' □[1;31m67)□[1;34m',A11,
     +' □[1;31m89)□[1;34m',A11)
302   FORMAT (' □[1;31m 2)□[1;34m',A11,' □[1;31m24)□[1;34m',A11,
     +' □[1;31m46)□[1;34m',A11,' □[1;31m68)□[1;34m',A11,
```

```
     +' □[1;31m90)□[1;34m',A11)
303   FORMAT (' □[1;31m 3)□[1;34m',A11,' □[1;31m25)□[1;34m',A11,
     +' □[1;31m47)□[1;34m',A11,' □[1;31m69)□[1;34m',A11,
     +' □[1;31m91)□[1;34m',A11)
304   FORMAT (' □[1;31m 4)□[1;34m',A11,' □[1;31m26)□[1;34m',A11,
     +' □[1;31m48)□[1;34m',A11,' □[1;31m70)□[1;34m',A11,
     +' □[1;31m92)□[1;34m',A11)
305   FORMAT (' □[1;31m 5)□[1;34m',A11,' □[1;31m27)□[1;34m',A11,
     +' □[1;31m49)□[1;34m',A11,' □[1;31m71)□[1;34m',A11,
     +' □[1;31m93)□[1;34m',A11)
306   FORMAT (' □[1;31m 6)□[1;34m',A11,' □[1;31m28)□[1;34m',A11,
     +' □[1;31m50)□[1;34m',A11,' □[1;31m72)□[1;34m',A11,
     +' □[1;31m94)□[1;34m',A11)
307   FORMAT (' □[1;31m 7)□[1;34m',A11,' □[1;31m29)□[1;34m',A11,
     +' □[1;31m51)□[1;34m',A11,' □[1;31m73)□[1;34m',A11,
     +' □[1;31m95)□[1;34m',A11)
308   FORMAT (' □[1;31m 8)□[1;34m',A11,' □[1;31m30)□[1;34m',A11,
     +' □[1;31m52)□[1;34m',A11,' □[1;31m74)□[1;34m',A11,
     +' □[1;31m96)□[1;34m',A11)
309   FORMAT (' □[1;31m 9)□[1;34m',A11,' □[1;31m31)□[1;34m',A11,
     +' □[1;31m53)□[1;34m',A11,' □[1;31m75)□[1;34m',A11,
     +' □[1;31m97)□[1;34m',A11)
310   FORMAT (' □[1;31m10)□[1;34m',A11,' □[1;31m32)□[1;34m',A11,
     +' □[1;31m54)□[1;34m',A11,' □[1;31m76)□[1;34m',A11,
     +' □[1;31m98)□[1;34m',A11)
311   FORMAT (' □[1;31m11)□[1;34m',A11,' □[1;31m33)□[1;34m',A11,
     +' □[1;31m55)□[1;34m',A11,' □[1;31m77)□[1;34m',A11,
     +' □[1;31m99)□[1;34m',A11)
312   FORMAT (' □[1;31m12)□[1;34m',A11,' □[1;31m34)□[1;34m',A11,
     +' □[1;31m56)□[1;34m',A11,' □[1;31m78)□[1;34m',A11,
     +'□[1;31m100)□[1;34m',A11)
313   FORMAT (' □[1;31m13)□[1;34m',A11,' □[1;31m35)□[1;34m',A11,
     +' □[1;31m57)□[1;34m',A11,' □[1;31m79)□[1;34m',A11,
     +'□[1;31m101)□[1;34m',A11)
314   FORMAT (' □[1;31m14)□[1;34m',A11,' □[1;31m36)□[1;34m',A11,
     +' □[1;31m58)□[1;34m',A11,' □[1;31m80)□[1;34m',A11,
     +'□[1;31m102)□[1;34m',A11)
315   FORMAT (' □[1;31m15)□[1;34m',A11,' □[1;31m37)□[1;34m',A11,
     +' □[1;31m59)□[1;34m',A11,' □[1;31m81)□[1;34m',A11,
     +'□[1;31m103)□[1;34m',A11)
316   FORMAT (' □[1;31m16)□[1;34m',A11,' □[1;31m38)□[1;34m',A11,
     +' □[1;31m60)□[1;34m',A11,' □[1;31m82)□[1;34m',A11,
     +'□[1;31m104)□[1;34m',A11)
317   FORMAT (' □[1;31m17)□[1;34m',A11,' □[1;31m39)□[1;34m',A11,
     +' □[1;31m61)□[1;34m',A11,' □[1;31m83)□[1;34m',A11,
     +'□[1;31m105)□[1;34m',A11)
318   FORMAT (' □[1;31m18)□[1;34m',A11,' □[1;31m40)□[1;34m',A11,
     +' □[1;31m62)□[1;34m',A11,' □[1;31m84)□[1;34m',A11,
     +'□[1;31m106)□[1;34m',A11)
319   FORMAT (' □[1;31m19)□[1;34m',A11,' □[1;31m41)□[1;34m',A11,
     +' □[1;31m63)□[1;34m',A11,' □[1;31m85)□[1;34m',A11,
     +'□[1;31m107)□[1;34m',A11)
320   FORMAT (' □[1;31m20)□[1;34m',A11,' □[1;31m42)□[1;34m',A11,
     +' □[1;31m64)□[1;34m',A11,' □[1;31m86)□[1;34m',A11,
     +'□[1;31m108)□[1;34m',A11)
321   FORMAT (' □[1;31m21)□[1;34m',A11,' □[1;31m43)□[1;34m',A11,
     +' □[1;31m65)□[1;34m',A11,' □[1;31m87)□[1;34m',A11,
     +'□[1;31m109)□[1;34m',A11)
322   FORMAT (' □[1;31m22)□[1;34m',A11,' □[1;31m44)□[1;34m',A11,
     +' □[1;31m66)□[1;34m',A11,' □[1;31m88)□[1;34m',A11,
     +'□[1;31m110)□[1;34m',A11)

      PRINT '(6X,''□[1;33mPress ANY alpha-numeric key and ENTER to'//
     +' return to the previous screen □[0m□[8m'')'
```

```
      READ*, key
      print '('' □[0m'')'    ! Clear all ANSI

      RETURN
      END


C*********************************************************************
C* Subroutine FIXLABEL: Add Height/Depth labels to header labels      *
C*********************************************************************

      SUBROUTINE FIXLABEL3(HeadLab, UnitHead, GndLabel, DayCode,
     +                     DayDex, DayVar, DayLevels, DayHeader,
     +                     DayLabel, DayHeader2, Windrose)


      INTEGER looper, loop, loop2
      INTEGER DayVar, DayLevels, Windrose
      INTEGER DayCode(110), DayDex(110)
      CHARACTER*10 AtLabel(30), GndLabel(30), DayLabel(30)
      CHARACTER*11 DayHeader(110), DayHeader2(110)
      CHARACTER*10 UnitHead(110)
      CHARACTER*11 HeadLab(250)
      CHARACTER ChrDayDex1*1, ChrDayDex2*2, NewHead1*8, NewHead2*7

C     Initialize DayHeader Array
      DO 115 loop=1,110
          DayHeader(loop)='           '
115   CONTINUE

      DO 111 looper=1,DayVar
          DayHeader(looper)=HeadLab(DayCode(looper))

          IF (DayDex(looper) .GT. 0) THEN
               IF (DayDex(looper) .LT. 10) THEN
                    WRITE(ChrDayDex1,101) DayDex(looper) ! Convert int to char
101                 FORMAT(I1)
                    NewHead1=DayHeader(looper)(4:11)
                    DayHeader(looper)=NewHead1//'('//ChrDayDex1
     +              //')'
                    UnitHead(looper)='          '
               ELSE
                    WRITE(ChrDayDex2,102) DayDex(looper) ! Convert int to char
102                 FORMAT(I2)
                    NewHead2=DayHeader(looper)(5:11)
                    DayHeader(looper)=NewHead2//'('//ChrDayDex2
     +              //')'
                    UnitHead(looper)='          '
               ENDIF

C             In the following,   42=GT(#), 138=Therm(#)
               IF (DayLevels .GT. 0) THEN
                    IF (DayCode(looper).EQ.42.OR.DayCode(looper).EQ.138)
     +                UnitHead(looper)=DayLabel(DayDex(looper))
               ENDIF
          ELSE
               UnitHead(looper)='          '
          ENDIF
          DayHeader2(looper)=DayHeader(looper)
111   CONTINUE

      IF (Windrose .GT. 0) THEN
          DayHeader2(Windrose)='   Windrose'
          DO 222 loop2=Windrose+1,Windrose+7
```

```
               DayHeader2(loop2)='           '
222        CONTINUE
       ENDIF

       RETURN
       END
C---------------------- End of FIXLABEL Subroutine ---------------------


C*********************************************************************
C* Subroutine NEWLABEL: Add Height/Depth labels to header labels       *
C*********************************************************************

       SUBROUTINE FIXLABEL(HeadLab, AtLabel, GndLabel, VarCode, Index,
     +                     Var, AtLev, GndLev, NewHeader, UnitHead)

