

NOAA@NSIDC's IPY/SEARCH Activities

Note: This document was last updated in 2007 and is no longer being updated. It is being retained for reference and historical purposes only.

The NOAA Arctic Research Program (ARP) funded NOAA@NSIDC to provide data management support for some of its Study of Environmental Arctic Change (SEARCH) activities. SEARCH program researchers need long-term and pan-arctic observations in order to detect climate change and to put change in context within space and time. NOAA SEARCH activities were ARP's contribution to the 2007-2008 International Polar Year (IPY).

Highlights of our work are below; the [Final Report, September 2006](#) has a more complete account.

1 PROTOTYPE CRYOSPHERIC CLIMATE INDICATORS

Continuous records of soil temperature, vegetation greenness, and sea ice extent are used to give an at-a-glance picture of a changing Arctic. These prototype cryospheric climate indicators were developed to supplement the indicators on the NOAA Arctic Change Web site. Visit the [Arctic Change: A Near-Real-Time Arctic Change Indicator](#) Web site to see these indicators of climate.

Funding constraints prevented us from developing these prototypes fully. The [Sea Ice Index](#) was an exception. With NOAA support, the index was extended back in time to 1979 with satellite passive microwave data from the Scanning Multi-channel Microwave Radiometer (SMMR) instrument. Prior to this instrument cross-calibration work, which took place in 2004, the popular Sea Ice Index time series began in 1988 with passive microwave data from the Special Sensor Microwave Image (SSM/I) instrument data.

2 PRECIPITATION DATA

We documented overlap between inventoried data sets, and acquired and published precipitation data.

Precipitation data sets published as part of this work are the following:

- [Monthly mean precipitation sums at Russian Arctic stations, 1966-1990](#) (G02170)
- [Meteorological Data from the Russian Arctic, 1961-2000](#) (G02141)
- [Daily precipitation sums at coastal and island Russian Arctic stations, 1940-1990](#) (G02164)

Precipitation data set inventory and overlap assessments, though dated, may be useful. See the Precipitation Data Set Station Lists and Overlap Analysis section for these inventories and assessments.

3 PUBLICATIONS

Fetterer, F., and K. Knowles. 2002, updated 2006. [Sea ice index](#). Boulder, Colorado USA: National Snow and Ice Data Center. Digital media.

Fetterer, F., and K. Knowles. 2004. Sea ice index monitors polar ice extent. *EOS Transactions of the American Geophysical Society* 85: 163.

Fetterer, F., and I. Smolyar. 2005. On the Creation of Environmental Data Sets for the Arctic Region. *Arctic Research of the United States NSF05-39 Vol. 19*: 15 pp.

National Snow and Ice Data Center, compiler. 2006. Monthly mean precipitation sums at Russian Arctic stations, 1966-1990. Boulder, Colorado USA: National Snow and Ice Data Center. Digital media.

National Snow and Ice Data Center. 2003. Meteorological data from the Russian Arctic, 1961-2000. Compiled by V. Radionov. Boulder, Colorado USA: National Snow and Ice Data Center. Digital media.

Overland, J., F. Fetterer, D. McGuire, J. Richter-Menge, and J. Walsh. 2003. [SEARCH Workshop on Large-Scale Atmosphere-Cryosphere Observations](#). *Bulletin of the American Meteorological Society*, DOI: 10.1175/BAMS-84-8-1077, 1077-1082.

Overland, J., F. Fetterer, D. McGuire, J. Richter-Menge, and J. Walsh, 2002. SEARCH Workshop on Large-Scale Atmosphere/Cryosphere Observations. *NOAA OAR Special Report Contribution 2452*, Pacific Marine Environmental Laboratory Seattle, WA: 82 pp.

Radionov, V.F., Ye. I. Aleksandrov, P.N. Svyashchennikov, and F. Fetterer. 2004. Daily precipitation sums at coastal and island Russian Arctic stations, 1940-1990. Boulder, Colorado USA: National Snow and Ice Data Center. Digital media.

4 PROGRESS REPORT

[Observations for SEARCH: Data Integration for Arctic Reanalysis and Change Detection](#)
(September 2006)

5 PRECIPITATION DATA SET STATION LISTS AND OVERLAP ANALYSIS

An analysis of the overlap in station coverage for various precipitation data sets was performed between June 2003 and February 2004 by B. Raup. This analysis was undertaken to provide information that would guide the acquisition of data to fill gaps. The work was funded by the NOAA Arctic Research Program.

Throughout this analysis, data sets are referred to by a letter and number designation rather than by a title. These NSIDC reference designations are linked to data set title and source in a table. See the [Precipitation Data Set Inventory](#) PDF document. This table also contains information about bias corrections and coverage for the featured data sets. The table is not meant to be an exhaustive inventory, but rather a summary of the data sets most likely to be important for SEARCH investigations.

