

Minnesota State Climatology Office

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The Minnesota State Climatology Office (MN_SCO) exists to manage, analyze, and disseminate climate information in service to the citizens of Minnesota. The MN_SCO is funded by the State of Minnesota Department of Natural Resources - Division of Waters, and housed at the University of Minnesota - Department of Soil, Water, and Climate. This partnership was formed in 1973.

The MN_SCO assists its customers in their investigations of the climate's impact on various components of the natural environment, and on socioeconomic activities. The MN_SCO uses its climate monitoring resources to quantify weather conditions and to place these conditions within historical and geographical context. The MN_SCO also provides quantitative summaries of historical climate conditions, allowing users to make informed decisions about future activities.

In order to provide its services, the MN_SCO requires an extensive historical climate data set. The climate database managed by the MN_SCO consists of over 100 million numbers. The database features data collected by Minnesota's high spatial density precipitation monitoring program, formed in the early 1970's. This "network of networks" utilizes the efforts of water-oriented state and local agencies to assemble precipitation data from approximately 1500 observers each year. Additionally, the National Weather Service (formerly the U.S. Weather Bureau) has maintained a large scale, volunteer-based climate monitoring network in Minnesota since 1890. Other, smaller scale climate monitoring efforts extend the historical record earlier into the 19th century. The MN_SCO also archives multi-element hourly weather data gathered at Minnesota's airports.

The MN_SCO provides customers with free access to a comprehensive electronic climate database. The MN_SCO also serves its customers by offering a variety of value-added analyses of climate data in the form of narratives, maps, graphs, and tables. Customers access MN_SCO products and services via a Web site, e-mail, telephone, and office visits.

The customers of the MN_SCO are many and varied. Customers can be grouped in the following categories:

- Minnesota Department of Natural Resources (sponsoring agency)
- State, Federal, and Local Governmental Agencies
- Private Sector Professionals
- Academic Community
- General Public

ARSCO Qualifications: the MN_SCO is designated by the AASC as the official state climate office for Minnesota. The following describes the ways in which the MN_SCO addresses each of the ARSCO qualifications:

Communication Capabilities:

- full-featured web site
- fully staffed information line
- near-immediate response to e-mail inquiries

Information Services:

- Web site – the MN_SCO Web site receives visits from approximately 2800 users per day. The Web site offers users free access to nearly all of Minnesota’s digitized climate data, as well as a host of value-added products such as narratives, maps, and tabular summaries.
- The Web site offers on-line daily data entry and data maintenance capability to volunteer precipitation observers. These near real-time data are automatically transferred to the National Weather Service North Central River Forecast Center.
- Phone and e-mail – the MN_SCO answers dozens of phone calls and e-mails per week from customers with climate questions.

Research:

- In 2008, the MN_SCO began a project that compares hourly precipitation data (TD-3240) with daily precipitation data (TD-3200 and Minnesota's high spatial density precipitation monitoring program) in an effort to 1) refine or create time-of-observation metadata and 2) provide a quantitative evaluation of observer behavior. A primary use of the project concerns the preparation of data sets for NOAA's Hydrometeorological Design Studies Center work on the NOAA Atlas 14 - Midwest Volume.
- In 2008, the MN_SCO prepared a report titled "Observing the Climate". The report examines both recent and long-term observed climate trends in Minnesota. A preface to the results section describes non-climatic influences on the climate observing system. Future enhancements and revisions to this document are likely.

Outreach:

- Staff are commonly requested to attend multi-agency, multi-disciplinary meetings where a climatological perspective is required.
- Staff give frequent interviews to the state’s electronic and print media.

Monitoring and Impact Assessments:

- Web site offers a variety of routinely prepared summaries of weekly and monthly temperature, degree day, precipitation, and snow depth data.
- Web site offers a chronological journal of significant weather events, providing a description of the event, impacts, and historical context.
- The MN_SCO utilizes a list server to deliver a monthly electronic newsletter summarizing climate conditions observed during the previous month and the resulting impact on water resources (approximately 500 subscribers).
- The MN_SCO is in frequent communication with authors of the U.S. Drought Monitor.