       INTEGER looper, loop
       INTEGER Var, AtLev, GndLev
       INTEGER VarCode(110), Index(110), Units(110)
       CHARACTER*10 AtLabel(30), GndLabel(30), DayLabel(30)
       CHARACTER*11 NewHeader(110)
       CHARACTER*10 UnitHead(110)
       CHARACTER*11 HeadLab(250)
       CHARACTER ChrIndex1*1, ChrIndex2*2, NewHead1*8, NewHead2*7

C     Initialize NewHeader Array
       DO 115 loop=1,110
           NewHeader(loop)='           '
115   CONTINUE

       DO 111 looper=1,Var
           NewHeader(looper)=HeadLab(VarCode(looper))

           IF (Index(looper) .GT. 0) THEN
                IF (Index(looper) .LT. 10) THEN
                     WRITE(ChrIndex1,101) Index(looper) ! Convert int to char
101                FORMAT(I1)
                     NewHead1=NewHeader(looper)(4:11)
                     NewHeader(looper)=NewHead1//'('//ChrIndex1
     +             //')'
                     UnitHead(looper)='          '
                ELSE
                     WRITE(ChrIndex2,102) Index(looper) ! Convert int to char
102                FORMAT(I2)
                     NewHead2=NewHeader(looper)(5:11)
                     NewHeader(looper)=NewHead2//'('//ChrIndex2
     +             //')'
                     UnitHead(looper)='          '
                ENDIF

C              In the following,   11=CO2(#)
C                                  14=CO2mV(#)
C                                  26=e(#)
C                                  28=eCR7(#)
C                                 137=Td(#)
C                                 160=Tw(#)
C                                 163=u(#)
                IF (AtLev .GT. 0) THEN
                     IF (VarCode(looper) .EQ. 11 .OR.
     +                 VarCode(looper) .EQ. 14 .OR.
     +                 VarCode(looper) .EQ. 26 .OR.
     +                 VarCode(looper) .EQ. 28 .OR.
     +                 VarCode(looper) .EQ. 137 .OR.
     +                 VarCode(looper) .EQ. 160 .OR.
```

```
     +                VarCode(looper) .EQ. 163 ) THEN
                        UnitHead(looper)=AtLabel(Index(looper))
                    ENDIF
                ENDIF

C             In the following, 42=GT(#),       22=Dry_GT(#),
C                               70=Mesic_GT(#), 171=Wet_GT(#),
C                               161=Twater(#)   43=GTlg(#),
C                               44=GTsh(3)
                IF (GndLev .GT. 0) THEN
                    IF (VarCode(looper) .EQ. 42 .OR. VarCode(looper)
     +                .EQ. 22 .OR. VarCode(looper) .EQ. 70 .OR.
     +                VarCode(looper) .EQ. 171 .OR.
     +                VarCode(looper) .EQ. 161 .OR.
     +                VarCode(looper) .EQ. 43 .OR.
     +                VarCode(looper) .EQ. 44) THEN
                        UnitHead(looper)=GndLabel(Index(looper))
                    ENDIF
                ENDIF
            ELSE
                UnitHead(looper)='          '
            ENDIF

111   CONTINUE

       RETURN
       END
C---------------------- End of NEWLABEL Subroutine ---------------------


C*********************************************************************
C* Subroutine OPENSCRN: Deternine if screens are to be colour or B&W   *
C*********************************************************************

       SUBROUTINE OPENSCRN(ScrnType, HalfDay)

       INTEGER ScrnType

111   CALL CLEAR()
       PRINT*, ' '
       PRINT*, ' '
       PRINT*, ' '
       PRINT*, '                      ******************************'
       print '(23X,''*  ClimoBase Extractor V2.0  *'')'

       PRINT*, '                      ******************************'
       PRINT*, ' '
       PRINT*, ' '
       PRINT '(7X,''ALL DATA IN THIS CLIMATOLOGICAL DATABASE ARE THE'//
     +' PROPERTY OF'')'
       PRINT '(17X,''DR. WAYNE R. ROUSE AND MCMASTER UNIVERSIY'')'
       PRINT*, '                             (c) 1984 - 1999~'

       PRINT*, ' '
       PRINT*,'     ~Extraction of data is permitted with the consent'//
     +' of Dr. Rouse '
       PRINT*, ' '
       PRINT*, ' '
       PRINT*, ' '
       print*,' Choose from one of the following display tyes:'
       PRINT*, ' '
       PRINT*, '      1. Colour (PC must be configured for ANSI)'
       PRINT*, '      2. Monochrome (Black & White)'
       PRINT*, ' '
```

```
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' '
      PRINT*, ' Enter selection (1 or 2): '
      READ*, ScrnType
      print*, ScrnType
      IF( ScrnType .NE. 1 .AND. ScrnType .NE. 2 ) THEN
          GOTO 111
      ENDIF

      RETURN
      END


C*********************************************************************
C* Subroutine REFORMAT2: Left justify headers for screen printing      *
C*********************************************************************

      SUBROUTINE REFORMAT2(DayHeader2, NwHeader2, Last)

      INTEGER N, LOOP1, Last
      CHARACTER*11 DayHeader2(110), NwHeader2(110)

      DO 10 loop1=1,Last
          IF( DayHeader2(loop1)(11:11) .EQ. ' ' ) THEN
               NwHeader2(loop1)='           '
          ELSEIF ( DayHeader2(loop1)(1:1) .NE. ' ' ) THEN
               NwHeader2(loop1)=DayHeader2(loop1)
          ELSE
               DO 20 N=2,11
                    IF( DayHeader2(loop1)(N:N) .NE. ' ' ) THEN
                        NwHeader2(loop1)=' '//DayHeader2(loop1)(N:11)
                        GOTO 10
                    ENDIF
20             CONTINUE
          ENDIF
10    CONTINUE

C     Clear remainder of the ARRAY
      IF( Last .LT. 110) THEN
          DO 30 loop1=Last+1, 110
               NwHeader2(loop1)='           '
30        CONTINUE
      ENDIF

      RETURN
      END


C*********************************************************************
C* Subroutine READHEAD: Input variable headers from a file             *
C*********************************************************************

      SUBROUTINE READHEAD(drive, HeadLab)

      INTEGER TotHeader, loop
      CHARACTER*11 HeadLab(250)
      CHARACTER header*180
      CHARACTER drive*1

      OPEN (11, FILE=drive//':\DATABASE\INIFILES\HEADERS.PRN',
     +ACTION='READ')

C     Strip header:
```

```
      READ (11,400) header
400   FORMAT (A180)

C     Read the number of variables in the file
      READ (11,'(I3)') TotHeader

C     Strip header:
      READ (11,400) header

C     Read headers into an array
      DO 160 loop=1,TotHeader
          READ (11,'(4X,A11)') HeadLab(loop)
160   CONTINUE

      CLOSE (11)
      RETURN
      END
C---------------------- End of READHEAD Subroutine --------------------


C*********************************************************************
C* Subroutine READINI: Input initialization data from a file          *
C*********************************************************************

      SUBROUTINE READINI(drive, filename, Year, Per, Var, AtLev,
     +             GndLev, Contig1, Days1, VarCode, Index, Units,
     +             DayCode, DayDex, DayUnit, DayVar, DayLevels,
     +             AtLabel, GndLabel, DayLabel, l, Windrose, loop,
     +             Start, Finish)

      INTEGER loop, Start, Finish, l
      INTEGER Year, Per, Var, DayVar, AtLev, GndLev, Contig1
      INTEGER Days1(10,2), VarCode(110), Index(110), Units(110)
      INTEGER DayCode(110), DayDex(110), DayUnit(110)
      INTEGER DayLevels, Windrose

      CHARACTER infil0*4, infil1*12, filename*8   ! *.INI file
      CHARACTER*1 drive
      CHARACTER header*180
      CHARACTER*10 AtLabel(20), GndLabel(20), DayLabel(20)

C     Opening *.INI file
      infil0='.INI'
      infil1=filename//infil0             ! Input file #10

      OPEN (10, FILE= drive//':\DATABASE\INIFILES\'//infil1,
     +ACTION='READ')
C     ******************** Read INI file parameters *****************
C     Strip header:
      READ (10,400) header
400   FORMAT (A180)
      READ (10,110) Year, Per, Var, AtLev, GndLev, Contig1
110   FORMAT (6I10)

C     Read the Days array (i.e. contiguous periods)
C     Strip header:
      READ (10,400) header
      DO 100 loop=1,Contig1
          READ (10,115) Days1(loop,1), Days1(loop,2)
115       FORMAT (2I10)
100   CONTINUE

C     Read atmospheric level labels:
C     Strip header:
```

```
      READ (10,400) header
      Read (10,130) (AtLabel(l),l=1,AtLev)
130   Format (30A10)

C     Read ground temperature level labels:
C     Strip header:
      READ (10,400) header
      Read (10,130) (GndLabel(l),l=1,GndLev)

C     Read VarCodes, Index, UnitCodes
C     Strip header:
      READ (10,400) header
      DO 120 loop=1,Var
          READ (10,135) VarCode(loop), Index(loop), Units(loop)
135       FORMAT(I6,I2,I2)
120   CONTINUE

