Development of a new Data Search Service using Web GIS for the Marine-Earth Observation Data

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http://www.jamstec.go.jp/

1. Summary

Japan Agency for Marine-Earth Science and Technology (JAMSTEC) has performed a variety of marine-earth observation and also has publicized its data through web sites. JAMSTEC has developed a data search service JAMSTEC Data Search Portal (http://www.jamstec.go.jp/dataportal/), which helps users to find data from many kinds of its data sites and databases using web GIS.

2. Back Ground

JAMSTEC has started marine observation since 1981, which is over a quarter of a century, using its research vessels and deep sea submersibles and has publicized its observation data and samples on its web site. As JAMSTEC's activity extended to biosphere, solid earth, land area and the atmosphere etc. the numbers of data publishing sites and the amount of data has increased. This increase may cause difficulty for our users to find the data which they need. We became to be apprehensive that our valuable observation data and samples may not be utilized, simply because they were not found easily. A comprehensive data search service throughout various data sites was thought to be the solution.

As the Earth observations are mostly performed on points or across in lines, and most of our users are interested in specific areas, the spatial retrieval function of GIS is highly effective.

3. Outline of Data Search Portal

Data Search Portal uses ArcIMS as a GIS server and retrieves shape files which include the longitude and latitude of observation sites/lines and relevant properties including URLs to the data publication page. When users select a data set, a distribution of observation sites/lines will be shown on a map and users will be able to zoom in/out and pan across the map. After choosing an area of interest using a mouse, users can have a list of observations with links to relevant data publication pages (Fig.1). Users will be able to see detailed information and also can download the data from those pages.

This system is a specialized portal application and independent publication sites are supposed to exist in advance. Links to publication pages are just URLs and specific interfaces are not necessary. As a result, Data Search Portal can provide a retrieval function regardless of data types or structure of data sites.

Also ArcIMS enables us to have plural interfaces on one server and to provide a special front-end search function for a specific data type. Using this system, we do not need to develop a spatial retrieval application on each data site individually.

4. Future Plans

In this stage, Data Search Portal only provides a spatial retrieval function on one layer. We are developing a multi-layer and complex retrieval function which enables users to search data from plural layers not only by area but also by period, research vessel or variables. And it will be necessary to develop an effective way to update shape files.

Also we consider developing web service which enables to distribute shape files in this system to outside search systems.
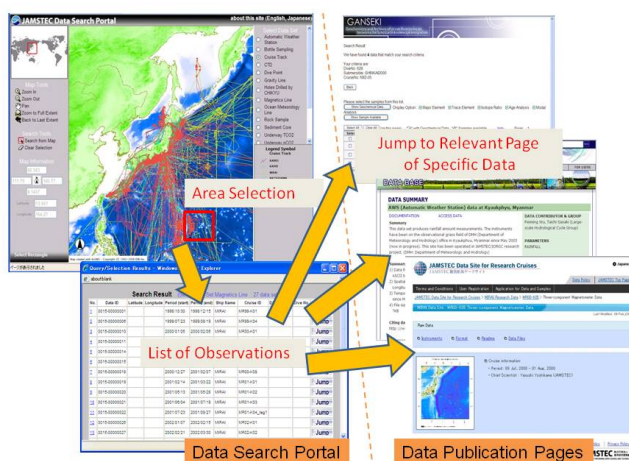

Fig.1 Schematic Flow in Finding Data with JAMSTEC Data Search Portal