



SnowEx20 Senator Beck Basin Transect Ground Surface Temperature, Version 1

USER GUIDE

How to Cite These Data

As a condition of using these data, you must include a citation:

Derry, J. 2020. *SnowEx20 Senator Beck Basin Transect Ground Surface Temperature, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. <https://doi.org/10.5067/85ATFFAR0SCH>. [Date Accessed].

FOR QUESTIONS ABOUT THESE DATA, CONTACT NSIDC@NSIDC.ORG

FOR CURRENT INFORMATION, VISIT https://nsidc.org/data/SNEX20_SB_GST



National Snow and Ice Data Center

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1 DATA DESCRIPTION

1.1 Parameters

The main parameter for this data set is ground surface temperature, measured in degrees Celsius (°C).

1.2 File Information

1.2.1 Format

Data files are provided in Comma-Separated Values (CSV) format.

Extensible Markup Language (.xml) files with associated metadata are also provided.

1.2.2 File Contents

Data are provided in nine columns:

- Column 1: Date of measurement, in MM/DD/YY format
- Column 2: Time of measurement, in HH:MM:SS format
- Columns 3-9: Temperature readings, in °C, from the seven data collection points (see Table 1 for more details)

Date	Time	BS10N	BS08N	BS06N	BS03S	BS01S	BS25S	BS22S
10/20/19	12:01:01 AM	-6.979	-5.458	-4.516	-5.94	-5.505	-3.471	-5.026
10/20/19	1:01:01 AM	-6.979	-5.962	-5.019	-5.94	-5.505	-3.471	-5.53
10/20/19	2:01:01 AM	-7.482	-6.467	-5.523	-5.94	-6.008	-3.974	-5.53
10/20/19	3:01:01 AM	-7.986	-7.477	-7.034	-5.94	-7.016	-5.483	-6.539
10/20/19	4:01:01 AM	-7.482	-7.982	-7.538	-5.94	-7.016	-5.986	-6.539
10/20/19	5:01:01 AM	-7.482	-10.002	-10.057	-5.94	-10.041	-7.998	-9.565
10/20/19	6:01:01 AM	-6.979	-11.518	-11.066	-5.94	-9.033	-6.992	-7.547
10/20/19	7:01:01 AM	-6.476	-12.023	-9.049	-5.94	-7.52	-6.489	-8.556
10/20/19	8:01:01 AM	-6.979	-12.529	-8.545	-5.94	-7.016	-6.489	-11.08
10/20/19	9:01:01 AM	-7.986	-13.035	-9.049	-5.94	-7.016	-6.489	-12.09

Figure 1. Column Headers and the First Ten Rows of Data from File: Senator_Beck_Temp_at_Ground_Surface.csv.

1.2.3 Naming Convention

Data are provided in a single file, Senator_Beck_Temp_at_Ground_Surface.csv.

1.3 Spatial Information

1.3.1 Coverage

Data were collected from seven locations, described in Table 1. These points fall along two plant monitoring transects in the Upper Basin of the Senator Beck Study Basin in Senator Beck, Colorado (Figure 2). Location names derive from the Center for Snow and Avalanche Studies naming conventions.

Table 1. Spatial locations for the seven ground surface temperature points.

Location Name	Location Short Name	Elevation (feet above sea level)	Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)
Baseline Study 10 North	BS10N	13,085	37°55'05.90242"	-107°43'49.54959"
Baseline Study 8 North	BS08N	12,751	37°54'49.49239"	-107°43'48.91099"
Baseline Study 6 North	BS06N	12,538	37°54'34.80341"	-107°43'48.49488"
Baseline Study 3 South	BS03S	12,337	37°54'25.47632"	-107°43'48.05003"
Baseline Study 1 South	BS01S	12,554	37°54'17.89943"	-107°43'47.59676"
Baseline Study 25 South	BS25S	12,119	37°54'25.82148"	-107°43'24.24722"
Baseline Study 22 South	BS22S	12,075	37°54'15.90531"	-107°43'23.77804"

