Japan's Activities Contributing to GEOSS

GEOSS Symposium on Integrated Observation for Sustainable Development in the Asia-Pacific Region (GEOSS AP Symposium)

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Kenji ITATANI
Deputy Director-General,
Research and Development Bureau
Ministry of Education, Culture, Sports, Science and Technology (MEXT)

Topics

1. Japan's National Strategy
2. Programs Contributing to GEOSS

Introduction; Japan's Vision for GEOSS

- **Needs of effective Earth observation through international cooperation**
- **Japan's advanced technologies in Earth observation**

Promotion and Contribution to
Global Earth Observation System of Systems (GEOSS)

Introduction; Japan's Priory Contributing to GEOSS

- **3 priority areas among 9 GEOSS societal benefits:**
  - –Adaptation to Global Warming and Carbon Cycle
  - –Adaptation to Climate Variations and Water Cycle
  - –Reduction and Prevention of Disasters
- **Special focus on Asia-Pacific Region**

Earth Observation Promotion Strategy

- Established in Dec. 2004 (⇔GEOSS 10-Y Plan, Feb. 2005)
- Japan's basic EO strategy for next 10 years
- Basic strategy:
  - Constructing an **integrated Earth observation system (GEOSS)** driven by user needs
  - Securing Japanese autonomy and International leadership
  - **Cooperation with the Asian and Oceania countries**
- Strategic prioritization
  - –5 urgent social needs to be addressed

    Global Warming, Water cycle & management, Atmospheric changes, Wind & Flood damages, Earthquake & Tsunami
  - –15 individual fields promoting strategies
- Special commission to develop annual action plan based on the Strategy

Action Plan for Japanese Earth Observations

Guiding policy: Promoting the close coordination and cooperation across the fields and among ministries/institutes

Establishment of coordination core and promotion of its operation

1. Global warming
2. Earthquakes, tsunamis, and volcanic activity
3. Others (Water Cycle etc.)

Detailed Policy: Implementation of Joint Projects

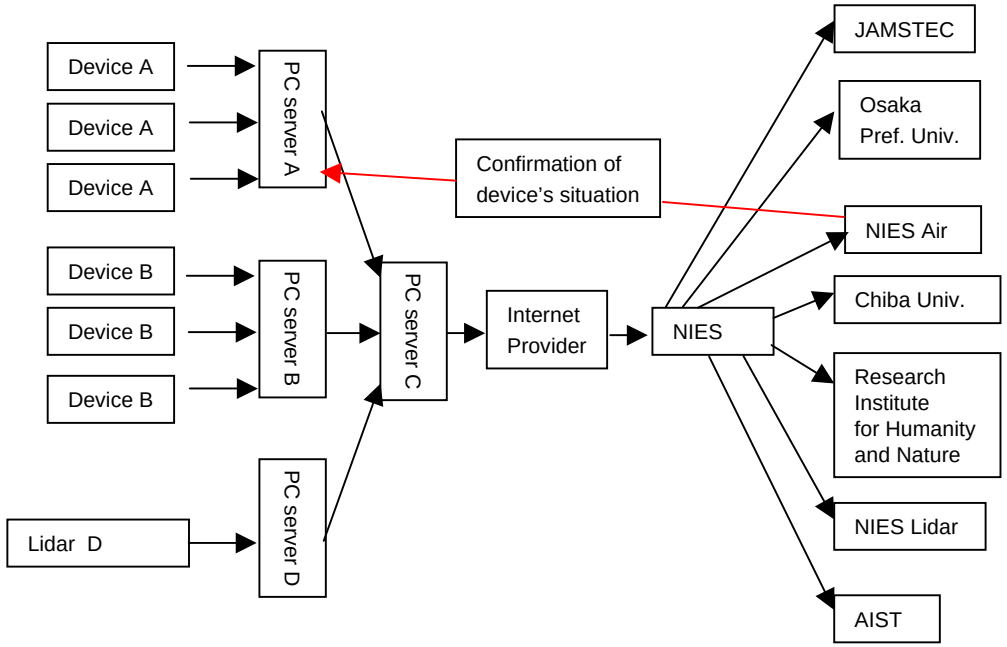
1. Joint operation of Henoko cape super site（Aerosol、Ozone etc.）
2. Observation of carbon dioxide's income and outlays etc. in joint operation of flux operation tower.
3. Construction of observation network of turbulence in electric dissociation field which is in the way of digital communication・broadcast
4. Observation of earth density distribution by GOSAT
5. Monitoring of city air utilizing remote sensing and IT technologies and development of real time information utilizing technology.
6. Development of Data Integration and Analysis System that is performed concentrated data processing and data management mainly in climate, water cycle and ecosystem fields
7. Development of GEO Grid system processing discretely by grid technology in resource prove fields etc.

