

The GEO Cold Regions Initiative

A Cold Regions community to Group on Earth Observations (GEO)

AOS Working Group 3 Breakout Session

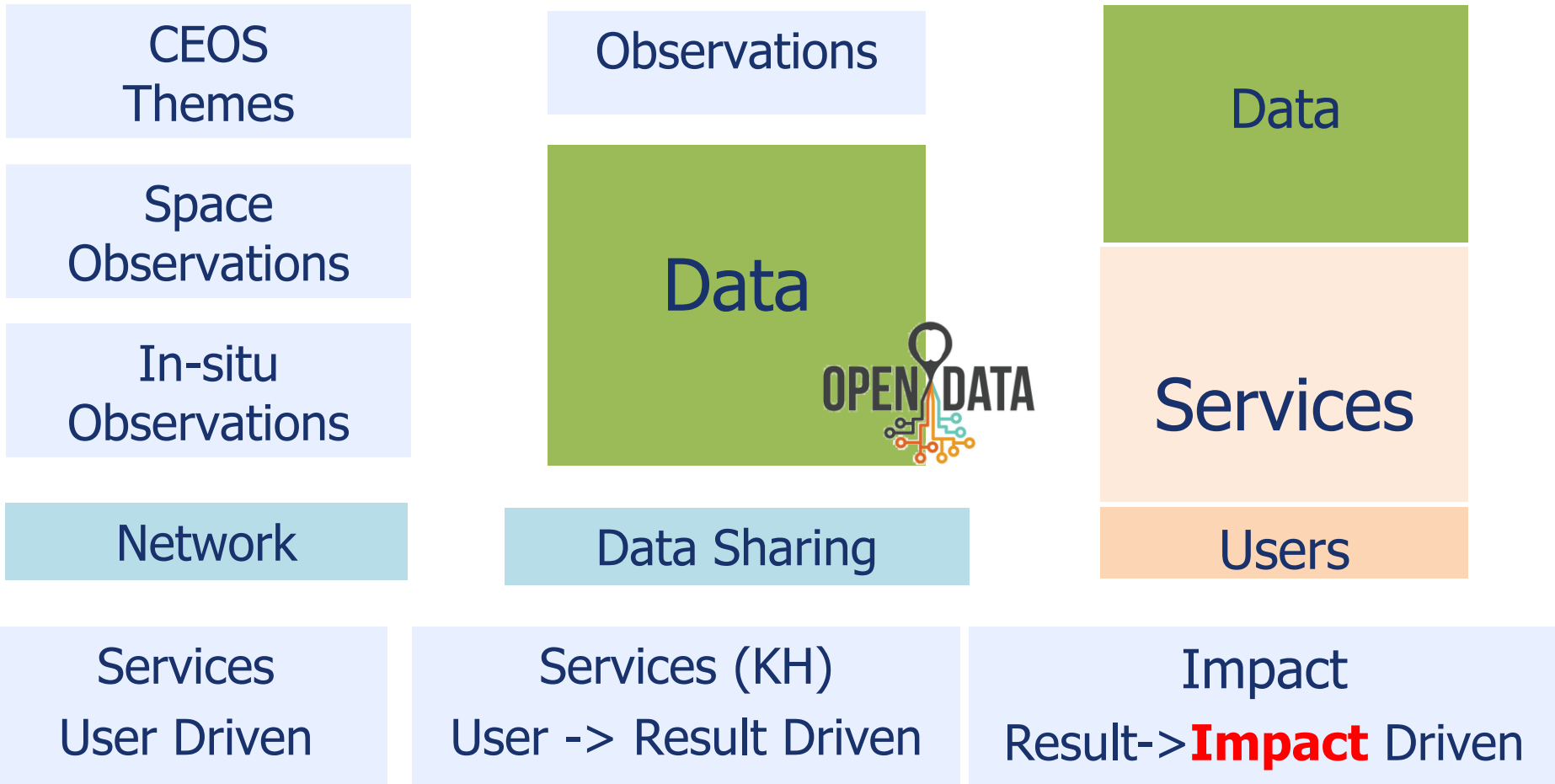
GEO Cold Regions Information Service for Cold Regions

Yubao Qiu (qiuyb@aircas.ac.cn)

<https://www.geocri.org/>

30th, March, 2022

GEO and its GEOSS



GEO-X Plenary & Geneva Ministerial Summit

Integrating Observations to Sustain our Planet

15-17 January 2014, Geneva, Switzerland

GEOSS: An Information Service for Cold Regions

Conclusion and Recommendations from GEO Cold Regions Side Event
Geneva, Switzerland, January, 2014

An **Information Service for Cold Regions** (or GEO Cold Regions), exploiting the GEOSS information system, is needed to develop a **user-driven approach** for Cold Regions **information services to complement** the current mainly science-driven efforts.

