

Title: Development of an Integrated Northern Hemisphere Snow and Ice Operational Climate Data Record

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The generation of operational climate data records (CDRs) is a critical step in providing the necessary information for scientists, decision-makers, and stakeholders to make adaptive choices that could improve the nation's resiliency to environmental change and variability, maintain our economic vitality, and improve the safety and comfort of U.S. citizens. Operational CDRs for northern hemisphere snow and ice characteristics are particularly important because interannual variations in snow and ice conditions influence ecosystems, climate, weather and water, and commerce and transportation, NOAA's four central goals.

Although several research data sets on snow and ice conditions have nearly reached a critical level of maturity in science and data preservation, they do not satisfy all of the CDR requirements listed in the [NRC \(2004a\)](#) report on creating climate data records, and there has not yet been an effort to create an integrated snow and ice CDR over the northern hemisphere. Accordingly, our goals in this project are to develop an integrated snow and ice CDR and design a framework for incorporating other complimentary CDRs into the integrated snow and ice CDR.

To accomplish these goals, our project has three main objectives, namely (1) Develop mature Northern Hemisphere terrestrial snow and sea ice CDRs with known levels of uncertainty and with community-standard metadata; (2) Assemble mature Northern Hemisphere terrestrial snow and sea ice data products into an integrated snow and ice CDR; and (3) Provide the snow and ice CDR in multiple grids, on multiple time steps, and in multiple formats for the research community, decision-makers, and stakeholders. Throughout the project, we will seek community feedback via an Advisory Council and through town hall meetings at the AGU conference in years 1 and 3 to ensure that our CDR will meet community needs.

The integrated CDR will be provided via an existing Web site (<http://climate.rutgers.edu/snowcover/>) on several time steps (daily through annual), in various grids (e.g., Equal-Area Scalable Earth, 1° x 1°), and in various formats (e.g., text, netCDF, flat binary) for access by the community. The integrated CDR will also be distributed to relevant national data centers. Upon completion of this project, the CDR will begin the transition to operational production at a NOAA center by introducing production into the ongoing operations at the Rutgers' National Climatic Data Center's Applied Research Center satellite facility. Once production confidence is fully attained and all requisite data archives and metadata are completed, the final transfer of processing to a NOAA operational center will take place. At that point, our study team will be performing scientific data stewardship activities only.