Example of joint project transverse fields and among ministries/institutes

Joint Operation in Henoko Cape Super Site

Comprehensive atmospheric and aerosol observation at the Site

- National Institute for Environmental Studies (NIES) provides basic Infrastructure for the Super Site.
- Related institutes and organizations provide observing devises and conduct respective observations
- Observed data are collected and transferred to NIES and utilized by each institute



Joint Utilization of Flux Observation Towers

Observation network for carbon dioxide absorption

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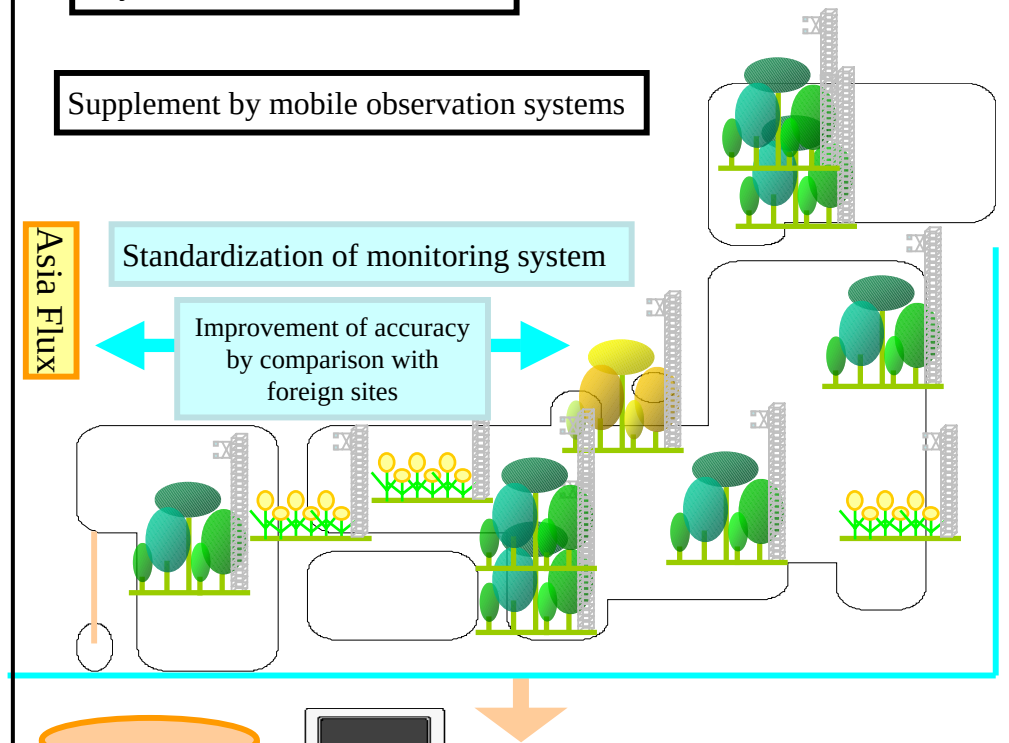
Understanding of mechanisms of land carbon cycle

