

Arctic Spatial Data Infrastructure (Arctic SDI)

Organisation:

Mapping agencies of the eight circumpolar countries

Coordinating organisations and main contact person:

- Natural Resources Canada, Canada Centre for Mapping and Earth Observation
- Agency for Data Supply and Efficiency, Denmark
- National Land Survey of Iceland
- Norwegian Mapping Authority
- Federal Service for State Registration, Cadastre and Mapping of the Russian Federation
- Swedish Mapping, Cadastral and Land Registration Authority
- U.S. Geological Survey
- National Land Survey of Finland, Heli Ursin heli.ursin@nls.fi

Description of the deliverable:

Modernize the use and reuse of existing data for cost effectiveness: Understanding and responding to the impacts of climate change and human activities in the Arctic requires accessible and reliable data to facilitate monitoring, research, management and decision making. Often data is difficult and costly to find, access and combine due to lack of standardized distribution of data and insufficient compliance to international standards. The existing data infrastructure is inefficient and if modernized will be much more cost effective.

Improve accessibility of authoritative data: The Arctic SDI was established to address the need for readily available spatial data in the northern areas of the globe. The Arctic SDI works with stakeholder organizations to make their key data accessible and interoperable. With a focus on the Arctic Council and its working groups, the Arctic SDI facilitates data sharing at all levels: local, national, regional and global. It documents and applies information management best practices, based on open international standards, to build communities of practice to share data.

A key example is the **Arctic SDI harmonized basemap**, which is produced using the existing data from the Arctic Mapping Agencies. It provides a unified topographic view over the entire Arctic with details such as elevation, rivers and lakes and other geographic features.

Expand integrative and innovative potential of Arctic data: Arctic SDI aims to make more datasets available to allow mash-ups for unanticipated applications, limited only by the imagination of the scientists and stakeholders using the data.

A key example is the **Arctic SDI Geoportal**, launched in 2014, that is built for browsing, visualizing, analyzing, and sharing spatial information. Geoportal users can combine map layers to visualize the phenomena of their choice. The Geoportal features for example a Time Series tool, which can be used to visualize how various phenomena, e.g. sea surface temperature change over time in the Arctic. Dynamic interactive maps, known as embedded maps, can be created for delivery via any website without any coding with just a few quick steps. Circumpolar place name search enables discovery of locations throughout the Arctic.

The Arctic SDI geoportal can be used free of charge by anyone, including decision makers.

Stage of development and timeline:

The Senior Arctic Officials of the Arctic Council have given formal support to the Arctic SDI. Cooperation with Arctic Council and its working groups has been started, and data from the working groups is already available in the Arctic SDI Geoportal. A circumpolar digital elevation product is being made available. Prototypes have demonstrated repeatability of science through open web based standards. Work has started with the International Hydrographic Organization – Regional Arctic Hydrographic Commission – on an ecosystems-based approach in the Arctic through the integration of land and marine spatial data infrastructure initiatives. Linkages with United Nations Sustainable Development Goals is unfolding.

Website:

<https://arctic-sdi.org/>

<https://geoportal.arctic-sdi.org/>

International scientific cooperation dimension:

The Arctic Spatial Data Infrastructure is based on a signed Memorandum of Understanding between the eight circumpolar countries' National Mapping Agencies (Canada, Finland, Iceland, Kingdom of Denmark, Norway, Russian, Sweden, and the United States of America). The lead country changes every two years in unison with Arctic Council. International cooperation includes Conservation of Arctic Flora and Fauna's Arctic Biodiversity Data Service, International Hydrographic Organization, Open Geospatial Consortium, ISO, United Nations Global Geospatial Information Management (UN-GGIM) Committee of Experts, National Science Foundation (USA), and the National Geospatial-Intelligence Agency (USA).

Relation with the themes of ASM1 and the connection with the themes of ASM2:

The Arctic SDI is based on all principles of Spatial Data Infrastructures to facilitate open data integration via published standards in support of open science and policy. The components of Arctic SDI include governance, data, standardized web services, technologies and supporting policies. Many participants in the Arctic are already using one or more of these Infrastructure components to consume or publish data. The Arctic SDI Geoportal facilitates easy access to arctic spatial data and a mechanism for distributing the data further in other websites. Since standards facilitate data interoperability there are further opportunities to understand the dynamics of Arctic Change and understanding effects on the land and marine environments and societies.