ARCTIC SDI
Arctic Spatial Data Infrastructure

Enabling Access to Arctic Location-Based Information

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Acting Director General, National Land Survey of Iceland

13th CostGIS Symposium,
Ísafiörður

How climate is changing

The potential future effects of global climate change include more frequent wildfires, longer periods of drought in some regions and an increase in the number, duration and intensity of tropical storms. Credit: Left - Mellimage/Shutterstock.com, center - Montree Hanlue/Shutterstock.com.

https://climate.nasa.gov/effects/

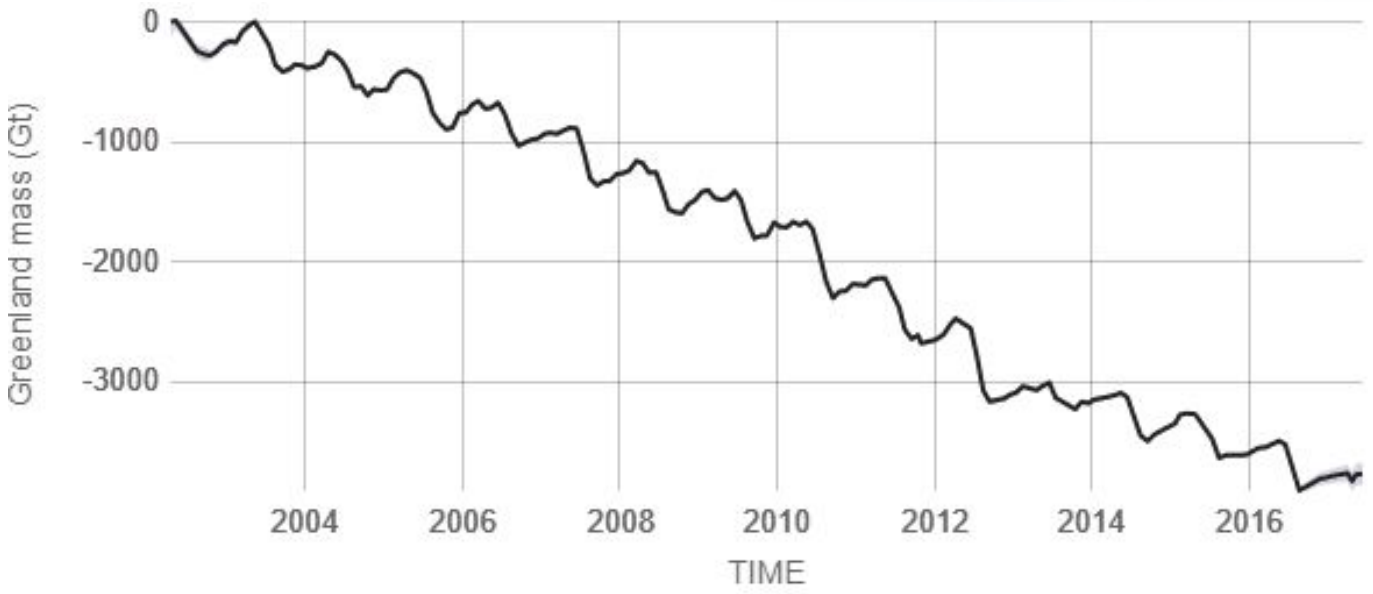
GREENLAND MASS VARIATION SINCE 2002

Data source: Ice mass measurement by NASA's GRACE satellites.
Credit: NASA

RATE OF CHANGE

↓ 286.0

Gigatonnes per year
margin: ±21



Source: climate.nasa.gov

Everything happens somewhere

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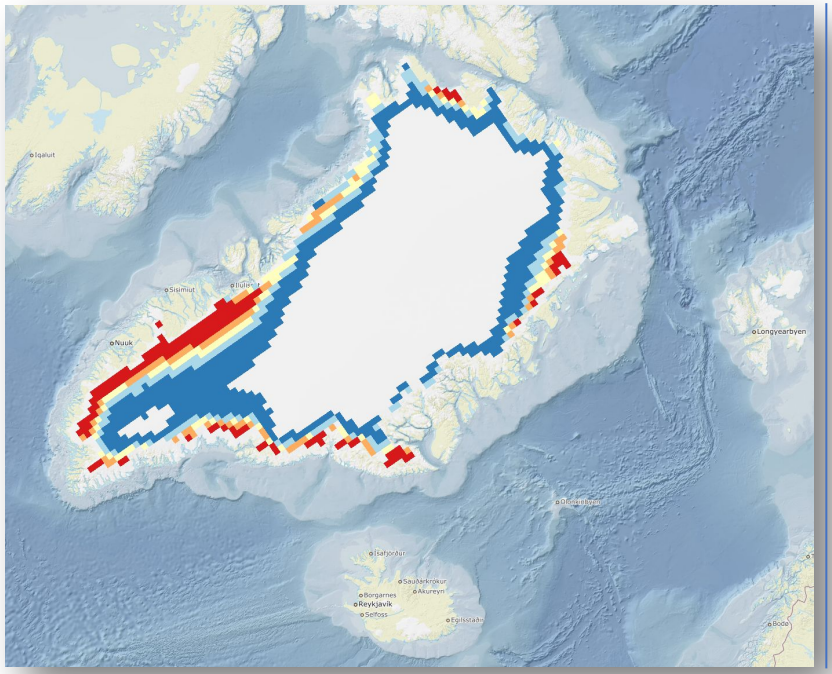
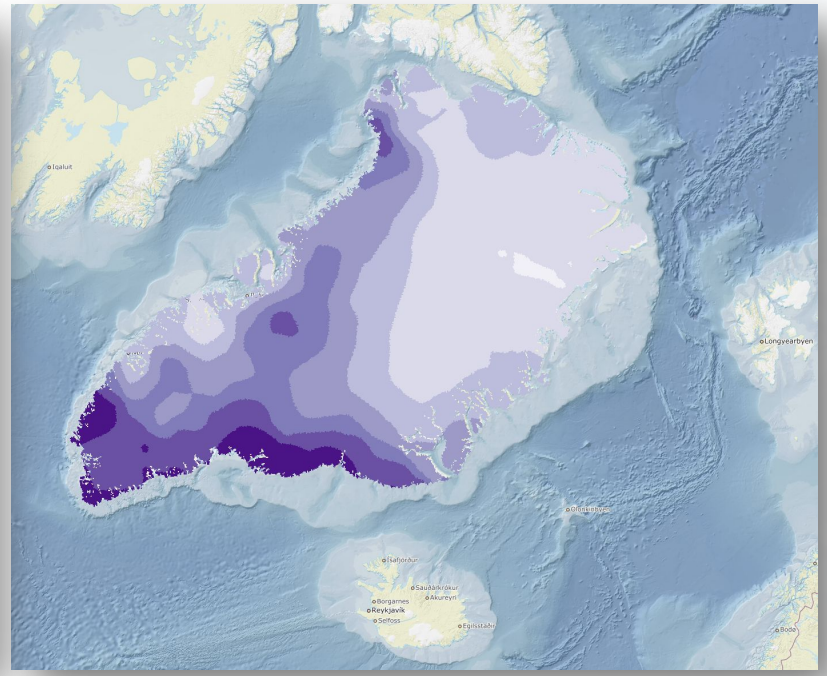
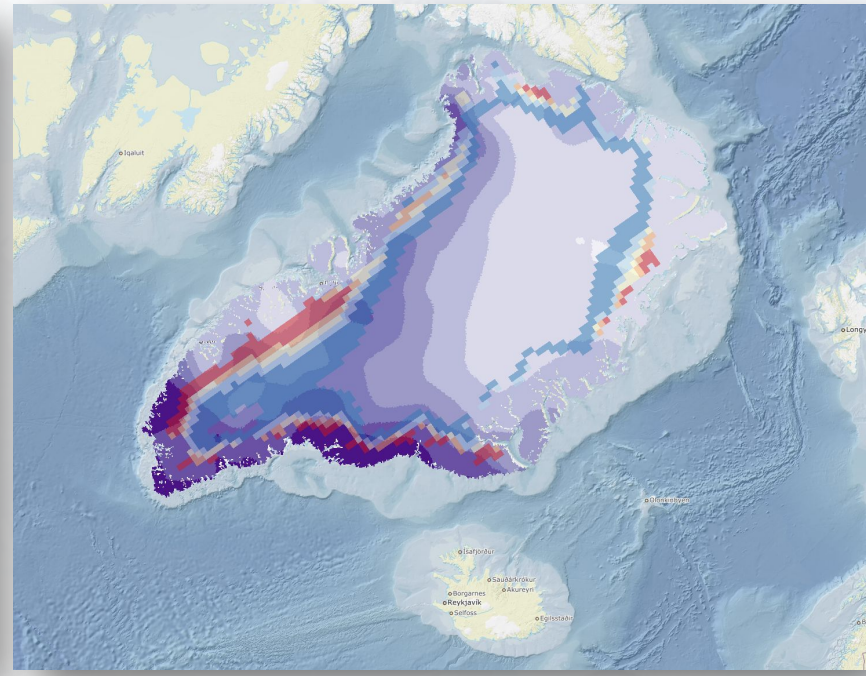
arctic-sdi.org

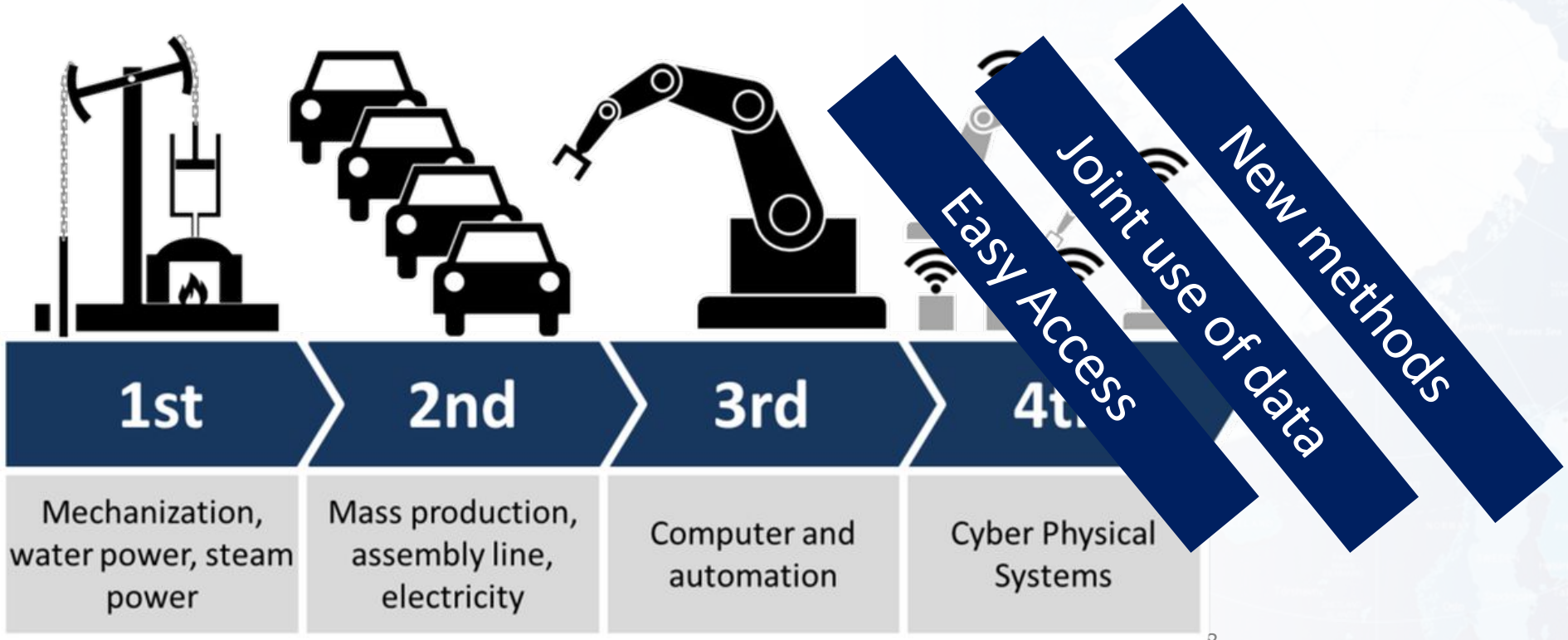






In year 2016, for first time, more computers were searching the internet than humans.

