GROUP ON EARTH OBSERVATIONS

Earth Observations for Sustainable Water Management

Geospatial Technologies For Sustainable Water Management

3 July 2017
Central European University
Budapest, Hungary

Douglas Cripe
GEO Secretariat

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Observations – In, On, and Around the Earth

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GEO Vision

To realize a future wherein decisions and actions, for the benefit of humankind, are informed by coordinated, comprehensive and sustained Earth observations and information

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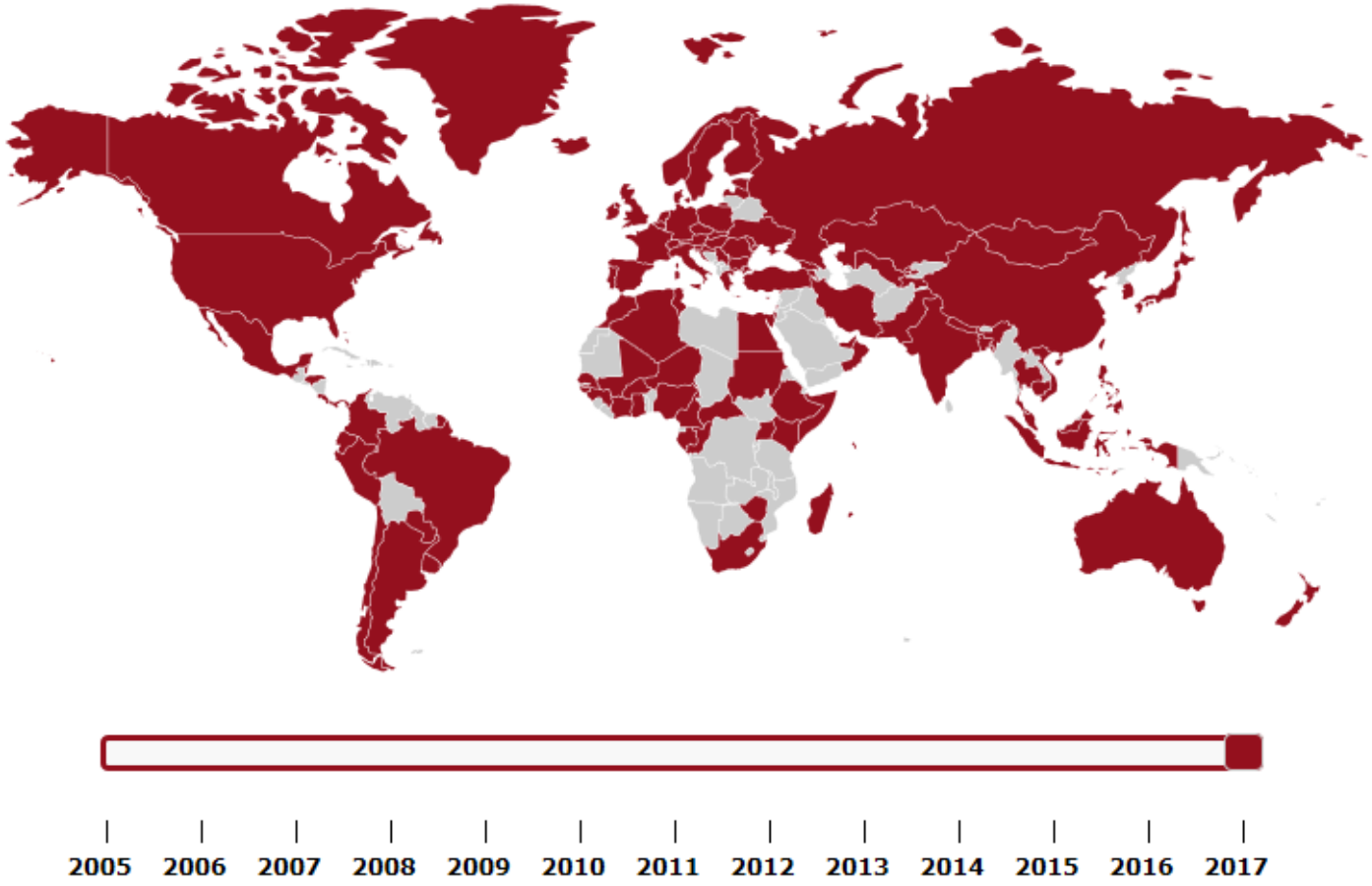
GEO Partnership 105 Members

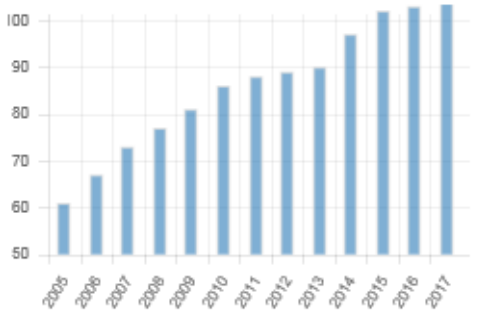
GEO Member Map for the year 2017



Number of Members (2017)

Africa:	27
Americas:	16
Asia/Oceania:	21
C.I.S.:	7
Europe:	34
Total:	105

Number of Members by year



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GEO Partnership 109 Participating Organizations

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GEOSS Implementation Requires: *Data Sharing Principles*

- **Free and Open Exchange of Data --** Open by Default

- **Data and Products at Minimum Time Delay and at Minimum Cost**

- **Free of Charge or Cost of Reproduction for research/education**

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Societal Benefit Areas (SBAs)

Climate change and its impacts cut across all SBAs

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Objectives of the Water Resources Management SBA

- Improving water resource management through better understanding of the water cycle
- Support water resource management & decision making
  - Transforming data to information based on user needs
  - Deliver water quality data products & information
  - Produce a global water quality monitoring & forecasting service
- Water-related issues addressed by GEOSS
  - Precipitation; soil moisture, Groundwater, Lake & reservoir levels; streamflow, Snow cover; glaciers and ice; Evaporation & transpiration; Water quality & water use.

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Communities of Practice: Aquawatch & IGWCO

IGWCO CoP

Integrated Global Water Cycle Observations Community of Practice

Objectives

- Providing a framework for guiding decisions
- Promoting strategies
- Coordinating & facilitating the inputs
- Fostering the development of tools, applications & systems
- Supports the plans of the International Groundwater Resource Assessment Centre (IGRAC) & its Global Groundwater Monitoring Network (GGMN)

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GEOSS Water Strategy (2014)

- Integration for data management & observational & prediction systems via the Water Cycle Integrator (WCI)
- Support policy goals
- Promotes integration for data products bringing together in-situ & satellite observations
- Provide a set of tools

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GEO GLOWS

GEO - Global Water Sustainability

OBJECTIVES

1) **Strengthen capacity** to understand water data needs and develop user-driven applications products from EO data and applications
2) **Engage end users and boundary** organizations to understand needs by region and decision making process and prioritize activities based on vulnerability analyses
3) **Coordinate and leverage GEOGLOWS partners** to more effectively provide information and expertise to US and international stakeholder and end user communities
4) **Strengthen U.S. and international capacity** to use water EO and science effectively across spatial and temporal scales
5) **Contribute to the assessments of impacts of climate change with population and economic growth on water resources and their availability, and to inform planning and adaptation activities**

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GEO GLOWS

Components

1. Enhancing Global Water Sustainability	2. Minimizing Basin and Regional Risk	3. Essential Water Variable (EWV) Understanding
Sustainable Development Goals	Integrated Water Prediction (IWP)	Water Quality
Water Scarcity and Access	Floods	Water Use
Climate Change	Droughts	Water Cycle Variables (Precipitation, Soil Moisture, Groundwater, Evapotranspiration, Stream Flow, Surface Water Storage (Includes Snow Pack))
Cold Regions	Transboundary Issues (IWRM)	
	Water-Energy-Food-Environment-Health Nexus	
	Climate Change Adaptation	

4. Earth Observations, Integrated Data Products and Applications, and Tool Development

5. Data Sharing, Dissemination of Data, Information, Products, and Knowledge

6. User Engagement, Capacity Building and AmeriGEOSS

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GEOGLOWS

2. Minimizing Basin and Regional Risks

- **National water center - operations center**

“Street Level” Water Prediction and Impact-Based Decision Support

WATER PREDICTION + GEO-INTELLIGENCE

USGS science for a changing world

FEDERAL EMERGENCY MANAGEMENT AGENCY

DEPARTMENT OF COMMERCE UNITED STATES OF AMERICA

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

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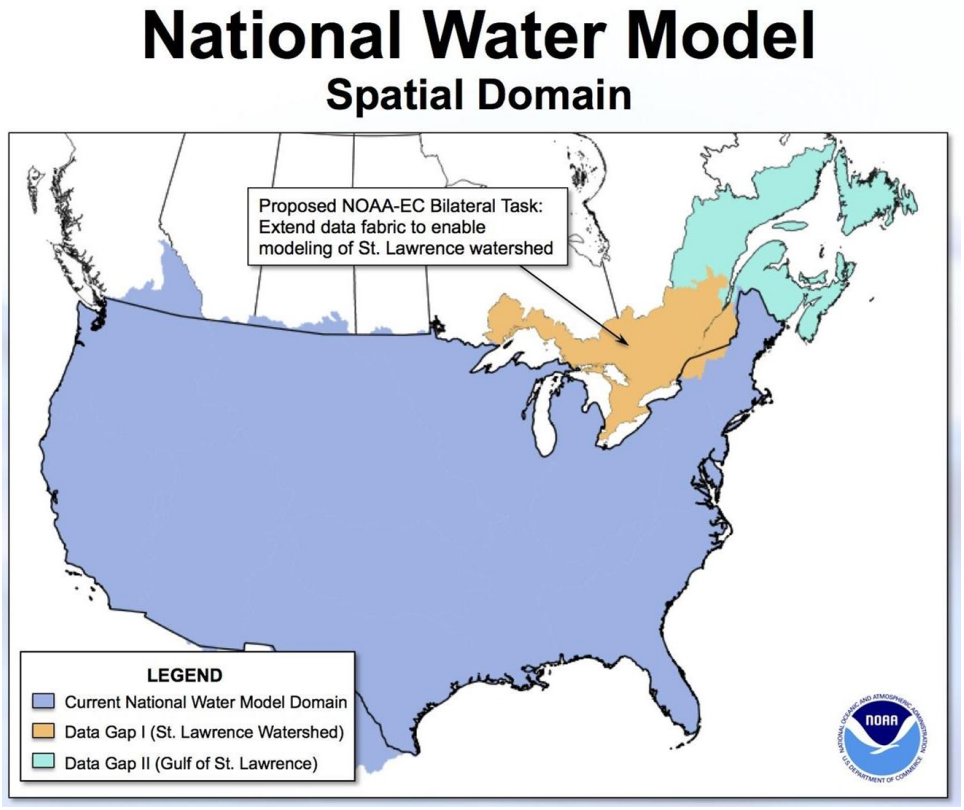
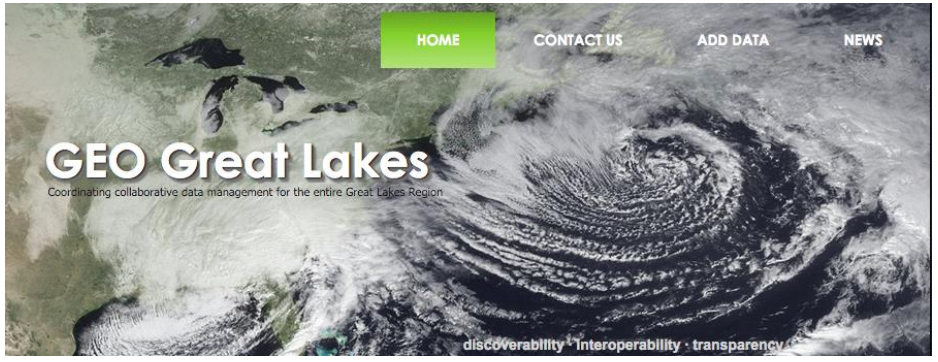
GEO GLOWS

