Sample management in JAMSTEC: Cooperation-based management of diverse samples

Takayuki Tomiyama, Tohru Iseto, Yasumi Toyoda, Miki Morioka, Makoto Ito
and JAMSTEC Sample Management Team

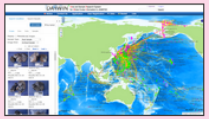
Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
Data Management Office: dmo@jamstec.gojp

JAMSTEC Samples & Data

Public Distribution

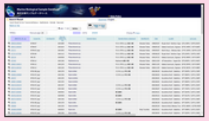
JAMSTEC publicly distributes samples and data obtained by research cruises through several websites. Public users can request/download the samples and data, and utilize them for additional uses with research/educational purposes.

Websites



DARWIN cruise/dive data & samples

J-EDI dive video & photo



Marine biological sample database

BISMaL marine life occurrence

Core sample curation website

And more at NUUNKUI

Variety of websites are operated for distributing information to the public, reflecting the wide variations of information types and the complex workflows in behind. Related information is linked together and create a large network among these websites.

In-House Sample Management Database

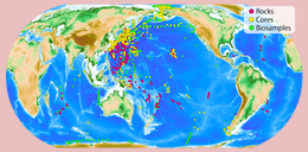
JAMSTEC Sample Database (JSDB) for Rock, Sediment Core & Biological Sample Management

JSDB, an integrated management-level database for JAMSTEC samples was newly installed. These sample types were previously managed using separated information systems.

-System package: I.B.MUSEUM v12, (Waseda Sys. Devel. Co. Ltd.)

-Server: vCPU: 8 x 2.3GHz /MEM: 16GB /HDD: 300GB /CentOS 7.5

JSDB Sample Information



Statistics of database records (as of 01/07/2020)

Sample Type	Metadata	Physical Samples	Associated Data
Rocks	24413	13563*1	6889
Cores*2	1616	963	13343
Biosamples	60277	60276*3	-

*1Includes 2811 records of duplicated samples.
*2Numbers refer to coring events or drilled holes.
*3Includes 273 records of photo-only samples.

List of sample metadata, i.e. the information of onboard sampling activities, is submitted by onboard researchers after each cruise, whereas information of archived physical samples and sample associated data, are provided at different timing by on-shore sample managers, onboard technicians or research groups. Using JSDB, operators can organize the complex relations among these records.

Development Notes

Major Features of JSDB

-Fit to multiple sample types: Data items for geological samples were re-organized to follow the IGSN metadata schema. Biological data items such as those for taxonomy were incorporated as well.

-Can handle various data formats: Electric files with any data format can be uploaded to JSDB, as associated data for samples.

-Designed for group-based sample management: Each record is secured by user group write permission, and by flag controls that allow intergroup browsing and on-line publication.

-Utilize package built-in functions: The developer package accommodates convenient user interfaces, such as input assistance, complex data search and customizable viewers.

Future Plans and Problems

-Data forwarding to public distribution systems: Implementation of data synchronization module for DARWIN is on-going. The module re-maps data items to compensate the differences in metadata schema.

-Further commitment with IGSN: Currently, limited samples have IGSNs as URL-type associated data. Major involvement with IGSN will need detailed considerations for information workflows, including ID allocation, information sharing with researchers and IGSN administration office.

-In-house collaboration: Physical samples are independently managed in multiple departments and research groups. In-house information sharing is widely operated for biological samples. Similar collaboration may help effective management of rocks and cores.

Sample management in JAMSTEC:
Cooperation-based management of diverse samples

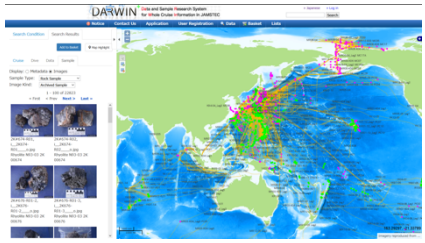
Takayuki Tomiyama, Tohru Iseto, Yasumi Toyoda, Miki Morioka, Makoto Ito, and JAMSTEC Sample Management Team
Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
Data Management Office: dmo@jamstec.go.jp

JAMSTEC Samples & Data

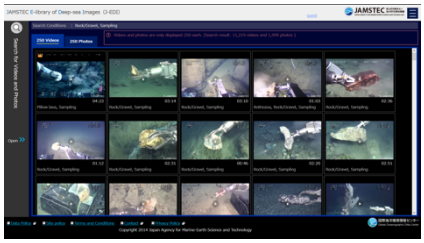
Public Distribution

JAMSTEC publicly distributes samples and data obtained by research cruises through several websites. Public users can request/download the samples and data, and utilize them for additional uses with research/educational purposes.

