Enabling Access to Arctic Location Based Information

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Improve access to reliable data for
Monitoring,
Management,
Emergency preparedness and
Decision making
in the Arctic
Participating Countries

Canada
Norway
Finland
Russia

Denmark
Sweden
USA
Iceland

USGS, Chair 2015-2017
NLS FI, Chair 2017-2019
A Brief History of the Arctic SDI

...a voluntary collaboration of the 8 Arctic National Mapping Agencies since 2007

1990’s: Git Barents

2007: First Arctic SDI Roadmap

2008-2009: Arctic Council SAOs endorse the Arctic SDI initiative

2010-2013: Project plan approved

2014: Geoportal launched

2015: 5-year Strategic Plan and Governance established

2016 and forward:

- Improved Geoportal
- Pan-Arctic DEM
- OGC Pilot
- Increased outreach
- Stakeholder Documentation & User Guides

Arctic SDI: The Results of Collaborative Efforts

Maturing of the Arctic SDI
A Collaborative Model in the Arctic SDI

- Working with stakeholder organizations to make their key data available, with a focus on the Arctic Council
- Understanding the needs and requirements of stakeholders
- Information Management best practices (lifecycle of geospatial data)
- Open standards and interoperability
- Helping data contributors and users understand how to participate

Graphic Source: OGC
Arctic Council Working Groups

ACAP - Arctic Contaminants Action Program

PAME - Protection of the Arctic Marine Environment

CAFF - Conservation of Arctic Flora and Fauna

EPPR - Emergency Prevention, Preparedness and Response

AMAP - Arctic Monitoring and Assessment Programme
Capacity Building

SDI Manual for the Arctic with guidelines & practices for

• Data management and sharing
• SDI development
• Standardization guidelines
• Efficient monitoring and decision making
• Key Performance Indicators
• Evaluation once in two years
Open Geospatial Consortium (OGC) Arctic Spatial Data Pilot - Climate Change Scenarios

- Scenario based video – how to
  - break down information silos
  - improve access to reliable data for monitoring, management, emergency preparedness and decision making in the Arctic
- Address Arctic specific issues, like zero/low bandwidth
- Increase awareness of Arctic SDI

http://www.opengeospatial.org/projects/initiatives/arcticsdp
Technical Support

• Assisting CAFF WGs with use their thematic data

• MODIS satellite data derived products:
  – Vegetation Indices (incl. NDVI)
  – Land Cover Type
  – Snow Covered Area
  – Sea Surface Temperature (SST)
  – Marine Chlorophyll-a

• Time-Series Migratory Bird Index

• …
Data Resources

- Pan-Arctic Digital Elevation Map
- Marine Data
- Gazetteer Database and Search
- Arctic Reference Basemap
Authoritative Reference

Basemap

Provided Directly from the 8 Arctic National Mapping Agencies

Common Cartographic Specification

A Trusted Source of Detailed Information

Southern Svalbard: Arctic SDI Basemap vs. Google Maps
2012 Arctic Report Cards describe dramatic changes in the Arctic (December 4, 2012)

December 4, 2013, U.S.A.- The Arctic Council, through the Arctic Monitoring and Assessment Programme (AMAP) and the Conservation of Arctic Flora and Fauna’s (CAFF) Circumpolar Biodiversity Monitoring Programme (CBMP), has contributed to the Arctic Report Card, an annual report released today by the National Oceanic and Atmospheric Administration (NOAA) that monitors the often-quickly changing conditions in the Arctic.

The peer-reviewed report contains contributions from 141 authors from 15 countries. For this year’s issue CAFF’s CBMP developed and edited the terrestrial and marine ecosystem chapters in cooperation with others, while AMAP organized an independent peer-review process involving international experts.

The Arctic region continued to break records in 2012—among them the loss of summer sea ice, spring snow cover, and melting of the Greenland ice sheet. This was true even though air temperatures in the Arctic were unremarkable relative to the last decade, according to the report.

Major findings include:

- **Snow cover**: A new record low snow extent for the Northern Hemisphere was set in June 2012, and a new record low was reached in May over Eurasia.
- **Sea ice**: Minimum Arctic sea ice extent in September 2012 set a new all-time record low, as measured by satellite since 1979.
- **Greenland ice sheet**: There was a rare, nearly ice sheet-wide melt event on the Greenland ice sheet in July, covering about 97 percent of the ice sheet on a single day.
- **Vegetation**: The tundra is getting greener and there’s more above-ground growth. During the period of 2003-2010, the length of the growing season increased through much of the Arctic.
- **Wildlife and food chain**: In northernmost Europe, the Arctic fox is close to extinction and vulnerable to the encroaching Red fox. Additionally, massive phytoplankton blooms below the summer sea ice suggest estimates of biological production at the bottom of the marine food chain may be ten times too low.
- **Ocean**: Sea surface temperatures in summer continue to be warmer than the long-term average at the growing ice-free margins, while upper ocean temperature and salinity show significant interannual variability with no clear trends.
- **Weather**: Most of the notable weather activity in fall and winter occurred in the sub-Arctic due to a strong positive
Oskari – Geoportal for ASDI and INSPIRE

• Open Source Framework for Geoportals
• Easy-to-use tools for using Distributed SDI’s like INSPIRE, European Location Framework ELF, Arctic SDI
• Built-in access to WFS 2.0 API’s with Complex Schemas
• Embedded Maps Tool and Integration API - like Google maps with rich SDI content
• Time Series Data Visualization
• Thematic Mapping with Statistical Information
Other Oskari Examples
Comparison of INSPIRE and Arctic SDI

- Regulated
- 28 member states
- Users: European Commission, others?
- Harmonized data models, schemas
- Interoperability via Implementation Rules and Technical Guidance

- Voluntary collaboration
- 8 national mapping agencies
- Users: Arctic Council Working Groups (for a start)
- No harmonization of data apart from Cartographic Specification for Arctic Basemap
- Interoperability via plain OGC/ISO and ASDI Manual
Arctic SDI Video on YouTube

Introduction to the Arctic Spatial Data Infrastructure

Arctic SDI Fact Sheet

GEOSPATIAL DATA – A TOOL FOR BETTER INFORMED DECISIONS AND MORE EFFICIENT ADMINISTRATION IN THE ARCTIC

Improved access to geospatial data can help us better to predict, understand and react to changes in the Arctic. Responses to the impact of climate change and human activities in the Arctic requires accessible and reliable data to facilitate monitoring, management, emergency preparedness and decision making.

Important data sets are produced and distributed by many stakeholders – public and private sector – and most of it can be geographically referenced. A spatial data infrastructure provides tools for data distributors to ensure that their geospatial data is easier for users to access, validate and combine with other data.

The Arctic SDI provides such an infrastructure and its development is facilitated by the National Mapping Agencies of the eight Arctic countries.

The Arctic SDI Geoportal and the initial Arctic SDI Reference Map – the basic building blocks in the Arctic Spatial Data Infrastructure are available:

- The Arctic SDI Geoportal providing a web map viewer for use by any interested user to access the reference data sets and national, regional and international data.

Information on Oskari

OSKARI