2. Minimizing Basin and Regional Risks

Exemplary transboundary effort



Implementation of IWP in the Great Lakes



Environment Canada

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

AmeriGEOSS
Implementing GEOSS in the Americas
Implementando GEOSS en América
Implementando GEOSS na América
Mise en œuvre du GEOSS en Amérique

GEO GLOWS

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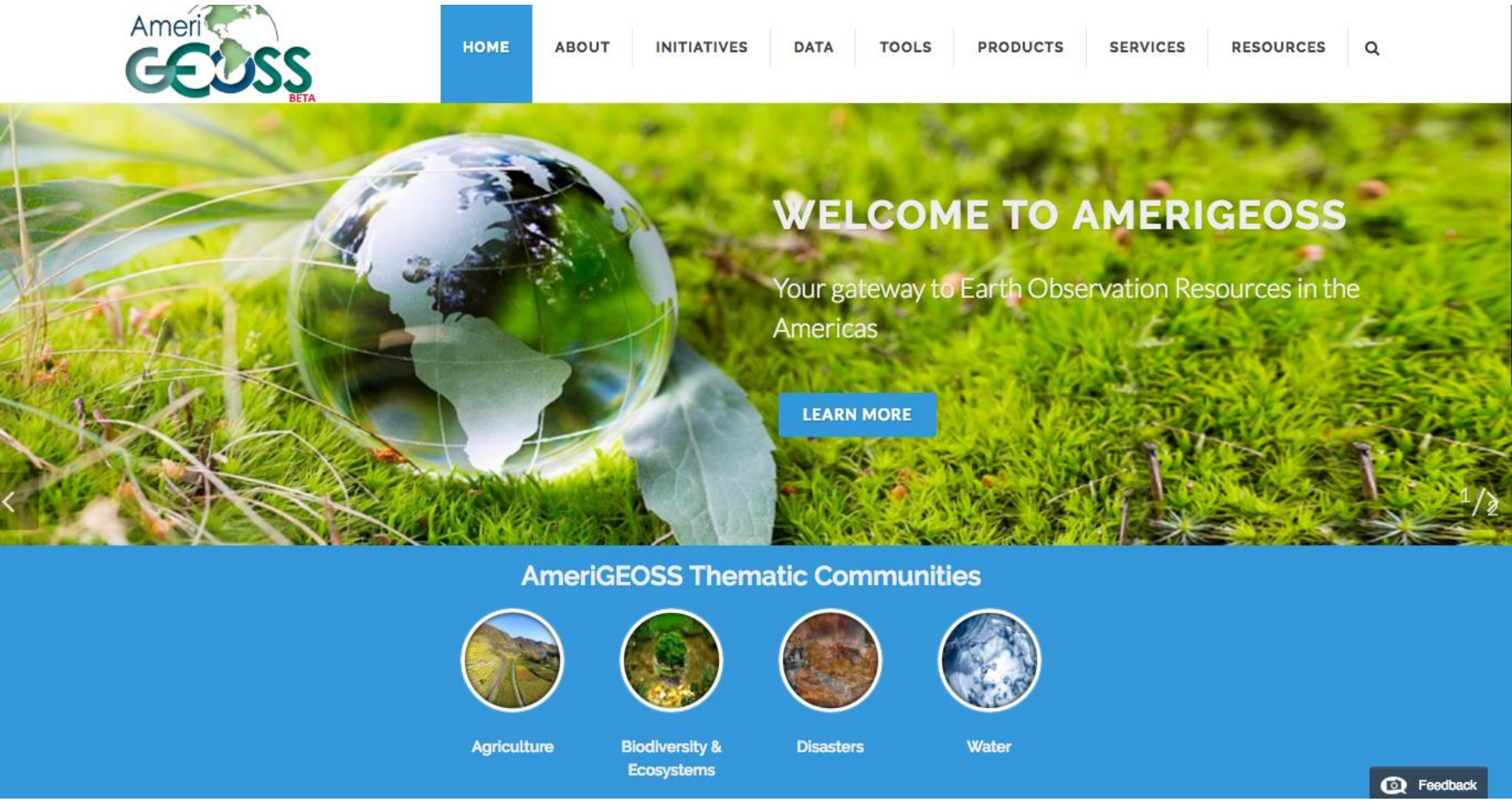

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GEO GLOWS

AmeriGEOSS Foundational Activities

- GEONETCast Americas (GNC-A): Delivering Regional and National Data, Products, and Observations
- Regional component of the Global GEONETCast
- Provided by the U.S./NOAA
- Footprint covers
  - Most of North America Caribbean Region Central South America
  - Operational since Spring 2008

WMO

Satellite Utilization and Products Division
WMO Space Programme

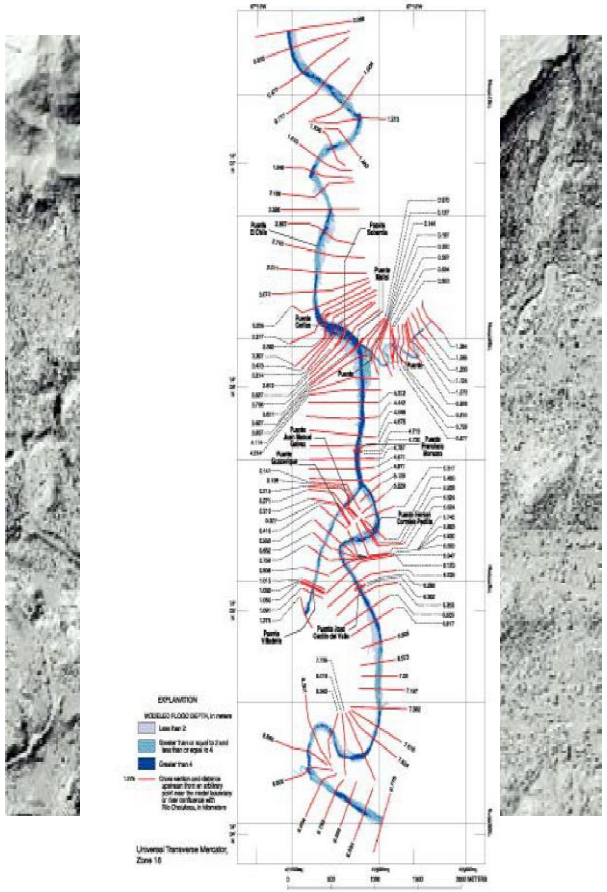
AmeriGEOSS
Implementing GEOSS in the Americas
Implementando GEOSS en América
Implementando GEOSS na América
Mise en œuvre du GEOSS en Amérique

Red: Operational stations
Green: Installations in progress
Orange: EUMETCast-Americas in conversion to GNC-A
Yellow: In consideration by the organization
Blue: Acquiring equipment

Flood Risk Management in Urban Areas in Magdalena River

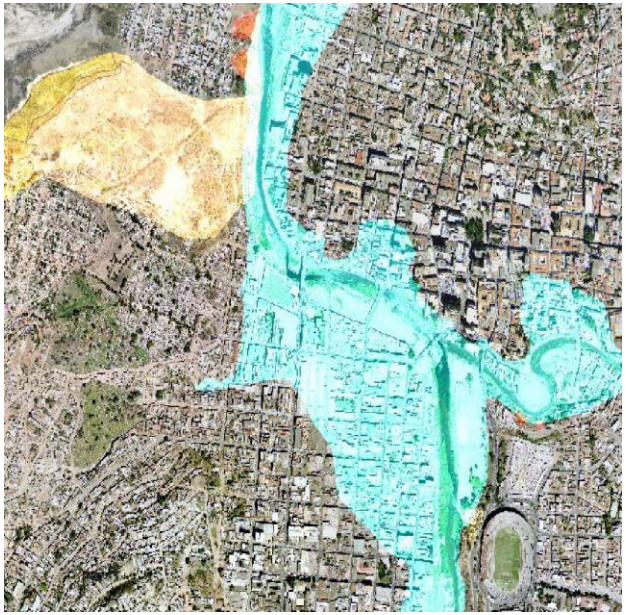
THREAT VULNERABILITY AND RISK ASSESSMENT

THREAT



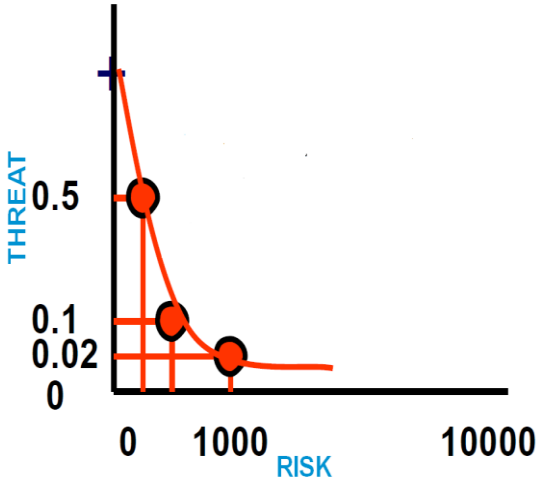
Hydraulic and hydrologic modelling

VULNERABILITY



Social work

RISK



Economic analysis

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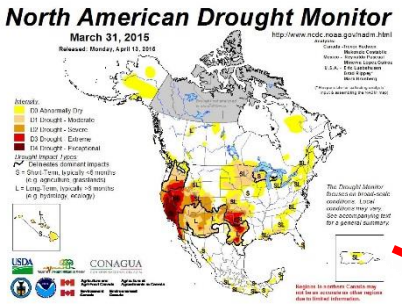
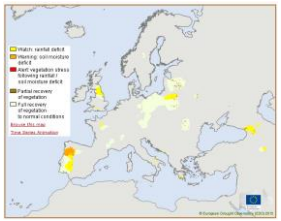
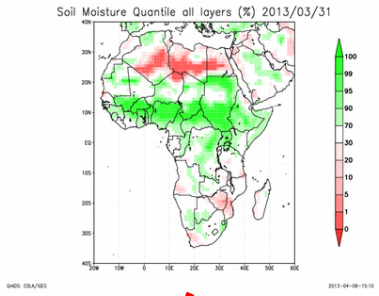
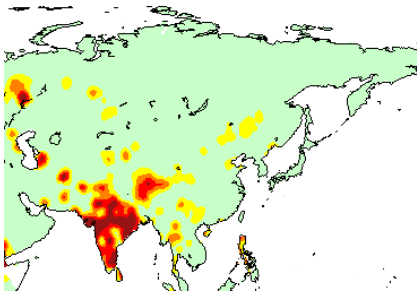
Global Drought Monitoring