Systematic site establishment

Supplement by mobile observation systems

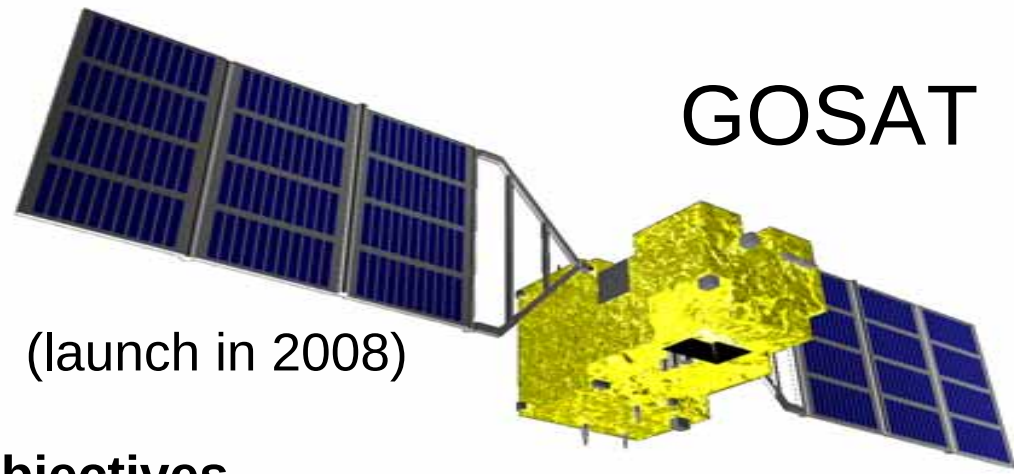


Archiving and publication of flux observation data

For validation of remote sensing, data and various models

Greenhouse Gases Observing Satellite <GOSAT>

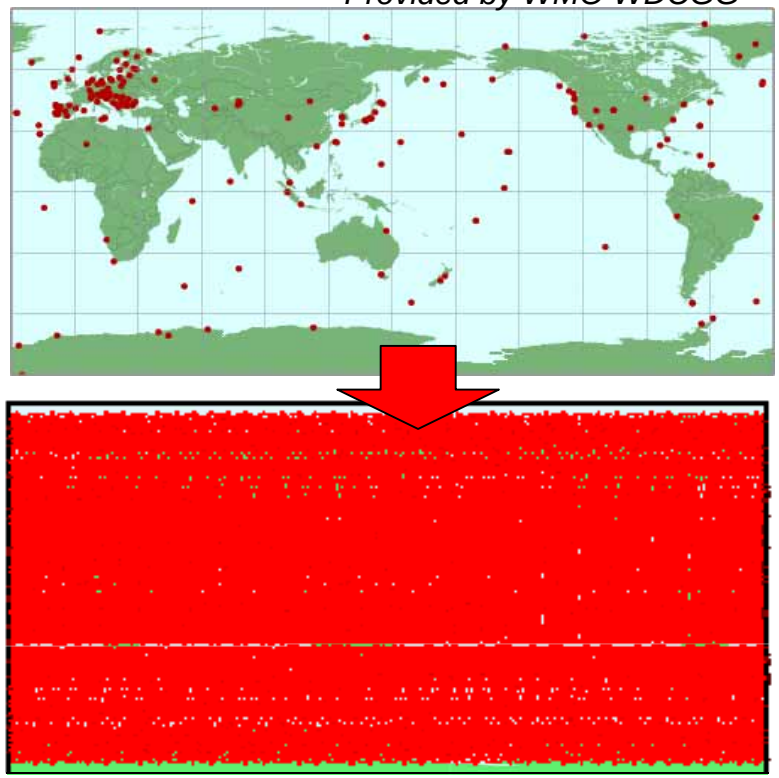
Joint project of :
- Japan Aerospace Exploration Agency,
- Ministry of Environment,
- National Institute for Environmental Studies



GOSAT

(launch in 2008)

Current Ground-based Observation Points (320pts)
Provided by WMO WDCGG



Increase of Observation Points using GOSAT (56,000pts)