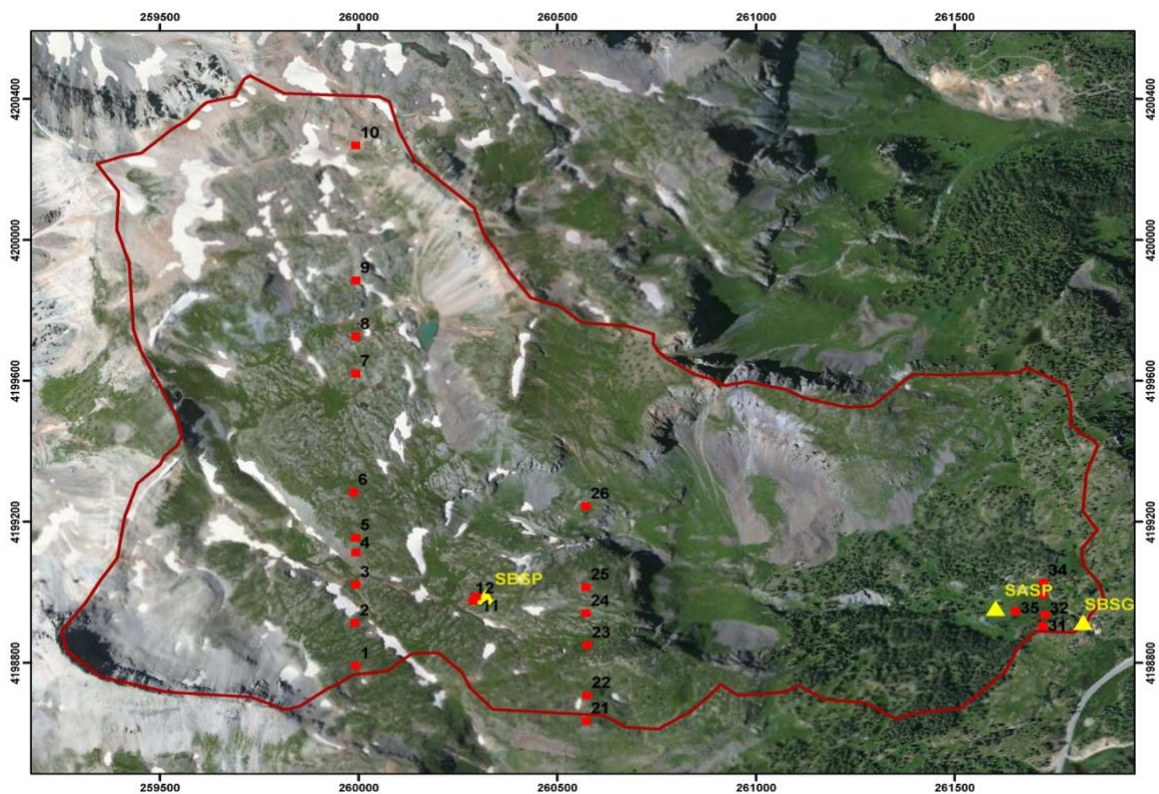


Figure 2. Map of the Senator Beck Study Basin: red dots show the plant inventory transects along which iButton temperature sensors were placed and correspond to the Baseline Study locations defined in Table 1. Yellow triangles represent other observation points – SBSP and SASP are climate stations while SBSG is a stream gauge station. See Section 8 Appendix for a larger map.

1.3.2 Resolution

Data are point measurements unevenly spaced along two transects.

1.3.3 Geolocation

This data set uses the WGS 84 geographic coordinate system ([EPSG: 4326](https://epsg.org/epsg/4326)).

1.4 Temporal Information

1.4.1 Coverage

20 October 2019 through 18 July 2020

1.4.2 Resolution

Hourly

2 DATA ACQUISITION AND PROCESSING

2.1 Background

Ground surface temperature measurements were collected along two plant monitoring transects in the Upper Basin of the Senator Beck Study Basin (Figure 2). These plant monitoring transects correspond to plant community monitoring efforts conducted by the Center for Snow and Avalanche Studies every five years. More details on the [Senator Beck Basin Baseline Plant Community Monitoring](#) effort can be found on the Center for Snow and Avalanche Studies website.