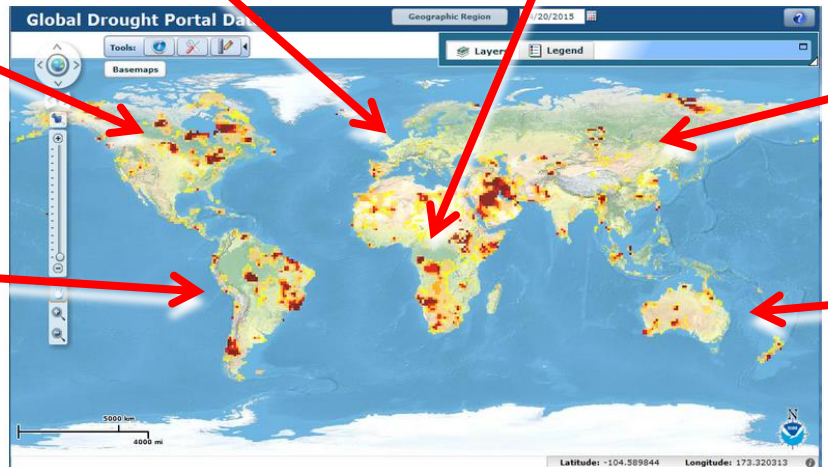
- Currently no global, authoritative, and consistent information on drought available that is easily accessible to all users
- GDIS (Global Drought Information System) under development
  - coordinating global and regional information on drought monitoring, forecasting, and management

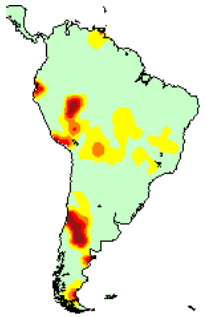


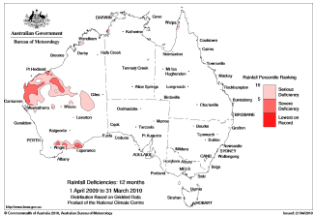












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Global Flood Awareness System

Pre-operational since 2011

Producing medium range probabilistic flood forecasts

GLOFAS
Global Flood Awareness System

Provides:

Global overviews of upcoming flood events in large river basins

Early warnings and info on upstream river conditions to downstream countries

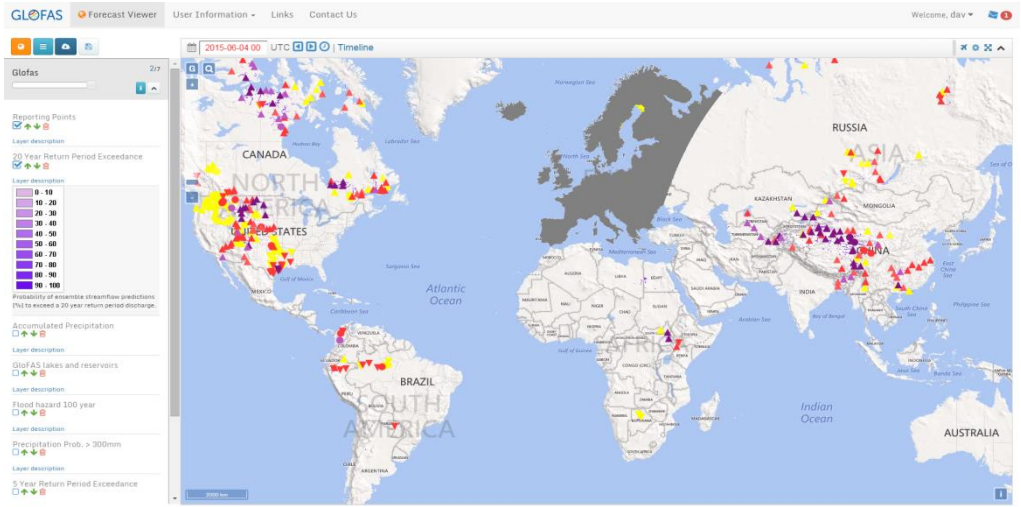
GloFAS has >1000 registered users from:

Public authorities

NGOs

Private sector

Academic/training/ research institutions



JRC EUROPEAN COMMISSION

opernicus The European Earth Observation Programme

ECMWF

University of Reading

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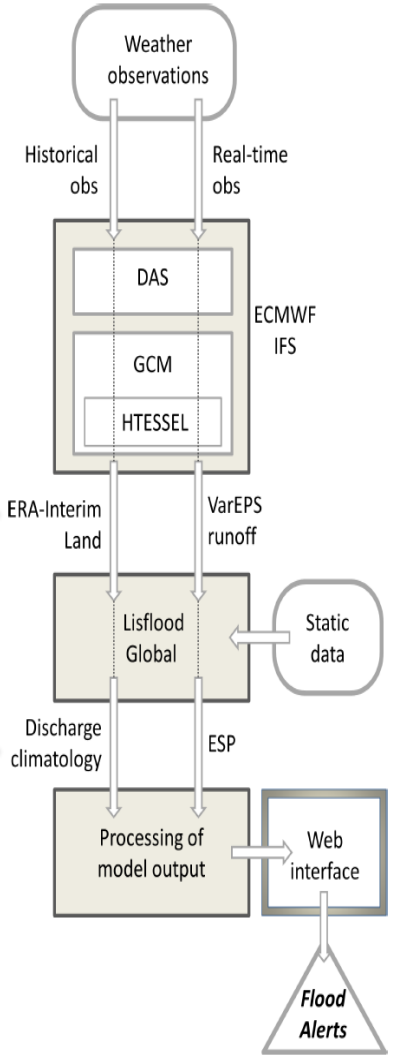
GLOFAS Global Flood Awareness System

GloFAS: Making flood predictions on the Global scale

- **ECMWF IFS**
  - **51 member ensemble**
  - **15 day lead time**
  - **Runoff generated by the land surface component (HTESSEL)**

- **Raster based hydrological model**
- **1D flow routing**

- **Event magnitude thresholds based on model climatology**
- **Integrated web interface**



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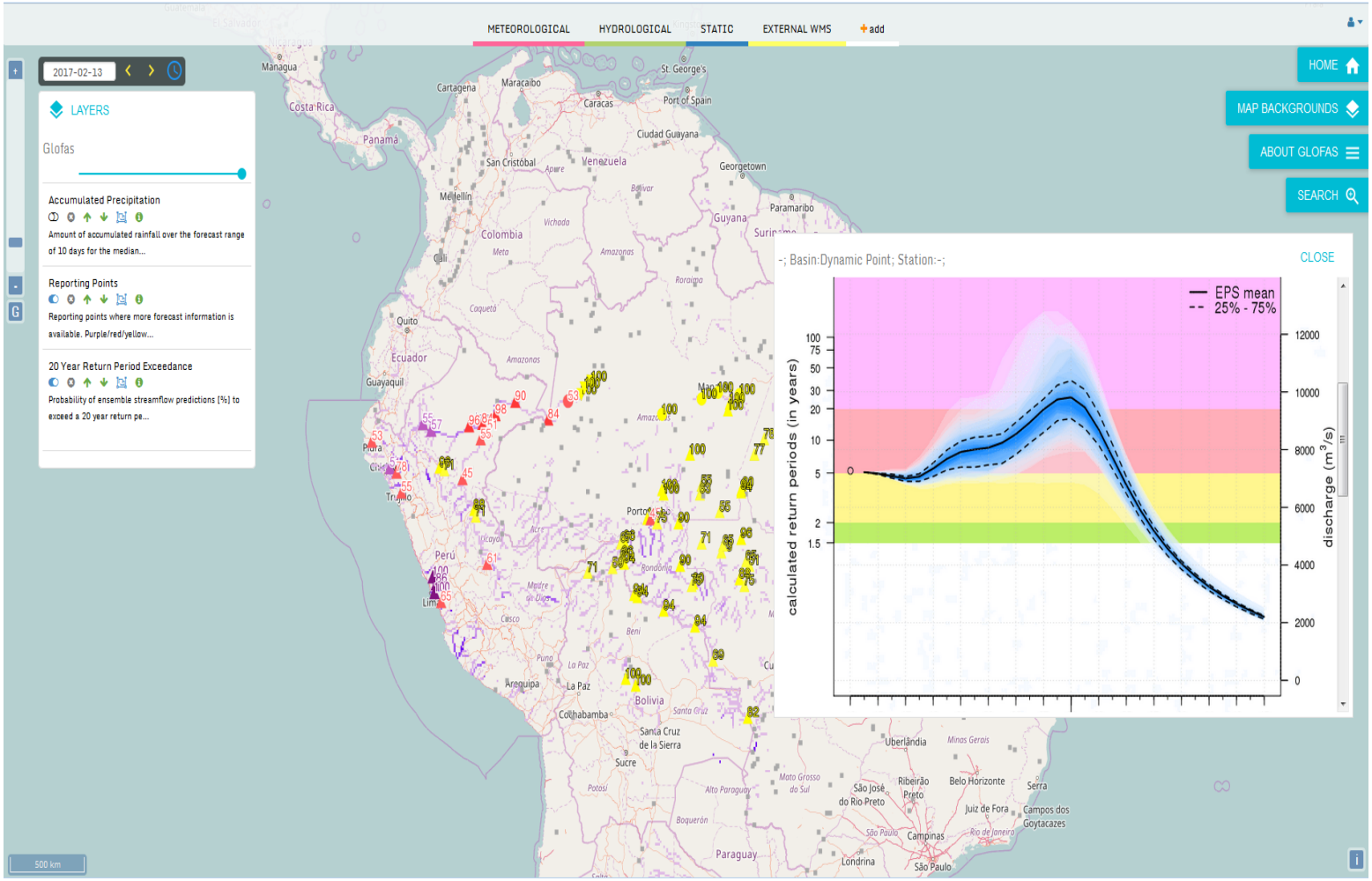
GLOFAS
Global Flood Awareness System

