

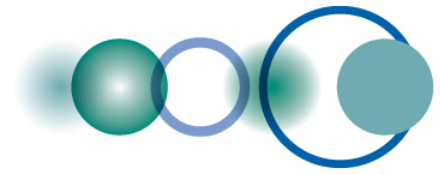
GEO Carbon and GHG Initiative WG

Session 1:

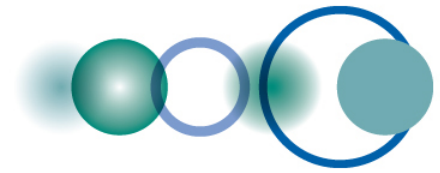
Background information on the GEO 2017-2019 Work Programme with the SDGs

Hiroyuki Muraoka (Gifu University, Japan)
GEO Programme Board (Japan alternate)
GEO-C Task 3 contributor





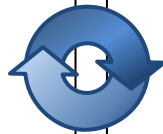
A set of coordinated, independent Earth observation, information and processing systems that interact and provide access to diverse information for a broad range of users in both public and private sectors.



Earth Observation Domains (examples)

Observation Fields

Atmosphere
Land
(Lowland)
(Mountain)
Freshwater
(Lake)
(River)
Coast
Ocean
Arctic
etc.

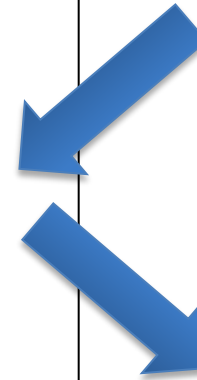


Observation Themes

Climate
Weather
Carbon
Water
Energy
Biodiversity
Land-use and change
Foods
Disaster
Disturbance
etc.

Scientific interests

User needs



GEOSS

Data
Knowledge
Information



- ❖ SDGs
- ❖ Tackling climate change
- ❖ Sustainability of ecosystem services

Sound decision making



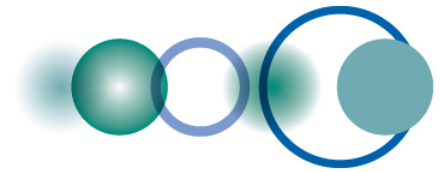
The GEOSS Portal is your main entry point to unlock Earth Observation data from archives all over the world.

Here You can choose Your area of interest

 Enter search words ...  |  

Enter the search phrase here





GEO Strategic Plan 2016-2025: Implementing GEOSS

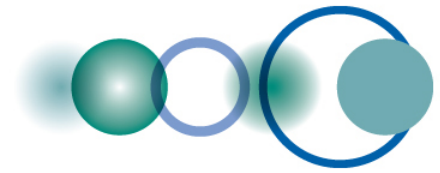
[Approved at GEO-XII Plenary and Ministerial Summit in 2015, Mexico-city]

- ❖ GEO's Vision
- ❖ Strategic Objectives [Advocate, Deliver, Engage]
- ❖ Societal Benefit Areas (SBAs)... Application oriented
- ❖ Implementation mechanisms
[Flagships, Initiatives, Community Activities, Foundational Tasks]

GEO Work Programme 2017-2019

[Approved at GEO-XIII Plenary in 2016, St. Petersburg]

- ❖ Flagships (4)
- ❖ Initiatives (22)
- ❖ Community Activities (31)
- ❖ Foundational Tasks (10)



8 Societal Benefit Areas

Biodiversity and Ecosystem Sustainability

Carbon and GHG related SBA:

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;

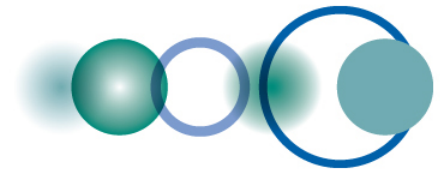
in order to strengthen conservation, restoration and sustainable use of ecosystems and biodiversity, including marine planning and ocean use, in response to changes in climate and land use, through science-society collaborations at local, national, regional and global levels.