GEOCRI WORK PROGRAMME



GEOCRI WORK PROGRAMME 2023-2025

Planning for GEOCRI 2023-2025.

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GEOCRI WORK PROGRAMME 2020-2022

This draft version to 2000-2022.

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FINAL REPORT ON THE STATUS OF GEO CRI - FEB., 2019

Final Report on the Status of GEO
Initiative (GEOCRI)

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GEOCRI WORK PROGRAMME 2017-2019

Implementation Plan for GEOCRI 2017-2019

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WA-01-C3 AT GEO 2012-2015 WORK PLAN

WA-01-C3 : Information Service for Cold
Regions in the 2012-2015 Work Plan.

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DOCUMENTS & STATEMENTS



GEOCRI SUPPORTS CIMR (SENTINEL 11) MISSION REQUIREMENTS

GEOCRI supports CIMR or Sentinel 11 Mission Requirements

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GROUP ON EARTH OBSERVATIONS TO AMS2

Group on Earth Observations (GEO) and its CRI to AMS2, Oct., 2018

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STATEMENT TO AOS2018 : GEOCRI SERVICE TO SBAS

A Statement to AOS2018 - A Cold Regions Information Service Approach for SBAS

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STATEMENT TO AOS2016 : INFORMATION SERVICE

GEOCRI Statement to AOS2016, March, 2016

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GEOCRI IMPLEMENTATION PLAN (LONG DRAFT VERSION) TO WMO PSTG-6

GEO WP: Global Initiative-11 May, 2016 (52 pages)

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GEOCRI - FORMALLY ENDORSED BY YOPP

GEOCRI document endorsed by YOPP at Dec-2015

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GEO-X: GEOCRI CONCLUSION AND RECOMMENDATIONS

GEO-X Side Event (GEOCRI), Jan. 2014

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STATEMENT TO WMO PSTG-3 : INFORMATION SERVICE FOR COLD REGION

WA-01-C3: INFORMATION SERVICE FOR COLD REGION, May, 2013@Paris

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Examples: The melting Arctic creates a new world of shipping and resource opportunities



Browser address bar: <https://www.scientificamerican.com/article/melting-arctic-sea-ice-means-more-shipping-and-m>

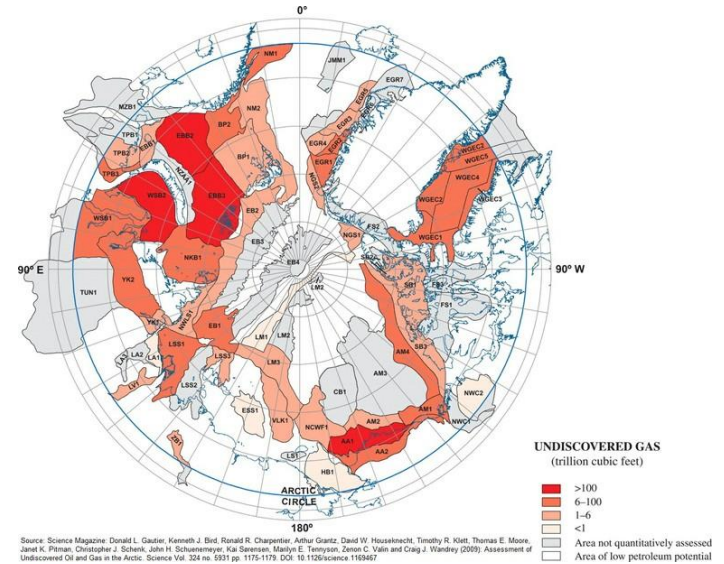
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THE SCIENCES MIND HEALTH TECH SUSTAINABILITY EDUCATION VIDEO PODCASTS BLOGS STORE