GloFAS: Web interface



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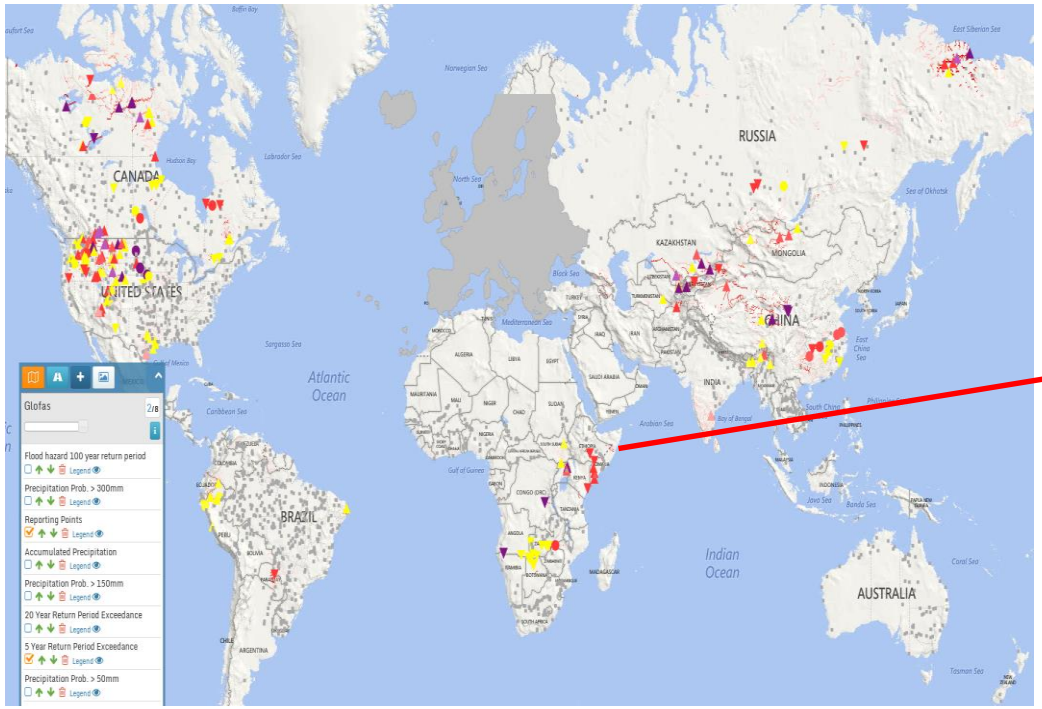
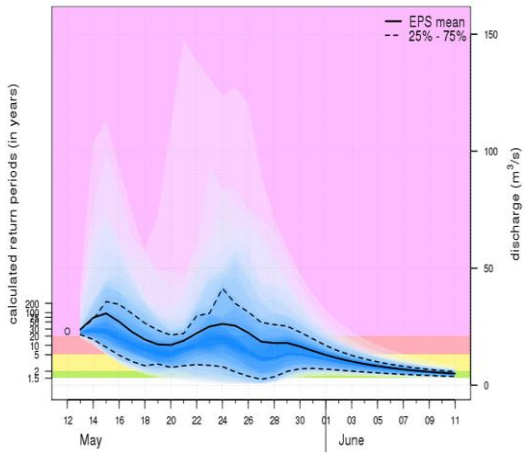
GLOFAS Global Flood Awareness System

GloFAS data availability

- Users/partners can register to access and analyse forecasts and warnings
  - For decision-making purposes and research
- Open Data – can be provided on request
- Station locations can be added as reporting points





ECMWF EUROPEAN CENTRE FOR MEDIUM-RANGE WEATHER FORECASTS

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 provide easy access to observations and environmental information products by users across the globe.

GEOCRI – GEO Cold Region Initiative

- Aiming to share the vision of GEO to **address the global environmental change, and its resulting impacts and challenges on all aspects of society**, an ***Information Service for Cold Regions*** was established to broaden and share Earth observations for societal benefits, and inform the decision makers, through strengthening coordination with diverse communities, engagement and collaboration of stakeholders including decision makers and etc..

- **Scope** - ***Global Cold Regions***: Including the Arctic, Antarctic, Himalaya-Third Pole, high-latitude oceans and high-mountain cold region areas

- **GEO Cold Regions Initiative** > recommended to **GEO WP 2017-2019,** which is the legacy of Information Service for Cold Regions in ***Water*** SBA.

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Why GEO Cold Regions?

Scientific and Societal Importance

- More than 100 countries around the world have cryospheric elements. These elements are a main source of fresh water.
- Cold regions are the most ecologically and environmentally sensitive areas, and changes to these areas comprehensively affect the dynamic earth system, impacting many aspects of society in all parts of the world.

The cold regions of our planet influence our entire world.




GEOCRI Mission and Objectives

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.

Objectives

- *Integrating, Brokering and Promoting Earth Observations over Earth Cold Regions*
- *Advocating and Practicing Data Sharing*
- *Building Community Portal and Services*
- *Strengthening Capacity building and Partnerships*

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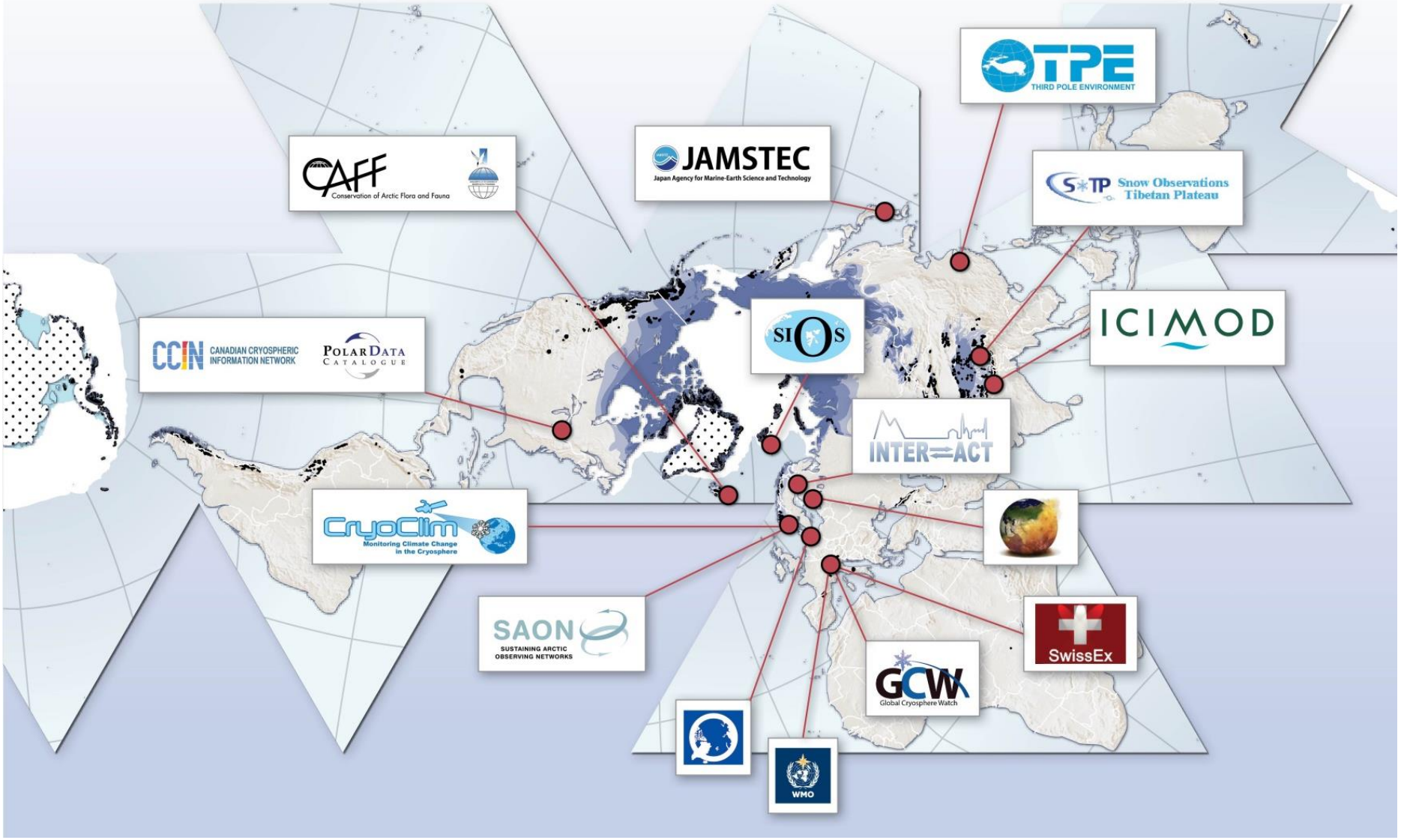
Earth's Cold Region



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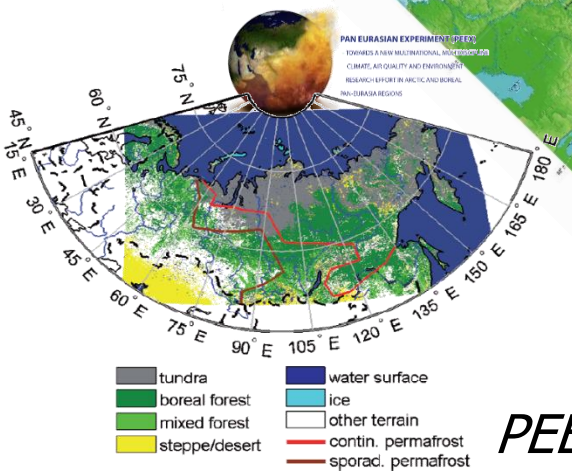
View From Northern Poles

- ✓ Frozen Water and Phase changing
  - ✓ High Latitude
  - ✓ High Altitude



PEEX

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Environmental and socio-political challenges

Specific Earth observation needs and requirements

Climate & Weather
Biodiversity & Ecosystems
International Relations & Cooperation
Sustainable Development, Indigenous Communities & Traditional Practices
Health
Agriculture, Fisheries, Hunting & Food
Water
Pollution & Environmental Protection
Hazards
Built Environment, Infrastructure & Transport
Energy
Mining & Fossil Fuels
Forestry
Shipping
Tourism

