



10th Asia Pacific Biodiversity Observation Network Workshop (Kuching | July 2018)

Perspectives from GEO

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www.earthobservations.org

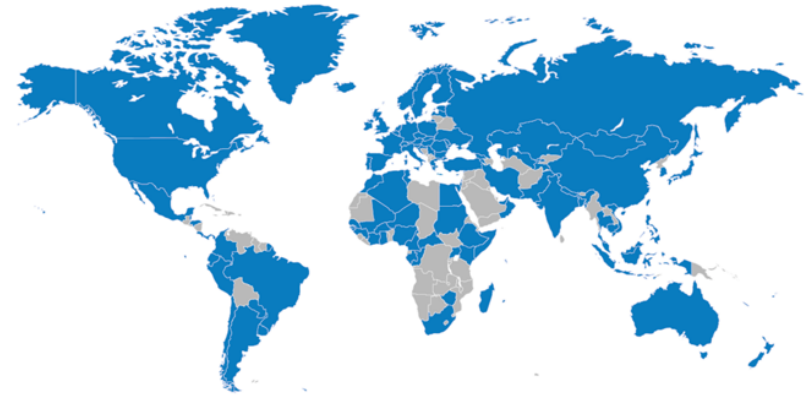
www.geoportal.org

Group on Earth Observations (GEO)

Member states (105)

GEO Vision

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



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

Participating Organizations (126)



GEOSS

(Global Earth Observation System of Systems)

What is GEOSS?

GEOSS is a set of coordinated, independent and open Earth observation (EO) collection, information and processing systems.

What does GEOSS do?

GEOSS links observing systems to strengthen monitoring of the state of the Earth, ensuring that data is accessible and interoperable.

Why does GEOSS matter?

GEOSS increases our understanding of Earth processes, and enhances predictive capabilities that underpin sound decision-making.



Societal Benefit Areas

**Biodiversity and
Ecosystem Sustainability**

**Disaster
Resilience**

**Energy and
Mineral
Resources
Management**

**Food Security
and
Sustainable
Agriculture**

**Infrastructure
and
Transport
Management**

**Public Health
Surveillance**

**Water
Resources
Management**

**Sustainable
Urban
Development**



The GEOSS Platform “GEOSS Portal”



170+ brokered catalogs

5000+ data providers

400 Million+ resources

The image displays a grid of logos for various data providers and organizations. At the top, there are logos for GEO GROUP ON EARTH OBSERVATIONS, GEOSS Portal, and ESA. Below these, a large grid of logos is arranged in approximately 10 rows and 10 columns. The logos include: ADS (Arctic Data archive System), Regional Centre for Mapping of Resources for Development, AFR/MAISON, amazon web services, Australian Government Geoscience Australia, AODN, AVISO+, Environment Canada, climate change initiative, CEOS, IDE CHILE, EEA, INPE, CAFF (Conservation of Arctic Flora and Fauna), CUAHSI HIS (Sharing hydrologic data), Joint Research Centre Data Catalogue (Opening access to JRC data), DIAS (Data Integration & Analysis System), DigitalGlobe, EnerGE, WERSERVICE, enviroGRIDS, EOMAP, ESA (European Space Agency), esri, EUMETSAT, GEOLOW, EVK2CNR (Ricerca scientifica in alta quota), FAO (Fédération Aéronautique Internationale), IGN (Institut National de l'Information Géographique et Forestière), GBIF (Global Biodiversity Information Facility), GeoSUR (La Red Geoespacial de América Latina y el Caribe), GDI-DE (Geodateninfrastruktur Deutschland), GMOS (Global Memory Observation System), GRDC, great lakes observing system, Humanitarian Data Exchange, HOT (Humanitarian OpenStreetMap Team), ICIMOD, Indian Space Research Organisation, IRENA (International Renewable Energy Agency), IRIS, ISPR, World Soil Information, ISPR (Istituto Superiore per la Protezione e la Ricerca Ambientale), JAXA, KYSTINFO, LRIS (portal), Land Information New Zealand (Iaiti te whenua), Medina, NASA, NCAR, NAWA (National Water Research Institute), NOAA, NSIDC (National Snow and Ice Data Center), OBIS (Ocean Biogeographic Information System), ONE 10 (Ecology 2007-2017), PLANET LABS, NCAR UCAR, ORNL DAAC (DISTRIBUTED ACTIVE ARCHIVE CENTER FOR BIOGEOCHEMICAL DYNAMICS), OpenTopography (High-Resolution Topographic Data and Tools), Canadian Polar Data Network (CPDN), PEGEL ONLINE, POLAR DATA CATALOGUE, EGASKRO, PECTAPOM (PELAGOS), NRF (Norsk Research Foundation), SAEON (South African Environmental Observation Network), SeaDataNet, DATA.GOV.UK (Opening up Government), Schweizerische Eidgenossenschaft (Confédération suisse / Confederazione Svizzera / Confederaziun svizra), UAB (Dep. Biologia Animal, Vegetal y Ecologia / Dep. Geografia), TWAP (TRANSBOUNDARY WATERS ASSOCIATION PROGRAMME), UNEP, UNEP GRID (Geneva), USGS (science for a changing world), UNIVERSITÉ DE GENÈVE, USDA, unitar (United Nations Institute for Training and Research), UNOSAT, vito, what3words (addressing the world), DATA.GOV, SOCIOECONOMIC DATA AND APPLICATIONS CENTER (SEDAC) (A Data Center in NASA's Earth Observing System Data and Information System (EOSDIS) — Hosted by CIRES at Columbia University), and World Water Project.