In 2020, search by humans will only be negligible part of the search.


1st
2nd
3rd
4t
Mechanization, water power, steam power
Mass production, assembly line, electricity
Computer and automation
Cyber Physical Systems
Easy Access
Joint use of data
New methods

2015

2017

Arctic SDI

is based on voluntary commitments by **the National Mapping Agencies from 8 countries** that border the Arctic Circle

Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, USA

There is a signed Memorandum of Understanding towards cooperative development of an Arctic SDI.

Arctic SDI Strategic Vision

The Arctic Spatial Data Infrastructure will **facilitate access to geospatial information** in support of social, economic, environmental, monitoring, decision-making and other needs in the Arctic.

Spatial Data Infrastructure

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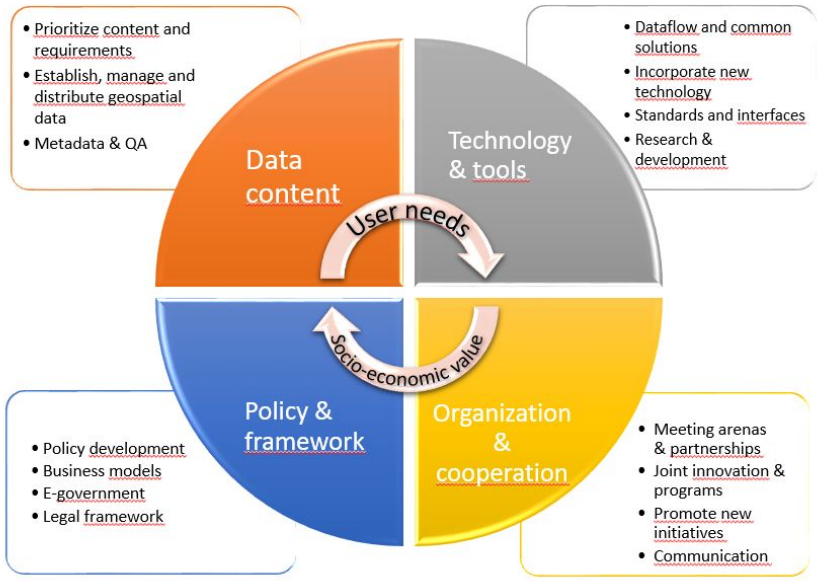
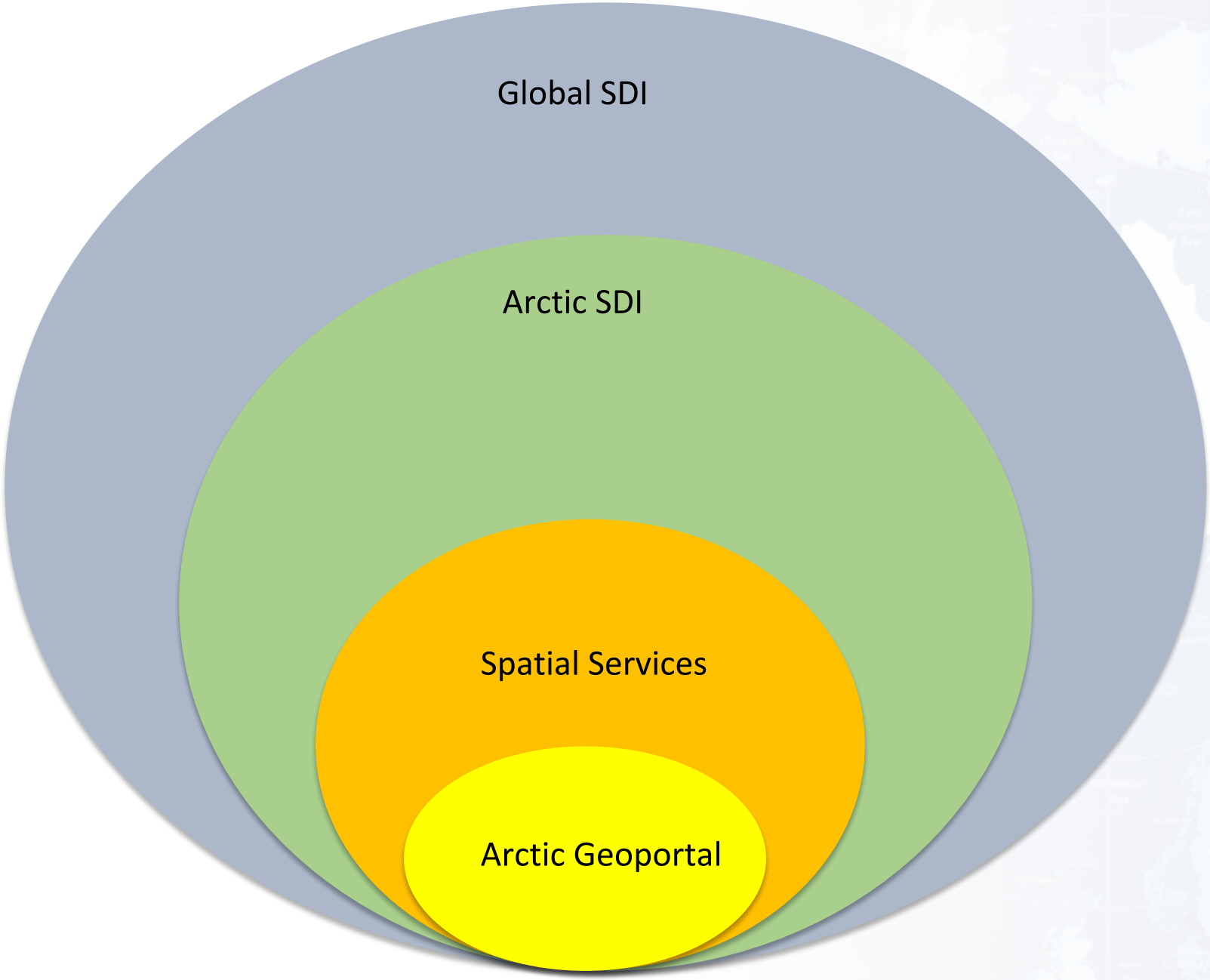
Arctic Spatial Data Infrastructure