Public Health
Surveillance

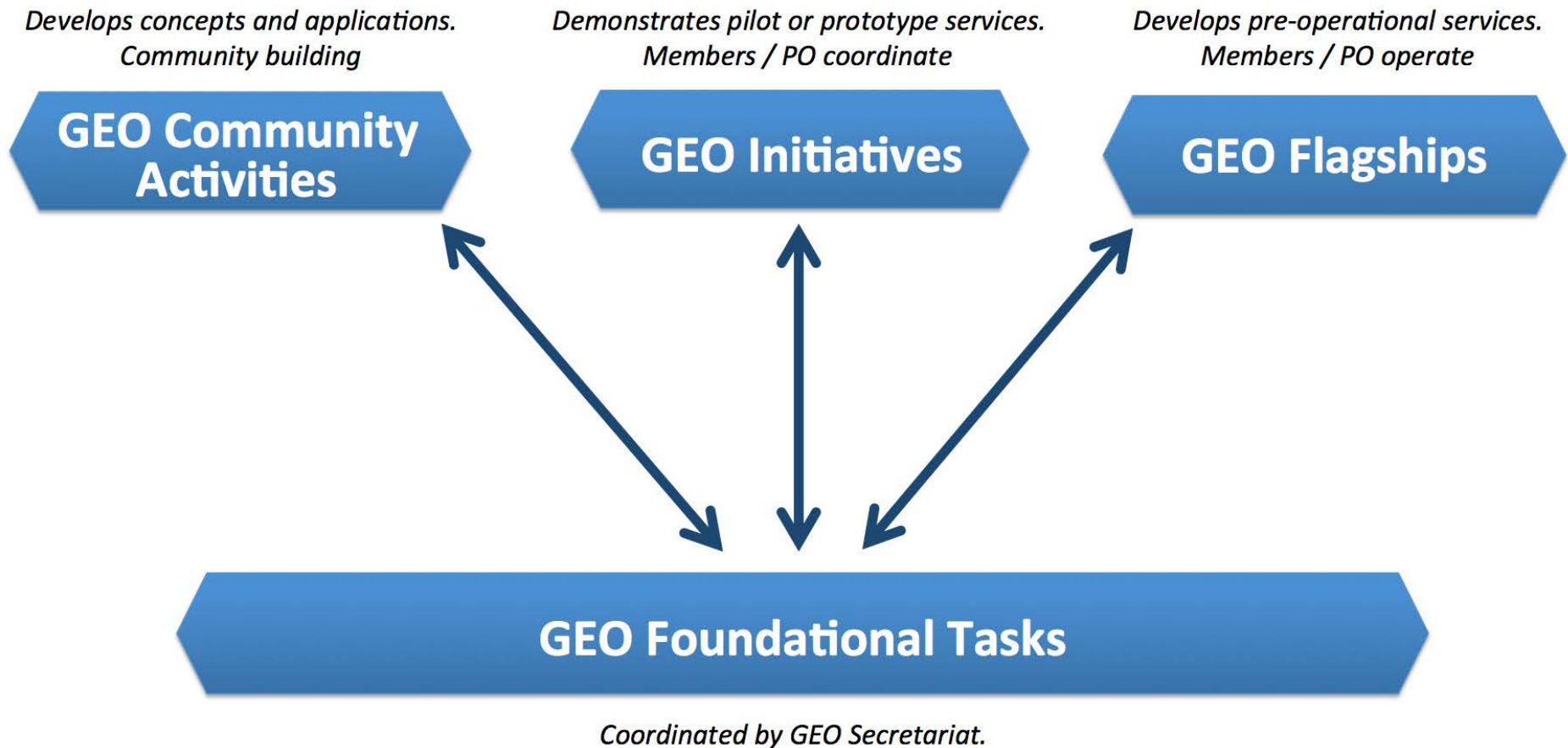


Infrastructure and
Transport Management

Food Security and
Sustainable Agriculture



The Four Implementation Mechanisms to realize GEO's vision and maximize the benefits to users





SBA: Biodiversity and Ecosystem Sustainability

Related activities (examples)

GEO Flagship

GEO Biodiversity Observation network (GEO BON)

Global Forest Observation Initiative (GFOI)

GEO Initiatives

The GEO Global Ecosystem Initiative (GEO-ECO)

GEO-GNOME Initiative: GEO Global Network for Observation and Information in Mountain Environments

GEO Carbon and GHG Initiative

Earth Observations for Ecosystem Accounting (EO4EA)