C     Read DAY file parameters (if they exist, i.e. # variables > 0)
C     Strip header:
      READ (10,400) header
      READ (10,400) header
      READ (10,400) header
      READ (10,140) DayVar
140   FORMAT (I10)

      IF(DayVar .GT. 0) THEN
C         Read duration, # of ground levels and 1st column of windrose data
C         Strip header:
          READ (10,400) header
          Read (10,145) Start, Finish, Windrose, DayLevels
145       FORMAT (4I10)

C         Read DAY file ground temperature labels
C         Strip header:
          READ (10,400) header
          Read (10,130) (DayLabel(l),l=1,DayLevels)

C         Read VarCodes, Index, UnitCodes
C         Strip header:
          READ (10,400) header
          DO 150 loop=1,DayVar
               READ (10,135) DayCode(loop), DayDex(loop), DayUnit(loop)
150       CONTINUE
      ENDIF

      CLOSE (10)
      RETURN
      END
C---------------------- End of READINI Subroutine ---------------------


C*********************************************************************
C* Subroutine READUNIT: Input variable units from a file              *
C*********************************************************************

      SUBROUTINE READUNIT(drive, UnitLab)

      INTEGER TotUnits, loop
      CHARACTER*10 UnitLab(40)
      CHARACTER header*180
      CHARACTER drive*1

      OPEN (12, FILE=drive//':\DATABASE\INIFILES\UNITS.PRN',
     +ACTION='READ')
```

```
C     Strip header:
       READ (12,400) header
400   FORMAT (A180)

C     Read the number of units in the file
       READ (12,'(I2)') TotUnits

C     Strip header:
       READ (12,400) header

C     Read units into an array
       DO 165 loop=1,TotUnits
           READ (12,'(10X,A11)') UnitLab(loop)
165   CONTINUE

       CLOSE (12)
       RETURN
       END
C---------------------- End of READUNIT Subroutine --------------------


C*********************************************************************
C* Subroutine REFORMAT: Left justify headers for screen printing      *
C*********************************************************************

       SUBROUTINE REFORMAT(NewHeader, NwHeader2, Var)

       INTEGER N, LOOP1, VAR
       CHARACTER*11 NewHeader(110), NwHeader2(110)

       DO 10 loop1=1,Var
           IF( NewHeader(loop1)(11:11) .EQ. ' ' ) THEN
                NwHeader2(loop1)='           '
           ELSEIF ( NewHeader(loop1)(1:1) .NE. ' ' ) THEN
                NwHeader2(loop1)=NewHeader(loop1)
           ELSE
                DO 20 N=2,11
                     IF( NewHeader(loop1)(N:N) .NE. ' ' ) THEN
                         NwHeader2(loop1)=' '//NewHeader(loop1)(N:11)
                         GOTO 10
                     ENDIF
20            CONTINUE
           ENDIF
10    CONTINUE

C     Clear remainder of the ARRAY
       IF( Var .LT. 110) THEN
           DO 30 loop1=Var+1, 110
                NwHeader2(loop1)='           '
30        CONTINUE
       ENDIF

       RETURN
       END


C*********************************************************************
C* Subroutine SELECTBW: B&W Data selection screen                     *
C*********************************************************************

       SUBROUTINE SELECTBW(NwHeader2, Numb, Var)

       INTEGER Numb, Var
```

```
      CHARACTER*11 NwHeader2(110)

444   CALL CLEAR()       ! clear the screen

      PRINT '(26X,'' DATA SELECTION SCREEN'')'
      PRINT '(26X,'' ---------------------'')'

      PRINT 301, NwHeader2(1), NwHeader2(23), NwHeader2(45),
     +           NwHeader2(67), NwHeader2(89)
      PRINT 302, NwHeader2(2), NwHeader2(24), NwHeader2(46),
     +           NwHeader2(68), NwHeader2(90)
      PRINT 303, NwHeader2(3), NwHeader2(25), NwHeader2(47),
     +           NwHeader2(69), NwHeader2(91)
      PRINT 304, NwHeader2(4), NwHeader2(26), NwHeader2(48),
     +           NwHeader2(70), NwHeader2(92)
      PRINT 305, NwHeader2(5), NwHeader2(27), NwHeader2(49),
     +           NwHeader2(71), NwHeader2(93)
      PRINT 306, NwHeader2(6), NwHeader2(28), NwHeader2(50),
     +           NwHeader2(72), NwHeader2(94)
      PRINT 307, NwHeader2(7), NwHeader2(29), NwHeader2(51),
     +           NwHeader2(73), NwHeader2(95)
      PRINT 308, NwHeader2(8), NwHeader2(30), NwHeader2(52),
     +           NwHeader2(74), NwHeader2(96)
      PRINT 309, NwHeader2(9), NwHeader2(31), NwHeader2(53),
     +           NwHeader2(75), NwHeader2(97)
      PRINT 310, NwHeader2(10), NwHeader2(32), NwHeader2(54),
     +           NwHeader2(76), NwHeader2(98)
      PRINT 311, NwHeader2(11), NwHeader2(33), NwHeader2(55),
     +           NwHeader2(77), NwHeader2(99)
      PRINT 312, NwHeader2(12), NwHeader2(34), NwHeader2(56),
     +           NwHeader2(78), NwHeader2(100)
      PRINT 313, NwHeader2(13), NwHeader2(35), NwHeader2(57),
     +           NwHeader2(79), NwHeader2(101)
      PRINT 314, NwHeader2(14), NwHeader2(36), NwHeader2(58),
     +           NwHeader2(80), NwHeader2(102)
      PRINT 315, NwHeader2(15), NwHeader2(37), NwHeader2(59),
     +           NwHeader2(81), NwHeader2(103)
      PRINT 316, NwHeader2(16), NwHeader2(38), NwHeader2(60),
     +           NwHeader2(82), NwHeader2(104)
      PRINT 317, NwHeader2(17), NwHeader2(39), NwHeader2(61),
     +           NwHeader2(83), NwHeader2(105)
      PRINT 318, NwHeader2(18), NwHeader2(40), NwHeader2(62),
     +           NwHeader2(84), NwHeader2(106)
      PRINT 319, NwHeader2(19), NwHeader2(41), NwHeader2(63),
     +           NwHeader2(85), NwHeader2(107)
      PRINT 320, NwHeader2(20), NwHeader2(42), NwHeader2(64),
     +           NwHeader2(86), NwHeader2(108)
      PRINT 321, NwHeader2(21), NwHeader2(43), NwHeader2(65),
     +           NwHeader2(87), NwHeader2(109)
      PRINT 322, NwHeader2(22), NwHeader2(44), NwHeader2(66),
     +           NwHeader2(88), NwHeader2(110)

301   FORMAT ('  1)',A11,' 23)',A11,
     +' 45)',A11,' 67)',A11,
     +' 89)',A11)
302   FORMAT ('  2)',A11,' 24)',A11,
     +' 46)',A11,' 68)',A11,
     +' 90)',A11)
303   FORMAT ('  3)',A11,' 25)',A11,
     +' 47)',A11,' 69)',A11,
     +' 91)',A11)
304   FORMAT ('  4)',A11,' 26)',A11,
     +' 48)',A11,' 70)',A11,
     +' 92)',A11)
```

```
305   FORMAT ('  5)',A11,' 27)',A11,
     +' 49)',A11,' 71)',A11,
     +' 93)',A11)
306   FORMAT ('  6)',A11,' 28)',A11,
     +' 50)',A11,' 72)',A11,
     +' 94)',A11)
307   FORMAT ('  7)',A11,' 29)',A11,
     +' 51)',A11,' 73)',A11,
     +' 95)',A11)
308   FORMAT ('  8)',A11,' 30)',A11,
     +' 52)',A11,' 74)',A11,
     +' 96)',A11)
309   FORMAT ('  9)',A11,' 31)',A11,
     +' 53)',A11,' 75)',A11,
     +' 97)',A11)
310   FORMAT (' 10)',A11,' 32)',A11,
     +' 54)',A11,' 76)',A11,
     +' 98)',A11)
311   FORMAT (' 11)',A11,' 33)',A11,
     +' 55)',A11,' 77)',A11,
     +' 99)',A11)
312   FORMAT (' 12)',A11,' 34)',A11,
     +' 56)',A11,' 78)',A11,
     +'100)',A11)
313   FORMAT (' 13)',A11,' 35)',A11,
     +' 57)',A11,' 79)',A11,
     +'101)',A11)
314   FORMAT (' 14)',A11,' 36)',A11,
     +' 58)',A11,' 80)',A11,
     +'102)',A11)
315   FORMAT (' 15)',A11,' 37)',A11,
     +' 59)',A11,' 81)',A11,
     +'103)',A11)
316   FORMAT (' 16)',A11,' 38)',A11,
     +' 60)',A11,' 82)',A11,
     +'104)',A11)
317   FORMAT (' 17)',A11,' 39)',A11,
     +' 61)',A11,' 83)',A11,
     +'105)',A11)
318   FORMAT (' 18)',A11,' 40)',A11,
     +' 62)',A11,' 84)',A11,
     +'106)',A11)
319   FORMAT (' 19)',A11,' 41)',A11,
     +' 63)',A11,' 85)',A11,
     +'107)',A11)
320   FORMAT (' 20)',A11,' 42)',A11,
     +' 64)',A11,' 86)',A11,
     +'108)',A11)
321   FORMAT (' 21)',A11,' 43)',A11,
     +' 65)',A11,' 87)',A11,
     +'109)',A11)
322   FORMAT (' 22)',A11,' 44)',A11,
     +' 66)',A11,' 88)',A11,
     +'110)',A11)