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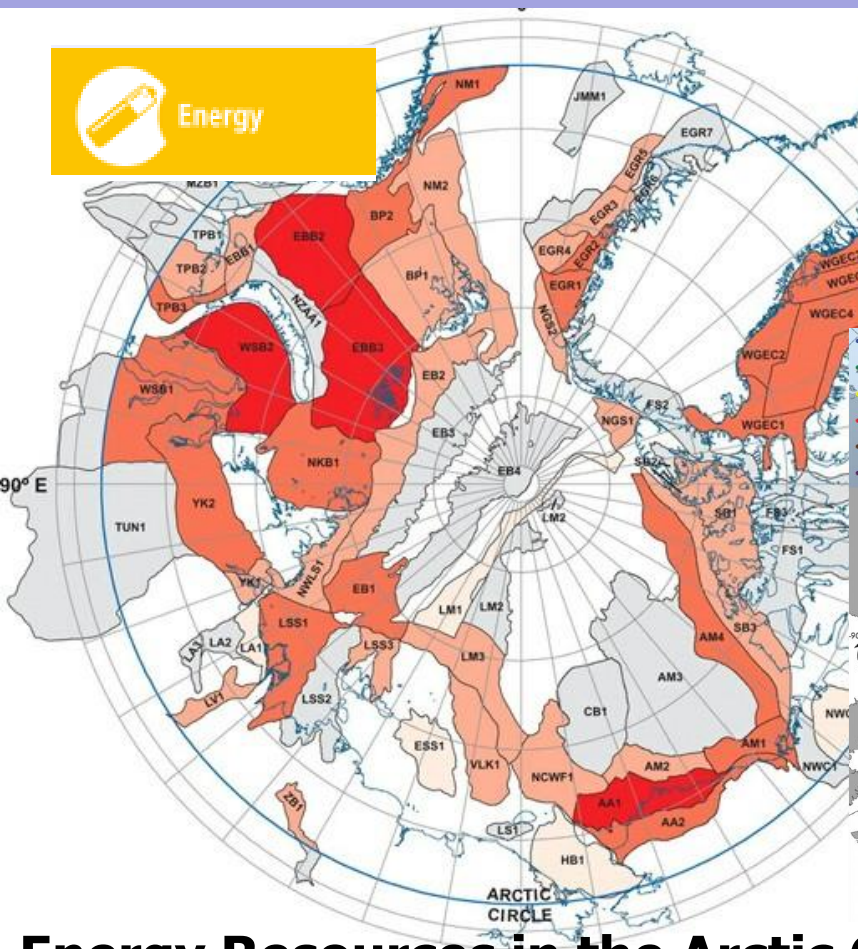
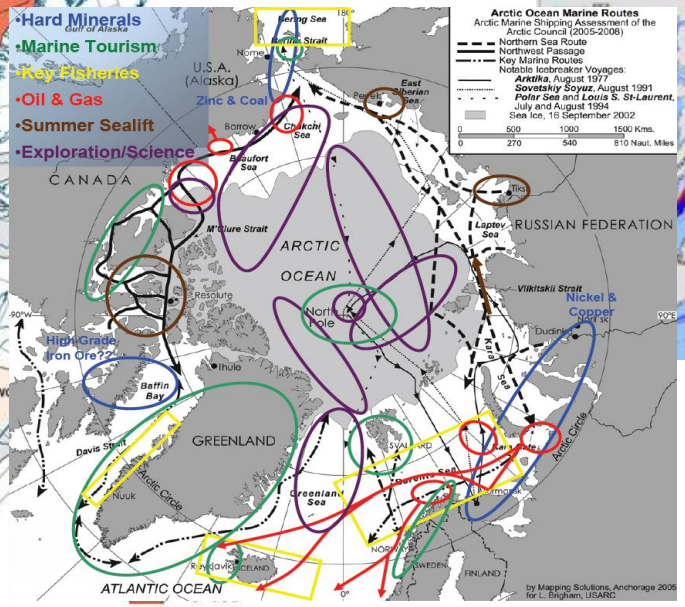
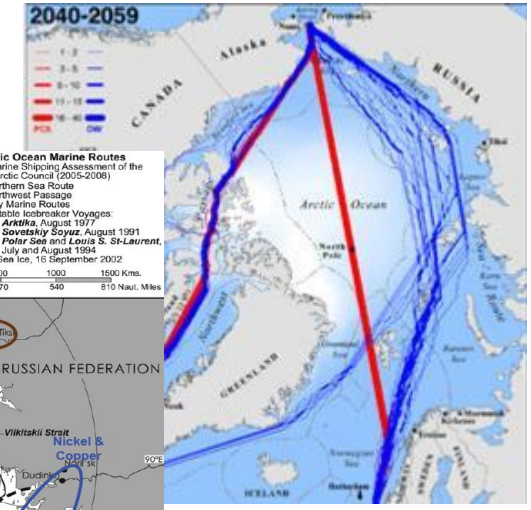
Example: The melting Arctic creates a new world of shipping and resource opportunities

Energy

Make Way for More Ships-- and More Species Invasions







Energy Resources in the Arctic Ocean

Source: Science Magazine: Donald L. Gautier, Kenneth J. Bird, Ronald R. Charpentier, Arthur Grantz, David W. Houseknecht, Timothy R. Klett, Thomas E. Moore, Janet K. Pitman, Christopher J. Schenk, John H. Schuenemeyer, Kai Sørensen, Marilyn E. Tennyson, Zenon C. Valin and Craig J. Wandrey (2009): Assessment of Undiscovered Oil and Gas in the Arctic. Science Vol. 324 no. 5931 pp. 1175-1179. DOI: 10.1126/science.1169467

1–6
<1
Area not quantitatively assessed
Area of low petroleum potential

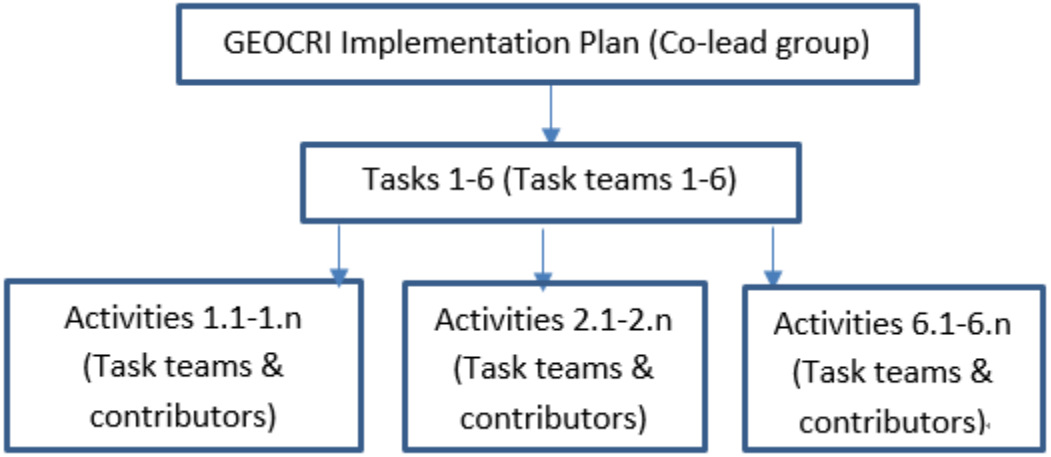
Arctic: a new geopolitical arena

Mandate - Focus on Global Cold Regions

GEOCRI is well aligned with the GEO mission and strategic objectives with its contribution and support to international processes underway, including the UN SDG, UNFCCC, UN Sendai Framework for Disaster Risk Reduction, and its UN Convention on Biological Diversity.

- ***Example 1:*** *Europe - ESA's activities turning to the Polar regions – economy, climate change, geo-political strategy and etc..*
- ***Example 2*****:** White House Arctic Science Ministerial, Sept 28, 2016
  - **Focus areas:** Strengthening and Integrating Arctic Observations and Data Sharing and Applying Expanded Scientific Understanding of the Arctic to Build Regional Resilience and Shape Global Responses
- ***Example 3*****:** SAON – Sustained Arctic Observing Networks, initiated by Arctic Council and IASC in 2011 Ministerial Meeting
- ***Example 4:*** IPPI/IASC, IACS/IUCN, ECPHORS/WMO

GEOCRI Task and Implentation Plan



Hierarchy structure of the activities

Tasks:

- Infrastructures
- Monitoring Network and Data
- Integrating in situ and Remote Sensing Observations
- User Engagement and Communication
- Capacity Buidling and Knowledge Transfer
- Management and Monitoring

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GEO Cold Regions participations

Countries

Canada
China
Finland
Germany
India
Italy
Japan
Netherlands
Norway
Spain
Sweden
Switzerland
United Kingdom
United States

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
- ICIMOD: International Centre for Integrated Mountain Development
- INTERACT: International Network for Terrestrial Research and Monitoring in the Arctic
- **ISDE** : International Society for Digital Earth
- PEEX: Pan-Eurasian Experiment
- SAON: Sustaining Arctic Observing Network
- SIOS: Svalbard Integrated Earth Observing System
- SwissEx: Swiss Experiment Platform
- TPE: Third Pole Environment
- WMO GCW: Global Cryosphere Watch
- WMO WWRP PPP/YOPP

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Progress of Tasks

Finished the 1st Round Teleconf. in Jan., 2017

Identify the Priorities

1)Community Portal Development *– GEOCRI*

2)Essential Variables *for Cold Regions*

3)Integration*: In-situ, Remote Sensing and Model*

Meeting on 4th, March, 2017

Welcome to join us!