Ocean and Society: Blue Planet

Community Activities

Africa Global-scale Geochemical Baselines for mineral resource and environmental management: Capacity-building phase

Harmful Algal Bloom (HAB) Early Warning System

For Global Mangrove Monitoring

Foundational Tasks

GEOSS development and GCI operations

GEOSS in-situ observation resources

User needs and gap analysis



THE GLOBAL GOALS

For Sustainable Development

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

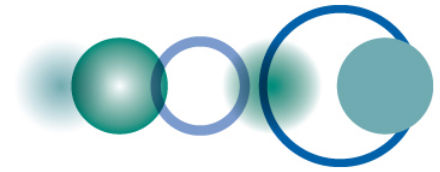
14 LIFE BELOW WATER

15 LIFE ON LAND

16 PEACE AND JUSTICE STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS

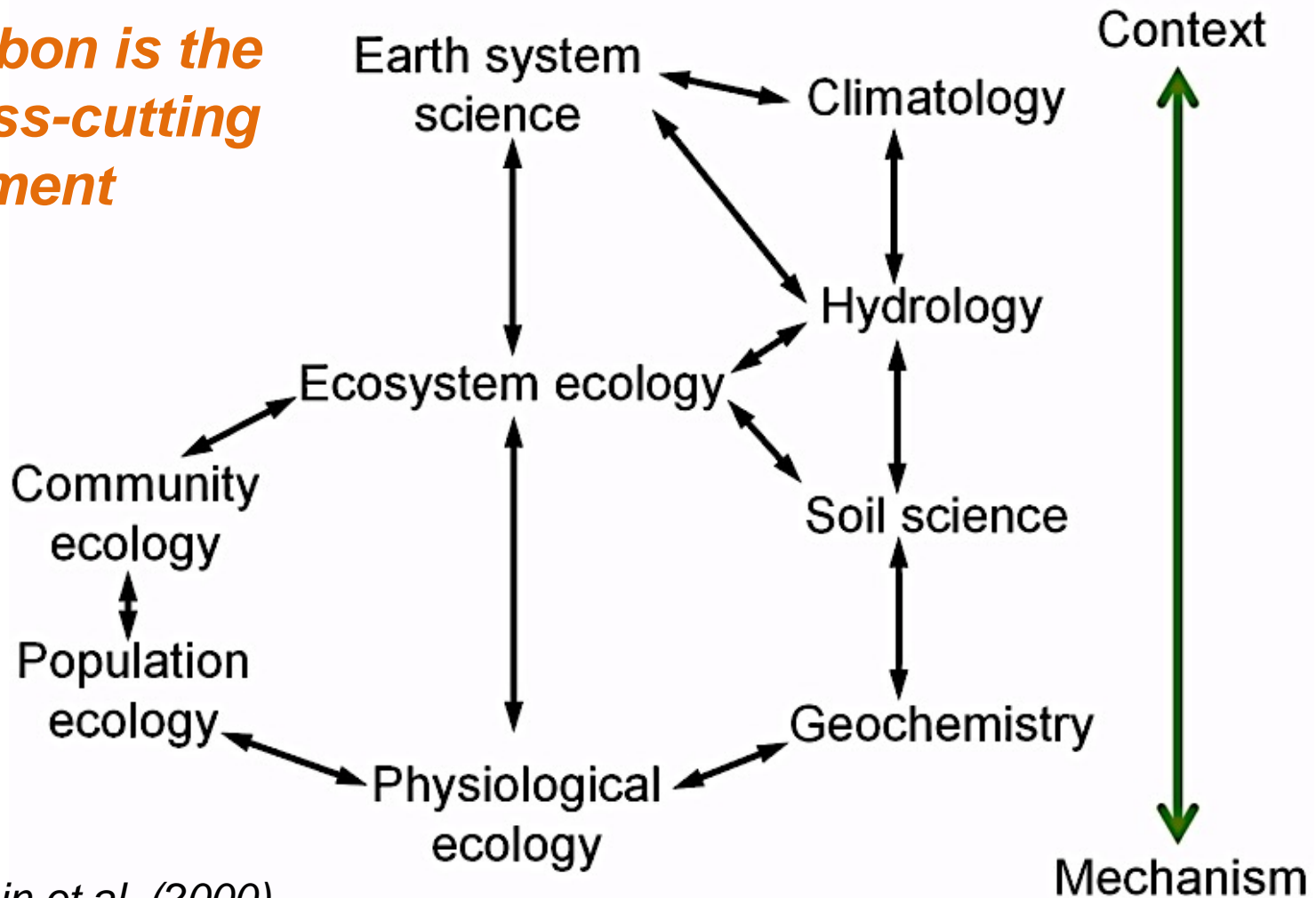
THE GLOBAL GOALS
For Sustainable Development