Figure 1 shows a map of station locations for precipitation data sets in the inventory table. Note that in the map the C5 dots in Alaska overlay the C6 dots. For a map of stations from W5, see Figure 2. A first step was to create station location listings in a uniform format. Overlap could then be evaluated using station ID and/or proximity.

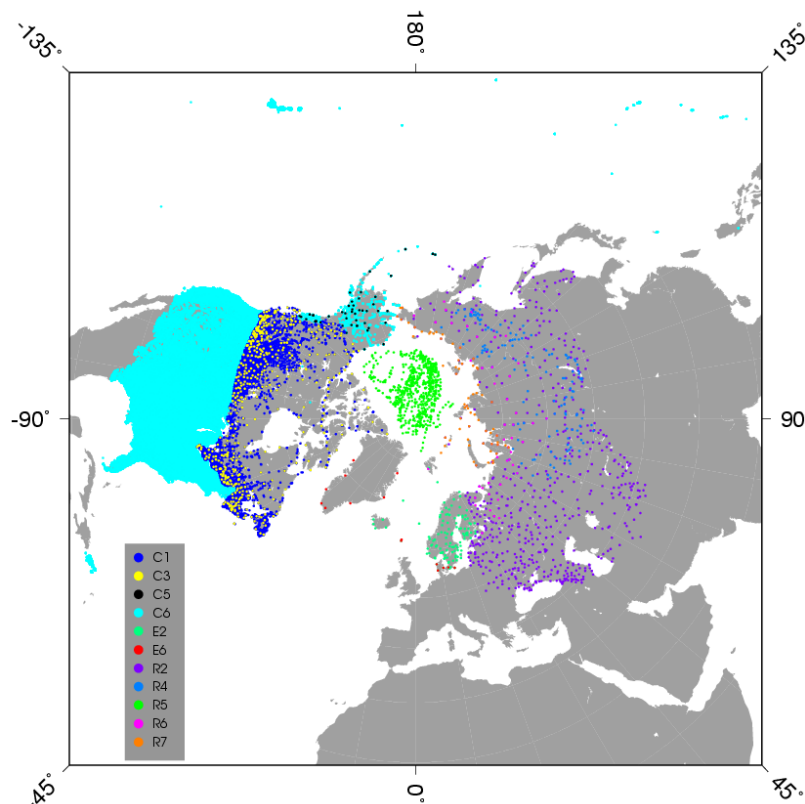


Figure 1. Map of station locations for precipitation data sets listed in the inventory table.

GDCN Stations

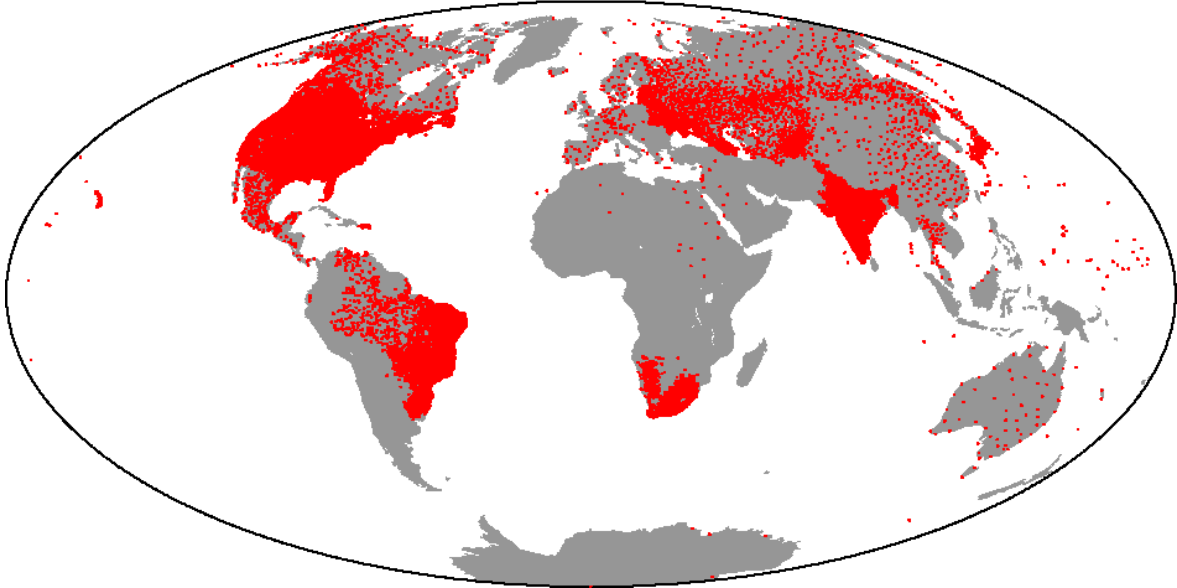


Figure 2. Global Daily Climatology Network Station Map from W5