SUSTAINABILITY

Melting Arctic Ice Will Make Way for More Ships--and More Species Invasions

A new study shows immense increases in shipping are likely over the North Pole and Arctic Ocean in the coming years, alerting scientists who study invasive species



More Species Invasions



Energy Resources in the Arctic Ocean



Impact on Security and Health



Ice melt forces polar bears into paths of Alaska schoolchildren

Trevor Hughes, USA TODAY | Published 4:07 a.m. ET April 22, 2016 | Updated 7:05 a.m. ET April 23, 2016





GEOCRI – Community:

Co-Lead Team

Participants:

Task teams

Contributors

Countries:

Canada
China
Chile
Finland
Germany
India
Italy
Japan
Netherlands

Organisations/Projects:

CAFF CBMP: Conservation of Arctic Flora and Fauna, Circumpolar Biodiversity Monitoring Program
CCIN: Canadian Cryospheric Information Network, Polar Data Catalogue
CliC: Climate and Cryosphere
CryoClim Cryosphere Climate Monitoring Service
DBAR-HiMAC – High Asia and Cold Regions
IASC: International Arctic Science Committee
ICIMOD: International Centre for Integrated



Co-Lead Team

The co-lead group for GEOCRI.

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Participants

The list of participants, including contributors, and observers.

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GEO Secretariat

Experts in GEO Secretariat to GEOCRI.

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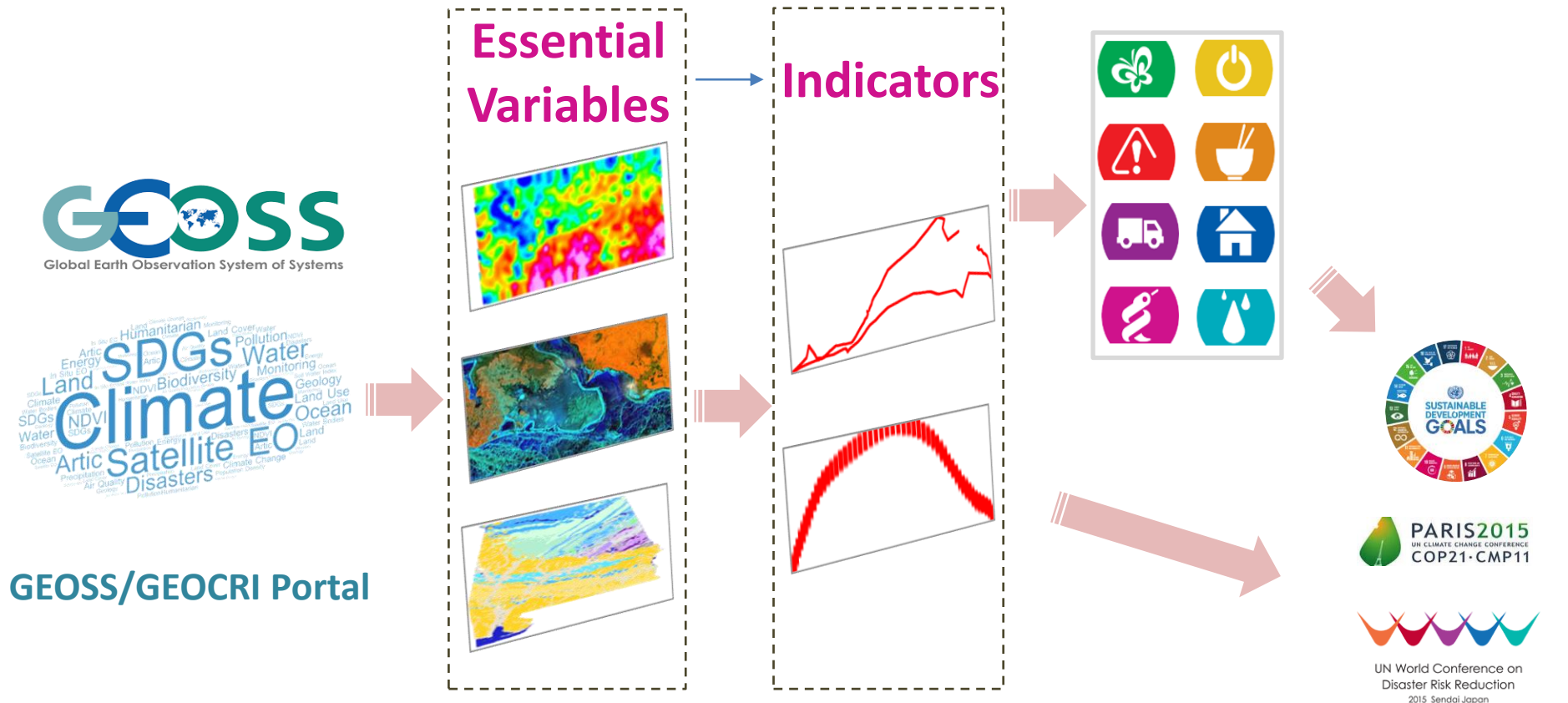