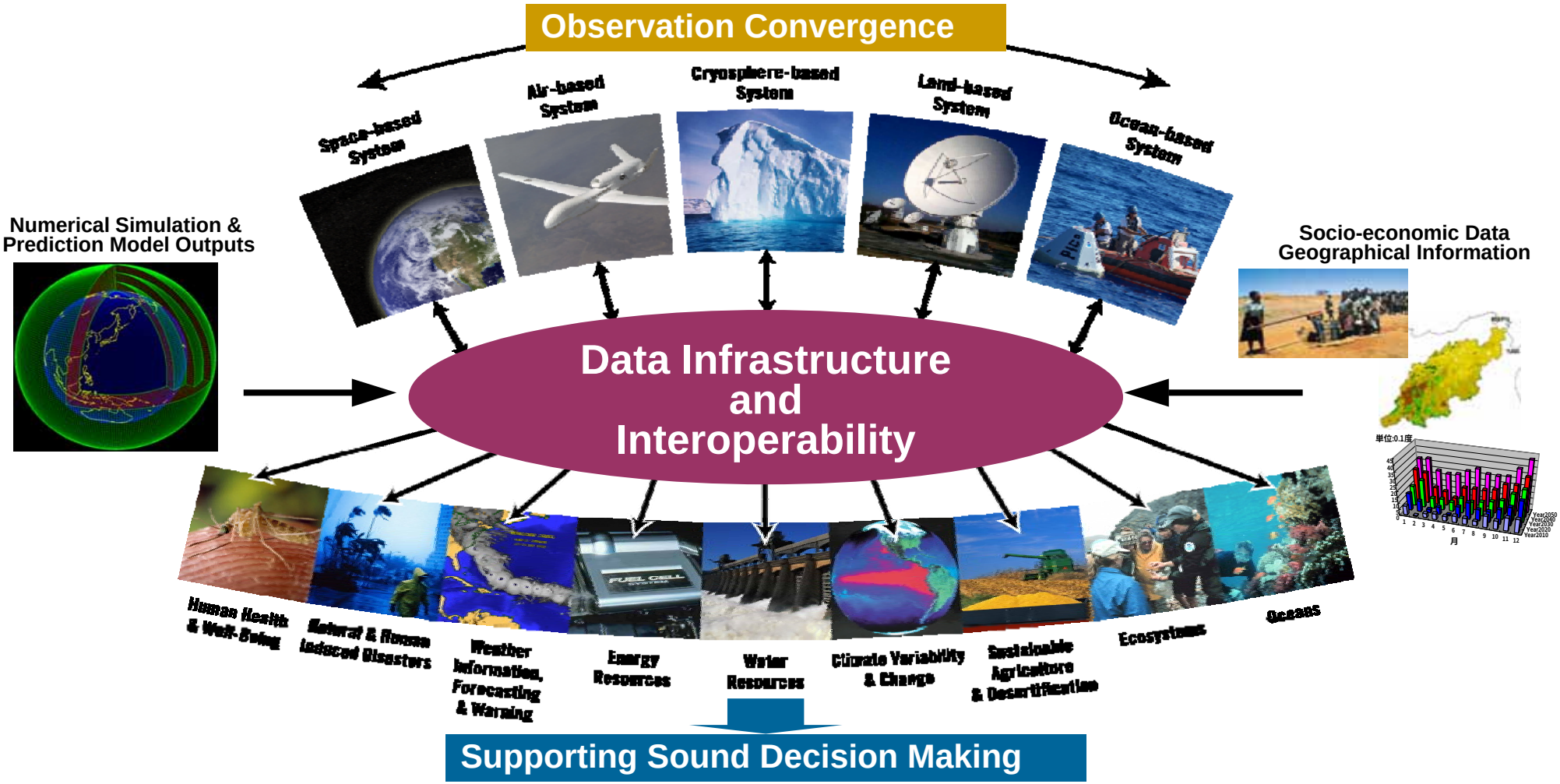
Objectives

(1) To observe CO_2 and CH_4 column density
- at 100-1000km spatial scale (with scanning mechanical)
- with relative accuracy of 0.3-1% for CO_2 (1-4ppmv, 3 month average).

