



Workshop

GEO Initiative on Earth Observation for Ecosystem Accounting (EO4EA)

***Group on Earth Observation (overview from
the EC)***

Copenhagen - Monday 27th March 2018

Gilles OLLIER

Earth Observation Sector

Directorate Climate Action and Resource Efficiency – I4

Directorate General Research & Innovation

EUROPEAN COMMISSION

Gilles.Ollier@ec.europa.eu

GEOSS: A Global System



European
Commission



- GEOSS is a set of coordinated, independent Earth observation, information and processing systems
- GEOSS links these systems to strengthen the monitoring of the state of the Earth
- GEOSS ensures that these data are accessible, of identified quality and provenance, and interoperable

GEO Ministerial Summit in Mexico City (11/11/2015)

Photos taken by Kiara Worth (IISD Reporting Services)



Mr Jianlin CAO
Vice Minister of Science & Technology
China



Mr Carlos MOEDAS
Commissioner for Research,
Science and Innovation
European Commission



Ms Naledi PANDOR
Minister, Science and Technology
South Africa



Ms Sally JEWELL
Secretary, Department of the Interior
United States

"Over the next few decades the international community will have to make many tough decisions. More importantly, we'll have to work together to solve global problems like climate change, hunger and migration."

"Insufficient or incomplete observing systems will only hold us back and lead to high environmental, economic and social costs in the long term."

Carlos MOEDAS
European Commissioner for Research, Science and Innovation

GEO missions



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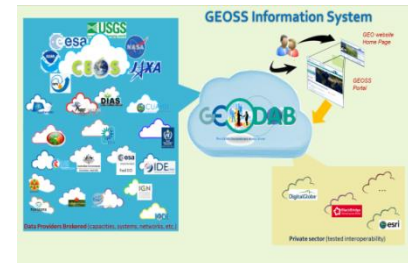
(i) Promote broad and open sharing of Earth observation data globally,



(i) Coordinate strategies and investments in observing capabilities;



(i) Develop an information architecture to enable sharing of data and information,



(i) Develop new integrative initiatives to deliver services tailored to specific end-user needs, creating and fostering the connection between data providers and users.