      PRINT 15, Var
15    FORMAT (21X,' Enter a variable code (2 -',I3,'): ')
      READ*, Numb
      IF ( Numb .LT. 2 .OR. Numb .GT. Var) GOTO 444

      CALL CLEAR()       ! clear the screen

      RETURN
      END
```

```
C*********************************************************************
C* Subroutine SELECTC: (Colour) Data selection screen                *
C*********************************************************************

      SUBROUTINE SELECTC(NwHeader2, Numb, Var)

      INTEGER Numb, Var
      CHARACTER*11 NwHeader2(110)

444   print '('' □[2J'')'       ! clear the screen

      PRINT '(26X,'' □[1;32mDATA SELECTION SCREEN'')'
      PRINT '(26X,'' --------------------- □[0m'')'

      PRINT 301, NwHeader2(1), NwHeader2(23), NwHeader2(45),
     +           NwHeader2(67), NwHeader2(89)
      PRINT 302, NwHeader2(2), NwHeader2(24), NwHeader2(46),
     +           NwHeader2(68), NwHeader2(90)
      PRINT 303, NwHeader2(3), NwHeader2(25), NwHeader2(47),
     +           NwHeader2(69), NwHeader2(91)
      PRINT 304, NwHeader2(4), NwHeader2(26), NwHeader2(48),
     +           NwHeader2(70), NwHeader2(92)
      PRINT 305, NwHeader2(5), NwHeader2(27), NwHeader2(49),
     +           NwHeader2(71), NwHeader2(93)
      PRINT 306, NwHeader2(6), NwHeader2(28), NwHeader2(50),
     +           NwHeader2(72), NwHeader2(94)
      PRINT 307, NwHeader2(7), NwHeader2(29), NwHeader2(51),
     +           NwHeader2(73), NwHeader2(95)
      PRINT 308, NwHeader2(8), NwHeader2(30), NwHeader2(52),
     +           NwHeader2(74), NwHeader2(96)
      PRINT 309, NwHeader2(9), NwHeader2(31), NwHeader2(53),
     +           NwHeader2(75), NwHeader2(97)
      PRINT 310, NwHeader2(10), NwHeader2(32), NwHeader2(54),
     +           NwHeader2(76), NwHeader2(98)
      PRINT 311, NwHeader2(11), NwHeader2(33), NwHeader2(55),
     +           NwHeader2(77), NwHeader2(99)
      PRINT 312, NwHeader2(12), NwHeader2(34), NwHeader2(56),
     +           NwHeader2(78), NwHeader2(100)
      PRINT 313, NwHeader2(13), NwHeader2(35), NwHeader2(57),
     +           NwHeader2(79), NwHeader2(101)
      PRINT 314, NwHeader2(14), NwHeader2(36), NwHeader2(58),
     +           NwHeader2(80), NwHeader2(102)
      PRINT 315, NwHeader2(15), NwHeader2(37), NwHeader2(59),
     +           NwHeader2(81), NwHeader2(103)
      PRINT 316, NwHeader2(16), NwHeader2(38), NwHeader2(60),
     +           NwHeader2(82), NwHeader2(104)
      PRINT 317, NwHeader2(17), NwHeader2(39), NwHeader2(61),
     +           NwHeader2(83), NwHeader2(105)
      PRINT 318, NwHeader2(18), NwHeader2(40), NwHeader2(62),
     +           NwHeader2(84), NwHeader2(106)
      PRINT 319, NwHeader2(19), NwHeader2(41), NwHeader2(63),
     +           NwHeader2(85), NwHeader2(107)
      PRINT 320, NwHeader2(20), NwHeader2(42), NwHeader2(64),
     +           NwHeader2(86), NwHeader2(108)
      PRINT 321, NwHeader2(21), NwHeader2(43), NwHeader2(65),
     +           NwHeader2(87), NwHeader2(109)
      PRINT 322, NwHeader2(22), NwHeader2(44), NwHeader2(66),
     +           NwHeader2(88), NwHeader2(110)

301   FORMAT (' □[1;31m 1)□[1;34m',A11,' □[1;31m23)□[1;34m',A11,
     +' □[1;31m45)□[1;34m',A11,' □[1;31m67)□[1;34m',A11,
     +' □[1;31m89)□[1;34m',A11)
```

```
302   FORMAT (' □[1;31m 2)□[1;34m',A11,' □[1;31m24)□[1;34m',A11,
     +' □[1;31m46)□[1;34m',A11,' □[1;31m68)□[1;34m',A11,
     +' □[1;31m90)□[1;34m',A11)
303   FORMAT (' □[1;31m 3)□[1;34m',A11,' □[1;31m25)□[1;34m',A11,
     +' □[1;31m47)□[1;34m',A11,' □[1;31m69)□[1;34m',A11,
     +' □[1;31m91)□[1;34m',A11)
304   FORMAT (' □[1;31m 4)□[1;34m',A11,' □[1;31m26)□[1;34m',A11,
     +' □[1;31m48)□[1;34m',A11,' □[1;31m70)□[1;34m',A11,
     +' □[1;31m92)□[1;34m',A11)
305   FORMAT (' □[1;31m 5)□[1;34m',A11,' □[1;31m27)□[1;34m',A11,
     +' □[1;31m49)□[1;34m',A11,' □[1;31m71)□[1;34m',A11,
     +' □[1;31m93)□[1;34m',A11)
306   FORMAT (' □[1;31m 6)□[1;34m',A11,' □[1;31m28)□[1;34m',A11,
     +' □[1;31m40)□[1;34m',A11,' □[1;31m72)□[1;34m',A11,
     +' □[1;31m94)□[1;34m',A11)
307   FORMAT (' □[1;31m 7)□[1;34m',A11,' □[1;31m29)□[1;34m',A11,
     +' □[1;31m51)□[1;34m',A11,' □[1;31m73)□[1;34m',A11,
     +' □[1;31m95)□[1;34m',A11)
308   FORMAT (' □[1;31m 8)□[1;34m',A11,' □[1;31m30)□[1;34m',A11,
     +' □[1;31m52)□[1;34m',A11,' □[1;31m74)□[1;34m',A11,
     +' □[1;31m96)□[1;34m',A11)
309   FORMAT (' □[1;31m 9)□[1;34m',A11,' □[1;31m31)□[1;34m',A11,
     +' □[1;31m53)□[1;34m',A11,' □[1;31m75)□[1;34m',A11,
     +' □[1;31m97)□[1;34m',A11)
310   FORMAT (' □[1;31m10)□[1;34m',A11,' □[1;31m32)□[1;34m',A11,
     +' □[1;31m54)□[1;34m',A11,' □[1;31m76)□[1;34m',A11,
     +' □[1;31m98)□[1;34m',A11)
311   FORMAT (' □[1;31m11)□[1;34m',A11,' □[1;31m33)□[1;34m',A11,
     +' □[1;31m55)□[1;34m',A11,' □[1;31m77)□[1;34m',A11,
     +' □[1;31m99)□[1;34m',A11)
312   FORMAT (' □[1;31m12)□[1;34m',A11,' □[1;31m34)□[1;34m',A11,
     +' □[1;31m56)□[1;34m',A11,' □[1;31m78)□[1;34m',A11,
     +'□[1;31m100)□[1;34m',A11)
313   FORMAT (' □[1;31m13)□[1;34m',A11,' □[1;31m35)□[1;34m',A11,
     +' □[1;31m57)□[1;34m',A11,' □[1;31m79)□[1;34m',A11,
     +'□[1;31m101)□[1;34m',A11)
314   FORMAT (' □[1;31m14)□[1;34m',A11,' □[1;31m36)□[1;34m',A11,
     +' □[1;31m58)□[1;34m',A11,' □[1;31m80)□[1;34m',A11,
     +'□[1;31m102)□[1;34m',A11)
315   FORMAT (' □[1;31m15)□[1;34m',A11,' □[1;31m37)□[1;34m',A11,
     +' □[1;31m59)□[1;34m',A11,' □[1;31m81)□[1;34m',A11,
     +'□[1;31m103)□[1;34m',A11)
316   FORMAT (' □[1;31m16)□[1;34m',A11,' □[1;31m38)□[1;34m',A11,
     +' □[1;31m60)□[1;34m',A11,' □[1;31m82)□[1;34m',A11,
     +'□[1;31m104)□[1;34m',A11)
317   FORMAT (' □[1;31m17)□[1;34m',A11,' □[1;31m39)□[1;34m',A11,
     +' □[1;31m61)□[1;34m',A11,' □[1;31m83)□[1;34m',A11,
     +'□[1;31m105)□[1;34m',A11)
318   FORMAT (' □[1;31m18)□[1;34m',A11,' □[1;31m40)□[1;34m',A11,
     +' □[1;31m62)□[1;34m',A11,' □[1;31m84)□[1;34m',A11,
     +'□[1;31m106)□[1;34m',A11)
319   FORMAT (' □[1;31m19)□[1;34m',A11,' □[1;31m41)□[1;34m',A11,
     +' □[1;31m63)□[1;34m',A11,' □[1;31m85)□[1;34m',A11,
     +'□[1;31m107)□[1;34m',A11)
320   FORMAT (' □[1;31m20)□[1;34m',A11,' □[1;31m42)□[1;34m',A11,
     +' □[1;31m64)□[1;34m',A11,' □[1;31m86)□[1;34m',A11,
     +'□[1;31m108)□[1;34m',A11)
321   FORMAT (' □[1;31m21)□[1;34m',A11,' □[1;31m43)□[1;34m',A11,
     +' □[1;31m65)□[1;34m',A11,' □[1;31m87)□[1;34m',A11,
     +'□[1;31m109)□[1;34m',A11)
322   FORMAT (' □[1;31m22)□[1;34m',A11,' □[1;31m44)□[1;34m',A11,
     +' □[1;31m66)□[1;34m',A11,' □[1;31m88)□[1;34m',A11,
     +'□[1;31m110)□[1;34m',A11)
```