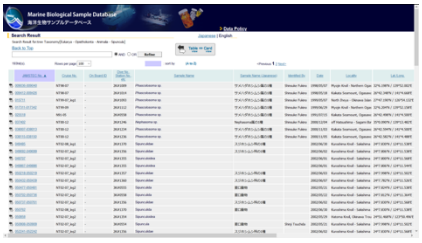
Websites



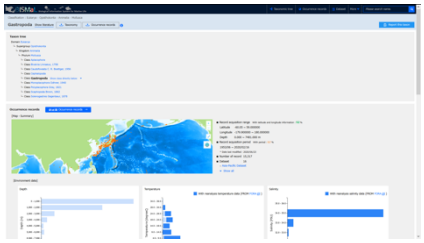
DARWIN cruise/dive data & samples
http://www.godac.jamstec.go.jp/darwin/e



J-EDI dive video & photo
https://www.godac.jamstec.go.jp/jedi/e/



Marine biological sample database
http://www.godac.jamstec.go.jp/bio-sample/index_e.html



BISMaL marine life occurrence
https://www.godac.jamstec.go.jp/bismal/e/

Core sample curation website
http://www.jamstec.go.jp/kochi/jc_curation/e/

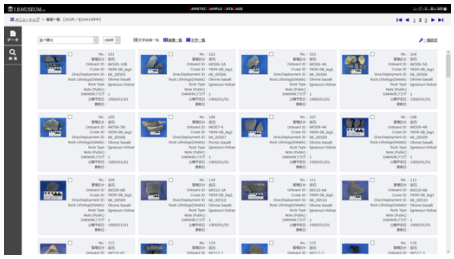
And more at NUUNKUI
http://www.godac.jamstec.go.jp/jmedia/portal/e/

Variety of websites are operated for distributing information to the public, reflecting the wide variations of information types and the complex workflows in behind. Related information is linked together and create a large network among these websites.

In-House Sample Management Database

JAMSTEC Sample Database (JSDB) for Rock, Sediment Core & Biological Sample Management

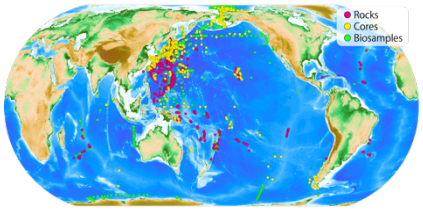
JSDB, an integrated management-level database for JAMSTEC samples was newly installed. These sample types were previously managed using separated information systems.



Screenshot of JSDB

- System package: I.B.MUSEUM v12, (Waseda Sys. Devel. Co. Ltd.)
- Server: vCPU: 8 x 2.3GHz /MEM: 16GB /HDD: 300GB /CentOS 7.5

JSDB Sample Information



Global map of JAMSTEC sampling activities

Statistics of database records (as of 01/07/2020)

Sample Type	Metadata	Physical Samples	Associated Data
Rocks	24413	13563*1	6889
Cores*2	1616	963	13343
Biosamples	60277	60276*3	-

*1Includes 2811 records of duplicated samples.
*2Numbers refer to coring events or drilled holes.
*3Includes 273 records of photo-only samples.

Table for JSDB record statics

List of sample metadata, i.e. the information of onboard sampling activities, is submitted by onboard researchers after each cruise, whereas information of archived physical samples and sample associated data, are provided at different timing by on-shore sample managers, onboard technicians or research groups. Using JSDB, operators can organize the complex relations among these records.

Development Notes

Major Features of JSDB

- Fit to multiple sample types: Data items for geological samples were re-organized to follow the IGSN metadata schema. Biological data items such as those for taxonomy were incorporated as well.
- Can handle various data formats: Electric files with any data format can be uploaded to JSDB,

as associated data for samples.

- Designed for group-based sample management: Each record is secured by user group write permission, and by flag controls that allow intergroup browsing and on-line publication.
- Utilize package built-in functions: The developer package accommodates convenient user interfaces, such as input assistance, complex data search and customizable viewers.

Future Plans and Problems

- Data forwarding to public distribution systems: Implementation of data synchronization module for DARWIN is on-going. The module re-maps data items to compensate the differences in metadata schema.
- Further commitment with IGSN: Currently, limited samples have IGSNs as URL-type associated data. Major involvement with IGSN will need detailed considerations for information workflows, including ID allocation, information sharing with researchers and IGSN administration office.
- In-house collaboration: Physical samples are independently managed in multiple departments and research groups. In-house information sharing is widely operated for biological samples. Similar collaboration may help effective management of rocks and cores.