2.2 Acquisition

Seven iButton temperature sensors collected temperature readings every hour during the 2020 snow season. Temperature sensors were wrapped in a single layer of waterproof rubber tape. They were also hung, using the same waterproof rubber tape, in the middle of a 3-foot by 4-inch PVC tube. The ends of each tube were covered in a wire screen. PVC tubes were designed to minimize the influence of solar radiation, to prevent the sensor from touching anything (thereby minimizing conduction), and to protect the sensors from animals and the elements. See Figure 3 for a picture of one of the PVC tubes, as deployed in the field.

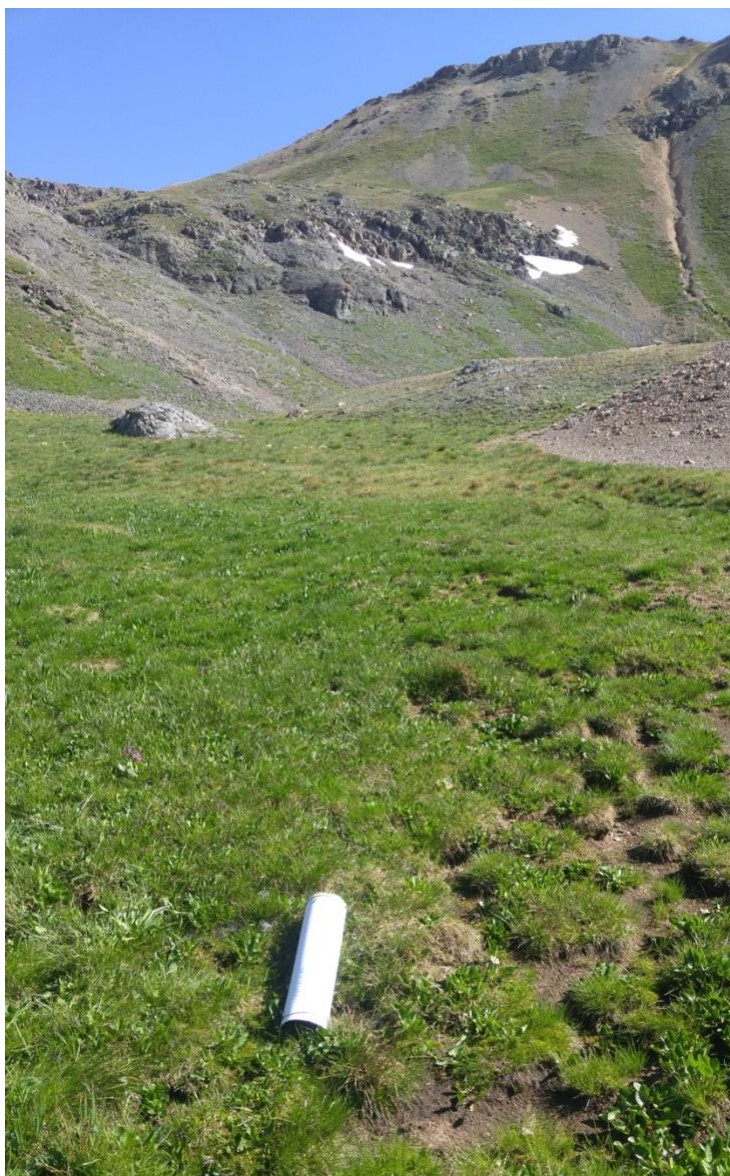


Figure 3. Example of a PVC tube with iButton temperature sensor inside deployed in the field.

2.3 Processing

iButton sensors output temperature directly, so no processing was required.

2.4 Quality, Errors, and Limitations

When sensors were collected in July 2020, one iButton sensor (at station BS06N) was uncovered approximately 100 yards from its initial deployment spot. One theory is that the sensor was dragged by an animal.

2.5 Instrumentation

2.5.1 Description

Data were collected using iButton temperature sensors.

3 VERSION HISTORY

Initial release.

