



Environmental Working Group Arctic Meteorology and Climate Atlas, Version 1

USER GUIDE

How to Cite These Data

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

Environmental Working Group. Edited by F. Fetterer and V. F. Radionov. 2000. *Environmental Working Group Arctic Meteorology and Climate Atlas, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NSIDC: National Snow and Ice Data Center. <https://doi.org/10.7265/N5MS3QNJ>. [Date Accessed].

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National Snow and Ice Data Center

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1 OVERVIEW

The Environmental Working Group (EWG) was established in June 1995 under the framework of the U.S.-Russian Joint Commission on Economic and Technological Cooperation. In January 1996, the EWG Arctic Climatology Group took on the task of compiling digital data on arctic regions to expand scientific understanding of the Arctic. This work resulted in a set of three atlases on CD-ROM for arctic oceanography, sea ice, and meteorology. The contents of the CD-ROM is available for digital download from NSIDC FTP. Note: This online user guide is an overview of the Atlas and was prepared by NSIDC based on the complete documentation available as part of the digital download. However, this online documentation does include an important Addendum and Errata section that is not included in the CD-ROM's documentation.

2 ATLAS SECTIONS

The Arctic Meteorology and Climate Atlas was developed by specialists from the Arctic and Antarctic Research Institute (AARI), St. Petersburg, Russia; the University of Washington, Seattle; and the National Snow and Ice Data Center, University of Colorado, Boulder, USA. The Atlas has three main sections.

1. "A Look Back" highlights some chapters in the history of arctic exploration and weather observation and includes a condensed translation of an AARI publication detailing the Russian North Pole drifting station program, as well as a photo gallery from the North Pole stations:
2. "Arctic meteorology and climate: A Primer for newcomers to the North" is a collection of informative facts concerning elements of meteorology and climate with an emphasis on phenomena that occur in the Arctic. In addition, the Primer includes an article on Inuit climate knowledge, a monograph on weather hazards in the Russian Arctic translated from Russian into English, and a glossary of meteorology in English and Russian.
3. The "Data and Documentation" section of the Atlas contains gridded fields and station data from Russian and other sources. An HTML interface allows the user to plot data from the coastal stations and floating platforms. Station and platform data are in ASCII files. Gridded fields are climatological monthly mean fields of meteorological parameters based on the best available existing products improved, when possible, with new data. Gridded field data are in ASCII EASE-Grid format files with a cell size of 250 km. Corresponding browse files are .gif format images. In addition to data, this section of the Atlas contains the following documents in both Russian and English:
 - A Climatology of Arctic Clouds by Inga Nikolayevna Zavyalova
 - The Solar Radiation Regime of the Arctic (Description of the Marshunova Radiation Climatology) by M. S. Marshunova
 - Technological Handbook of the Climate of Russia (Arctic Region): Solar Radiation, edited by V.F. Radionov

3 DETAILED DATA DESCRIPTION

3.1 Gridded Fields

Two-meter air temperature: Monthly means, standard deviation, and coefficient of variation for the 1980s and 1990s.

Sea level pressure: Decadal monthly means for the 1950s through 1990s; period-of-record monthly means for 1951 through 1990; long-term monthly means for 1961 through 1990; and fields of anomaly, standard deviation, and coefficient of variation.

Precipitation: Monthly mean fields for the period 1951 to 1990 in millimeters (averaged over the month).

Cloud: Decadal monthly mean fields of total and low cloud cover for 1952 through 1995; long-term monthly mean fields of total and low cloud cover for 1952 through 1995.

Snow: Monthly mean snow depth fields on land for 1966 through 1982; monthly mean snow depth fields for the Arctic ocean for 1954 through 1991; monthly mean snow water equivalent fields for the Arctic ocean for 1954 through 1991.

Global solar radiation: Climatological monthly means. In addition, the "Gridded Fields" section of the Atlas contains a climatology of direct, global and net radiation from Russian and other sources, compiled and scanned at AARI by M. S. Marshunova.

3.2 Coastal Station Data

Monthly means of meteorological observation data from 65 Russian and 24 western coastal and island stations for a period that includes the early 1950's through 1990 are provided. The Russian station observations include two-meter air temperature, sea level pressure, total and low cloud amount, and relative humidity. The western station observations include sea level pressure, two-meter air temperature, and precipitation. After 1960, a moisture parameter (relative humidity or dew point temperature) is generally available.

3.3 Floating Platform Data

The data in this section of the Atlas, taken together, provide observations with better spatial and temporal coverage of the Arctic ocean than has generally been available in the past. These data are three or six hourly synoptic data, monthly means, or in the case of DARMS, once daily observations.