Term of Reference to GEOCRI

Term of Reference to GEOCRI (Revised in March, 2022)

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Big Data based Information Service for Cold Regions



Data

Products

Information

SBA

Global Policies

GEO CRI Data Flow Diagram

Mission: Develop a **user-driven approach** for Cold Regions **information services** to **complement** the mainly current science-driven effort, and foster the collaboration for improved *Earth observations and information* on a global scale.

GCW The Global Cryosphere Watch **Inputs EO Data**

SAON Inventory of arctic observational projects as a contribution to EU PolarNet; (CBM) atlas.

CAFF/CBMP: Arctic Biodiversity Data Service (ABDS) as biodiversity data sharing and as a source of data for ecosystem-based management, interoperability with partners such as GBIF, OBIS and PDC.

INTERACT

PEEX Pan-Eurasian Experiment (PEEX) – A Framework Program on the Land–Atmosphere–Ocean–Society Interactions of the Changing Arctic–Boreal Environments

SIOS <https://www.sios-svalbard.org/>

IADC <http://mainnode.src.cnr.it/cnr/>

(**SOTP**) Snow Observations over Tibetan Plateau

ESA – MOST / NRSCC

CCT-IP Climate Change Integrated Project

TW-1A:(Chinese cubesat named polar sea ice observation in both Polar Regions

Chinese Water Cycle Mission (WCOM):

(**CMP**) **CRA** Cryosphere Monitoring Programme of the Arctic Observing and Research for Sustainability and of the Mountains as Sentinels of Change

(**ADS**) Arctic Data Archive System

The Year of Polar Prediction (YOPP)

Third Pole Environment (TPE)A data portal

<http://en.tpedatabase.cn>

The **Barcelona Expert Center (BEC)** <http://satice.icm.csic.es>

GMOS Observational programme for mercury Pollution & Environmental Protection

JAMSTEC

WDCDGG (World Data Center-D for Glaciology and Geocryology

INTAROS (Integrated Arctic Observation system)

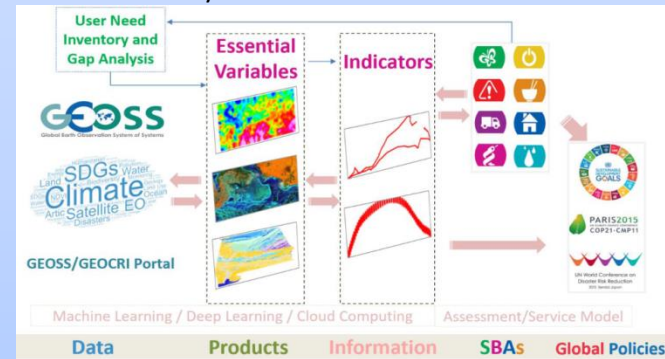
End Users

Cold region Earth observation user communities include scientists, policy-makers, industry, business and commerce, students, and local communities.

Community Portal Development –

Outputs Products and Services

- **Improve discoverability, accessibility and usability of cold regions Earth observation data** and information by advocating broad open data policies and strengthened capacity building;
- **Support existing observation networks and systems in cold regions**, sharing expertise and knowledge, as well as integrating observation products into GEOSS via the GEOSS Common Infrastructure (GCI);
- **Contribute** to identify the gaps for observations and data/information services over cold regions;
- **Facilitate** full integration and interoperability of in situ and remotely sensed Earth observations in cold regions across all environmental, ecological and human domains;
- Increase the ability of all users and potential users to benefit from cold region Earth observations, including policy makers, researchers, local communities and industry, through ongoing capacity building;
- **Strengthen partnerships between cold region Earth observation providers**, users, funders and other stakeholders to increase efficiencies and ensure needs and requirements are effectively met.