Define the roadmaps and outcomes

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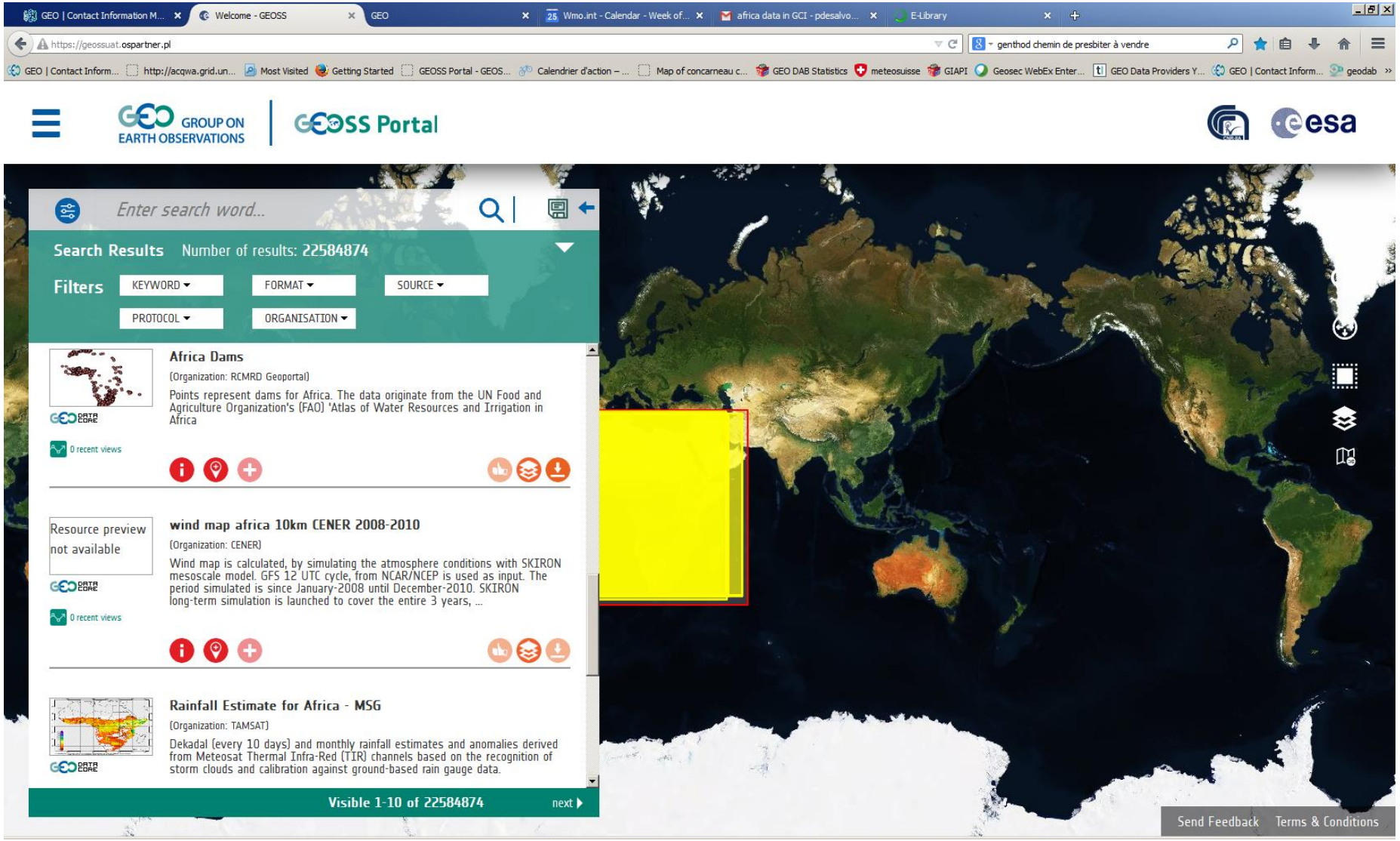
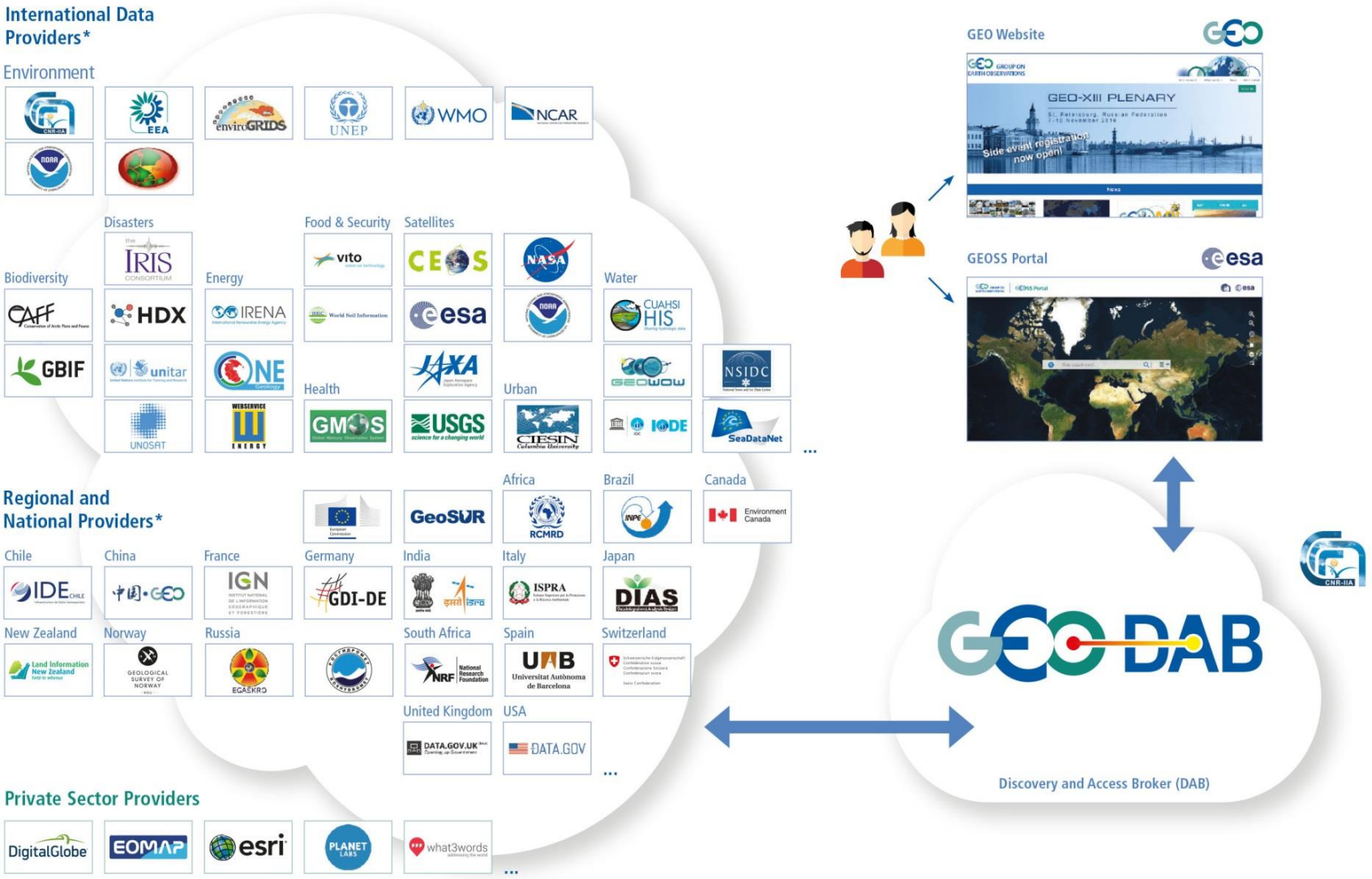
GEO promotes Broad Open Data Policy

GEOSS Portal: Search and Discover



Implementing GEOSS



- Some numbers on GEOSS Assets:152 brokered catalogs, approx discoverable and accessible 200 ml resources

GEO DAB Suported Standards

OGC CSW 2.0.2 AP ISO 1.0	INPE
OGC CSW 2.0.2 ebRIM EO	**CKAN**
OGC CSW 2.0.2 ebRIM CIM	**DCAT**
ESRI GEOPORTAL 10	GI-cat
OAI-PMH 2.0	ESRI GEOPORTAL 10
OpenSearch 1.1	NCML-OD
OpenSearch 1.1 ESIP	BCODMO
OpenSearch GENESI DR	NCML-CF
CKAN	NetCDF-CF 1.4
CUAHSI HIS-Central	FTP populated with supported metadata types
ESRI REST API 10.3	WAF Web Accessible Folders
OGC WCS	GeoNetwork (2.2.0 or greater)
OGC WMS	Ecological Markup Language 2.1.1
OGC WFS 1.0.0, 1.1.0, 2.0.0	NERRS (National Estuarine Research Reserve System)
OGC WMTS	HMA CSW 2.0.2 ebRIM/CIM
OGC SOS 1.0.0, 2.0.0, 2.0.0 Hydro Profile	HDF
OGC WPS 1.0.0	IADC DB (MySQL)
OGC CSW 2.0.0 Core	GrADS-DS
OGC CSW 2.0.2 AP ISO 1.0	FedEO
OGC CSW 2.0.2 ebRIM/EO AP	ARPA DB (based on Microsoft SQL)
OGC CSW 2.0.2 ebRIM/CIM AP	ESRI Map Server
IRIS Station	SHAPE files (FTP)
IRIS Event	KISTERS Web - Environment of Canada
HYRAX THREDDS SERVER 1.9	Environment Canada Hydrometric data (FTP)
OAI-PMH 2.0 - Harvesting	OpenSearch 1.1
GBIF	Earth Engine
DIF	RASAQM
HYDRO	EGASKRO
UNAVCO	SITAD (Sistema Informativo Territoriale Ambientale Diffuso)
CDI 1.04, 1.3, 1.4	File System
ISO19115-2	GDACS
THREDDS 1.0.1, 1.0.2	GeoRSS 2.0
THREDDS-NCISO 1.0.1, 1.0.2	Degree catalog service 2.2
THREDDS-NCISO-PLUS 1.0.1, 1.0.2	OpenSearch GENESI DR

Source: http://www.geodab.net/

GEOSS Portal:
Visualize and download

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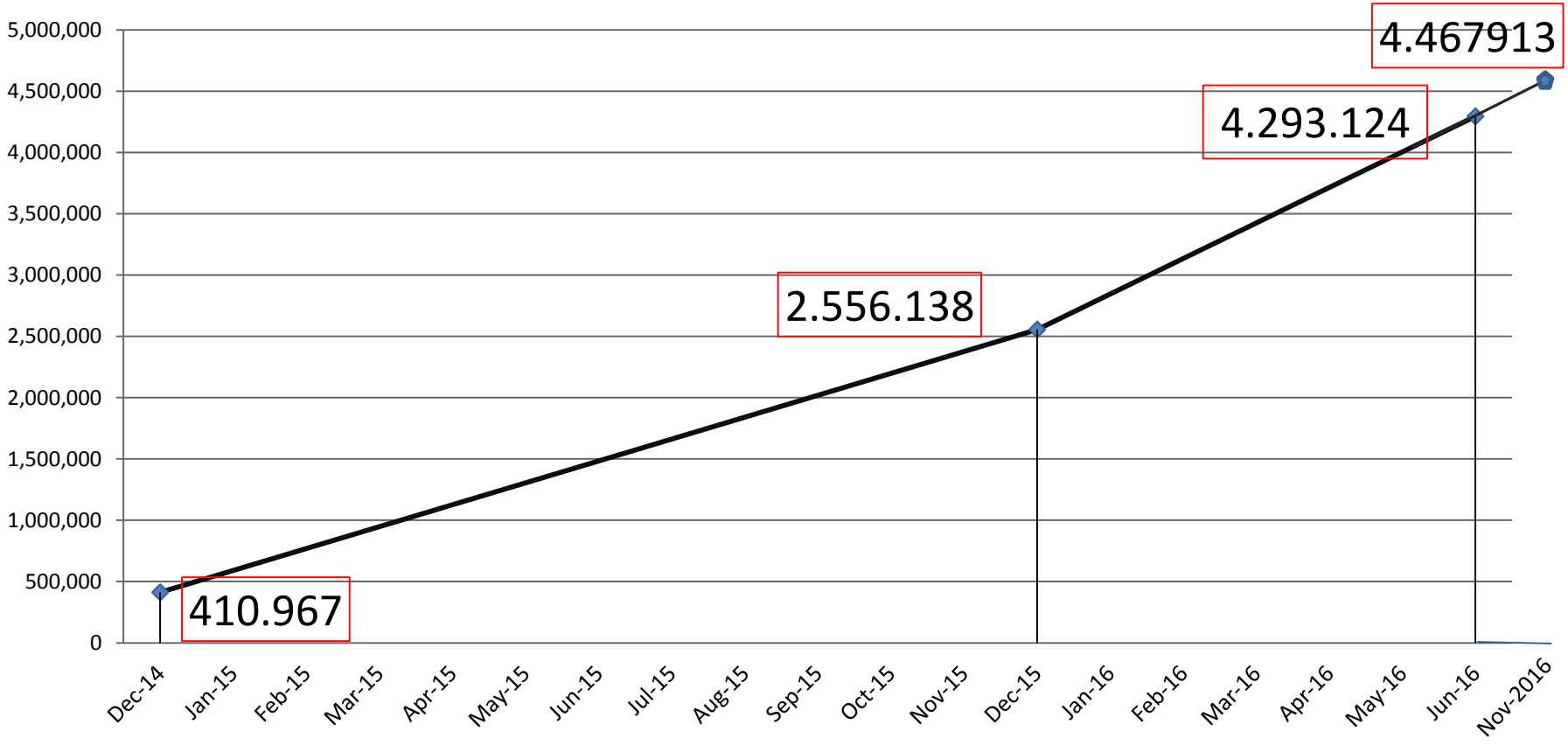
Yearly Queries of the GCI over the past 3 years!!