```
      PRINT 15, Var
15    FORMAT (21X,' □[0mEnter a variable code (2 -',I3,'): □[1;33m')
      READ*, Numb
      print '('' □[0m'')'    ! Turn off colour
      IF ( Numb .LT. 2 .OR. Numb .GT. Var) GOTO 444
      print '('' □[2J'')'       ! clear the screen

      RETURN
      END


C*********************************************************************
C* Subroutine SELSEABW: B&W Data selection screen                    *
C*********************************************************************

      SUBROUTINE SELSEABW(NwHeader2, Numb, Last)

      INTEGER Numb, Last
      CHARACTER*11 NwHeader2(110)

444   CALL CLEAR()       ! clear the screen

      PRINT '(26X,'' DATA SELECTION SCREEN'')'
      PRINT '(26X,'' ---------------------'')'

      PRINT 301, NwHeader2(1), NwHeader2(23), NwHeader2(45),
     +           NwHeader2(67), NwHeader2(89)
      PRINT 302, NwHeader2(2), NwHeader2(24), NwHeader2(46),
     +           NwHeader2(68), NwHeader2(90)
      PRINT 303, NwHeader2(3), NwHeader2(25), NwHeader2(47),
     +           NwHeader2(69), NwHeader2(91)
      PRINT 304, NwHeader2(4), NwHeader2(26), NwHeader2(48),
     +           NwHeader2(70), NwHeader2(92)
      PRINT 305, NwHeader2(5), NwHeader2(27), NwHeader2(49),
     +           NwHeader2(71), NwHeader2(93)
      PRINT 306, NwHeader2(6), NwHeader2(28), NwHeader2(50),
     +           NwHeader2(72), NwHeader2(94)
      PRINT 307, NwHeader2(7), NwHeader2(29), NwHeader2(51),
     +           NwHeader2(73), NwHeader2(95)
      PRINT 308, NwHeader2(8), NwHeader2(30), NwHeader2(52),
     +           NwHeader2(74), NwHeader2(96)
      PRINT 309, NwHeader2(9), NwHeader2(31), NwHeader2(53),
     +           NwHeader2(75), NwHeader2(97)
      PRINT 310, NwHeader2(10), NwHeader2(32), NwHeader2(54),
     +           NwHeader2(76), NwHeader2(98)
      PRINT 311, NwHeader2(11), NwHeader2(33), NwHeader2(55),
     +           NwHeader2(77), NwHeader2(99)
      PRINT 312, NwHeader2(12), NwHeader2(34), NwHeader2(56),
     +           NwHeader2(78), NwHeader2(100)
      PRINT 313, NwHeader2(13), NwHeader2(35), NwHeader2(57),
     +           NwHeader2(79), NwHeader2(101)
      PRINT 314, NwHeader2(14), NwHeader2(36), NwHeader2(58),
     +           NwHeader2(80), NwHeader2(102)
      PRINT 315, NwHeader2(15), NwHeader2(37), NwHeader2(59),
     +           NwHeader2(81), NwHeader2(103)
      PRINT 316, NwHeader2(16), NwHeader2(38), NwHeader2(60),
     +           NwHeader2(82), NwHeader2(104)
      PRINT 317, NwHeader2(17), NwHeader2(39), NwHeader2(61),
     +           NwHeader2(83), NwHeader2(105)
      PRINT 318, NwHeader2(18), NwHeader2(40), NwHeader2(62),
     +           NwHeader2(84), NwHeader2(106)
      PRINT 319, NwHeader2(19), NwHeader2(41), NwHeader2(63),
     +           NwHeader2(85), NwHeader2(107)
      PRINT 320, NwHeader2(20), NwHeader2(42), NwHeader2(64),
```

```
     +           NwHeader2(86), NwHeader2(108)
      PRINT 321, NwHeader2(21), NwHeader2(43), NwHeader2(65),
     +           NwHeader2(87), NwHeader2(109)
      PRINT 322, NwHeader2(22), NwHeader2(44), NwHeader2(66),
     +           NwHeader2(88), NwHeader2(110)

301   FORMAT ('  1)',A11,' 23)',A11,
     +' 45)',A11,' 67)',A11,
     +' 89)',A11)
302   FORMAT ('  2)',A11,' 24)',A11,
     +' 46)',A11,' 68)',A11,
     +' 90)',A11)
303   FORMAT ('  3)',A11,' 25)',A11,
     +' 47)',A11,' 69)',A11,
     +' 91)',A11)
304   FORMAT ('  4)',A11,' 26)',A11,
     +' 48)',A11,' 70)',A11,
     +' 92)',A11)
305   FORMAT ('  5)',A11,' 27)',A11,
     +' 49)',A11,' 71)',A11,
     +' 93)',A11)
306   FORMAT ('  6)',A11,' 28)',A11,
     +' 40)',A11,' 72)',A11,
     +' 94)',A11)
307   FORMAT ('  7)',A11,' 29)',A11,
     +' 51)',A11,' 73)',A11,
     +' 95)',A11)
308   FORMAT ('  8)',A11,' 30)',A11,
     +' 52)',A11,' 74)',A11,
     +' 96)',A11)
309   FORMAT ('  9)',A11,' 31)',A11,
     +' 53)',A11,' 75)',A11,
     +' 97)',A11)
310   FORMAT (' 10)',A11,' 32)',A11,
     +' 54)',A11,' 76)',A11,
     +' 98)',A11)
311   FORMAT (' 11)',A11,' 33)',A11,
     +' 55)',A11,' 77)',A11,
     +' 99)',A11)
312   FORMAT (' 12)',A11,' 34)',A11,
     +' 56)',A11,' 78)',A11,
     +'100)',A11)
313   FORMAT (' 13)',A11,' 35)',A11,
     +' 57)',A11,' 79)',A11,
     +'101)',A11)
314   FORMAT (' 14)',A11,' 36)',A11,
     +' 58)',A11,' 80)',A11,
     +'102)',A11)
315   FORMAT (' 15)',A11,' 37)',A11,
     +' 59)',A11,' 81)',A11,
     +'103)',A11)
316   FORMAT (' 16)',A11,' 38)',A11,
     +' 60)',A11,' 82)',A11,
     +'104)',A11)
317   FORMAT (' 17)',A11,' 39)',A11,
     +' 61)',A11,' 83)',A11,
     +'105)',A11)
318   FORMAT (' 18)',A11,' 40)',A11,
     +' 62)',A11,' 84)',A11,
     +'106)',A11)
319   FORMAT (' 19)',A11,' 41)',A11,
     +' 63)',A11,' 85)',A11,
     +'107)',A11)
320   FORMAT (' 20)',A11,' 42)',A11,
```

```
     +' 64)',A11,' 86)',A11,
     +'108)',A11)
321   FORMAT (' 21)',A11,' 43)',A11,
     +' 65)',A11,' 87)',A11,
     +'109)',A11)
322   FORMAT (' 22)',A11,' 44)',A11,
     +' 66)',A11,' 88)',A11,
     +'110)',A11)

      IF( Last .EQ. 2) THEN
          PRINT 15
15       FORMAT (25X,' Enter a variable code (2): ')
          READ*, Numb
      ELSE
          PRINT 17, Last
17       FORMAT (21X,' Enter a variable code (2 -',I3,'): ')
          READ*, Numb
      ENDIF

      IF ( Numb .LT. 2 .OR. Numb .GT. Last) GOTO 444
      CALL CLEAR()

