



JAMSTEC 国立研究開発法人
海洋研究開発機構
JAPAN AGENCY FOR MARINE-EARTH SCIENCE AND TECHNOLOGY

The 10th GEOSS Asia-Pacific Symposium
Hanoi, Vietnam, 19 September 2017

JAMSTEC Ocean Data Systems

Yasunori Hanafusa

Data Management Office,

Japan Agency for Marine-Earth Science and Technology (JAMSTEC)

History and Overview of Ocean Observations in JAMSTEC

- **1981** JAMSTEC started ocean research when its R/V Natsushima and DSRV Shinkai2000 went into service.
- **1998** started systematic data management when R/V Mirai went into service.
- **2007** established its “Data Policy”.



➤ JAMSTEC Covers **very wide Research Areas**;

Arctic – Antarctic, Pacific/Japan Sea – Indian Ocean – Atlantic, Above Ocean/Land – Sea Surface – Deep Sea – Under Sea Bottom, Physics/Chemistry – Biological and Earth, etc.

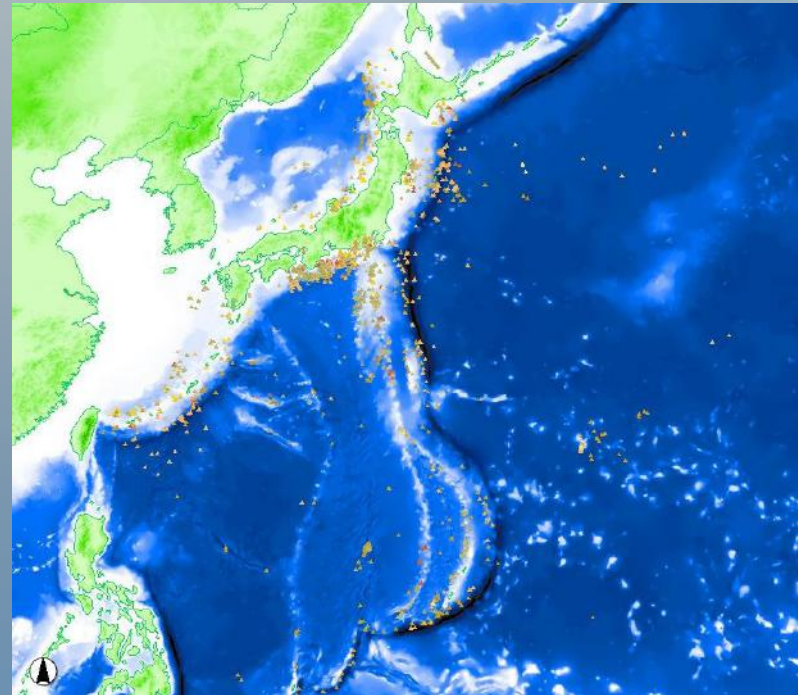
➤ has **Various Platforms**;

RVs, Submersibles, Buoys, Floats, ROVs/AUVs, Land stations, Sea Bottom Stations, and High-Performance Computers



Research Cruises/Dives of JAMSTEC

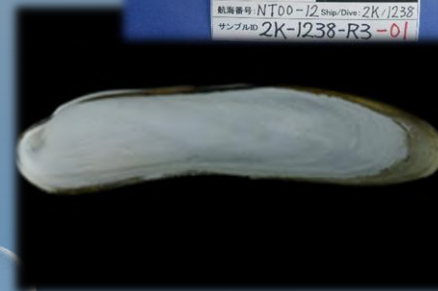
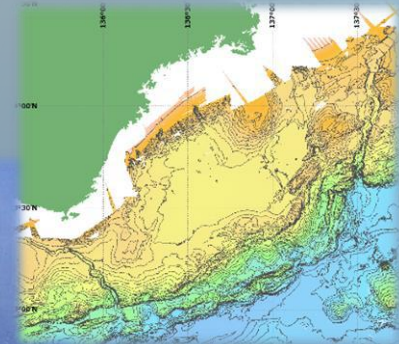
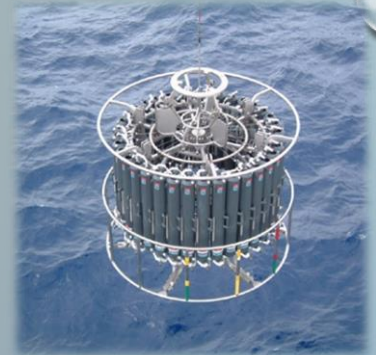
- JAMSTEC Accepts Research Themes for Some of its Cruises
- Cruises Consist of Different Themes and Go to Different Areas
- JAMSTEC totally Operates Cruises from Theme Selection to Data Management



Data /Samples from 1,593 Cruises and 4,793 Dives are opened as of March 2017.