Global SDI
Arctic SDI
Spatial Services
Arctic Geoportal

Users, Stakeholders and Data Providers

- Arctic Council Working Groups (CAFF, AMAP, EPPR, PAME)
- Academic institutions in the Arctic
- Government and public sector
- Business, media, citizens, NGOs,…

Strategic Objectives from Arctic SDI Strategic Plan 2015 -2020

1. Address Needs of Arctic Council and Other Users
2. Provide Reference Datasets
3. Facilitate Access to Thematic Datasets
4. Data and Technical Interoperability
5. Spatial Operational Policies
6. Communications

Arctic SDI & ARMSDIWG Joint Workshop

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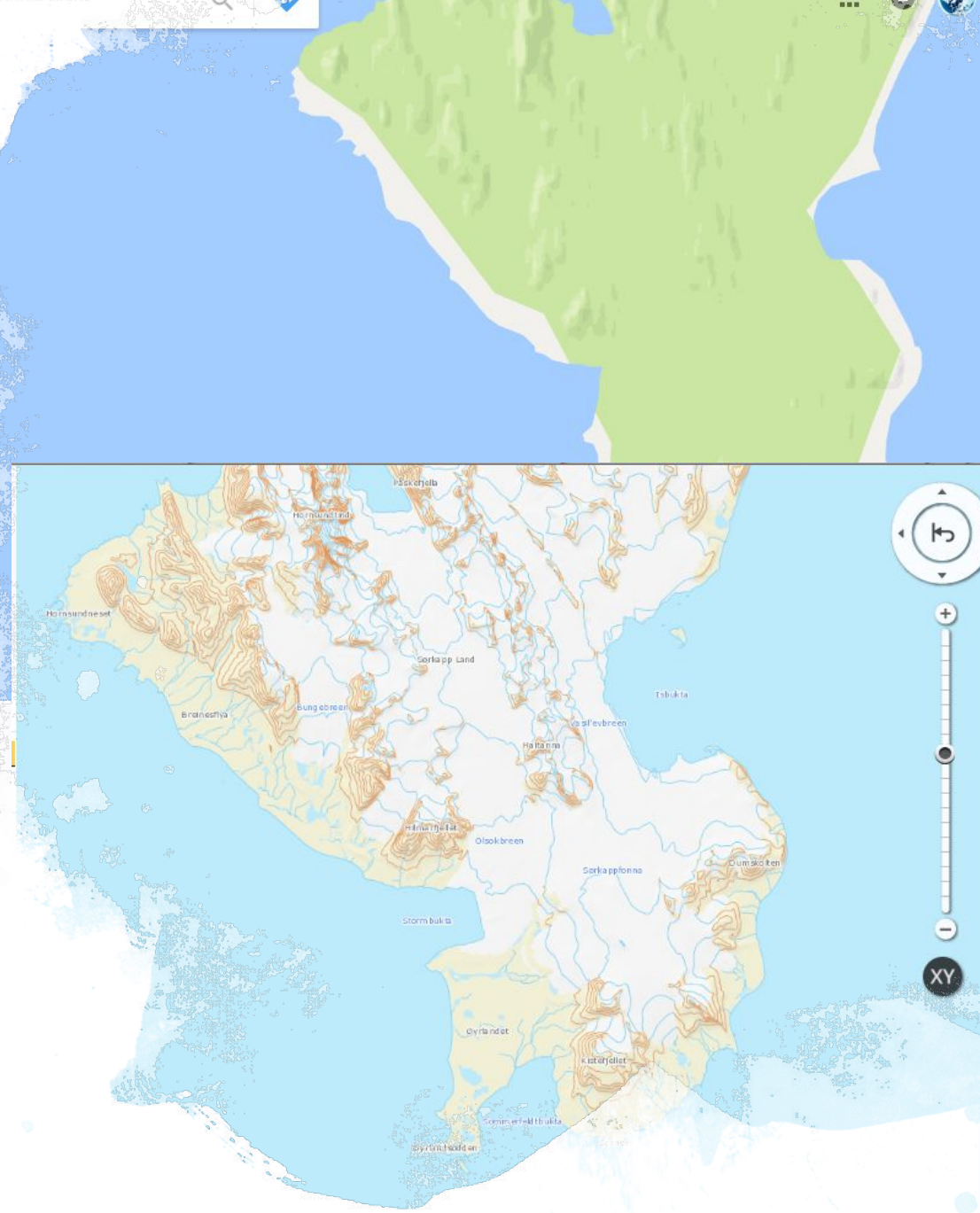
Arctic SDI provides an