      RETURN
      END


C*********************************************************************
C* Subroutine SELSEASC: (Colour) Data selection screen                *
C*********************************************************************

      SUBROUTINE SELSEASC(NwHeader2, Numb, Last)

      INTEGER Numb, Last
      CHARACTER*11 NwHeader2(110)

444   print '('' □[2J'')'       ! clear the screen

      PRINT '(26X,'' □[1;32mDATA SELECTION SCREEN'')'
      PRINT '(26X,'' --------------------- □[0m'')'

      PRINT 301, NwHeader2(1), NwHeader2(23), NwHeader2(45),
     +           NwHeader2(67), NwHeader2(89)
      PRINT 302, NwHeader2(2), NwHeader2(24), NwHeader2(46),
     +           NwHeader2(68), NwHeader2(90)
      PRINT 303, NwHeader2(3), NwHeader2(25), NwHeader2(47),
     +           NwHeader2(69), NwHeader2(91)
      PRINT 304, NwHeader2(4), NwHeader2(26), NwHeader2(48),
     +           NwHeader2(70), NwHeader2(92)
      PRINT 305, NwHeader2(5), NwHeader2(27), NwHeader2(49),
     +           NwHeader2(71), NwHeader2(93)
      PRINT 306, NwHeader2(6), NwHeader2(28), NwHeader2(50),
     +           NwHeader2(72), NwHeader2(94)
      PRINT 307, NwHeader2(7), NwHeader2(29), NwHeader2(51),
     +           NwHeader2(73), NwHeader2(95)
      PRINT 308, NwHeader2(8), NwHeader2(30), NwHeader2(52),
     +           NwHeader2(74), NwHeader2(96)
      PRINT 309, NwHeader2(9), NwHeader2(31), NwHeader2(53),
     +           NwHeader2(75), NwHeader2(97)
      PRINT 310, NwHeader2(10), NwHeader2(32), NwHeader2(54),
     +           NwHeader2(76), NwHeader2(98)
      PRINT 311, NwHeader2(11), NwHeader2(33), NwHeader2(55),
     +           NwHeader2(77), NwHeader2(99)
      PRINT 312, NwHeader2(12), NwHeader2(34), NwHeader2(56),
     +           NwHeader2(78), NwHeader2(100)
```

```
      PRINT 313, NwHeader2(13), NwHeader2(35), NwHeader2(57),
     +           NwHeader2(79), NwHeader2(101)
      PRINT 314, NwHeader2(14), NwHeader2(36), NwHeader2(58),
     +           NwHeader2(80), NwHeader2(102)
      PRINT 315, NwHeader2(15), NwHeader2(37), NwHeader2(59),
     +           NwHeader2(81), NwHeader2(103)
      PRINT 316, NwHeader2(16), NwHeader2(38), NwHeader2(60),
     +           NwHeader2(82), NwHeader2(104)
      PRINT 317, NwHeader2(17), NwHeader2(39), NwHeader2(61),
     +           NwHeader2(83), NwHeader2(105)
      PRINT 318, NwHeader2(18), NwHeader2(40), NwHeader2(62),
     +           NwHeader2(84), NwHeader2(106)
      PRINT 319, NwHeader2(19), NwHeader2(41), NwHeader2(63),
     +           NwHeader2(85), NwHeader2(107)
      PRINT 320, NwHeader2(20), NwHeader2(42), NwHeader2(64),
     +           NwHeader2(86), NwHeader2(108)
      PRINT 321, NwHeader2(21), NwHeader2(43), NwHeader2(65),
     +           NwHeader2(87), NwHeader2(109)
      PRINT 322, NwHeader2(22), NwHeader2(44), NwHeader2(66),
     +           NwHeader2(88), NwHeader2(110)

301   FORMAT (' □[1;31m 1)□[1;34m',A11,' □[1;31m23)□[1;34m',A11,
     +' □[1;31m45)□[1;34m',A11,' □[1;31m67)□[1;34m',A11,
     +' □[1;31m89)□[1;34m',A11)
302   FORMAT (' □[1;31m 2)□[1;34m',A11,' □[1;31m24)□[1;34m',A11,
     +' □[1;31m46)□[1;34m',A11,' □[1;31m68)□[1;34m',A11,
     +' □[1;31m90)□[1;34m',A11)
303   FORMAT (' □[1;31m 3)□[1;34m',A11,' □[1;31m25)□[1;34m',A11,
     +' □[1;31m47)□[1;34m',A11,' □[1;31m69)□[1;34m',A11,
     +' □[1;31m91)□[1;34m',A11)
304   FORMAT (' □[1;31m 4)□[1;34m',A11,' □[1;31m26)□[1;34m',A11,
     +' □[1;31m48)□[1;34m',A11,' □[1;31m70)□[1;34m',A11,
     +' □[1;31m92)□[1;34m',A11)
305   FORMAT (' □[1;31m 5)□[1;34m',A11,' □[1;31m27)□[1;34m',A11,
     +' □[1;31m49)□[1;34m',A11,' □[1;31m71)□[1;34m',A11,
     +' □[1;31m93)□[1;34m',A11)
306   FORMAT (' □[1;31m 6)□[1;34m',A11,' □[1;31m28)□[1;34m',A11,
     +' □[1;31m50)□[1;34m',A11,' □[1;31m72)□[1;34m',A11,
     +' □[1;31m94)□[1;34m',A11)
307   FORMAT (' □[1;31m 7)□[1;34m',A11,' □[1;31m29)□[1;34m',A11,
     +' □[1;31m51)□[1;34m',A11,' □[1;31m73)□[1;34m',A11,
     +' □[1;31m95)□[1;34m',A11)
308   FORMAT (' □[1;31m 8)□[1;34m',A11,' □[1;31m30)□[1;34m',A11,
     +' □[1;31m52)□[1;34m',A11,' □[1;31m74)□[1;34m',A11,
     +' □[1;31m96)□[1;34m',A11)
309   FORMAT (' □[1;31m 9)□[1;34m',A11,' □[1;31m31)□[1;34m',A11,
     +' □[1;31m53)□[1;34m',A11,' □[1;31m75)□[1;34m',A11,
     +' □[1;31m97)□[1;34m',A11)
310   FORMAT (' □[1;31m10)□[1;34m',A11,' □[1;31m32)□[1;34m',A11,
     +' □[1;31m54)□[1;34m',A11,' □[1;31m76)□[1;34m',A11,
     +' □[1;31m98)□[1;34m',A11)
311   FORMAT (' □[1;31m11)□[1;34m',A11,' □[1;31m33)□[1;34m',A11,
     +' □[1;31m55)□[1;34m',A11,' □[1;31m77)□[1;34m',A11,
     +' □[1;31m99)□[1;34m',A11)
312   FORMAT (' □[1;31m12)□[1;34m',A11,' □[1;31m34)□[1;34m',A11,
     +' □[1;31m56)□[1;34m',A11,' □[1;31m78)□[1;34m',A11,
     +'□[1;31m100)□[1;34m',A11)
313   FORMAT (' □[1;31m13)□[1;34m',A11,' □[1;31m35)□[1;34m',A11,
     +' □[1;31m57)□[1;34m',A11,' □[1;31m79)□[1;34m',A11,
     +'□[1;31m101)□[1;34m',A11)
314   FORMAT (' □[1;31m14)□[1;34m',A11,' □[1;31m36)□[1;34m',A11,
     +' □[1;31m58)□[1;34m',A11,' □[1;31m80)□[1;34m',A11,
     +'□[1;31m102)□[1;34m',A11)
315   FORMAT (' □[1;31m15)□[1;34m',A11,' □[1;31m37)□[1;34m',A11,
```

```
     +' □[1;31m59)□[1;34m',A11,' □[1;31m81)□[1;34m',A11,
     +'□[1;31m103)□[1;34m',A11)
316   FORMAT (' □[1;31m16)□[1;34m',A11,' □[1;31m38)□[1;34m',A11,
     +' □[1;31m60)□[1;34m',A11,' □[1;31m82)□[1;34m',A11,
     +'□[1;31m104)□[1;34m',A11)
317   FORMAT (' □[1;31m17)□[1;34m',A11,' □[1;31m39)□[1;34m',A11,
     +' □[1;31m61)□[1;34m',A11,' □[1;31m83)□[1;34m',A11,
     +'□[1;31m105)□[1;34m',A11)
318   FORMAT (' □[1;31m18)□[1;34m',A11,' □[1;31m40)□[1;34m',A11,
     +' □[1;31m62)□[1;34m',A11,' □[1;31m84)□[1;34m',A11,
     +'□[1;31m106)□[1;34m',A11)
319   FORMAT (' □[1;31m19)□[1;34m',A11,' □[1;31m41)□[1;34m',A11,
     +' □[1;31m63)□[1;34m',A11,' □[1;31m85)□[1;34m',A11,
     +'□[1;31m107)□[1;34m',A11)
320   FORMAT (' □[1;31m20)□[1;34m',A11,' □[1;31m42)□[1;34m',A11,
     +' □[1;31m64)□[1;34m',A11,' □[1;31m86)□[1;34m',A11,
     +'□[1;31m108)□[1;34m',A11)
321   FORMAT (' □[1;31m21)□[1;34m',A11,' □[1;31m43)□[1;34m',A11,
     +' □[1;31m65)□[1;34m',A11,' □[1;31m87)□[1;34m',A11,
     +'□[1;31m109)□[1;34m',A11)
322   FORMAT (' □[1;31m22)□[1;34m',A11,' □[1;31m44)□[1;34m',A11,
     +' □[1;31m66)□[1;34m',A11,' □[1;31m88)□[1;34m',A11,
     +'□[1;31m110)□[1;34m',A11)