To help Task 3:

Coordinated, Inter-disciplinary, Cross-scale observations

**Carbon is the
cross-cutting
element**



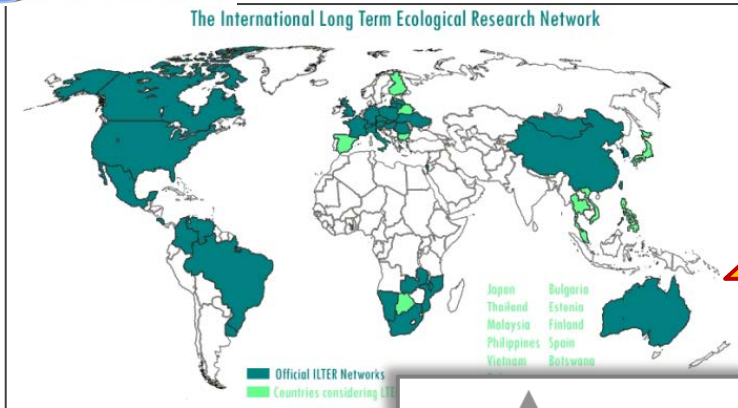
Chapin et al. (2000)

Potential idea for Task 3

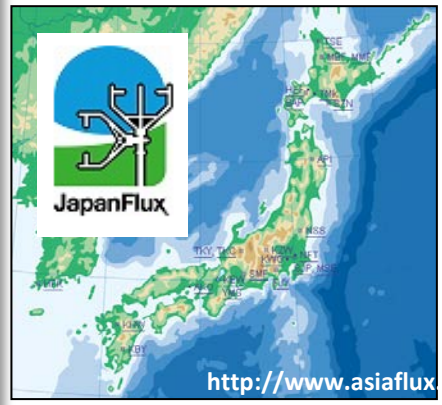
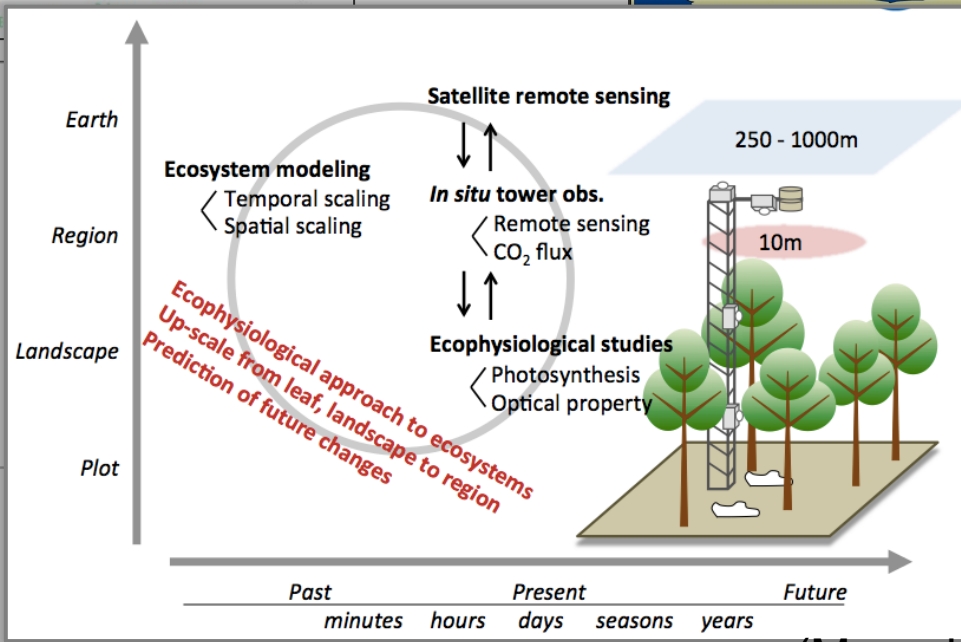
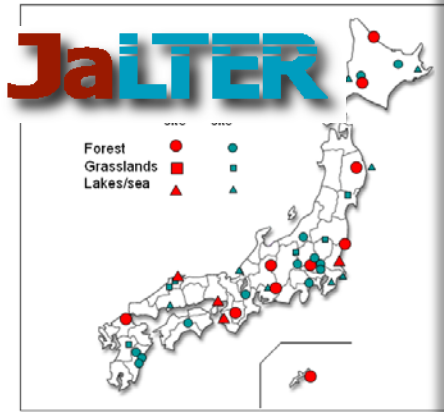
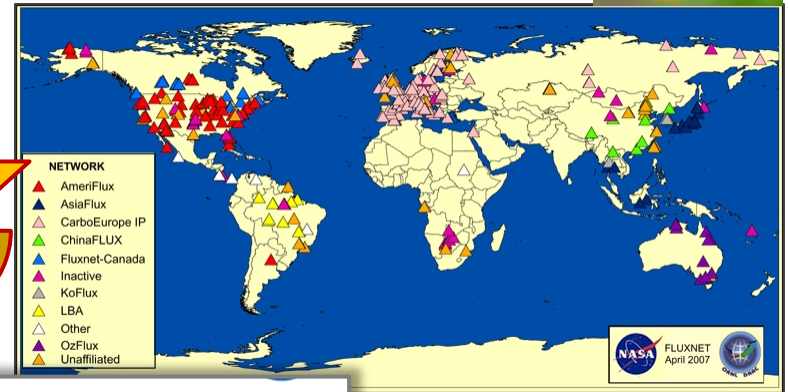
Super-sites to foster networking and examining observation strategy
(Carbon as the connection of climate, biodiversity and ecosystems)