Authoritative Reference Basemap

Provided Directly from the

8 Arctic National Mapping Agencies



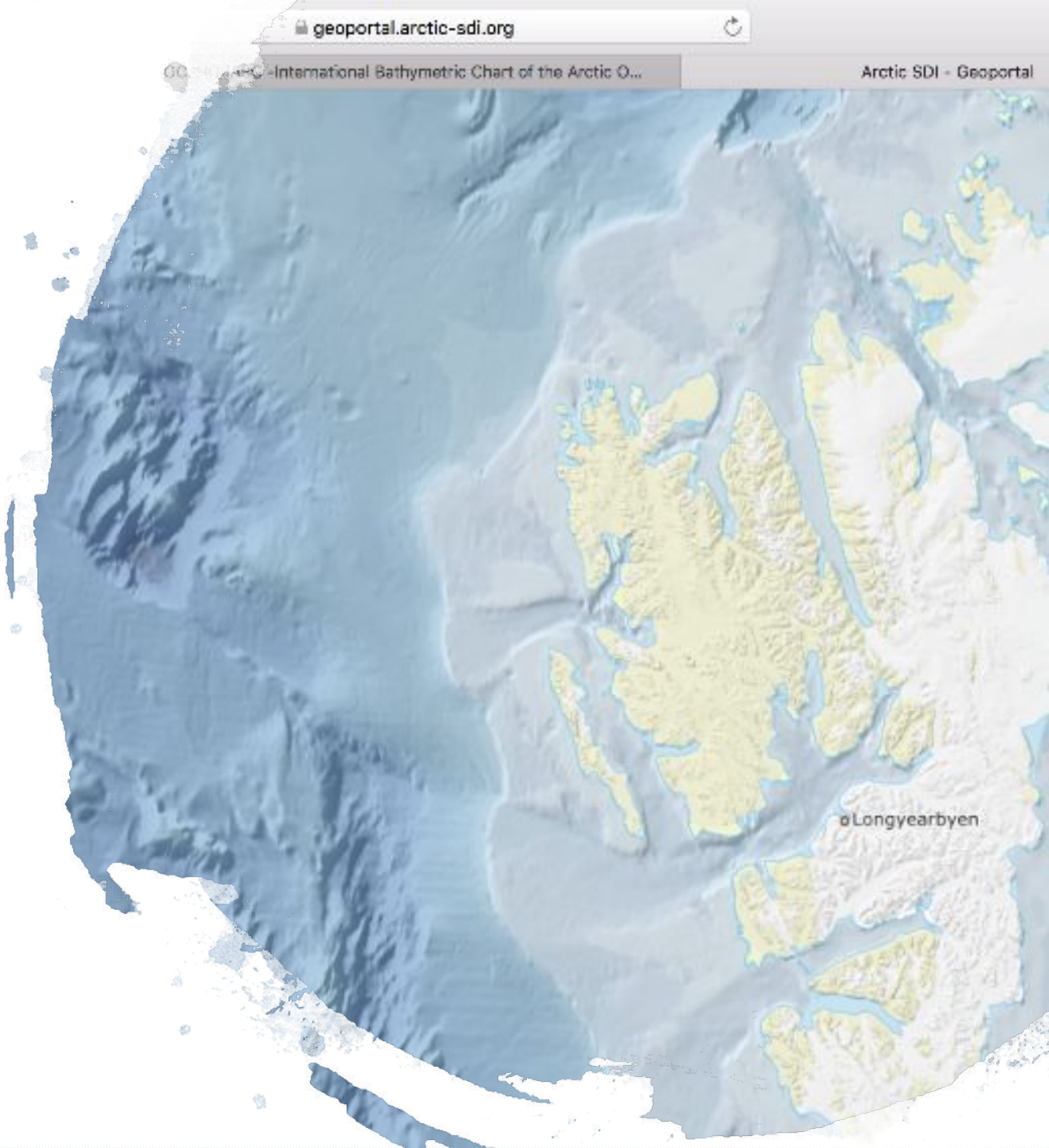
ARCTIC SDI Arctic Spatial Data Infrastructure

- Divide tasks with respect to established stakeholder “domains”

- Build on existing infrastructure, such as
  - Geoportal and its services, communication tools such as the Website, centralized document storage environment, and Guidelines whenever possible.