      IF( Last .EQ. 2) THEN
          PRINT 15
15       FORMAT (25X,' □[0mEnter a variable code (2): □[1;33m')
          READ*, Numb
      ELSE
          PRINT 17, Last
17       FORMAT (21X,' □[0mEnter a variable code (2 -',I3,'): □[1;33m')
          READ*, Numb
      ENDIF

      print '('' □[0m'')'    ! Turn off colour
      IF ( Numb .LT. 2 .OR. Numb .GT. Last) GOTO 444
      print '('' □[2J'')'       ! clear the screen

      RETURN
      END


C*********************************************************************
C* Subroutine SITELIST: (Colour) Deatils of Site Names                *
C*********************************************************************

      SUBROUTINE SITELIST()

      CHARACTER key

      PRINT '('' □[2J'',27X,'' □[1;32mSITE NAME DESCRIPTIONS'')'
      PRINT '(28X,'' ---------------------- □[1;31m'')'
      PRINT*, ' Beach & Ridge:□[1;34m energy balance sites on'//
     +' a raised beach 500 m S of Bird Cove□[1;31m'
      PRINT*, ' E. Creek Basin:□[1;34m Eastern Creek basin'//
     +' manual measurements (wells & rainfall)□[1;31m'
      PRINT*, ' E. Creek:□[1;34m Eastern Creek hydrometrics'//
     +'(seasonal data are current meter sessions)□[1;31m'
      PRINT*, ' Eddy:□[1;34m eddy covariance (Qh) energy balance site'//
     +' 100 m N of the Sedge site□[1;31m'
      PRINT*, ' Golf L.:□[1;34m energy balance site in the'//
     +' middle of Golf Lake (300 X 500 m)□[1;31m'
      PRINT*, ' Low TVC:□[1;34m lowland eddy covariance (Qh) energy'//
     +' balance site near Trail Valley C.□[1;31m'
```

```
      PRINT*, ' Main:□[1;34m main energy balance site on a '//
     +'sandy/heath upland plateau N of Golf L□[1;31m'
      PRINT*, ' Marantz:□[1;34m energy balance site at Marantz L.'//
     +' (thick peat covered w/lichen-heath)□[1;31m'
      PRINT*, ' Mobile Qg:□[1;34m Mobile systems (Tsurf, Q* & Qg) at'//
     +' Sedge, Willow, Lichen and Forest□[1;31m'
      PRINT*, ' Pfrost:□[1;34m 2.5 m-long permafrost thermocouple rod'//
     +' near the Sedge site□[1;31m'
      PRINT*, ' RCT-1:□[1;34m AES permafrost site E of'//
     +' airport terminal (Ta, RH, gnd temps in rock)□[1;31m'
      PRINT*, ' RCT-2:□[1;34m AES permafrost site W of the'//
     +' airport in sedge meadow (Qg & gnd temps)□[1;31m'
      PRINT*, ' Rocky:□[1;34m energy balance site on bedrock/'//
     +'heath area NE of the A-frame house□[1;31m'
      PRINT*, ' Rodney:□[1;34m 2.5 m deep thermistor rod'//
     +' 200 m W of the Beach site (in sand)□[1;31m'
      PRINT*, ' Sedge & Site4:□[1;34m energy balance sites on'//
     +' sedge fen terrain N of Twin Lakes□[1;31m'
      PRINT*, ' Site1:□[1;34m coastal marsh energy balance site'//
     +' near Hudson Bay□[1;31m'
      PRINT*, ' Site2:□[1;34m energy balance site farther inland'//
     +' than Site1, in sedge meadow□[1;31m'
      PRINT*, ' Site3:□[1;34m energy balance site farther inland'//
     +' than Site2, in sedge meadow□[1;31m'
      PRINT*, ' Upper TVC:□[1;34m upland eddy covariance (Qh) energy'//
     +' balance site near Trail Valley C□[1;31m'
      PRINT*, ' Waterhole L.:□[1;34m seasonal file of energy balance'//
     +' results for Waterhole Lake□[1;31m'
      PRINT*, ' Willow:□[1;34m coastal energy balance site over'//
     +' willow/birch vegetation at Bird Cove□[1;33m'
      PRINT*, ' '
      PRINT '(6X,''Press ANY alpha-numeric key and ENTER to return to'//
     +' the previous screen □[0m□[8m'')'
      READ*, key
      print '('' □[0m'')'    ! Clear all ANSI

      RETURN
      END


C*********************************************************************
C* Subroutine SITELSTB: B&W Deatils of Site Names                    *
C*********************************************************************

      SUBROUTINE SITELSTB()

      CHARACTER key

      CALL CLEAR()
      PRINT '(28X,'' SITE NAME DESCRIPTIONS'')'
      PRINT '(28X,'' ----------------------'')'
      PRINT*, ' Beach & Ridge: energy balance sites on'//
     +' a raised beach 500 m S of Bird Cove'
      PRINT*, ' E. Creek Basin: Eastern Creek basin'//
     +' manual measurements (wells & rainfall)'
      PRINT*, ' E. Creek: Eastern Creek hydrometrics'//
     +'(seasonal data are current meter sessions)'
      PRINT*, ' Eddy: eddy covariance (Qh) energy balance site'//
     +' 100 m N of the Sedge site'
      PRINT*, ' Golf L.: energy balance site in the'//
     +' middle of Golf Lake (300 X 500 m)'
      PRINT*, ' Low TVC: lowland eddy covariance (Qh) energy'//
     +' balance site near Trail Valley C.'
      PRINT*, ' Main: main energy balance site on a '//
```

```
+'sandy/heath upland plateau N of Golf L'
  PRINT*, ' Marantz: energy balance site at Marantz L.'//
+' (thick peat covered w/lichen-heath)'
  PRINT*, ' Mobile Qg: Mobile systems (Tsurf, Q* & Qg) at'//
+' Sedge, Willow, Lichen and Forest'
  PRINT*, ' Pfrost: 2.5 m-long permafrost thermocouple rod'//
+' near the Sedge site'
  PRINT*, ' RCT-1: AES permafrost site E of'//
+' airport terminal (Ta, RH, gnd temps in rock)'
  PRINT*, ' RCT-2: AES permafrost site W of the'//
+' airport in sedge meadow (Qg & gnd temps)'
  PRINT*, ' Rocky: energy balance site on bedrock/'//
+'heath area NE of the A-frame house'
  PRINT*, ' Rodney: 2.5 m deep thermistor rod'//
+' 200 m W of the Beach site (in sand)'
  PRINT*, ' Sedge & Site4: energy balance sites on'//
+' sedge fen terrain N of Twin Lakes'
  PRINT*, ' Site1: coastal marsh energy balance site'//
+' near Hudson Bay'
  PRINT*, ' Site2: energy balance site farther inland'//
+' than Site1, in sedge meadow'
  PRINT*, ' Site3: energy balance site farther inland'//
+' than Site2, in sedge meadow'
  PRINT*, ' Upper TVC: upland eddy covariance (Qh) energy'//
+' balance site near Trail Valley C'
  PRINT*, ' Waterhole L.: seasonal file of energy balance'//
+' results for Waterhole Lake'
  PRINT*, ' Willow: coastal energy balance site over'//
+' willow/birch vegetation at Bird Cove'
  PRINT*, ' '
  PRINT '(6X,''Press ANY alpha-numeric key and ENTER to return to'//
+' the previous screen '')'
  READ*, key