Types of Data/Samples

- Physical/Chemical Oceanography Data
(ex. Temperature, Salinity, DO)
- Meteorological Observation Data (ex. Temperature, Wind, Cloud)
- Geological Survey Data (ex. Bathymetry, Gravity)
- Samples
(ex. Rocks, Sediment Core, Organisms)
- Documents(ex. Cruise Reports)
- Photos and Videos



Data Policy of JAMSTEC

- Established in **2007**
- Purposes:
 - To **Prevent Dispersion** of Data
 - **Efficient Operation** of Facilities
- Outlines of Data Policy;
 - Data/Samples **Belong to** JAMSTEC
 - JAMSTEC **Archives** Data/Samples
 - JAMSTEC **Opens** Data/Metadata/Samples **after Moratorium** Period (basically 2 years)
 - **Free** for Research/Educational Use

Basic Policies on the Handling of Data and Samples by Japan Agency for Marine-Earth Science and Technology

May 16, 2007

1. Purposes

This Basic Policies refers to the handling and scientific and educational use of the various kinds of Data and Samples obtained by the Japan Agency for Marine-Earth Science and Technology (hereinafter called "JAMSTEC") as the result of its scientific research and development.

JAMSTEC considers the Earth as a unique system that is largely influenced by the Ocean and is involved in a wide scope of fundamental research and development. Further, JAMSTEC aims to contribute to the sustainable advancement of the human community as well as the systematization and expansion of knowledge through public relations, the dissemination of research results and related education activities.