ILTER and GEOSS Portal



Participating
Organization of GEO



Repository for Research Sites and Datasets

Discovery Maps Documentation Network Help & Training Login

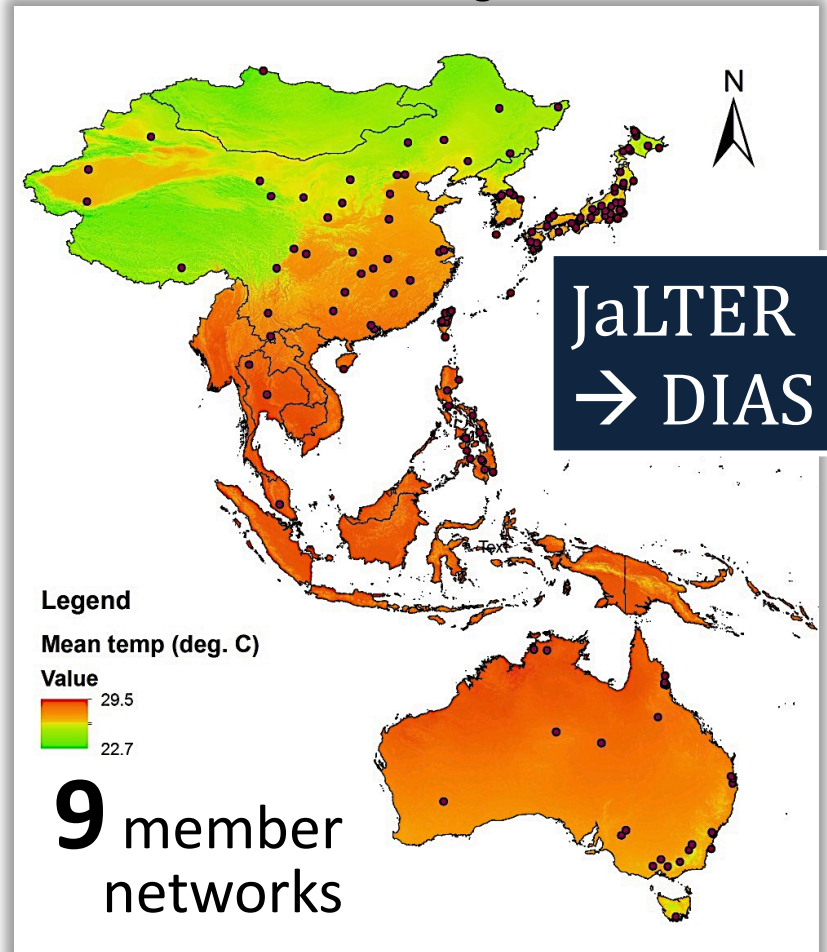
Welcome to DEIMS

ILTER-DEIMS
→ GEOSS Portal

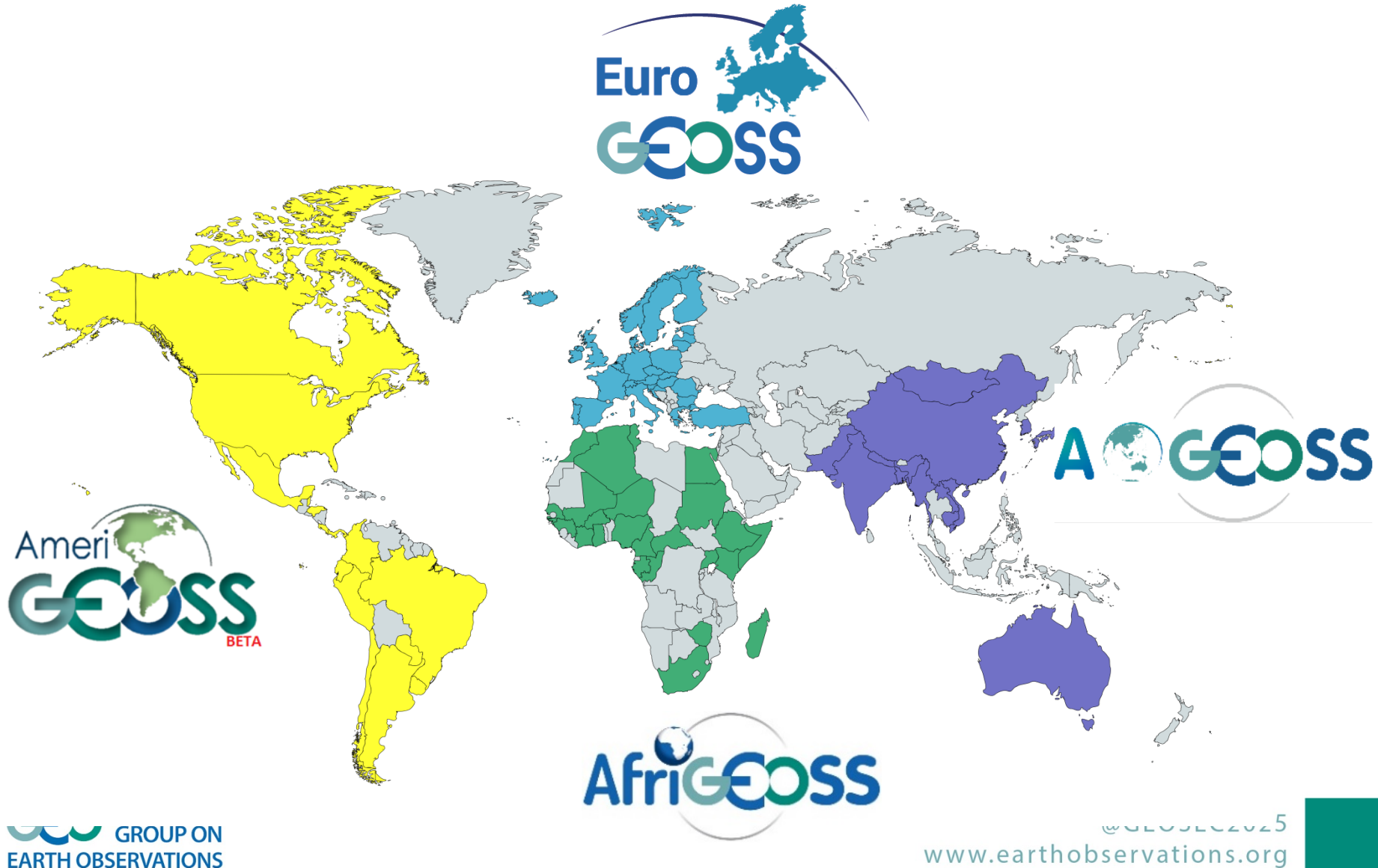
EARTH OBSERVATIONS

ILTER-EAP

East Asia and Pacific
regional network



Regional GEOSS



Asia-Oceania Caucus-GEO

AOGEOSS Coordination Board

GEOSS AP Symposium

Applications and services

Task1. AWCI

Task2. AP-BON



Task3. Carbon and GHG Initiative



Task4. Ocean and Society



Task5. Asia-RiCE



Task6. Monitoring and evaluation of drought in Asia-Oceania region

Task7. Environmental Monitoring and Protection

Task8. Ocean and Islands

Task9. Himalayan GEOSS

Foundational tasks

Task 10. Data Sharing

Task 11. AO-DataCube

Task 12. Users Engagement and Communication

Key activities of AOGEOSS in 2018

- **Calling joint research project as the pilot study by AOGEOSS**
 - Mekong River delta project is under discussion for collaboration between water, biodiversity and other area
 - AOGEOSS wants to learn your activities to organize the new project (but no actual funds yet... this should be planned)
- **11th GEOSS Asia Pacific GEOSS Symposium**
 - October 24-26, 2018 (Kyoto, Japan)
 - Contributions to 3 Engagement Priorities of GEO: SDGs, Sendai Framework of DRR, Paris Agreement
- **Asia Oceania day**
 - Side event of GEO Week 2018 (Kyoto, Japan), to be held on October 29
 - Regional GEOSS communication
 - Reporting activities of AOGEOSS: Tasks Group leads will be invited to present
 - Panel discussion by four regional GEOSS (AfriGEOSS, AmeriGEOSS, AOGEOSS, EuroGEOSS)