  RETURN
  END
```

APPENDIX D

ClimoBase Master Input Files: Statistics

Data Set	Year	File Names	Start	End	Data Breaks (i.e. daily files missing)	Total Days	Records/Day (Periods)	Fields/Rec. (Variables)	Total Records	Total Fields	File Size (per Day)	Total space used (bytes)
Main Site	1984	01200984.###	135	234	None	100	24	24	2,400	57,600	6,936	693,600
Main Site	1984	01200984.DAY	135	234	None	100	1	9	100	900	6,501	6,501
Marantz	1984	02210384.###	135	231	None	97	24	24	2,328	55,872	6,096	591,312
Marantz	1984	02210384.DAY	135	231	None	97	1	9	97	873	6,306	6,306
Main Site	1985	01200985.###	116	262	None	147	24	24	3,528	84,672	6,768	994,896
Main Site	1985	01200985.DAY	113	265	None	153	1	27	153	4,131	29,223	29,223
Marantz	1985	02210385.###	154	258	None	105	24	24	2,520	60,480	6,600	693,000
Marantz	1985	02210385.DAY	154	258	None	105	1	9	105	945	6,826	6,826
Waterhole Lake	1985	02240685.DAY	166	228	None	63	1	9	63	567	4,095	4,095
Site 1	1987	01121087.###	152	227	None	76	24	59	1,824	107,616	9,960	756,960
Site 1	1987	01121087.DAY	152	227	None	76	1	9	76	684	4,941	4,941
Site 2	1987	01130187.###	152	228	None	77	24	58	1,848	107,184	9,792	753,984
Site 2	1987	01130187.DAY	152	227	None	76	1	9	76	684	4,941	4,941
Site 3	1987	01140187.###	152	225	None	74	24	57	1,776	101,232	9,624	712,176
Site 3	1987	01140187.DAY	152	225	None	74	1	9	74	666	4,811	4,811
Site 4	1987	01010187.###	152	225	None	74	24	58	1,776	103,008	9,792	724,608
Site 4	1987	01010187.DAY	152	225	None	74	1	9	74	666	4,811	4,811
Sedge	1989	01010189.###	170	244	None	75	48	72	3,600	259,200	24,288	1,821,600
Sedge	1990	01010190.###	170	234	None	65	48	60	3,120	187,200	20,256	1,316,640
Sedge	1990	01010190.DAY	170	234	None	65	1	2	65	130	1,041	1,041
Willow	1990	01020290.###	170	236	None	67	48	84	3,216	270,144	28,320	1,897,440
Willow	1990	01020290.DAY	170	236	None	67	1	2	67	134	1,072	1,072
Sedge	1991	01010191.###	167	236	None	70	48	63	3,360	211,680	21,264	1,488,480
Sedge	1991	01010191.DAY	166	237	None	72	1	7	72	504	3,672	3,672
Willow	1991	01020291.###	166	235	None	70	48	58	3,360	194,880	19,584	1,370,880
Willow	1991	01020291.DAY	166	235	None	70	1	2	70	140	1,120	1,120
Ridge	1991	01030391.###	172	235	205-209	59	48	57	2,832	161,424	19,248	1,135,632
Golf Lake	1991	01060691.###	172	236	None	65	48	42	3,120	131,040	14,208	923,520
Golf Lake	1991	01060691.DAY	172	236	None	65	1	4	65	260	1,950	1,950
Eastern Creek	1991	01110791.###	163	237	None	75	96	7	7,200	50,400	4,896	367,200
Eastern Creek (CM)*	1991	01110791.DAY	160	233	None	74	1	5	74	370	2,738	2,738
Eastern Creek Basin	1991	01150891.DAY	160	236	None	77	1	38	77	2,926	20,636	20,636
Sedge	1992	01010192.###	160	247	None	88	48	62	4,224	261,888	20,928	1,841,664
Sedge	1992	01010192.DAY	160	247	None	88	1	13	88	1,144	8,185	8,185
Eastern Creek	1992	01110792.###	163	239	None	77	96	8	7,392	59,136	5,568	428,736
Eastern Creek (CM)*	1992	01110792.DAY	163	239	None	77	1	7	77	539	3,927	3,927
Eastern Creek Basin	1992	01150892.DAY	163	239	None	77	1	20	77	1,540	10,934	10,934
Sedge	1993	01010193.###	165	236	None	72	48	85	3,456	293,760	28,656	2,063,232
Sedge	1993	01010193.DAY	165	236	None	72	1	13	72	936	6,696	6,696
Eastern Creek	1993	01110793.###	168	238	None	71	96	7	6,816	47,712	4,896	347,616
Eastern Creek (CM)*	1993	01110793.DAY	171	238	None	68	1	7	68	476	3,468	3,468
Eastern Creek Basin	1993	01150893.DAY	171	238	None	68	1	19	68	1,292	9,180	9,180

Data Set	Year	File Names	Start	End	Data Breaks (i.e. daily files missing)	Total Days	Records/Day (Periods)	Fields/Rec. (Variables)	Total Records	Total Fields	File Size (per Day)	Total space used (bytes)
Sedge	1994	01010194.###	157	238	None	82	48	104	3,936	409,344	35,040	2,873,280
Sedge	1994	01010194.DAY	157	238	None	82	1	12	82	984	7,052	7,052
Eastern Creek	1994	01110794.###	167	238	None	72	96	5	6,912	34,560	3,552	255,744
Eastern Creek Basin	1994	01150894.DAY	165	238	None	74	1	18	74	1,332	9,472	9,472
Mobile_Qg-Sedge	1994	01190194.###	170	187	None	18	48	34	864	29,376	11,520	207,360
Mobile_Qg-Forest	1994	01190594.###	190	206	None	17	48	34	816	27,744	11,520	195,840
Mobile_Qg-Lichen	1994	01190394.###	207	222	None	16	48	34	768	26,112	11,520	184,320
Mobile_Qg-Willow	1994	01190294.###	222	238	None	17	48	34	816	27,744	11,520	195,840
RCT-1	1994	01080494.###	145	365	None	221	24	10	5,304	53,040	1,728	381,888
RCT-1	1994	01080494.DAY	145	365	None	221	1	13	221	2,873	20,553	20,553
Sedge	1995	01010195.###	163	237	None	75	48	69	3,600	248,400	23,280	1,746,000
Sedge	1995	01010195.DAY	163	237	None	75	1	11	75	825	5,925	5,925
Golf Lake	1995	01060695.###	168	236	174-177	65	48	46	3,120	143,520	15,552	1,010,880
Golf Lake	1995	01060695.DAY	168	236	None	69	1	2	69	138	1,104	1,104
RCT-1	1995	01080495.###	1	365	175-177	362	24	10	8,688	86,880	1,728	625,536
RCT-1	1995	01080495.DAY	1	365	None	365	1	13	365	4,745	33,945	33,945
Pfrost	1995	01160195.###	242	365	None	124	96	32	11,904	380,928	21,696	2,690,304
Rocky	1995	01040495.###	178	236	None	59	48	55	2,832	155,760	18,576	1,095,984
Eddy-CV	1995	01170195.###	257	289	None	33	48	10	1,584	15,840	3,456	114,048
Sedge	1996	01010196.###	156	238	None	83	48	68	3,984	270,912	22,944	1,904,352
Sedge	1996	01010196.DAY	156	238	None	83	1	9	83	747	5,396	5,396
RCT-1	1996	01080496.###	1	366	168-178, 239-242	351	24	10	8,424	84,240	1,728	606,528
RCT-1	1996	01080496.DAY	1	366	None	366	1	13	366	4,758	34,038	34,038
RCT-2	1996	01090196.###	167	366	None	200	24	18	4,800	86,400	3,072	614,400
Pfrost	1996	01160196.###	1	361	56-99	317	96	32	30,432	973,824	21,696	6,877,632
Eddy-CV	1996	01170196.###	2	366	1, 54-180, 236-240,317-328	221	48	10	10,608	106,080	3,456	763,776
Rodney	1996	01230396.###	162	366	237-240	201	48	15	9,648	144,720	5,136	1,032,336
Beach	1996	01030396.###	156	236	None	81	48	51	3,888	198,288	17,232	1,395,792
Beach	1996	01030396.DAY	156	236	None	81	1	9	81	729	5,265	5,265
LowTVC	1996	03180196.###	143	366	None	224	48	15	10,752	161,280	5,136	1,150,464
Sedge	1997	01010197.###	155	249	None	95	48	77	4,560	351,120	25,968	2,466,960
Sedge	1997	01010197.DAY	155	249	None	95	1	11	95	1,045	7,505	7,505
RCT-1	1997	01080497.###	1	365	None	365	24	10	8,760	87,600	1,728	630,720
RCT-1	1997	01080497.DAY	1	365	None	365	1	13	365	4,745	33,945	33,945
RCT-2	1997	01090197.###	1	365	None	365	24	18	8,760	157,680	3,072	1,121,280
Rodney	1997	01230397.###	1	43	None	43	48	15	2,064	30,960	5,136	220,848
Eddy-CV	1997	01170197.###	1	43	None	43	48	10	2,064	20,640	3,456	148,608
LowTVC	1997	03180197.###	1	365	21-112, 137-138	271	48	25	13,008	325,200	8,496	2,302,416
UpTVC	1997	03220297.###	140	365	None	226	48	26	10,848	282,048	8,832	1,996,032
RCT-1	1998	01080498.###	1	301	161-163	298	24	10	7,152	71,520	1,728	514,944
RCT-1	1998	01080498.DAY	1	301	None	301	1	13	301	3,913	27,993	27,993
RCT-2	1998	01090198.###	1	365	None	365	24	18	8,760	157,680	3,072	1,121,280
LowTVC	1998	03180198.###	1	229	None	229	48	25	10,992	274,800	8,496	1,945,584
UpTVC	1998	03220298.###	1	229	None	229	48	26	10,992	285,792	8,832	2,022,528

No. of Data Sets= **86** TOTAL = **61,675,976**

* CM=Current Metering Sessions # Files= 7006