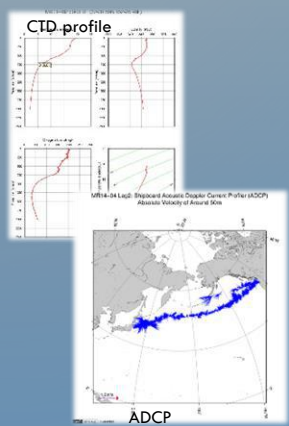
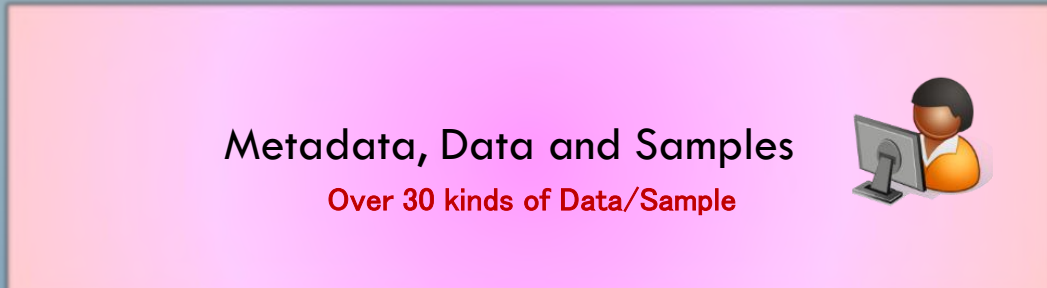
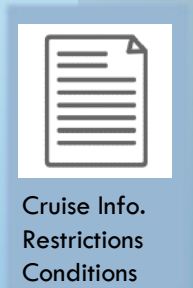
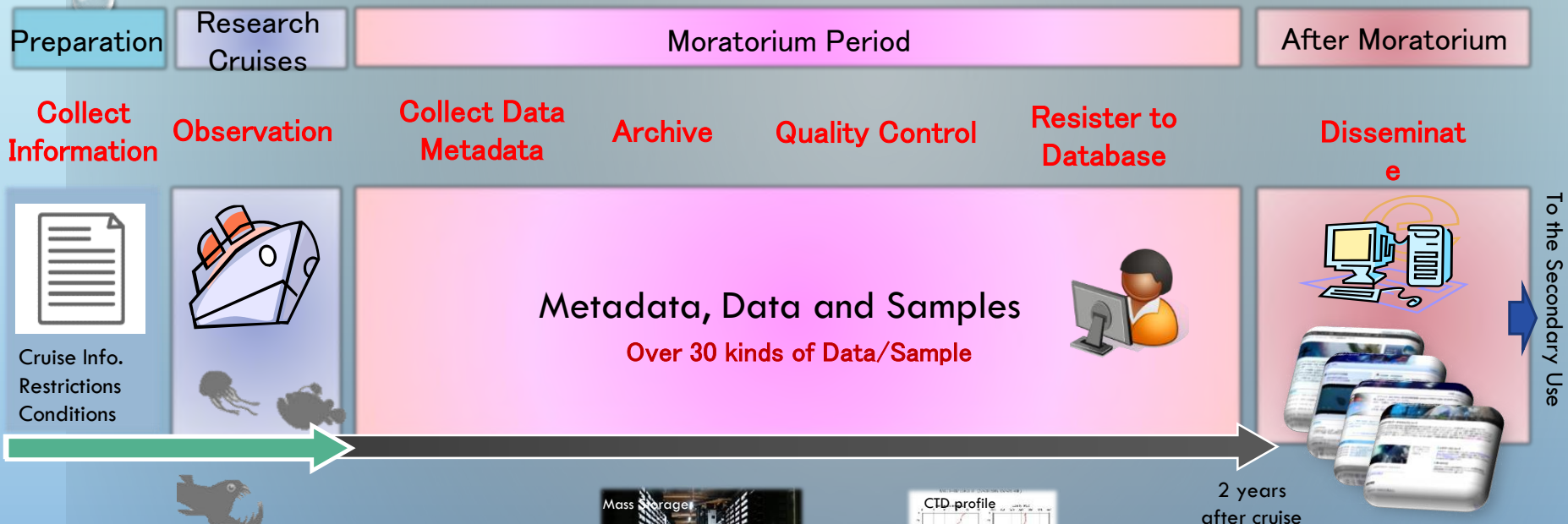
JAMSTEC possesses a large number of leading-edge facilities and equipment and has obtained Data and Samples of extremely high academic value. These Data and Samples are the common property of the human community, and it is important that they are made open for research and educational purposes and be available for use into the future on a global basis. JAMSTEC believes it is one of its most important missions to store these valuable Data and Samples for a long period of time and provide them in an easily accessible manner.