Mapping exercise of RG activities (GEO PB)

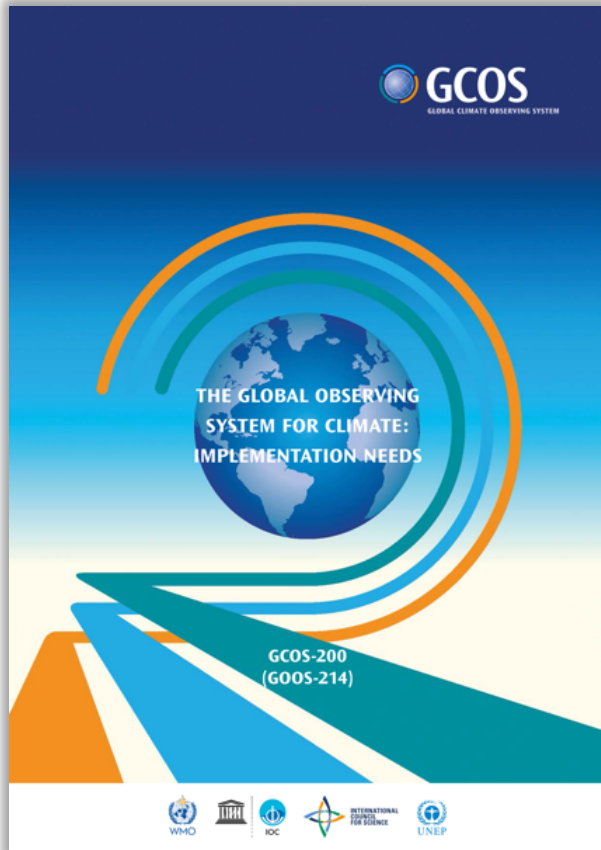
GEO Priorities		SBA	AfriGEOSS	AmeriGEOSS	AOGEOSS
SDGs		Biodiversity and Ecosystem Sustainability	Sustainable Forest Management	Ecosystems/ Biodiversity	AP-BON Environmental Monitoring and Protection Himalayan GEOSS
	Disaster	Disaster Resilience		Disaster Risk Reduction	Monitoring and Evaluation of drought in Asia-Oceania Region
		Energy and Mineral Resources Management			
		Food Security and Sustainable Agriculture	Food Security & Agriculture (AfriGAM) Soil Moisture & Agricultural Outreach Support	Agriculture	Asia-Rice
		Infrastructure and Transportation Management			
		Public Health Surveillance			
		Sustainable Urban Development	Sustainable Urban Development Land Cover for Africa		
		Water Resources Management	Water Resource Management	Water	AWCI Ocean and Society Ocean and Islands
	Climate				Carbon and GHG Initiative

In Situ Observation Resources Foundational task

Task Overview

- The task will **analyze the current state, trends, needs, and assess gaps** (geographical coverage, temporal and spatial resolution, etc.) for in-situ observing systems and networks, as they constitute a key element of GEO/GEOSS.
- The task will put particular **focus on coordination and access to data** and will provide various coordination opportunities in order to sustain and strengthen existing and planned ones,

Essential Climate Variables (ECV)



	Atmosphere	Terrestrial	Ocean
Energy and temperature	Surface radiation budget, Earth radiation budget, surface temperature, upper-air temperature, surface and upper-air wind speed	Albedo, latent and sensible heat fluxes, land surface temperature	Ocean surface heat flux, sea surface temperature, subsurface temperature
Other physical properties	Surface wind, upper-air wind, pressure, lightning, aerosol properties		Surface currents, subsurface currents, ocean surface stress, sea state, transient traces
Carbon cycle and other GHGs	Carbon dioxide, methane, other long-lived GHG, ozone, precursors for aerosol and ozone	Soil carbon, above-ground biomass	Inorganic carbon, nitrous oxide
Hydrosphere	Precipitation, cloud properties, water vapour (surface), water vapour (upper-air), surface temperature,	Soil moisture, river discharge, lakes, groundwater,	Sea surface salinity, subsurface salinity, sea level, sea surface temperature
Snow and ice		Glaciers, ice sheets and ice shelves, permafrost, snow	Sea Ice
Biosphere		Land cover, LAI, FAPAR, fire	Plankton, oxygen, nutrients, ocean colour, marine habitat properties
Human use of natural resources		Water use, GHG fluxes	Marine habitat properties

Coordinating In Situ Observations

Key points

© Andre Obregon (GEO Secretariat)