(2) To reduce sub-continental scale CO_2 annual flux estimation errors by half
- 0.54GtC/yr→0.27GtC/yr

Data Integration and Analysis System

Cooperative project of the University of Tokyo, Japan Agency for Marine-Earth Science and Technology, Japan Aerospace Exploration Agency sponsored by MEXT

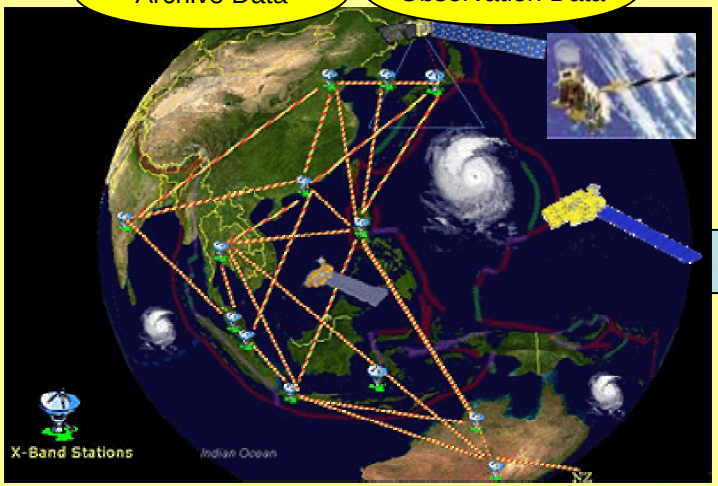


Sentinel Asia

Observation System

Archive Data

Observation Data



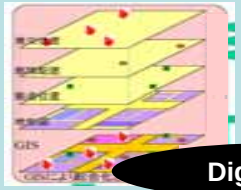
JAXA, MODIS stations

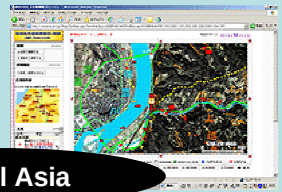
Data

Capacity Building

JAXA, AIT

Information Sharing Platform





Digital Asia

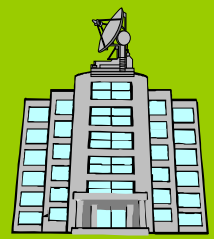
JAXA, AIT, Keio Univ.

ALOS Rapid Response System

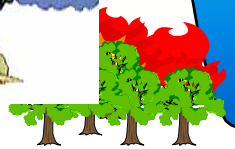
JAXA, ADRC

Data

Disaster Management Agencies



Disaster Prevention



Residents in disaster areas

Warning

Refuge

Rescue

Climate Variations Observational Research Program

Argo float

TRITON Buoy

Oyashio

Kuroshio

Argo Float

Mid-depth Circulation

Warm Water Pool

Intra-seasonal Variation
Large Scale Convective Activity

North Equatorial Current

North Equatorial Counter Current

Argo float

Volunteer Ship

Westerly Burst

TRITON Buoy

Research Vessel
“MIRAI”

Indonesian Throughflow

Indian Ocean Dipole event

Japan's Contribution to GEOSS

Policy Framework

Promotion of Integration of the Earth Observation Systems

•Conduct overall coordination among the activities to integrate the Earth observation systems in Japan through the Earth Observation Promotion Commission.

Continued Leadership in GEO

•Take the lead of the global activities which aim to provide higher-level socio-economic benefits through the comprehensive, coordinated Earth observation systems. (e.g. Member of Excom, ADC Co-chair)

R & D

Promotion of R & D for the National Key Technologies

•Conduct the overall system management of the **Earth Observation and Ocean Exploration System** based on the user needs.

•Promote a new program to integrate the observation data and numerical simulation results in the DIAS.

Contribution to the GEOSS 10-Y Implementation Plan