ILTER and ILTER-EAP



FLUXNET and AsiaFlux



(Muraoka et al. 2015)

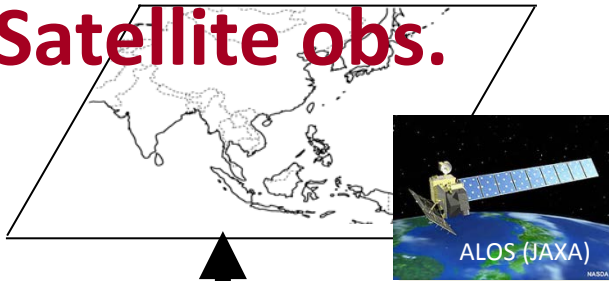
Potential idea for Task 3

Cross-scale and cross platform observations

(Carbon as the connection of climate, biodiversity and ecosystems)

Earth system and ecosystems
Biological and ecological processes

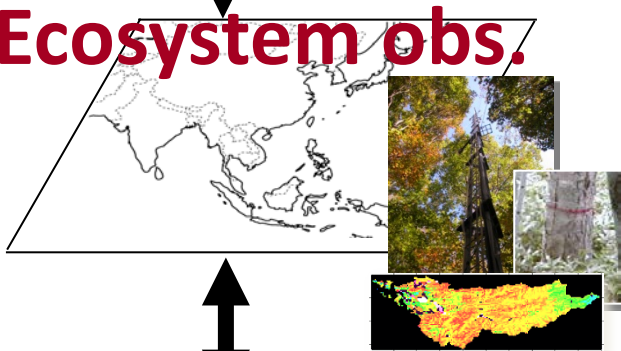
Satellite obs.



Satellite remote sensing

Ecosystem and land-use types
Vegetation structure
Temporal change in ecosystems

Ecosystem obs.



**Ecological process research,
tower flux obs. and modeling**

Primary production (carbon cycle)
Eco-hydrology
Nutrient cycling

Biodiversity obs.