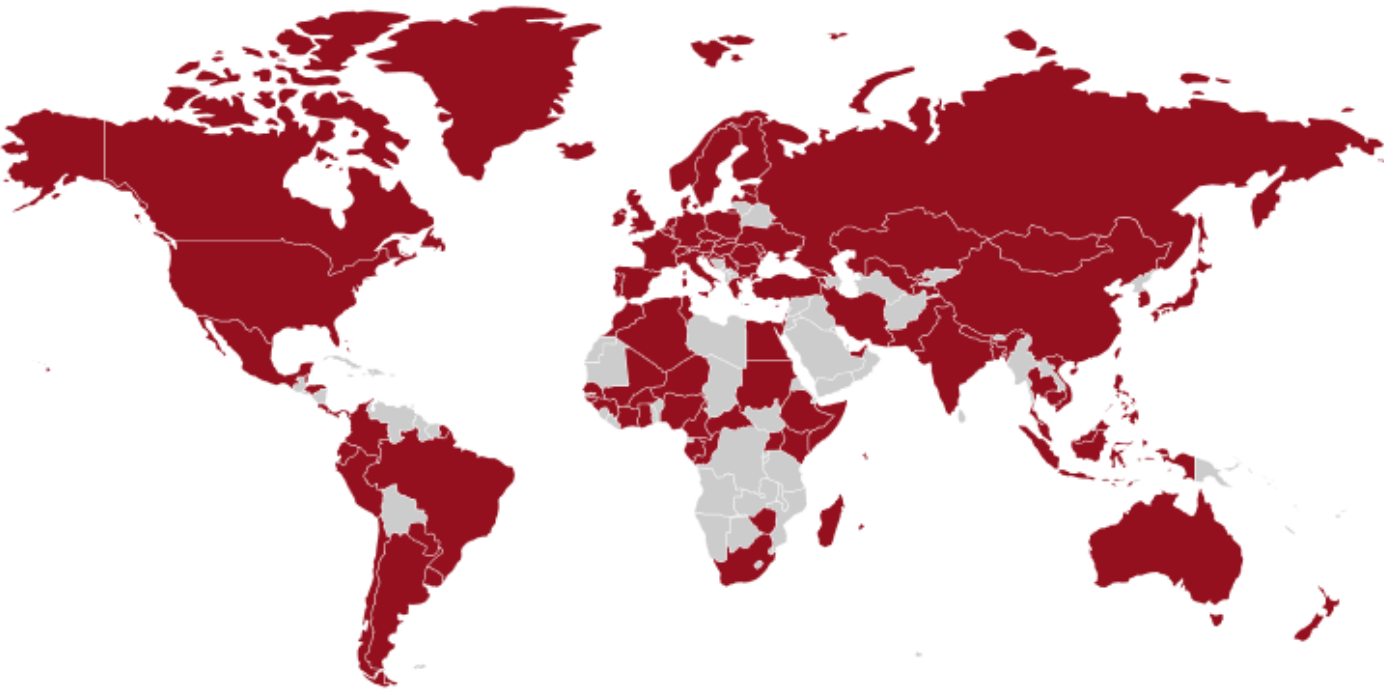


Research and
Innovation

104 GEO Members



GEO Member Map for the year 2017
(Use slider under the map to change the year)

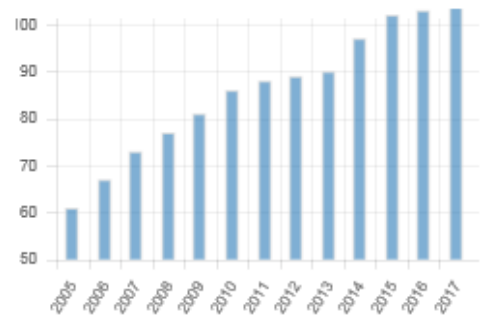


2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017

Number of Members (2017)

Africa:	27
Americas:	16
Asia/Oceania:	20
C.I.S.:	7
Europe:	34
Total:	104

Number of Members by year



106 Participating Organisations



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Research and
Innovation

GEO Societal Benefit Areas





Biodiversity and Ecosystem Sustainability

"By bridging multiple types of observation data and knowledge to provide information on the health of Earth's biological and ecological systems and their services to society; in order to strengthen conservation, restoration and sustainable use of ecosystems and biodiversity, including marine planning and ocean use, and forest management, in response to changes in climate and land use, through science-society collaborations at local, national, regional and global levels"

The four GEO Implementation Mechanisms



EO4EA

*Develop concepts and applications.
Community building*

*Demonstrate pilot or prototype services.
Members / PO coordinate*

*Spin-up pre-operational services.
Members / PO operate*

GEO Community Activities

GEO Initiatives

GEO Flagships




GEO Foundational Tasks

Coordinated by GEO Secretariat

GEOSS WORK PROGRAMME



European
Commission

SBA	GEO Initiatives		Community Activities	
	GI-02	GEOBON-Global Biodiversity Observation (GEO BON)	CA-29	Using Geospatial Data to Identify and Monitor Ecosystem Service and Track in a Natural Capital – Ecosystems Accounts Framework
	GI-03	GFOI Global Forest Observation Initiative	CA-30	Harmful Algal Bloom (HAB) Early Warning System
	GI-14	GECO: the GEO Global Ecosystem Initiative	CA-31	For Global Mangrove Monitoring
	GI-15	GEO-GNOME Initiative: GEO Global Network for Observation and information in Mountain Environments		
	GI-08	GEO Geohazard Supersites and Natural Laboratories (GSNL)	CA-23	Space and Security
	GI-09	Global Wildfire Information System	CA-26	Towards Chinese tsunami mitigation system under GEO framework
	GI-16	GEO-DARMA = Data Access for Risk Management (<i>to support the implementation of Sendai framework</i>).	CA-27	Foster Utilization of Earth Observation Remote Sensing and In Situ Data for All Phases of Disaster Risk Management (new-CEOS)
			CA-28	Global Flood Risk Monitoring
	GI-10	EO data and renewable energies	CA-06	EO data and mineral resources (Includes Impact Monitoring System for Geo-Resource Exploration and Exploitation)
			CA-25	Africa Global-scale Geochemical Baselines for mineral resource and environmental management: Capacity-building phase

GEOSS INFO SYSTEM (GCI)



European Commission

GEO Website

International Data Providers*

Environment



Biodiversity



Disasters



Energy



Food & Security



Satellites



Water



Health



Urban



Regional and National Providers*

Chile



China



France



Germany



Africa



Brazil



Canada



United Kingdom



Russia



South Africa



Spain



USA



India



Switzerland



Private Sector Providers



* more than a hundred in total



GEO Website



GEOSS Portal



GEO DAB

Discovery and Access Broker (DAB)

EC contribution to GEOSS



Italian port city of Brindisi - Sentinel-2B - 15 March (Copyright ESA)



Copernicus

The Six COPERNICUS SERVICES

Monitoring the State of the Earth System Environment ...