2) Development of Essential Variables for Cold Regions (GEO CRI efforts – addressing the indicator)

- Science Driven or Societal impact: applications for societal and economy development
- Compatible to the existing EVs, and Indicators
- Interface between the data and indicators for evaluation process
- Deliverables: White paper published
- **3) Integration: In-situ, Remote Sensing, Model, and its Data Integrating**

GEO Cold Regions : Pilot Services

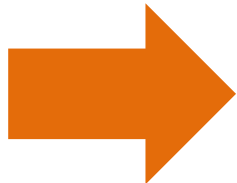


Mission: Develop a **data-impact-driven approach** for Cold Regions **information services to complement** the current mainly science-driven efforts, and **foster the collaboration for improved Earth observations and information** on a global scale.

Title: *Pilot Services Practice for GEO Cold Regions*

1. **Introduction** (background)
2. **Data or Observations** (*resource that GEO CRI could use for services*)
3. **Pilot Services**
4. **Organization and Participants**
5. **Resources**

Planning



Pilot Service : Sustainable Development

The Earth observations of cold regions providing the assessment to the regional SDGs addressing.



Pilot Service : Safety Transportation

The space observations providing the effective data supporting the safety transportation over land and ocean.



Pilot Service : Security Water Availability

The EO big data support the evaluation and management on the snow and ice for Water Availability.



Pilot Service : Emergency Actions and Adaption

The earth observations for supporting adaptation and emergency actions to snow and ice breakout,

DATA & REPOSITORIES



GEOSS Portal - GET Data Now

GEOSS (Global Earth Observation System of Systems) is a central part of GEO's Information System's mission.

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NextGEOSS - Cold Regions Pilot Portal

This pilot showcases products for selected areas in Cold Regions.

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Big Data for GEOCRI

Coming...

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HiMAC Data Portal - Open and Interoperable