4 RELATED DATA SETS

[SnowEx | Overview](#)

5 RELATED WEBSITES

[The Center for Snow and Avalanche Studies](#)

[SnowEx at NASA](#)

6 CONTACTS AND ACKNOWLEDGMENTS

Jeff E. Derry

Center for Snow and Avalanche Studies

Silverton, CO 81433

7 DOCUMENT INFORMATION

7.1 Publication Date

September 2020

7.2 Date Last Updated

September 2020

8 APPENDIX – ENLARGED FIGURE 1

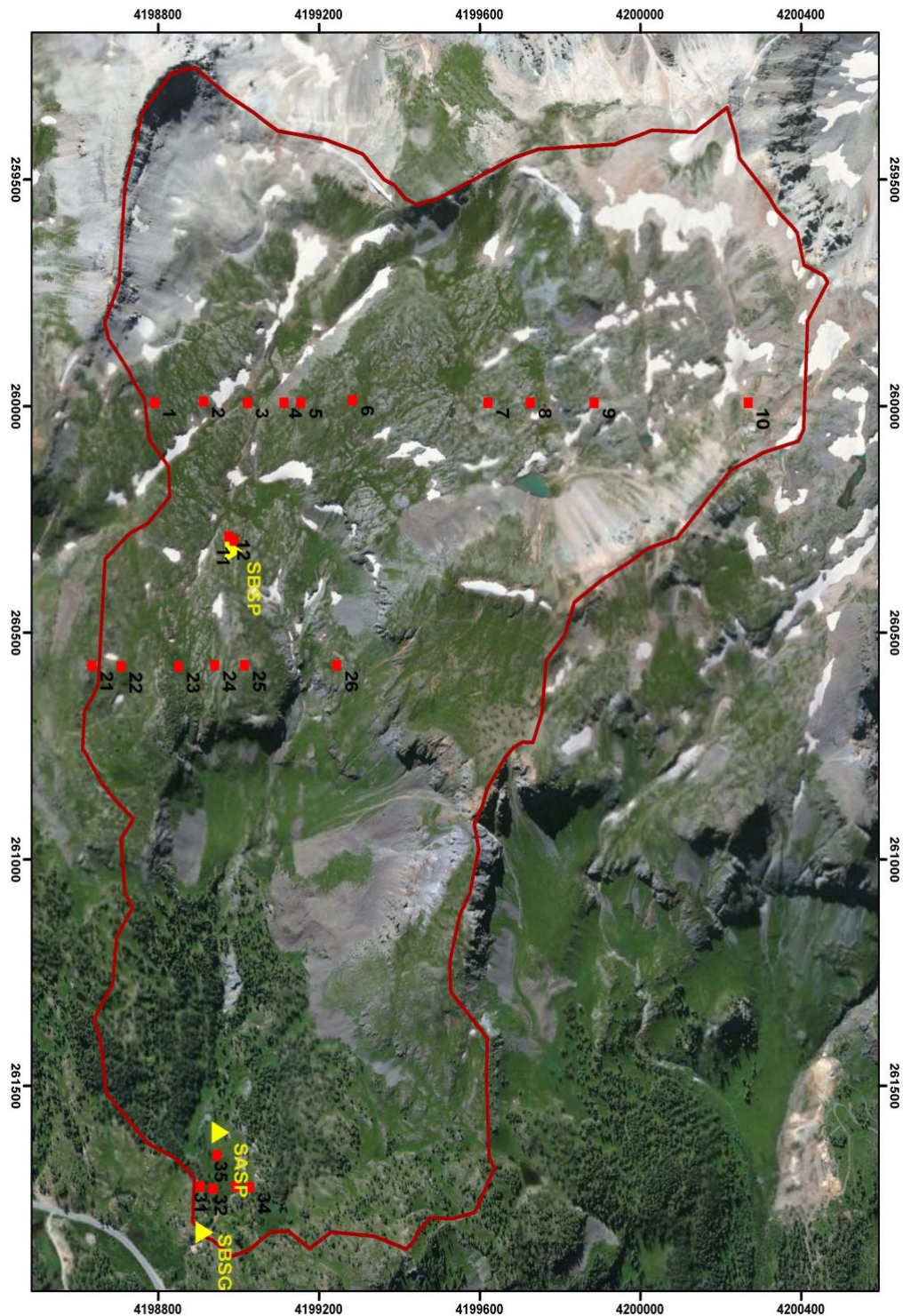


Figure A 1. Map of the Senator Beck Study Basin. Red dots show the plant inventory transects along which iButton temperature sensors were placed and correspond to the Baseline Study locations. Yellow triangles represent other observation points - SBSP and SASP are climate stations while SBSG is a stream gauge station.