FULL, FREE AND OPEN





✓ ✓

Land Monitoring

Copernicus
Europe's eyes on Earth



✓

Marine Environment Monitoring

Copernicus
Europe's eyes on Earth








✓

Climate Change

Copernicus
Europe's eyes on Earth

✓

Atmosphere Monitoring

Copernicus
Europe's eyes on Earth





✓ ✓

Emergency Management

Copernicus
Europe's eyes on Earth







✓ ✓ ✓

Security

Copernicus
Europe's eyes on Earth

✓ = operational
✓ = in ramp up

... Six cross-cutting Thematic Services

EUROPEAN ENVIRONMENTAL RESEARCH INFRASTRUCTURES



- Earth observation and research services
- Sustainable long term observations and experiments
- Building towards interoperability and common service platforms
 - ENVRI PLUS H2020 project
 - Several INFRA projects on RI development

www.envriplus.eu

www.envri.eu



H2020 Project



Project Number: 654182

EUROPEAN ENVIRONMENTAL RIS IN GEO INITIATIVES

ICOS, EPOS and LTER (through ILTER) are participating organisations in GEO. The marine Ris are participating through GOOS

Active participation of the ENVRI community in GEO initiatives

- Geo Biodiversity Observation Network (GEO BON)
- GEO Carbon and Greenhouse Gases Initiative
- Geo Geohazard Supersites and Natural Laboratories (GSNL)
- Geo Global Ecosystem Initiative (GEO ECO)
- Oceans and Society: Blue Planet

Much of the potential is still not used in GEO

ENVRI PLUS H2020 project has also a task on creating these connections to GEO initiatives



H2020 Project

plus
ENVRI

Project Number: 654182



ECOPOTENTIAL: Improving future ecosystem benefits through Earth Observations

Starting date: 1st June 2015, Duration: 4 years, 47 partners

Coordinator: Antonello Provenzale

Institute of Geosciences and Earth Resources, National Research Council of Italy

Co-Coordinator: Carl Beierkuhnlein

Biogeography, BayCEER, University of Bayreuth, Germany

Project Manager: Carmela Marangi

Institute of Applied Mathematics, National Research Council of Italy

External Communication Officer: Mariasilvia Giamberini

Institute of Geosciences and Earth Resources, National Research Council of Italy





ECOPOTENTIAL



This project is funded by the European Union

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 641762. Copyright by Ecopotential Consortium.

Working in partnership with 23 Protected Areas and beyond



Ecosystem types:
Mountains
Arid/semi-arid
Coastal/marine



Ecosystem types	
Arctic	[Light blue box]
Atlantic	[Blue box]
Black Sea	[Purple box]
Boreal	[Dark purple box]
Continental	[Light green box]
Macaronesia	[Teal box]
Mediterranean	[Yellow box]
Pannonian	[Orange box]
Steppic	[Light yellow box]

ECOPOTENTIAL Sites	
International Marine Protected Area	[Blue circle with white center]
Large Marine Ecosystem	[Blue circle]
National Park	[Circle with red, white, and green segments]
Natura 2000 site	[Circle with orange and white segments]
World Heritage	[Circle with purple and white segments]
Biosphere Reserve	[Circle with green and white segments]





Four new Innovation Actions kicked off in Autumn 2016, with a focus on land cover and land use:

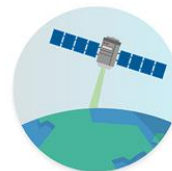
1. LandSense "A Citizen Observatory and Innovation Marketplace for Land Use and Land Cover Monitoring"
2. GROW "The GROW Observatory"
3. GroundTruth2.0: "Environmental knowledge discovery of human sensed data"
4. Scent: "Smart Toolbox for Engaging Citizens into a People-Centric Observation Web"





GROW
OBSERVATORY

Deploy a large-scale network of soil moisture low cost sensors (**15000+**) and soil testing kits in Europe through communities and community champions and **demonstrate** the usefulness of the CO for end users activities





LandSense

A Citizen Observatory and Innovation Marketplace
for Land Use and Land Cover Monitoring