Data are from:

Russian "North Pole" drifting stations: Two-meter air temperature, sea level pressure, total and low cloud, surface temperature, and wind velocity, for years spanning 1938 to 1991.

Western drifting stations: The earliest data are from the Fram in 1893, and the latest are from the AIDJEX experiment in 1975 and 1976. Parameters vary but all stations include two-meter air temperature, surface air pressure, wind speed and direction, and humidity data. Note that oceanographic data from certain Western drifting stations may be found in the [National Oceanic Data Center's World Ocean Database](#).

Russian Drifting Automatic Radiometeorological Stations (DARMS): Wind speed and direction, surface air pressure and air temperature from 1958 through 1975.

Russian Ice Patrol ships: Wind speed and direction, air pressure, air temperature, sea surface temperature, total cloud amount, low cloud amount, and relative humidity for voyages from 1952 through 1982.

3.4 Addendum and Errata

1. The Primer section has an error in the description of the Arctic Oscillation (found in file:///EWG_V1.0/HTML/PRIMER/PATTERNS/index.htm). The sentence "In the *negative* phase, frigid winter air does not extend as far into the middle of North America as it would during the *positive* phase of the oscillation" is incorrect: it should read "In the *positive* phase, frigid winter air does not extend as far into the middle of North America as it would during the *negative* phase of the oscillation."
2. Gridded fields of 2-meter air temperature are constructed using the University of Washington's International Arctic Buoy Program/Polar Exchange at the Sea Surface (IABP/POLES) temperature analysis fields. Updates and revisions to these fields can be obtained from the University of Washington's [International Arctic Buoy Programme \(IABP\) / Polar Exchange at the Sea Surface \(POLES\)](#).
3. The PDF version of the technical documentation is missing Figure 7. Figure 7 can be viewed using the html version of the documentation in file:///EWG_V1.0/HTML/DATA/DOCUMENTATION/index.htm, under Russian Drifting, Floating Platforms.
4. The documentation for Gridded Fields, Solar Radiation contains an error in the section on data sources for global radiation fields, ocean data sources. The sentence "Radiation data from the Russian North Pole (NP) drifting stations were compiled by AARI scientists as monthly averages for the mean position of stations NP-17 through NP-31 [Marshunova and Mishin, 1994], and obtained from *Daily Arctic Ocean Rawinsonde Data from Soviet Drifting Ice Stations*, a CD-ROM product of AARI, University of Washington Polar Science Center, and NSIDC" should instead read "Radiation data from the Russian North Pole (NP) drifting stations were compiled by AARI scientists as monthly averages for the mean position of stations NP-17 through NP-31 [Marshunova and Mishin, 1994], and obtained from *Arctic*

Ocean Snow and Meteorological Observations from Drifting Stations, a CD-ROM product of AARI, University of Washington Polar Science Center, and NSIDC."

5. Oceanographic data from certain Western drifting stations may be found in the [National Oceanic Data Center's World Ocean Database](#).
6. All station data reflect sea-level pressure, not surface pressure.

4 REFERENCES AND RELATED PUBLICATIONS

Colony, R., V. Radionov, and F. J. Tanis. 1998. Measurements of precipitation and snow pack at Russian North Pole drifting stations. *Polar Record* 34(188): 3-14.

Warren, S. G., I. G. Rigor, N. Untersteiner, V. F. Radionov, N. N. Bryazgin, Y. I. Aleksandrov, and R. Colony. 1999. Snow depth on Arctic sea ice. *Journal of Climate* 12: 1814-1829.

doi: [https://doi.org/10.1175/1520-0442\(1999\)012%3C1814:SDOASI%3E2.0.CO;2](https://doi.org/10.1175/1520-0442(1999)012%3C1814:SDOASI%3E2.0.CO;2).

4.1 Related Data Collections

[EWG Joint U.S.-Russian Atlas of the Arctic Ocean](#)

[EWG Joint U.S.-Russian Arctic Sea Ice Atlas](#)

[Meteorological Data from the Russian Arctic, 1961-2000](#)

[Daily precipitation sums at coastal and island Russian Arctic stations, 1940-1990](#)

[Monthly mean precipitation sums at Russian Arctic stations, 1966-1990](#)

[Historical Sea Ice Atlas](#)

[Global Digital Sea Ice Data Bank](#)

5 CONTACTS AND ACKNOWLEDGMENTS

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6 DOCUMENT INFORMATION

6.1 Document Authors

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6.2 Publication Date

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6.3 Date Last Updated

January 2010; A. Windnagel: Added overview table and clarified how to acquire the data.