Partnering with IHO/ARHC

Arctic Regional Marine SDI Working Group - ARMSDIWG

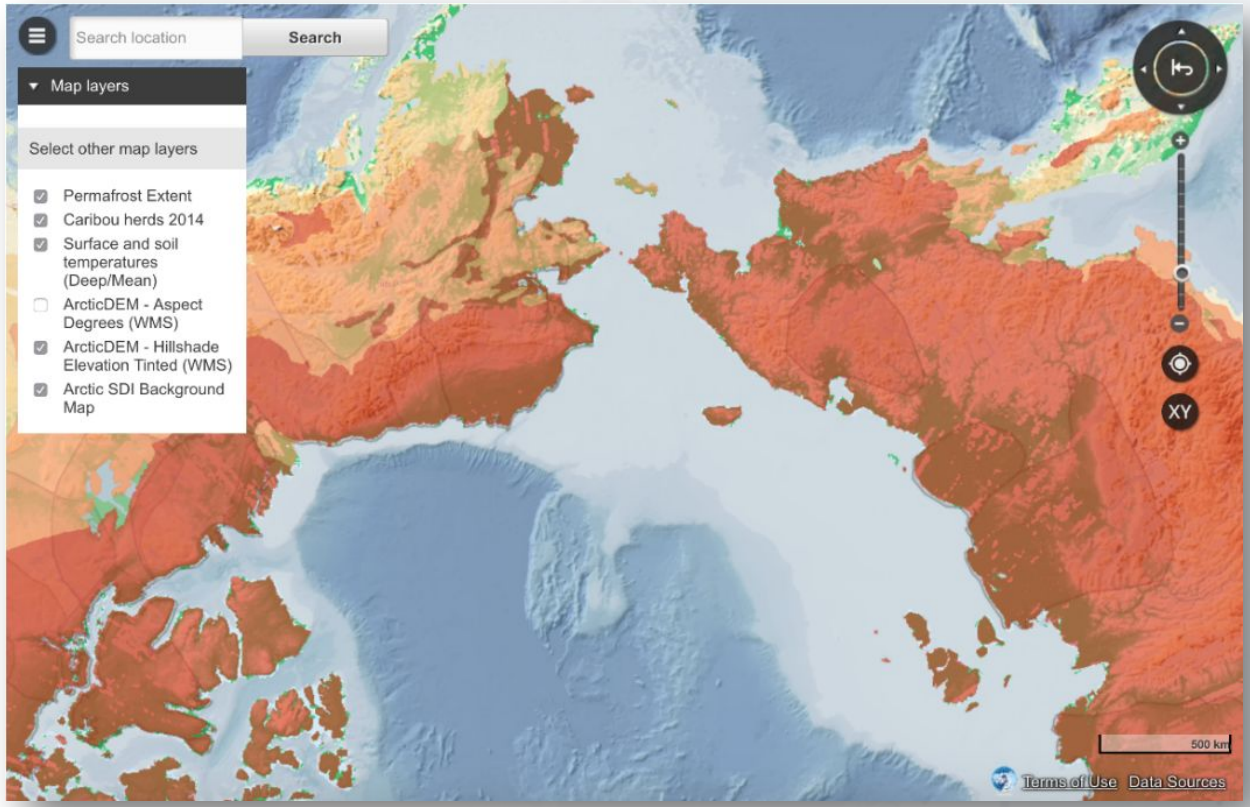


ARCTIC SDI Arctic Spatial Data Infrastructure

Access to data

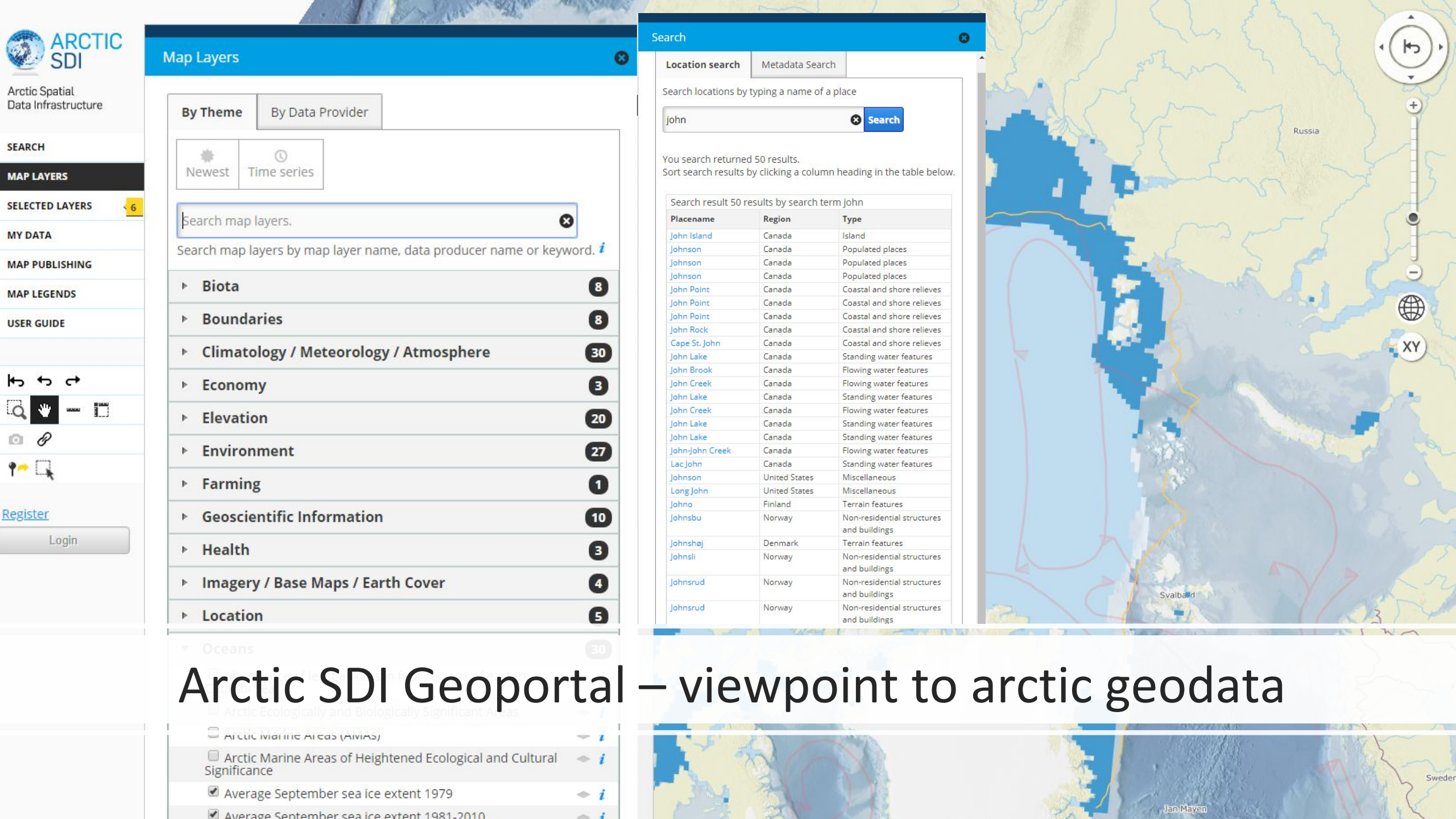
Partnering with Arctic Council

- **Enhance Data Management Best Practices** across Working Groups
- Regular dialog with Arctic Council
  - **Biannual Reporting through CAFF**
- **Incorporation of SDI standards into published data products**



*CAFF is using **Arctic SDI Geoportal** to **enable customized embedded maps***

Joint Session Arctic SDI and CAFF at [The Arctic Biodiversity Congress: October 9-12, 2018, Rovaniemi, Finland]



Arctic SDI Geoportal – viewpoint to arctic geodata

Login

Search CAFF

Search ... Go

Protected Areas Indicator data and graphics

Protected Areas Indicator Report
Get the graphics and the data

Protected Areas Indicator Report 2017

Protected Areas Index 2017

Protected areas have long been viewed as a key element for maintaining and conserving Arctic biodiversity and the functioning landscapes upon which species depend. Arctic protected areas have been established in strategically important and representative areas, helping to maintain crucial ecological features, e.g., caribou migration and calving areas, shorebird and waterfowl staging and nesting sites, seabird colonies, and critical components of marine mammal habitats.