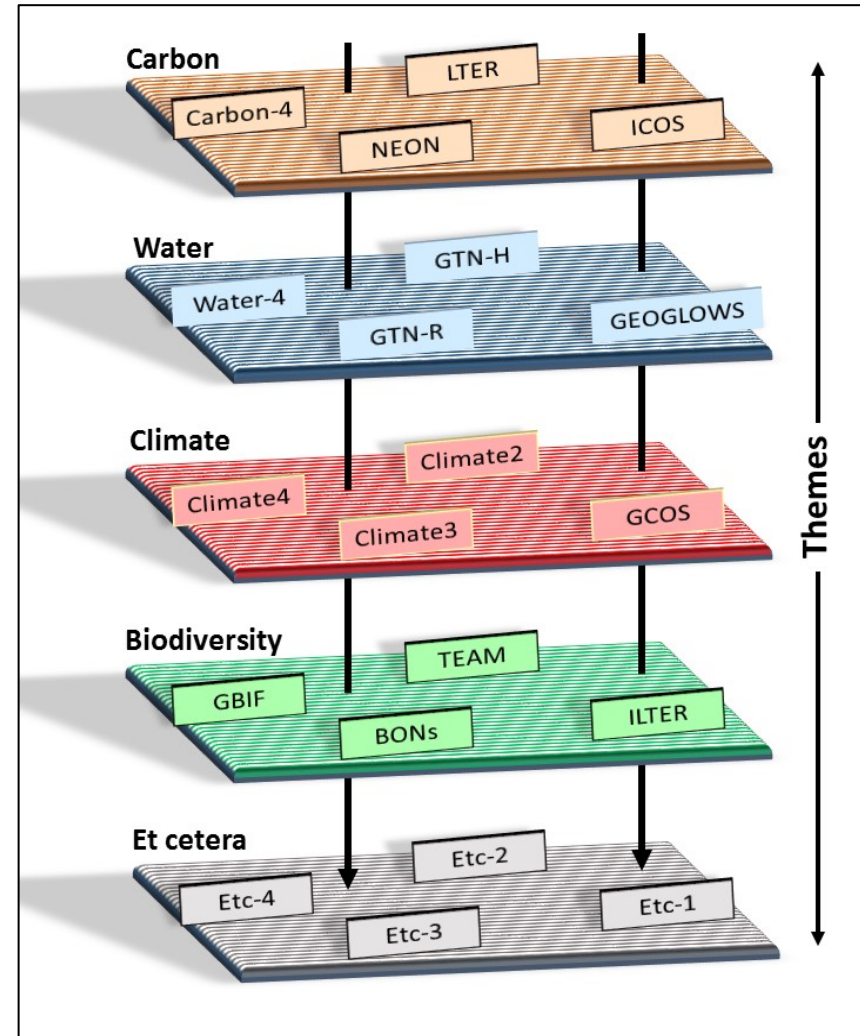
What are the challenges and opportunities?

The terrestrial domain is perceived to be the least coordinated area and provides opportunities for GEO.

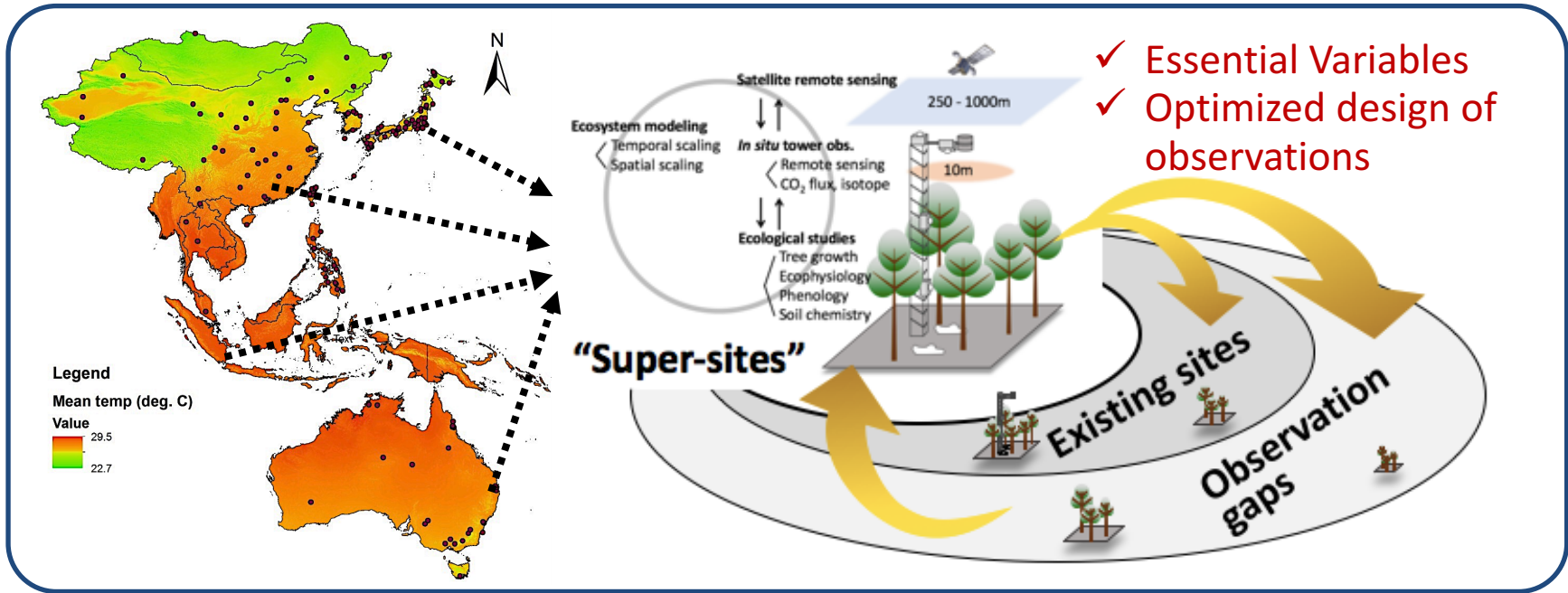
GCOS has identified this area in their Implementation Plan which can guide the GEO community.