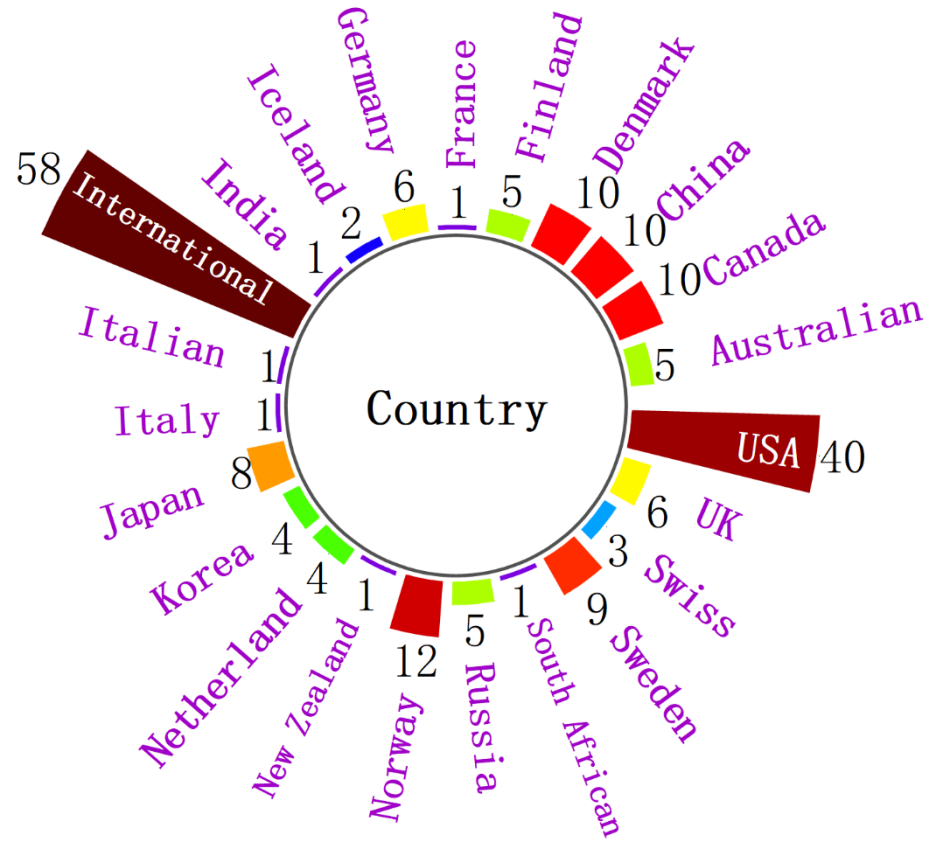
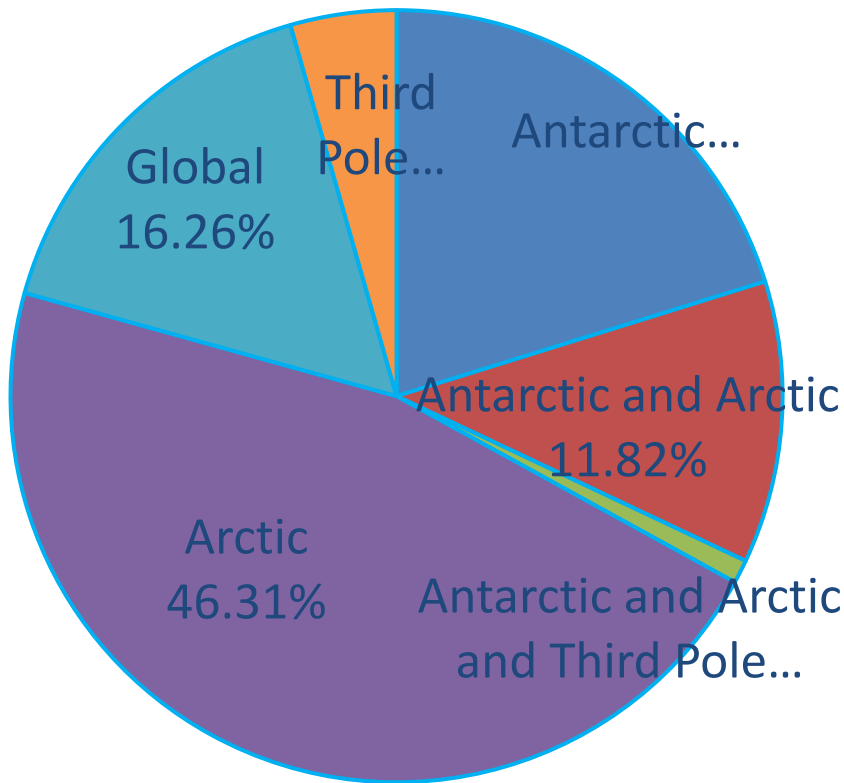
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Metadata for Repositories for Cold Regions