Inian Moorthy

IIASA

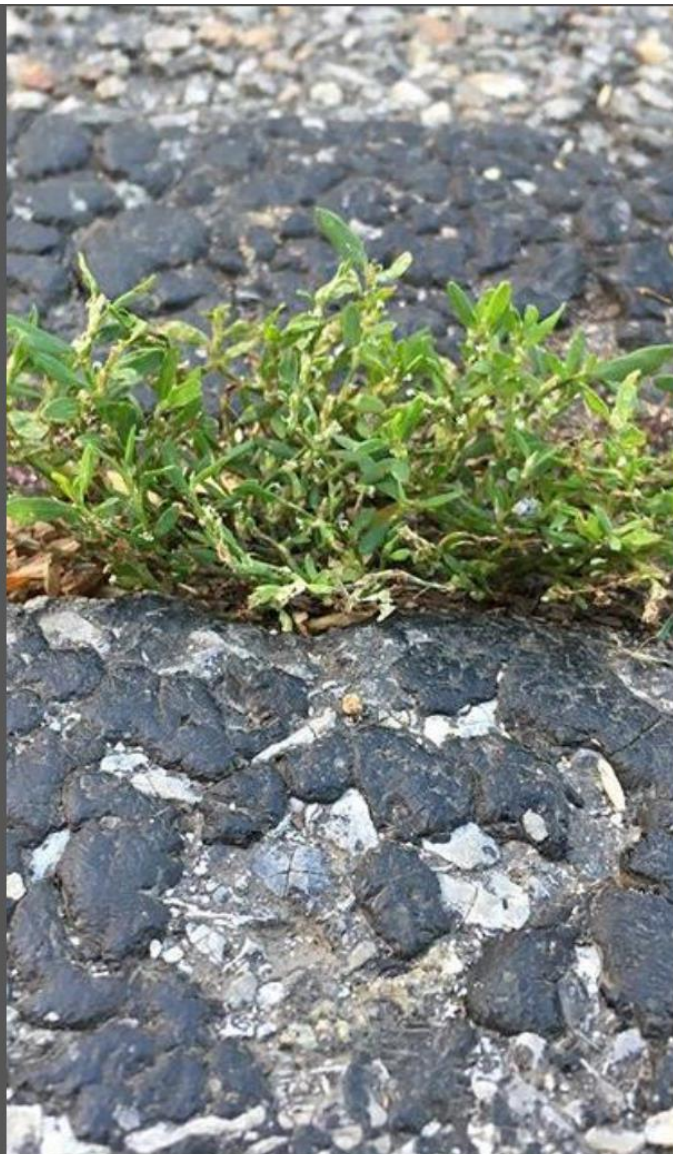
Steffen Fritz

IIASA

Connect with us!

info@landsense.eu

 [@LandSense](https://twitter.com/LandSense)





1

Urban & Rural Landscape Change

2018 & 2019

HORIZON 2020



Complementing authoritative data sources

- Reducing costs on professional surveying
- Optimizing workflows of mapping agencies
- Opening up access to land take information



OpenStreetMap France & Germany Soil conservation participants (Tulln)

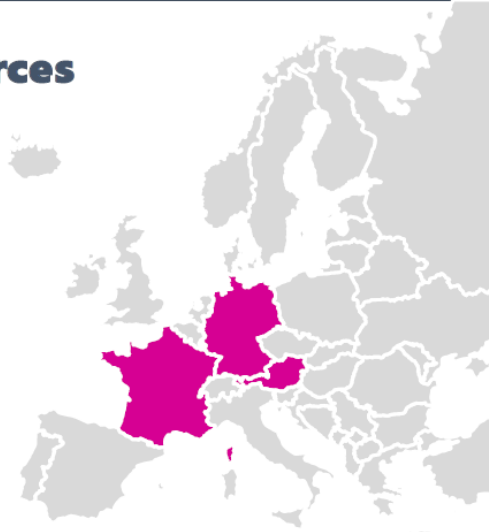


FotoQuest app OSM tools



Upscale potential:

Netherlands, UK, Finland, Switzerland, Greece



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ZUKUNFT
SEIT 1386

umweltbundesamt[®]
ENVIRONMENT AGENCY AUSTRIA

Input to Ecosystem Accounting

- Ecosystem condition monitoring
 - Physical state (e.g. soil fertility; surface- and groundwater quality; soil, air and water temperature)
 - Biological state (e.g. plant growth, biomass, biological diversity, marker species)
 - Processes (e.g. vegetation production, biomass, phenology)
 - Atmospheric deposition (gaseous and particulate compounds)
- Information for policy makers: economic relevance of ecosystems
 - Identifying ecosystem types and corresponding services under particular threat
 - Systems approach: interlinkage of ecosystem structures, matter fluxes, energy fluxes and biodiversity with human activities
 - Qualitative mapping of ecosystem services in dynamic regions

Thank you!

Courtesy



European Space Agency

**Copenhagen - SPOT-5 image
21 April 2011**