Need to resource in situ task.

Need to liaise with network coordinators and operators.



Inputs to GEO Symposium 2018



Cooperation and integration enable the communities →

Manual field survey

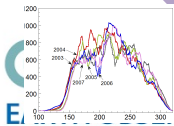


Sensor networks

Satellite imagery



Ecosystem models



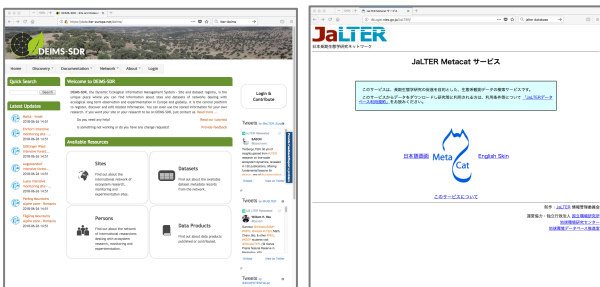
ROUNDER OBSERVATIONS

- Producing climate-biodiversity-ecosystem data and indicators of “ecosystem integrity”
- Cross-scale understanding and prediction of local, regional and global changes

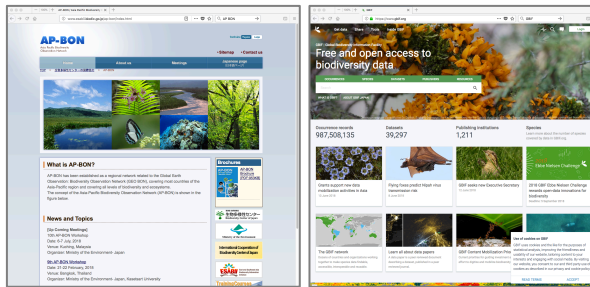


- ✓ Knowledge for adaptation in ecosystem management and resource use
- ✓ Strategy for long-term and integrated observations in gap areas

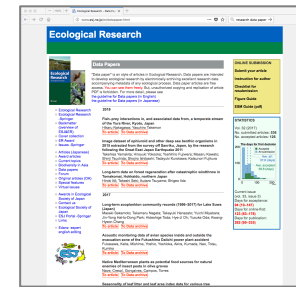
ILTER / JaLTER



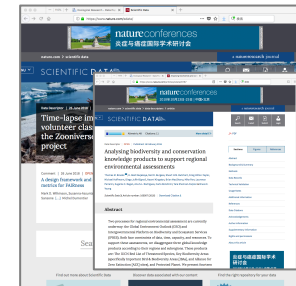
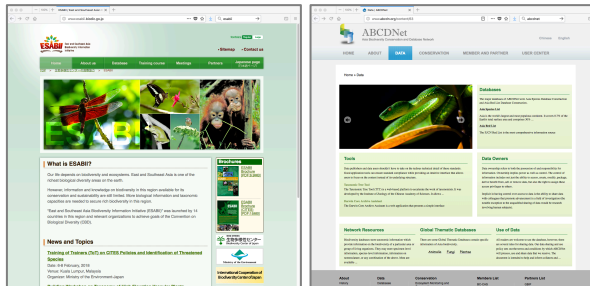
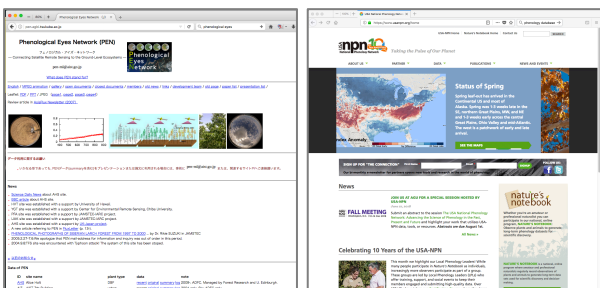
Biodiversity