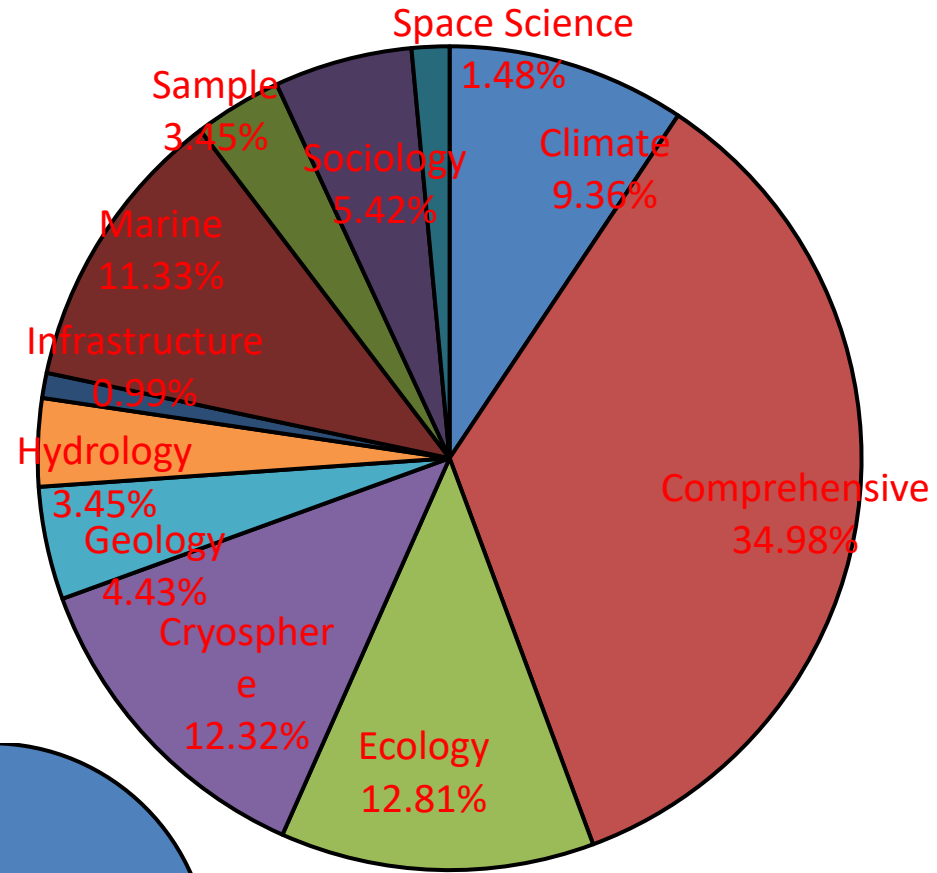
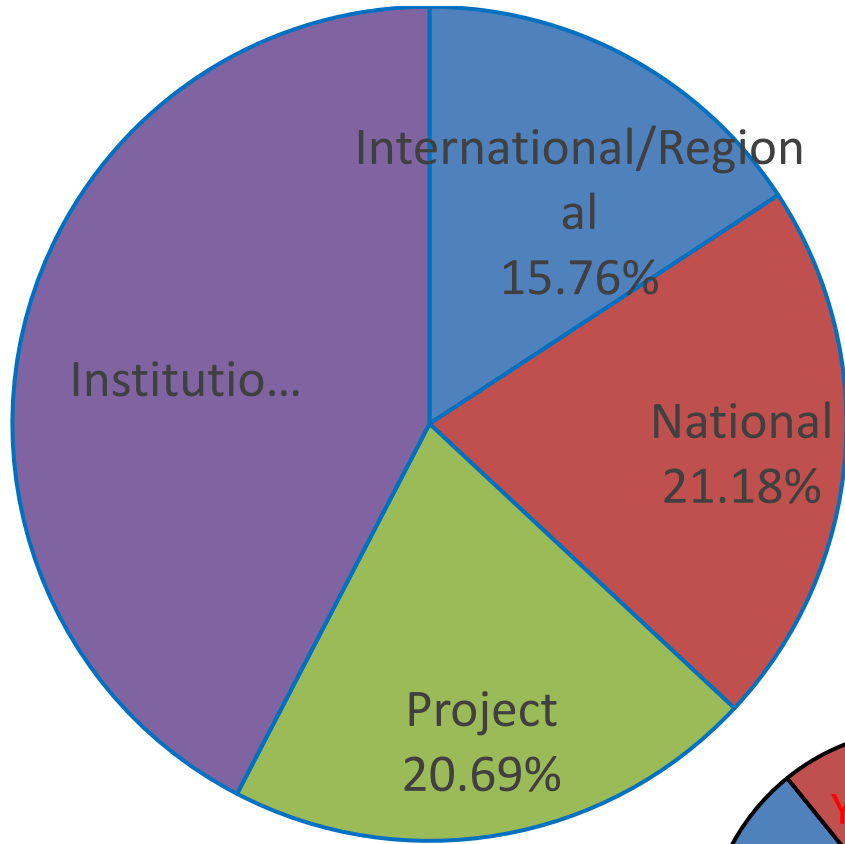


Tag	Categories			
Name				
Host Institute				
Country of Institute				
Organizers				
Database Level	International	Country	Research Institution	Project
Description				
URL				
Region	Arctic	Antarctica	Tibetan Plateau	Arctic and Antarctica
	Global	Three Poles		
Discipline	Climate	Comprehensive	Cryosphere	Ecology
	Infrastructure	Geology	Marine	Hydrosphere
	Sociology	Sample	Space Science	
Derivation of Data Policy	Own	Derived	None	
Data Policy				
Data Sharing Principle				
Data Management				
Openness	Open	Restricted Open	Not Open	
FIAR	yes		no	
Data Type	Remote sensing data	In-situ site data		Value-added data