Statistics related to machine to machine connections

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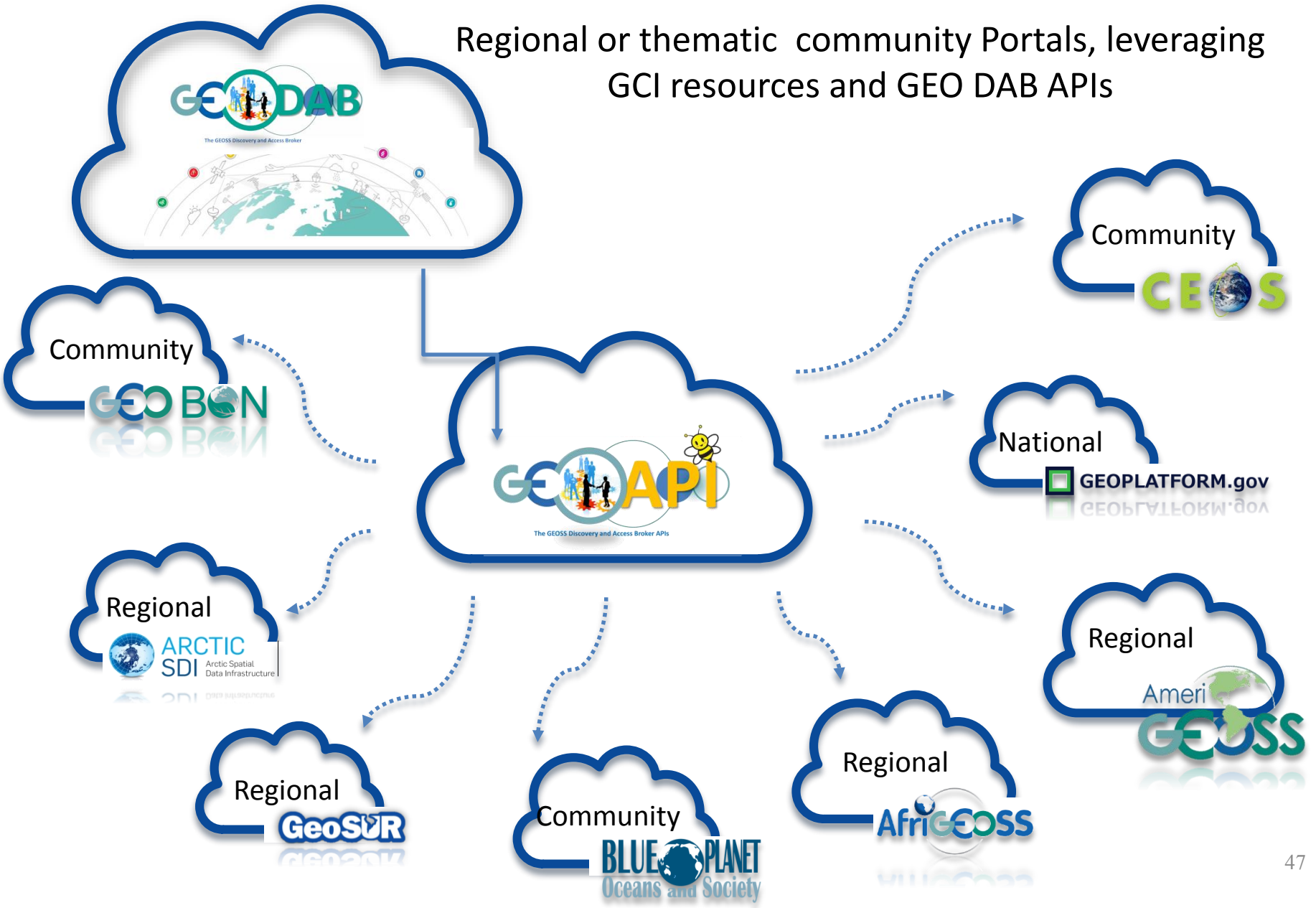
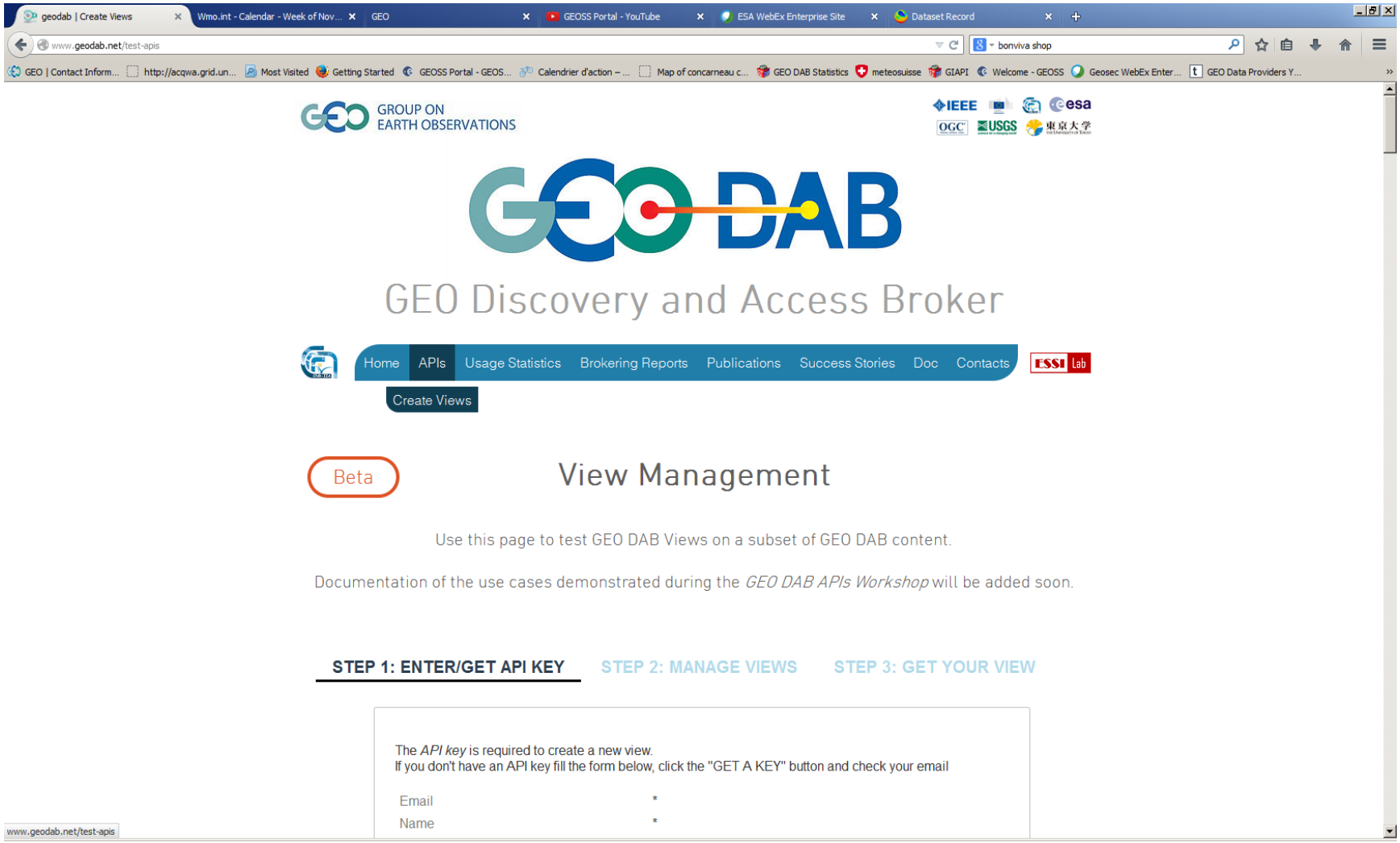
Users/GEO Portals

Regional or thematic community Portals, leveraging GCI resources and GEO DAB APIs



Leveraging GEO DAB APIs



http://www.geodab.net/apis

http://earthobservations.org/article.php?id=184

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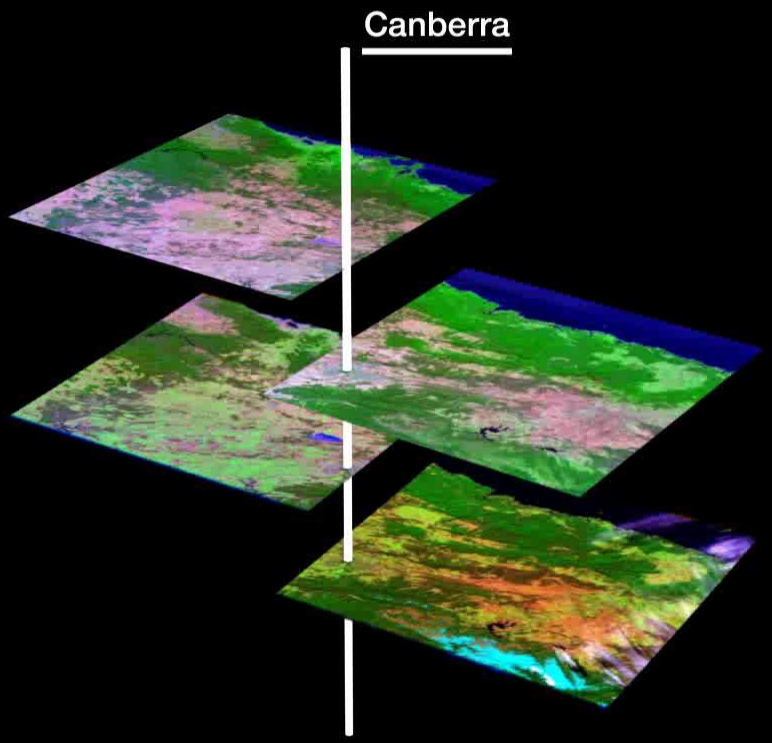
Australian Data Cube



