The Arctic SDI

Background

The Arctic SDI is a pan-Arctic cooperative initiative based on input from the National Mapping Organisations of all eight Arctic Council countries. It has the support of Canada, Denmark, the Faroe Island, Finland, Greenland, Iceland, Norway, Russian Federation, Sweden and the United States.

Preparations for establishing an Arctic SDI have been ongoing for a number of years. At the GeoNorth conferences in 2007 and 2009 the establishment of an Arctic SDI was proposed (http://www.sciencepoles.org/articles/article_detail/paul_jolicoeur_ipy_geonorth_2007_conference_arctic_spatial_data). During the same period the Arctic Council Working Groups released a number of reports which stressed the need for an Arctic SDI (CAFF 2008, CAFF, AMAP, and EPPR 2009).

The Arctic SDI initiative received, after a request from the Nordic Mapping Organisations, the formal support of the Arctic Council at its Senior Arctic Officials (SAO) -meeting in November 2009: "All Member States expressed their support for, and interest in participating in the Arctic SDI project" . The SAOs recognized the value of the Arctic SDI initiative and subsequently Greenland agreed to lead through the Conservation of Arctic Flora and Fauna (CAFF) project in the Arctic Council.

The first meeting of the project team with representatives of the National Mapping Agencies (NMA) from all the arctic countries and from the CAFF Working Group of the Arctic Council was held in Brussels in October 2011. At this meeting a protocol was signed which agreed to establish an interim organisation to be responsible for the production of the project plan and preparations for the formal project start.

Since then, the interim phase has ended, and the constitution of the organizational structure and the approval of the project plan took place in Reykjavik in April 2011. This has been followed up by several workshops for the technical part, and with Steering Committee meeting to ensure progress. The first Board meeting of the project is to be held in Reykjavik in late March.

Project Aim

The aim of this project is to jointly develop an Arctic SDI to include the following capabilities that will enable pan-Arctic science and societal decision support:

- Reference data as Web Map Services to establish a common image and vector base for the Arctic context at nominally 1:250,000-scale
- A searchable catalogue of map-able data resources – base maps and other geo-referenced thematic data and services
- A Web portal as primary user interface to search the catalogue and enable visual analysis of multiple base maps, thematic maps, and geographic data

With the current interest on climate change the Arctic has been subjected to intense scrutiny and as a result a wide array of data has been generated which is spatial in nature. The approach to managing much of this data has largely been national or dedicated to specific issues. As a result many of the existing datasets are distributed throughout many organisations. They are often not integrated

or coordinated and it is difficult to find an environment in which these diverse datasets can be combined and analysed together.

There is an obvious need for a dedicated Arctic SDI, which would provide for the development of the necessary standards and framework to encourage more efficient integration of and access to these datasets. It would allow for a more robust management and manipulation of data for both research and management purposes.

Examples of the contributions the Arctic SDI could make include the following:

- *Monitoring*
- Monitoring living resources – an Arctic SDI would allow for more effective circumpolar monitoring of biodiversity and common resources.
- Monitoring climate change – an Arctic SDI would allow for more effective interpretation and implementation of monitoring systems, e.g. with regards to climate change effects. The Arctic SDI will form an important framework and tool to facilitate, for example, the further development of CAFF's Circumpolar Biodiversity Monitoring Programme (CBMP – www.caff.is) and the Sustaining Arctic Observing Networks (SAON - www.arcticobserving.org).
- *Assessments*
- The Arctic SDI will provide a tool and means of contributing to:
- Increased knowledge of the effects of climate change, pollutants and heavy metals in the Arctic and their consequences for human and animal living conditions, globally as well as in the Arctic Region.
- Preservation of arctic nature, natural qualities, biological diversity and sustainable use of the region's resources, as far as both renewable and non-renewable resources are concerned.
- Contributing to the development and improvement of the quality of life of the arctic population and the ecological and economic prerequisites for continued human settlement in the Arctic.
- *Management and services*
- An Arctic SDI would facilitate the development and effectiveness of circumpolar Search & Rescue operations and contingency plans e.g. as in the case of the newly agreed upon Search and Rescue agreement between all the Arctic countries.
- Emergency response – if there would be an oil spill in Arctic waters, the existence of an Arctic SDI could contribute significantly to facilitating the coordination and implementation of response measures between countries.
- The potential for increased shipping in Arctic waters calls for increased cooperation and integration of national datasets and activities (AMSA 2009 – www.amsa.is)
- *Relevance to indigenous peoples of the Arctic*
- The common priorities of the Norwegian, Danish and Swedish Chairmanship period of the Arctic Council are primarily concerned with climate change, integrated resource management, the International Polar Year, Indigenous peoples and local living conditions. The Arctic SDI will provide tools that are essential in assisting the development of work associated with these priorities. The Arctic SDI with its map data and services will also provide indigenous peoples with tools that can help clarify and explain land use practices with regards to e.g. hunting, fishing and reindeer herding. These issues and conditions can be

presented, communicated and better understood by making use of the Arctic SDI data and its services.

Project framework

The project seeks to establish a joint technical collaboration amongst the national mapping agencies surrounding the Arctic in order to provide national geographic reference data as a basis for analysing and monitoring an environmental and climatologic change. The information will be accessed and distributed through a spatial data infrastructure consisting of national servers providing the national geographic datasets. New technology will provide for efficient and seamless presentation of reference data for advanced analysis together with thematic data.

The circumpolar national mapping agencies (NMAs) will lead the development, maintenance, and administration of the Arctic SDI by providing the national geographic information (reference data) and systems for data sharing amongst the circumpolar countries. Within the Arctic Council the project is being led by Greenland through CAFF. The work on the Arctic SDI will make use of technologies, data and experiences gathered from other SDI projects.