2. Definition of Data and Samples

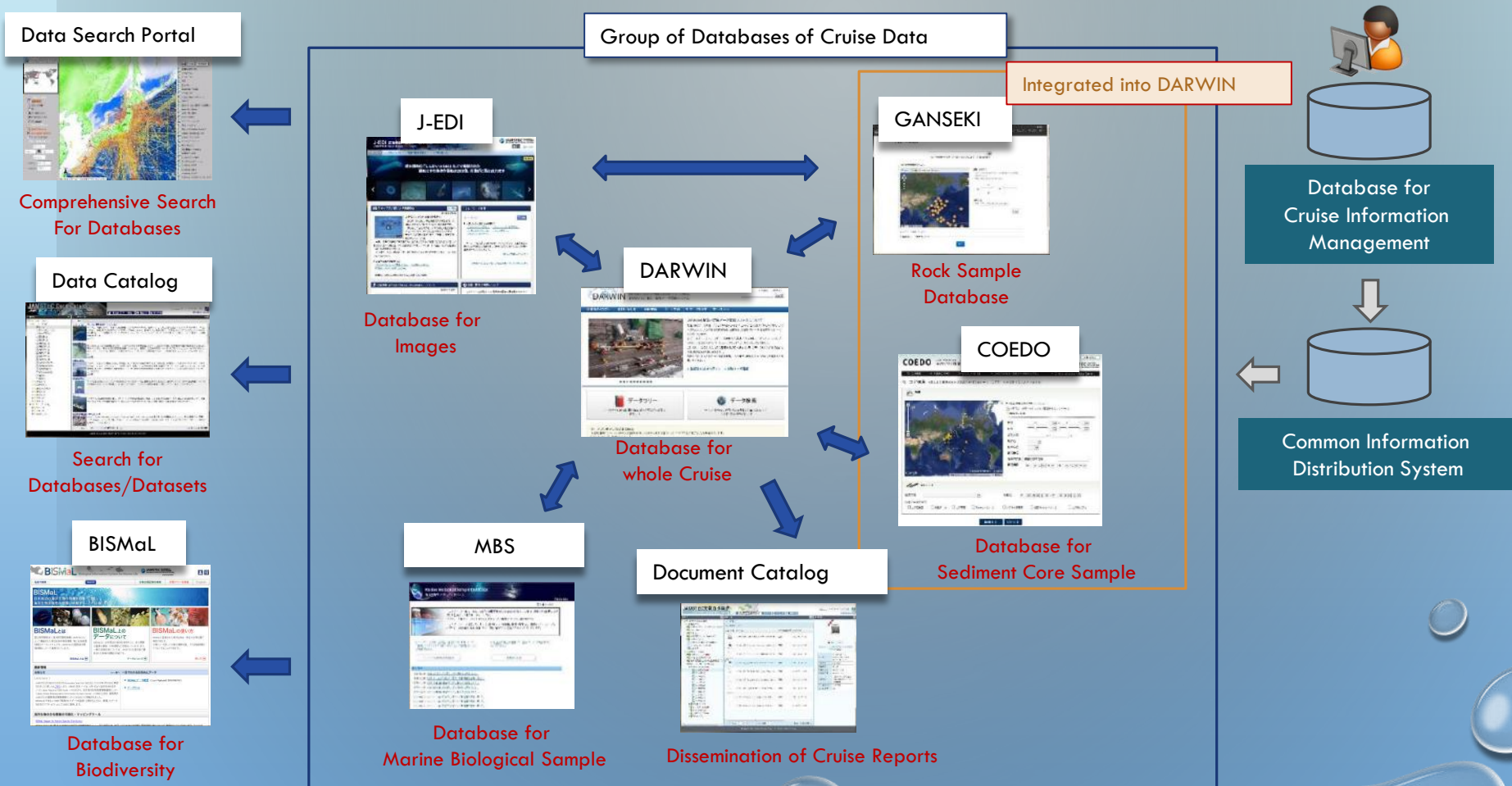
The Data and Samples mentioned herein refer to those obtained through the use of JAMSTEC facilities and equipment, and those obtained by JAMSTEC researchers

http://www.jamstec.go.jp/e/database/data_policy.html

Work Flow from Cruise to Database



Relationship between Data Publication Databases



<http://www.jamstec.go.jp/e/database>

Handling of Data by Other Platforms

- Kinds of Research/Observations

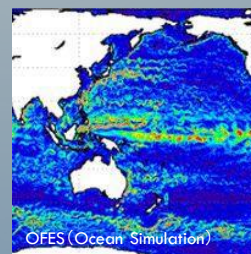
- ✓ Ocean Observations by other than Cruises (TRITON Buoys, ARGO Floats, Sea Bottom Seismometers, etc.)
- ✓ Terrestrial Observations (Atmosphere, Ecosystem, Seismology, etc.)
- ✓ Ocean Floor Drilling
- ✓ Simulation and Data Assimilation

- Methods of Publication

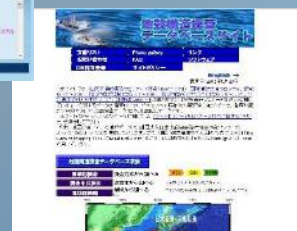
- ✓ By Original Databases
- ✓ Open Data Files by Data Catalog
- ✓ Provision of Data according to the Data Request