CAFF and the Protection of the Arctic Marine Environment (PAME) working groups have created an indicator report that provides an overview of the status and trends of Arctic protected areas.

CAFF Conservation of Arctic Flora and Fauna PAME Protection of the Arctic Marine Environment

Key facts:

The extent of protected areas within the CAFF boundary has almost doubled since 1980. While progress has been made, it has not been even across ecosystems and the report does not analyse how well the suite of protected areas meet the test of being an "ecologically connected, representative, and effectivelymanaged network of protected and specially managed areas that protects and promotes the resilience of the biological diversity, ecological processes and cultural heritage" (PAME 2015) of the Arctic.

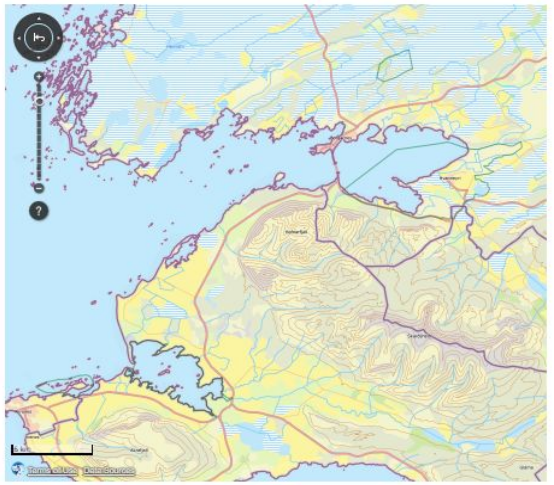


Figure 3: Distribution of protected areas (marine and terrestrial) across each of the six IUCN Management Categories, 2016.

Marine Protected Areas according to IUCN categories

Terrestrial Protected Areas according to IUCN categories

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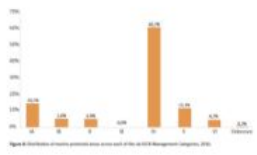
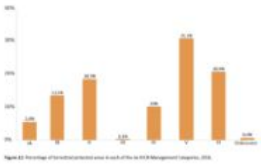
Marine Protected Areas according to IUCN categories



Terrestrial Protected Areas according to IUCN categories



Currently, in 2016, 20.2% of the Arctic's terrestrial area and 4.7% of the Arctic's marine areas are protected. Protected area coverage of the Arctic's terrestrial ecosystems exceeds Aichi Biodiversity Target 11 which aims for at least 17% of terrestrial and inland water to be protected by 2020. The protected area coverage of marine areas currently falls short of the Aichi Target goal for 10% of coastal and marine areas to be protected by 2020.

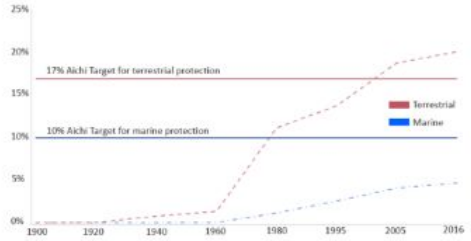
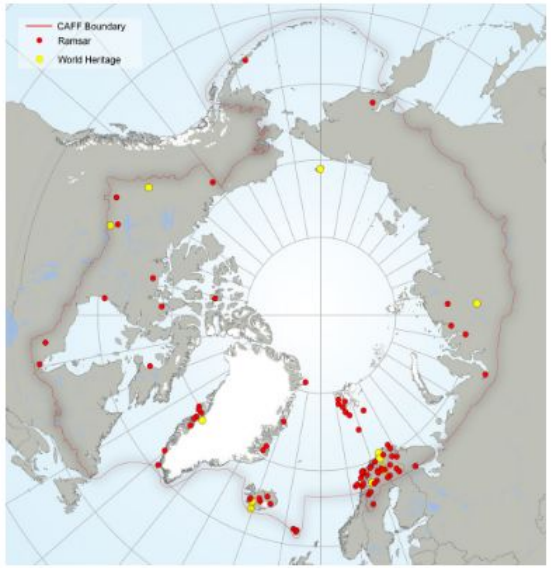


Figure 2: Trends in terrestrial and marine protected area coverage within the CAFF boundary, 1900-2016.

Within the CAFF boundary there are 92 areas recognised under global international conventions. These include 12 World Heritage sites (three of which have a marine component) and 80 Ramsar sites, which together cover 0.9% (289,931 km²) of the CAFF area. Between 1985 and 2015, the total area covered by Ramsar sites almost doubled, while the total area designated as World Heritage sites increased by about 50% in the same time period.



Display Sort By: Ordering ASC

Circumpolar Biodiversity Monitoring Program Coastal Expert Monitoring Group and Nordic Workshop Report Tromsø, Norway, January 9-10, 2018

This is the workshop report for the Circumpolar Biodiversity Monitoring Program Coastal Expert Monitoring Group and Nordic Workshop, Tromsø, Norway, January 9-10, 2018.