Species and genetic level research

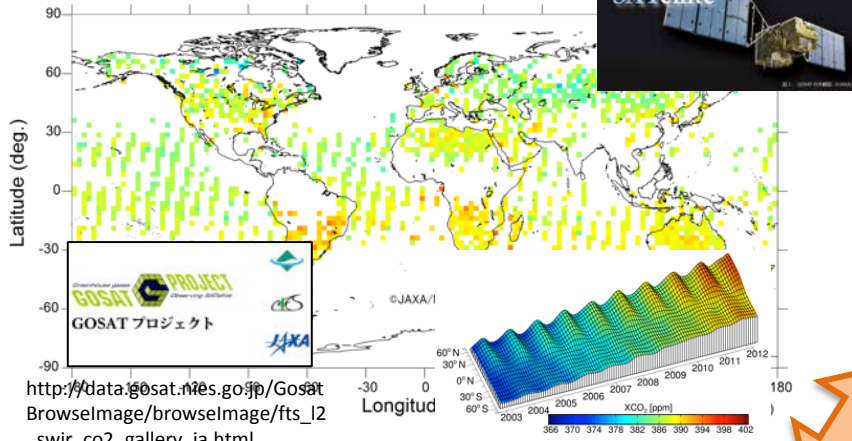
Plant species distribution
Wildlife habitat assessment
Biological interactions

(Muraoka et al. 2013)

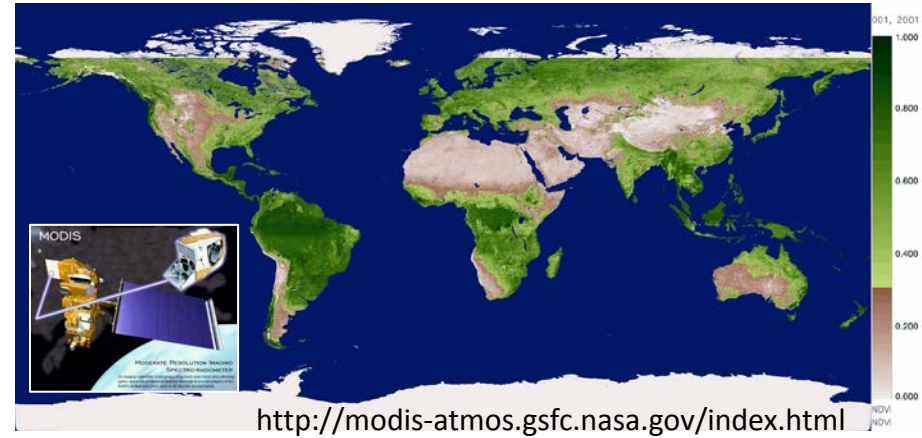
Observations to find and predict consequences among the systems

Atmospheric CO₂

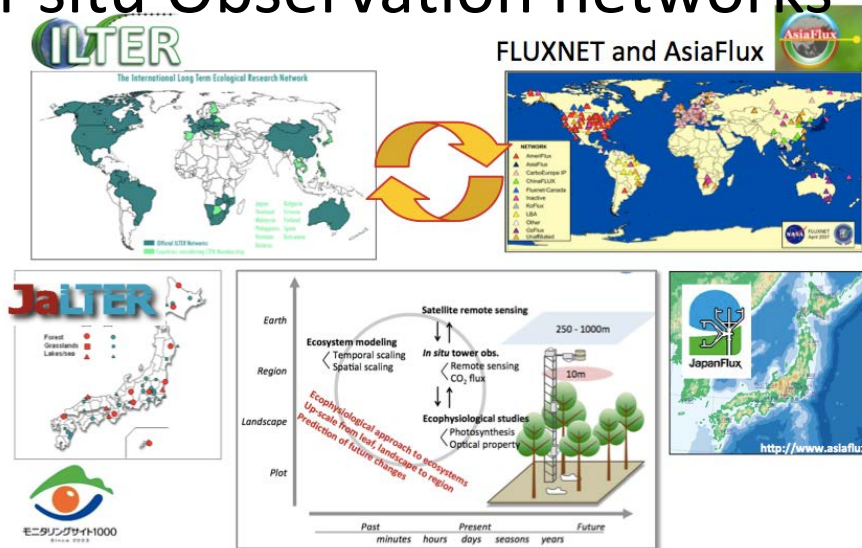
Greenhouse gases
Observing
SATellite



Global Surface status



Biodiversity and Ecosystem In-situ Observation networks



Climate, Weather, CO₂

*Changes in Biodiversity,
Ecosystem functions
and their services*

Human activity