- Data Publication Platform

“Data Catalog” as a metadata repository in JAMSTEC

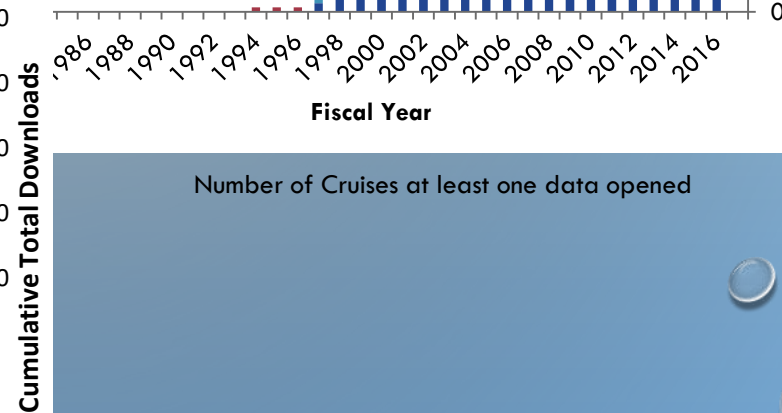
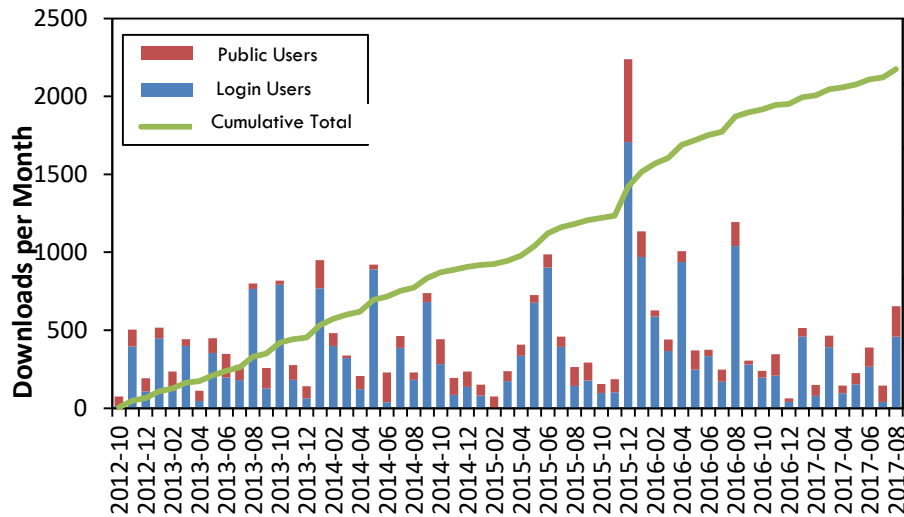
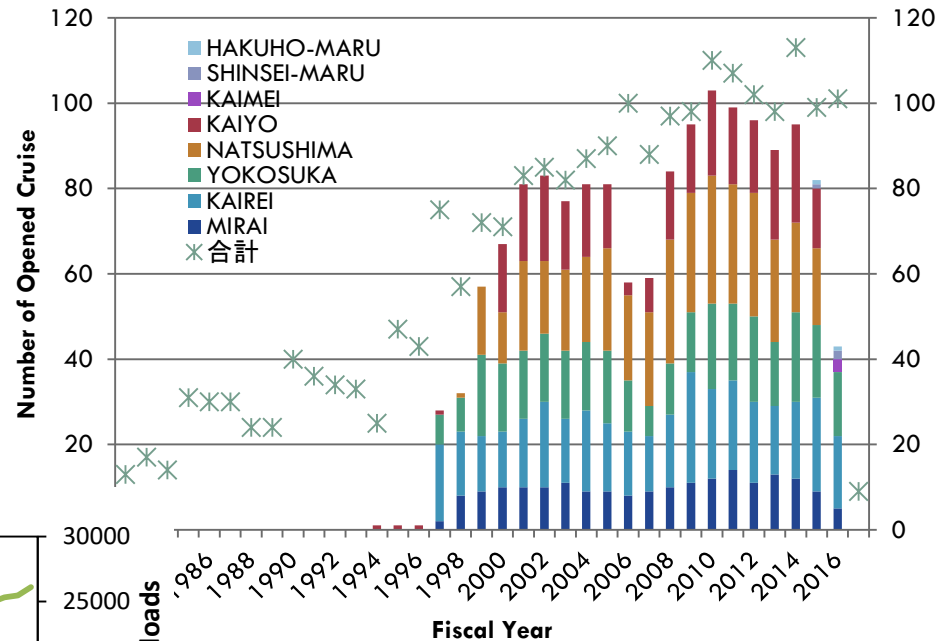


TRITON Buoy



Status of Data Dissemination

- Number of Data Opened : 6,917
- Videos : 344,374 (scenes)
Photos : 1,406,437 (photos)
- Rock Samples : 25,157
Sediment Core Samples : 918
Biological Samples : 42,523