Download Details

Circumpolar Biodiversity Monitoring Program Strategic Plan: 2018-2021

The Circumpolar Biodiversity Monitoring Program's (CBMP) Strategic Plan is intended to explain the overarching goals of the CBMP for the period 2018-2021, and to outline actions to deliver on those goals. It will guide the management of the program and help ensure the program□s continued relevance to the needs of the Arctic States, Permanent Participants, scientific and Arctic communities, and other partners.

Download Details

Circumpolar Biodiversity Monitoring Program (CBMP) Coastal Expert Workshop Meeting Report, Anchorage, Alaska, U.S.A., October 11-13, 2017

Proceedings report of the Coastal Expert Monitoring Group's expert workshop in Anchorage, Alaska, U.S.A., October 11-13, 2017.

Download Details

Arctic Freshwater Biodiversity Monitoring Plan Annual Report 2017 and Work Plan 2018

This report describes the progress over the past year to implement the CBMP Arctic Freshwater Biodiversity Monitoring Plan and the workplan for the year ahead.

Download Details

Marine Fishes of the Arctic Region Volume 1

Marine Fishes of the Arctic Region is intended for all who do research in and monitoring of marine eco-systems in the Arctic. It presents accounts for 205 species with maps of global distribution and descriptions of morphology and habitat, as well as a photographic identification guide. Information on 24 other species present only in the fringes of the Arctic Region or taxonomically problematic is given in the introductions to the fish families. As the Arctic continues to warm, more cold-temperate species are expected to enter the region and the distribution of true Arctic species will likely retract as the area of ice-covered cold water shrinks. The maps in this atlas can be used to compare future changes in distributions. The identification guide will be particularly helpful for identifying cold-water species, since fewer identification tools are available for this group of fishes.

Download Details

Arctic Marine Biodiversity Monitoring Plan Implementation: Greenland, 2017

A 2017 update on the implementation of the Arctic Marine Biodiversity Monitoring Plan in Greenland.

Download Details

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Take down the Silos

- Make stakeholder data available
- Understanding the needs
- Use of best practices
- Open standards
- Interoperability
- Help with how to participate and why it’s important


SUSTAINABLE DEVELOPMENT GOALS
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
SUSTAINABLE DEVELOPMENT GOALS

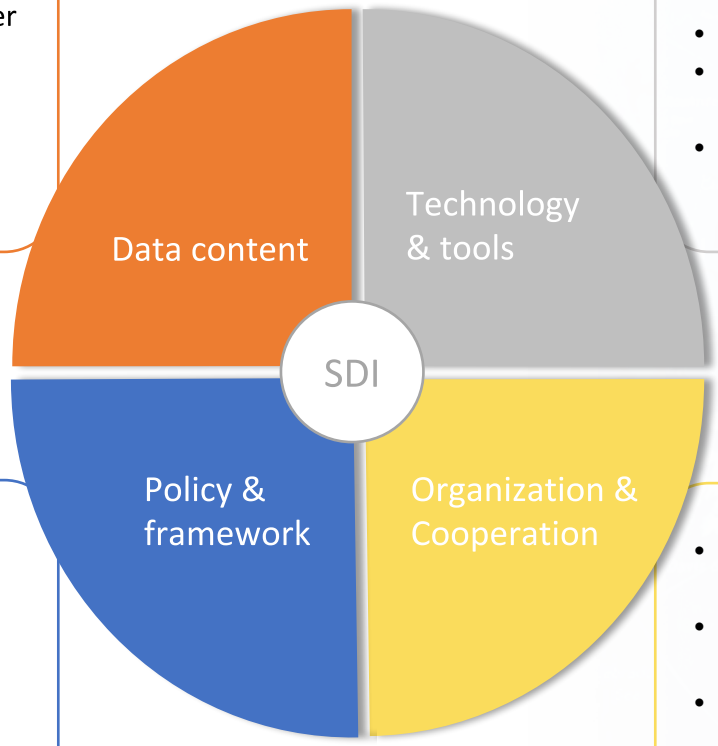
Arctic SDI Strategic Mission

The Arctic Spatial Data Infrastructure mission is to **promote cooperation** and **development of a Spatial Data Infrastructure that enables discovery, visualization, access, integration and sharing** of Arctic geospatial data, while pursuing **best data management practices**

Status of Arctic SDI

- Joint base map of Arctic 1:250 000
- Searchable Circumpolar Gazetteer

- Support for a Pan-Arctic DEM
- Thematic data from CAFF
- GEBCO bathymetry
- Other data services



- Metadata Catalog – GeoNetwork
- Geoportal - Oskari
- Embedded map tool – Oskari
- Delivery of an SDI Manual for the Arctic – Use of OGC standars
- Harvesting of Arctic spatial data services – Arctic 2030 program

- 2015-2020 Arctic SDI Strategic Plan
- Biennial report
- Arctic SDI governance plan
- Arctic SDI fact sheet
- Arctic SDI Geoportal fact sheet
- Key performance indicators - KPI

- MoU between 8 mapping agencies in the Arctic
- Joint statement of intent with IHO working group ARMSDIWG
- Link to the Senior Arctic Officials of Arctic Council through CAFF

Create data

Write metadata

Give access to your existing data

Give access to data AS IS

Provide your data somehow on web

… Then start think about standards and harmonization of data

Lets get started

ARCTIC SDI Arctic Spatial Data Infrastructure

Spatial Data Infrastructure (SDI)

Future

ARCTIC SDI Arctic Spatial Data Infrastructure

"We might be doing things differently but we are moving into the same direction"

Sören Reeberg Nielsen

"You may never know what results come of your action, but if you do nothing there will be no result"

Mahatma Gandhi

LANDMÆLINGAR ÍSLANDS

http://www.lmi.is/

https://arctic-sdi.org/

ARCTIC SDI Arctic Spatial Data Infrastructure

GEOSPATIAL DATA AND SERVICES - A TOOL FOR BETTER INFORMED DECISIONS AND MORE EFFICIENT ADMINISTRATION IN THE ARTIC