

Reconstructed North American Snow Extent, 1900-1993, Version 1

USER GUIDE

How to Cite These Data

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

Frei, A. and D. A. Robinson. 2002. *Reconstructed North American Snow Extent, 1900-1993, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NSIDC: National Snow and Ice Data Center. <https://doi.org/10.7265/N5000014>. [Date Accessed].

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

FOR CURRENT INFORMATION, VISIT <https://nsidc.org/data/G02130>

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1 OVERVIEW

This data set contains reconstructed monthly North American snow extent values for November through March, 1900-1993. Station-based snow observations are available for dates since the early twentieth century but lack comprehensive spatial coverage. A remotely sensed product based on visible-band imagery provides more complete spatial coverage but has been available only since the early 1970s. Investigators used a combination of satellite and station observations and based the reconstruction on linear regressions between the two types of observations. Additionally, the data set includes standard errors of estimates and the observed values upon which the regressions were based.

Figure 1 shows the reconstructed time series for North American snow extent for February from 1900-1993. Red dots are observed values and blue bold lines are reconstructed values. The figure also shows reconstructed values ± 1 standard error (blue solid lines). Note that reconstructed values can underestimate the magnitude, but not the sign, of the variations.

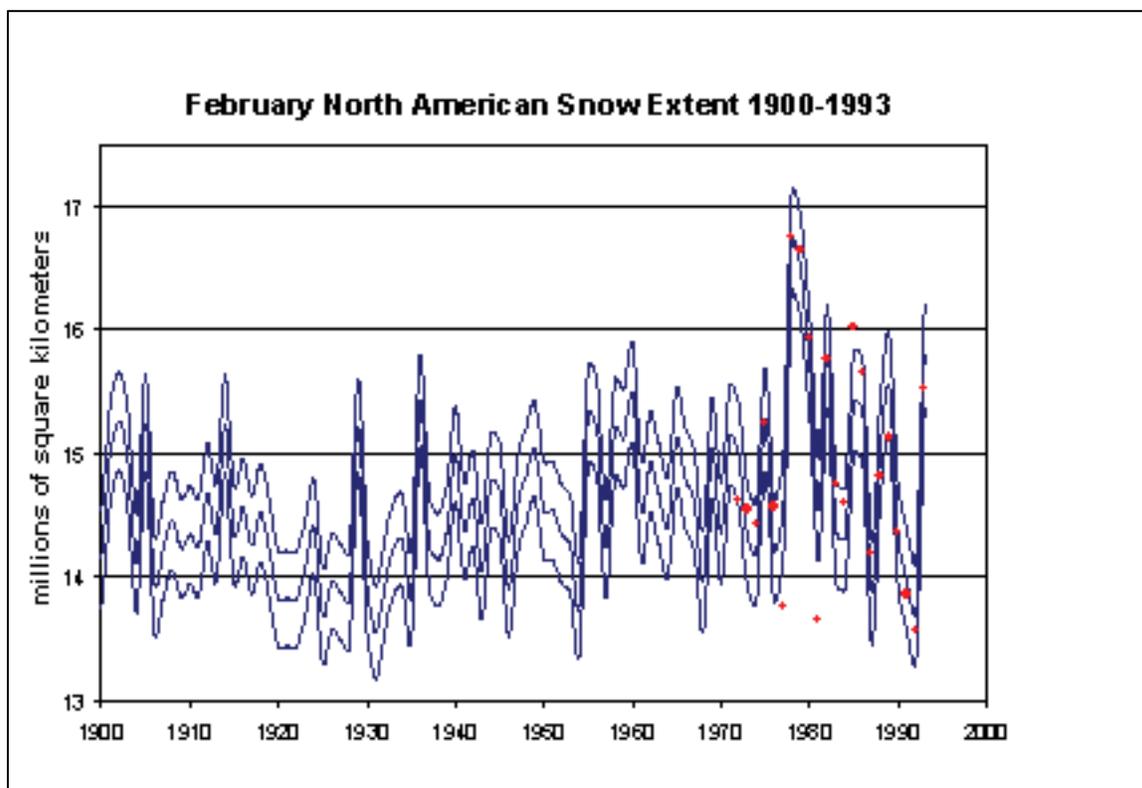


Figure 1. Reconstructed time series for North American snow extent for February, 1900-1993

Since the reconstructed values of snow extent are based on regression, variability in extent is underestimated, and therefore the magnitude of some extreme extent values is underestimated. However, in no case during the satellite era, when both data sets were available, was the sign of the reconstructed deviation from the mean extent different than observed.

2 DETAILED DATA DESCRIPTION

2.1 Format

The data are in ASCII text format.

2.2 File Size

8 Kb.

2.3 Spatial Coverage

The data set contains reconstructions of snow cover extent for North America.

2.4 Temporal Coverage and Resolution

The data span ranges from December 1900 to March 1993 and contains time series of reconstructed monthly snow extent.

2.5 Parameter or Variable

The data consist of reconstructed monthly snow extent values, standard errors, and observed values (when available). All values are in units 106 km².

2.5.1 Sample Data Record

Refer to the next page for a sample data record.

Year	Nov- R	Nov- SE	Nov- Obs	Dec- R	Dec- SE	Dec- Obs	Jan- R	Jan- SE	Jan- Obs	Feb- R	Feb- SE	Feb- Obs	Mar- R	Mar- SE	Mar- Obs
1910	10.42	0.749		13.60	0.654		14.86	0.595		14.35	0.396		12.54	0.496	
1911	11.72	0.749		13.87	0.654		14.34	0.595		14.25	0.396		12.64	0.496	
1912	10.25	0.749		13.55	0.654		15.10	0.595		14.68	0.396		14.53	0.496	

Abbreviations Key:

R: Reconstructed values

SE: Standard errors of the reconstructions; can be used as confidence limits

Obs: Observed values upon which the reconstructions are based

3 DATA ACQUISITION AND PROCESSING

The investigator generated a time series of reconstructed monthly snow cover extent based on linear regressions between station-based snow observations (from the Cooperative Weather Observer Program) and remotely sensed visible-band imagery (from the NOAA polar orbiting series of satellites). Additionally, the data set includes standard errors of snow cover estimates and the observed values upon which the regressions were based.

Frei et al. (1999) and Frei and Robinson (1999) describe the reconstruction method, along with its advantages and disadvantages.

4 REFERENCES AND RELATED PUBLICATIONS

Brown, R. 2002. Reconstructed North American, Eurasian, and Northern Hemisphere snow extent, 1915-1997. Boulder, CO: National Snow and Ice Data Center. Digital media.

Frei, A. and D. A. Robinson. 1999. Northern Hemisphere snow extent: regional variability 1972-1994. *International Journal of Climatology* 19: 1535-1560.

Frei, A., D. A. Robinson and M. G. Hughes. 1999. North American snow extent: 1900-1994. *International Journal of Climatology* 19: 1517-1534.

Robinson, D. A. 1993. Historical daily climatic data for the United States. Proceedings of the Eighth Conference on Applied Climatology. Anaheim, CA. American Meteorological Society: 264-269.

Robinson, D. A., K. F. Dewey and R. R. J. Heim. 1993. Global snow cover monitoring: an update. *Bulletin of the American Meteorological Society* 74(9): 1689-1696.

Robinson, D. A. and A. Frei. 1999. Seasonal variability of Northern Hemisphere snow extent using visible satellite data. *Professional Geographer* 52(2): 307-315.

4.1 Related Data Collections

[Reconstructed North American, Eurasian, and Northern Hemisphere Snow Cover Extent, 1900-1997](#)

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6 DOCUMENT INFORMATION

6.1 Document Authors

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