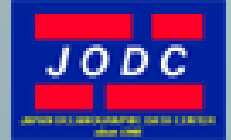


Number of Download from the Cruise/Dive Database

Collaboration with Other Databases

JAMSTEC;

- Submits Ocean Observation Data to IODE through JODC,
- Collects and Provides Biogeographic Information around Japan to the Ocean Biogeographic Information System (OBIS) under IODE as a **Associate Data Unit** in Japan,
- Provides metadata about Rock Samples to the **EarthChem** (International Portal Service of Geochemical Data)
- Provides metadata of JAMSTEC Data Catalog to the **Global Change Master Directory** (International Portal of Earth Observation Data)
- Became a Data Provider of the **GEOS Portal** July 2017.

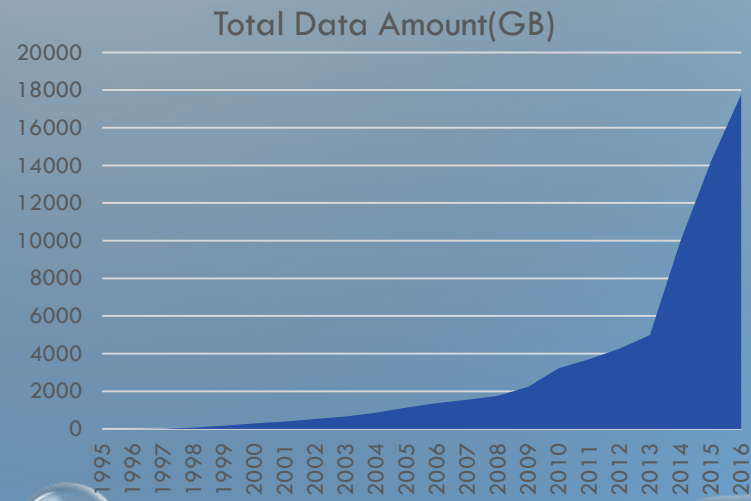
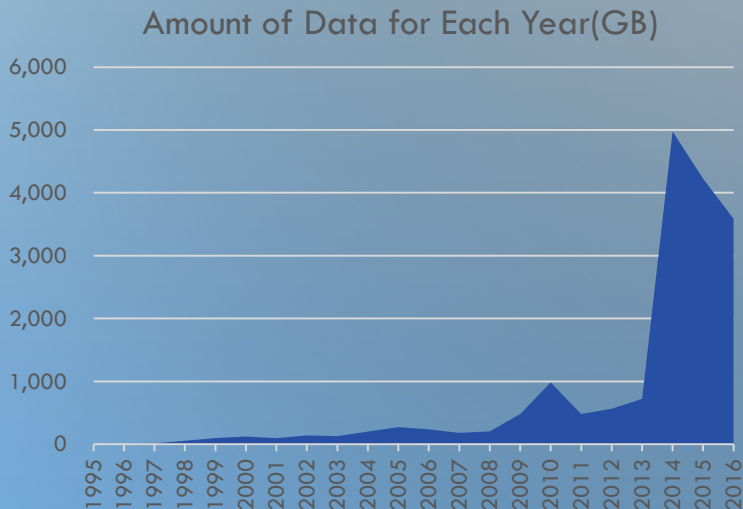


Recent Issue : Data Burst

- The **Data Amount** obtained by the RVs **skyrocketed** between 2013 and 2014.

This is due to the update of Observation Instruments (R/V MIRAI's Doppler Rader and R/V YOKOSUKA's MBES)

- Total Data Amount Rose up to about **18 TB**.
(not including the Amount of Images : over 300TB)



Futures

The Data Management Office in JAMSTEC will go forward to become a “**Reliable Data Repository**” in the Marine-Earth Science Community by following ;

- **Standardization** in metadata, key words, protocols, formats, etc.
ex. JAMSTEC use **DIF Metadata Schema** in some database
- **Collaboration** between International Databases
with automatic Submit/Harvest
ex. JAMSTEC became a **Data Provider of GEOSS Portal** this year.
- Common IDs for datasets, researchers, institutions, funds, projects, etc.
ex. Data Management Office will introduce **Data DOI** next year.

Thank you for your attention.