‘Cubing’ Landsat Images

Source: Geoscience Australia

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Data Cube Application

National Flood Risk Information Portal Australia

Source: Geoscience Australia

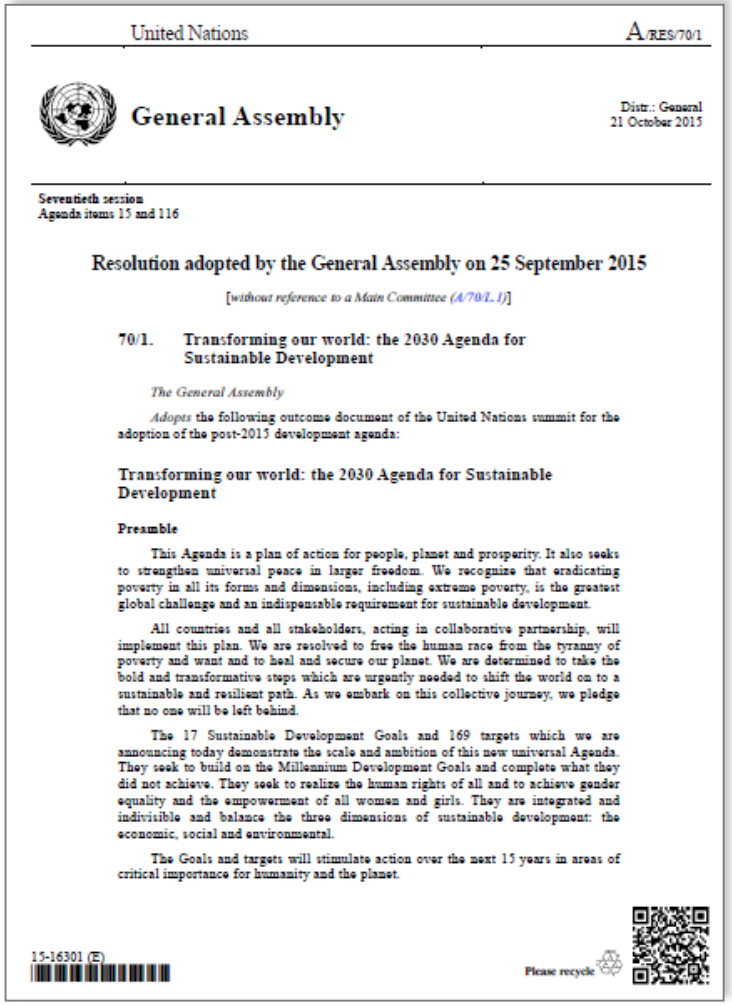
Australian Geoscience DATA CUBE

Australian Government Geoscience Australia

CSIRO

NCI

SDGs and Earth Observation



United Nations A/RES/70/1

General Assembly

Distr.: General
21 October 2015

Seventieth session
Agenda items 15 and 116

Resolution adopted by the General Assembly on 25 September 2015

[*without reference to a Main Committee (A/70/L.1)*]

70/1. Transforming our world: the 2030 Agenda for Sustainable Development

The General Assembly

Adopts the following outcome document of the United Nations summit for the adoption of the post-2015 development agenda:

Transforming our world: the 2030 Agenda for Sustainable Development

Preamble

This Agenda is a plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom. We recognize that eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development.

All countries and all stakeholders, acting in collaborative partnership, will implement this plan. We are resolved to free the human race from the tyranny of poverty and want and to heal and secure our planet. We are determined to take the bold and transformative steps which are urgently needed to shift the world on to a sustainable and resilient path. As we embark on this collective journey, we pledge that no one will be left behind.

The 17 Sustainable Development Goals and 169 targets which we are announcing today demonstrate the scale and ambition of this new universal Agenda. They seek to build on the Millennium Development Goals and complete what they did not achieve. They seek to realize the human rights of all and to achieve gender equality and the empowerment of all women and girls. They are integrated and indivisible and balance the three dimensions of sustainable development: the economic, social and environmental.

The Goals and targets will stimulate action over the next 15 years in areas of critical importance for humanity and the planet.

15-16301 (E)

Please recycle

Transforming our World: The 2030 Plan for Global Action - Article 76:

We will promote transparent and accountable scaling-up of appropriate public-private cooperation to exploit the contribution to be made by a wide range of data, **including Earth observation and geo-spatial information**, while ensuring national ownership in supporting and tracking progress.

Strategic Plan:

"GEO will supply the requisite Earth observations in support of effective policy responses for climate change adaptation, mitigation and other impacts across the SBAs."

2015 Mexico City Ministerial Declaration:

"Affirm that GEO and its Earth observations and information will support the implementation of, inter alia:

- *the 2030 Global Goals for Sustainable Development,*
- *the Sendai Framework for Disaster Risk Reduction 2015-2030,*
- *the United Nations System of Environmental and Economic Accounts,*
- *the United Nations Framework Convention on Climate Change."*

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The GEO Engagement Strategy

The mission of GEO can only be achieved through a strong and coherent engagement with stakeholder communities

- Fundamentally linked to the Mexico City Ministerial Declaration, GEO Strategic Plan and GEO Work Programme
- Aims at creating the necessary synergies between actions of the different GEO stakeholders and activities
- Does not attempt to replace existing actions but rather to align them with relevant policy priorities
- The desired result is to increase the impact and effectiveness of GEO actions

Goals and objectives

The aim is to enable GEO to become the reference global initiative that facilitates evidence-based environmental decision making by unlocking the potential of Earth observation

Three main objectives:

1) Establishing GEO as a unique international organization that ensures EO underpins global decision making
2) Ensuring strong advocacy for broad, open data policies and practices
3) Establishing GEO as a global reference for EO systems, data and information

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GEO Engagement Priorities 2017-2019

- 2030 Agenda for Sustainable Development

- Climate Change – Greenhouse Gas Monitoring

- Disaster Risk Reduction

GEO-XIII, November 2016, St Petersburg

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THE GLOBAL GOALS
For Sustainable Development

Usefulness of EO information increasingly recognized

Engagement Priorities 2017-2019

2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

- Support to the 2030 Sustainable Development framework enshrined in Mexico Declaration & GEO Strategic Plan
- Working together with selected GEO activities, actions will focus on organisations with sound activities related to SDGs and GEO Members/POs
- GEO principals have key role to engage national user stakeholders such as statistical offices and relevant ministries
- Partnerships to be pursued with UN agencies custodians for SDGs (e.g. FAO, UNEP, UNESCO, WHO…) as well as with coordination initiatives
  - (e.g.: SDSN, UN-GGIM, IAEG-SDGs WGGI, GPSDD, IISD)

GEO Initiative: Earth Observations for the Sustainable Development Goals (EO4SDGs)

GOAL I: **Earth observations and geospatial information contribute in novel and practical ways to support the achievement of the SDGs.**

GOAL II: **Increase skills and capabilities in uses of Earth observations for SDG activities and their broader benefits.**

GOAL III: **Broaden interest and awareness of Earth observations support to the SDGs and social, environmental, and economic benefits.**

EO4SDGs: Draft Implementation Plan

Assessment: Most likely Targets and Indicators that Earth obs. can contribute to (directly or indirectly)

Target (Contribute to progress on the Target, not necessarily the Indicator)									Goal	Indicator (Direct measure or indirect support to the Indicator)					
							1.4	1.5	1 No poverty	1.4.2					
						2.3	2.4	2.c	2 Zero hunger	2.4.1					
					3.3	3.4	3.9	3.d	3 Good health and well-being	3.9.1					
									4 Quality education						
								5.a	5 Gender equality	5.a.1					
		6.1	6.3	6.4	6.5	6.6	6.a	6.b	6 Clean water and sanitation	6.3.1	6.3.2	6.4.2	6.5.1	6.6.1	
					7.2	7.3	7.a	7.b	7 Affordable and clean energy	7.1.1					
								8.4	8 Decent work and economic growth						
					9.1	9.4	9.5	9.a	9 Industry, innovation and infrastructure	9.1.1	9.4.1				
						10.6	10.7	10.a	10 Reduced inequalities						
	11.1	11.3	11.4	11.5	11.6	11.7	11.b	11.c	11 Sustainable cities and communities	11.1.1	11.2.1	11.3.1	11.6.2	11.7.1	
				12.2	12.4	12.8	12.a	12.b	12 Responsible consumption and production	12.a.1					
					13.1	13.2	13.3	13.b	13 Climate action	13.1.1					
		14.1	14.2	14.3	14.4	14.6	14.7	14.a	14 Life below water	14.3.1	14.4.1	14.5.1			
	15.1	15.2	15.3	15.4	15.5	15.7	15.8	15.9	15 Life on land	15.1.1	15.2.1	15.3.1	15.4.1	15.4.2	
								16.8	16 Peace, justice and strong institutions						
17.2	17.3	17.6	17.7	17.8	17.9	17.16	17.17	17.18	17 Partnerships for the goals	17.6.1	17.18.1				

Engagement Priorities 2017-2019

CLIMATE CHANGE – GREENHOUSE GAS MONITORING

- **Mexico Declaration mentions support to implementation of the UNFCCC and Paris Agreement**
- **GEO can play a role in supporting:**
  - **Providing anthropogenic emissions data and methods (stocktaking)**
  - **Providing geospatial data locally (mitigation and adaptation)**
  - **Indicators and targets related to Climate in the SDGs.**
- **Actions should build on existing GEO Initiatives and Flagships**

PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

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Climate in the GEO Work Programme

Community Activities

- Access to climate data in GEOSS
- Collaboration between GEO and GFCS
- Copernicus Climate Change Service (C3S) & Copernicus Atmospheric Monitoring Service (CAMS)
- Land Cover, Water Cycle, Floods, Droughts and others

GEO Initiatives/Flagships

- GEO Carbon and GHG Initiative
- Global Drought Information System
- Climate Change Impact Observation on Africa´s Coastal Zones
- Information Service for Cold Regions

GEO CARBON AND GHG INITIATIVE

GEOGLAM Global Agricultural Monitoring

GFOI Global Forest Observations Initiative

GEO BON

BLUE PLANET Oceans and Society

Informing policy agendas

COP-23 Side Event

- UNFCCC IPC (Sep 2016) endorsed GEO having independent eligibility to apply for Side Events and Exhibits at future UNFCCC sessions
- ExCom Action 39.9: Secretariat to work with key partners (e.g. UNFCCC, IPCC, CEOS, GCOS, ICOS, etc.) to design a Side-Event at COP-23
- Content to be defined with partners → Task Force

- Possible topics include:
  - Carbon and GHG observations to support the implementation of the Paris Agreement
  - Help for countries in their national reporting
  - Role of (satellite) observations in the refinement of the IPCC Guidelines

COP23 FIJI
UN CLIMATE CHANGE CONFERENCE
BONN 2017

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Engagement Priorities 2017-2019

DISASTER RISK REDUCTION

- **Mexico Declaration mentions support to the implementation of Sendai Framework for DRR (2015-2030)**
- **Provision of timely EO data critical to the full cycle of disaster management**
- **Primary focus should be on developing countries**
- **Actions should build on existing GEO initiatives**
- **GEO working closely with UNISDR and participating in the Global Platform for Disaster Risk Reduction**

UN World Conference on Disaster Risk Reduction
2015 Sendai Japan

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Societal Benefit Areas (SBAs)

Climate change and its impacts cut across all SBAs

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Disaster Resilience

- Earth observations contribute to disaster mapping and better mitigation and response.
- GEO supports disaster resilience by increasing coordination of Earth observations to forecast and prepare for disasters, to mitigate damage and to better manage and recover from disasters.
- Working to expand the use of satellite imagery and surface data for reducing disasters risk.
- Developing decision-support tools and applications for the full cycle of disaster management.
- GEO-DARMA & Geohazards Supersites Natural Laboratories (GSNL) Initiatives
- Working in close collaboration with national space agencies.

Through the Committee on Earth Observation Satellites (CEOS) - the space coordination arm of GEO

CEOS

IRRESPONSIBILITY

NO SINGLE RAINDROP BELIEVES IT IS TO BLAME FOR THE FLOOD.

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Thank you !

www.earthobservations.org

www.geoportal.org

@geosec2025

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