> 200 Repositories for Cold Regions



> 200 Repositories for Cold Regions

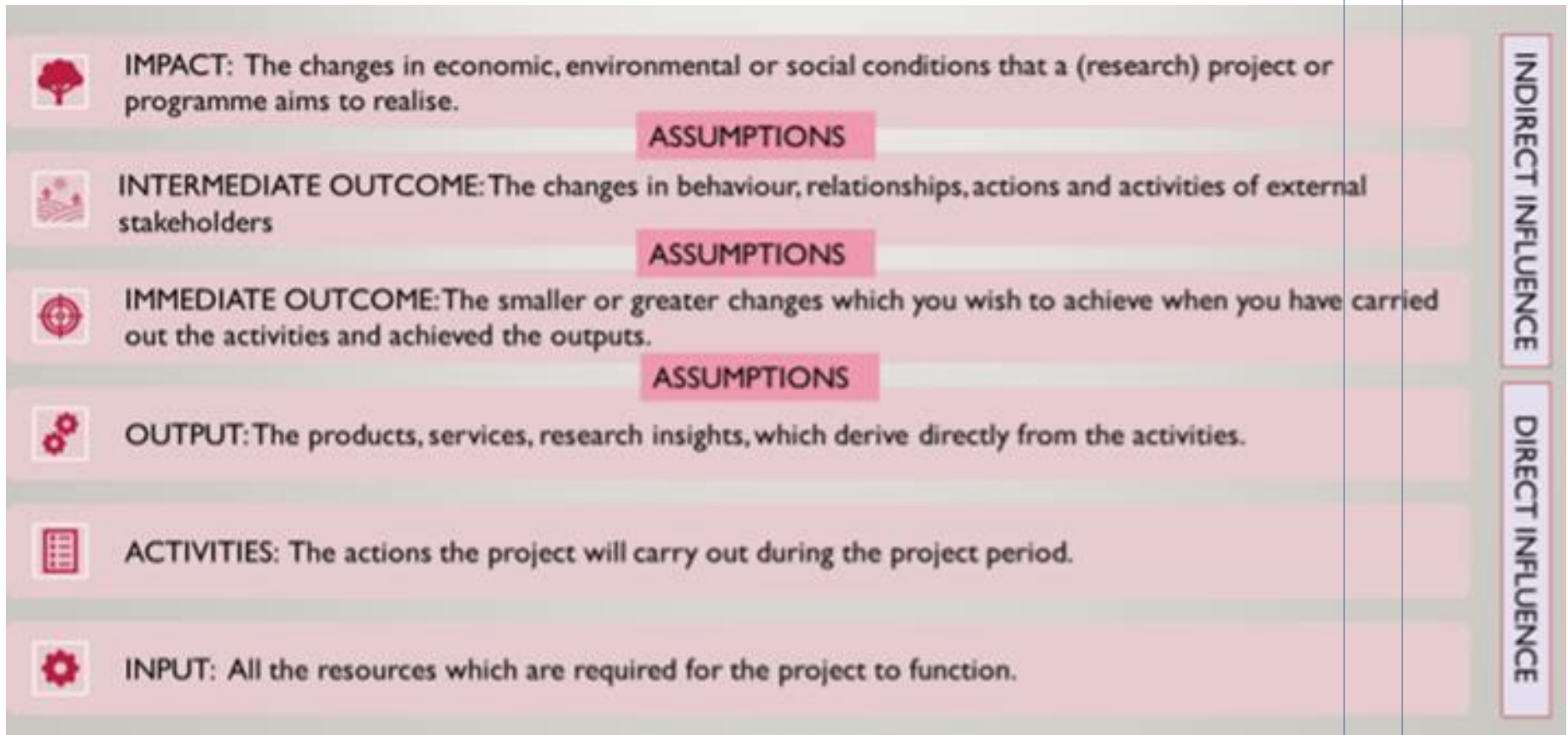


FAIR ?



Observations - Network of Data ? Network of Services?

Users? - > **Impacts**





Call for engagement in WP2023-2025

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