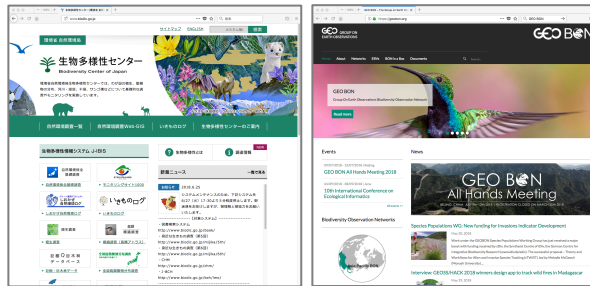
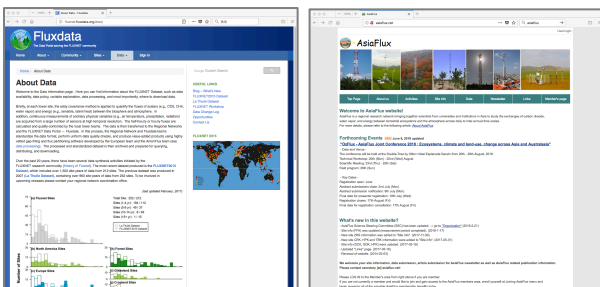
Data paper



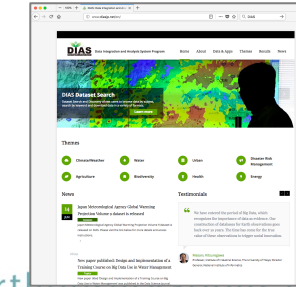
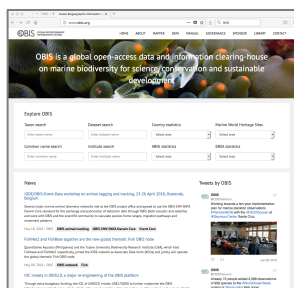
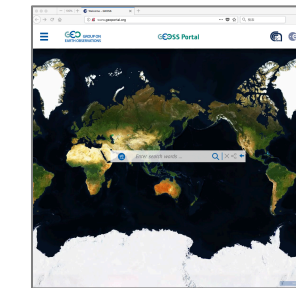
Phenology



