Data Integration and Analysis System

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GEO/GEOSS

• The Group on Earth Observations is coordinating efforts to build a Global Earth Observation System of Systems (GEOSS).

• GEO was launched in response to calls for action by the 2002 World Summit on Sustainable Development and by the G8 leading industrialized countries.
### S&D strategy in Japan

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<th>S&amp;T Basic plan -2</th>
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**GEO** (Global Earth Observation)

**GEOSS** (Global Earth Observation of Systsem of Systems)

**DIAS** (Data Integration and Analysis System)

**RECCA** (Research Program on Climate Change Adaptation)

**GRENE** (Green Network of Excellence)

S&T Basic plan -5 will start on 2016
What is DIAS?

・「Data Integration and Analysis System (DIAS)」 was launched in 2006 as one of five National Key Technologies defined by the 3rd Basic Program for Science and Technology of Japan. The mission of DIAS are;

- to coordinate the cutting-edge information science and technology and the various research fields addressing the earth environment
- to construct data infrastructure that can integrate earth observation data, numerical model outputs, and socio-economic data effectively
- to create knowledge enabling us to solve the earth environment problems
- to generate socio-economic benefits
DIAS aims

• *To create knowledge to be shared among different disciplines*
  – by arranging interoperability of the earth environment data, and constructing data infrastructure

• *To create knowledge to be shared throughout the world*
  – by constructing infrastructure where we can provide data that are quality checked and validated by integration

• *To disseminate data and information that brings awareness of the impacts and opportunities*
  – though tackling a large increase in volume and diversity of the earth observation data
Tackling a large increase in volume and diversity of the earth observation data
Data Integration and Analysis System

tackling a large increase in diversity of the Earth observation data

Ontology

Meta data Design

Satellite orbit/sensor attitude (revised for better accuracy)

Sensor calibration parameters (revised for better accuracy)

New analysis algorithm (e.g., estimating soil-water content, DEM generation etc.)

Coordinate system Registry

Based on sensor models and platform/orbit models (e.g., ISO15193)

Geo-coding service
Radiometric correction service
Other data processing services

metadata

Geo-coded Satellite image (raster data)

Service interfaces

Users' application

Users

In situ observation data
Model simulation data

CEOP data

Scope of this document
Data Integration and Analysis System
tackling a large increase in volume of the Earth observation data.


600TB (2007) → 2.7PB (2012)
Data Integration and Analysis System

accelerating data archiving, including data loading, QC and metadata registration
Data Integration and Analysis System

accelerating data archiving, including data loading, QC and metadata registration

18 River Basin, 280 stations completed

Asia Monsoon Year
24 project, 277 stations

Climate Data
16 River Basin, 202 stations
Data Integration and Analysis System
enriching data searching capability
Data Integration and Analysis System

enriching data searching capability
Integrated Water Resources Management

• The **Asian** countries cooperatively integrate data from earth observation satellites and in-situ networks with other types of data, including numerical weather prediction model outputs, geographical information, and socio-economic data, to generate information for making sound water resources management decisions.
Agricultural Production Management

- DIAS develops an information system for agricultural production management by integrating the real-time monitoring data of farmland, the growing condition of each crop cultivar, meteorological data, numerical weather predictions, and climate model predictions. This system will be usable by the farming community, enabling them to make improved management decisions especially in regions which are susceptible to global warming impacts.
Ocean Circulation and Fishery Resources Management

DIAS provides usable information for a sustainable fishery resources management by constructing an oceanography-fishery cooperative platform that enables resource managers to investigate relationships between fluctuations in the fishery resources and the seasonal to decadal ocean variations derived from an ocean re-analysis based on the data assimilation by applying the four dimensional variational assimilation.
Ecosystem Conservation and Participatory Monitoring Program

- DIAS compiles data bases of a number of important indices of biodiversity, including invasive alien species and endangered species through participatory monitoring programs, integrates to analyze the data with other earth observation data, and disseminates the products in a form to be easily used for decision making related to biodiversity conservation.
Thank you very much