FLUXNET / AsiaFlux

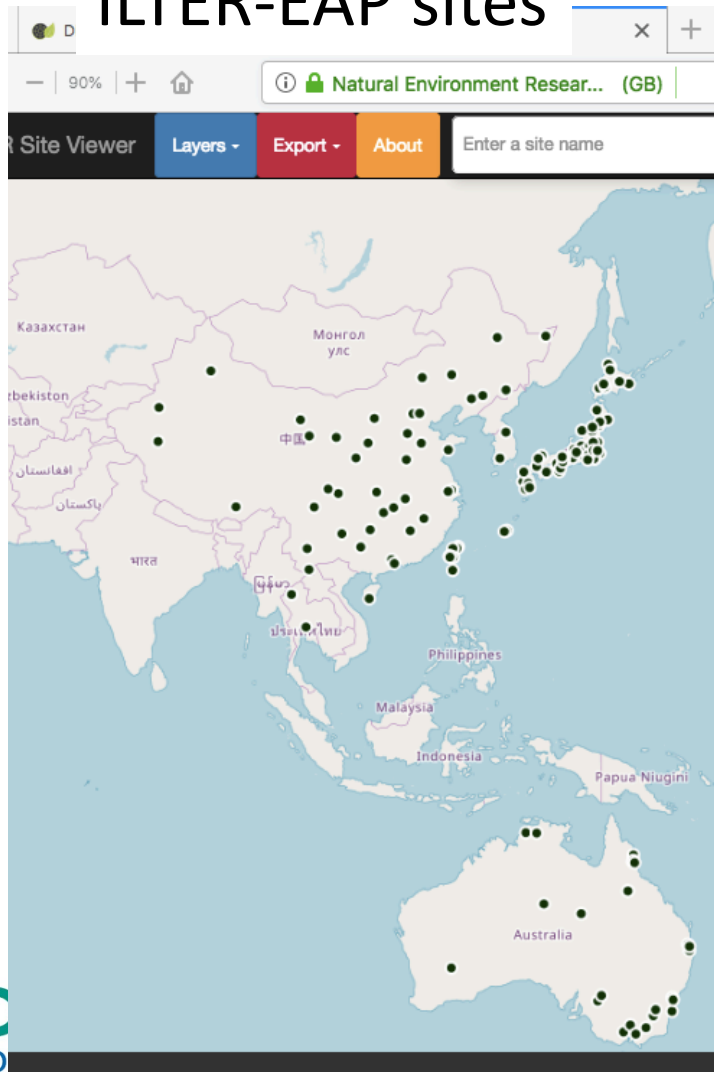


Data broker / integrator

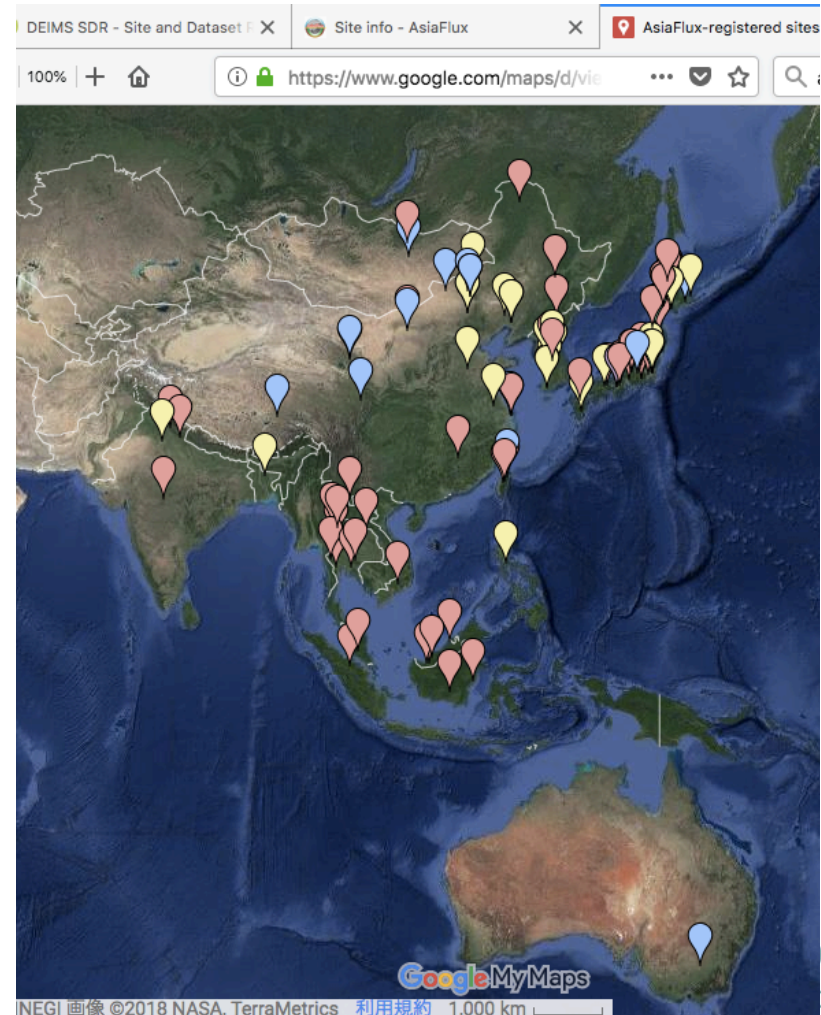


Research site information is fundamental for connecting *in-situ*, satellite and modeling studies

ILTER-EAP sites



AsiaFlux sites



GEO Highlights 2016-2017

Insight for a Changing World



GEO-XIV - 25-26 October 2017

GEO-XIV-5.4

2017-2019 GEO Work Programme

This Document is provided to Plenary for decision.

2020-2022 GEO Work Programme to be developed in 2019

Earth Observations in support of the **2030 Agenda for Sustainable Development**





Strengthening Regional Cooperation for the SDGs,
Paris Agreement and Sendai Framework

11TH GEOSS ASIA-PACIFIC SYMPOSIUM

24-26 October 2018 / Kyoto, Japan

#EO4ASIA

24-26 October, Kyoto/Japan

GEO WEEK 2018

29.10-2.11 2018 / KYOTO, JAPAN

29 Oct. – 2 Nov., Kyoto/Japan

