Interdisciplinary Online Data Sharing Service on ADS

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Arctic Data Archive System(ADS), NIPR

Introduction

- Mutual understanding between disciplines is important in interdisciplinary collaborative research.

- We support interdisciplinary collaborative research in terms of mutual use and mutual understanding of data.

- However, it takes a great effort and needs some knowledge to find the appropriate data from databases in other fields.

- Furthermore, it is very difficult to handle the data and to judge about the contents of the data.

- Arctic Data-archive System aims to build the system that facilitates a sharing and understanding the data of the various fields by implementing a Web-Application that anyone can manipulate.

Arctic Data-archive System (ADS)

- ADS was launched on purpose to collect, manage and open some arctic data.

- This system deals primarily with data.

- It is very important for data system to create a web site where users want to register and use the data.

- DATA INPUT : registration from researcher

  <u>IMPORTANT : the environment where it is easy to register data</u>

- DATA OUTPUT : used by user

  <u>IMPORTANT : the environment where it is easy to find and use data</u>

INPUT   OUTPUT
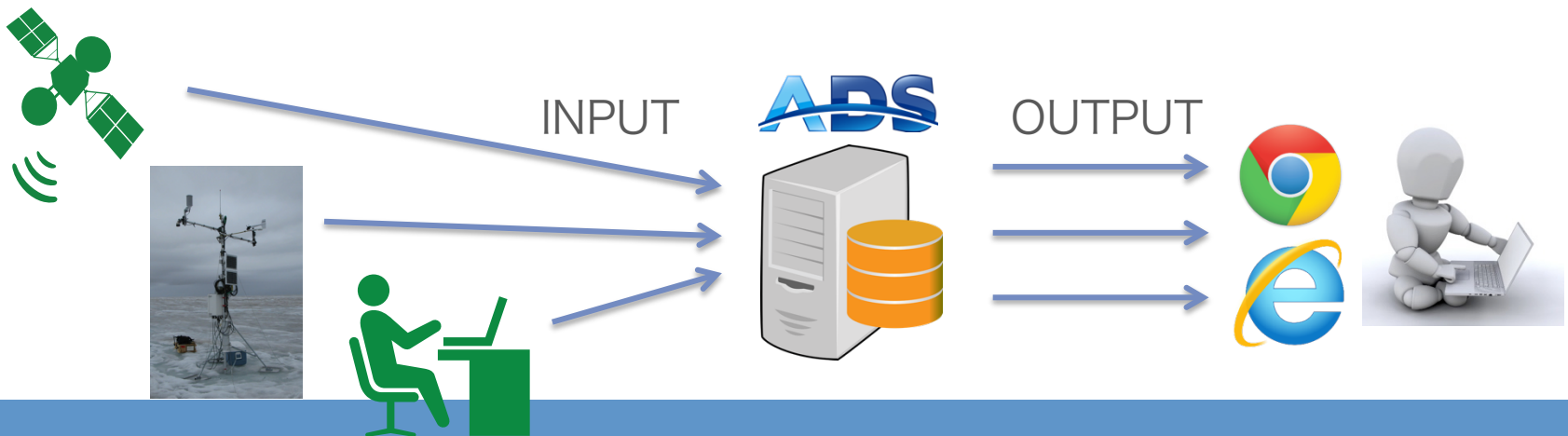
INPUT : Data Registration

Data in ADS is mainly registered in two ways.

1. automatic registration of daily dataset
   - The specific data is acquired and updated every day (satellite, reanalysis, forecast, station, etc.)
   - We need to clarify data license terms.
2. registered by researcher
   - The researchers register the observation data in good faith.
   - The registration work requires the amount of time and effort.
   - Incentives would be effective in order to motivate the registration process.

      e.g. DOI, data analysis tool, data creation support tool, etc.

OUTPUT : Data Use

- In order to retrieve the information from database, complex work and technical knowledge is often needed.
  - find out the appropriate data from huge kind of datasets.
  - understand and handle data file
  - analyse and visualize the phenomena from data
- Although metadata contains information about the data creation, it is insufficient to understand detailed information only by metadata in many cases.
- Generally we can't know information about phenomena included in dataset from metadata.
- A certain amount of specialized knowledge about data is required for acquisition and use of data.
  - The problem will be solved by providing the knowledge as information.
  - ⇒ We'd like to make the website which can be used without background information.

Web Application

- In order to progress the interdisciplinary research among various field, we are developing online data sharing service using Web Application.

- Why the web ?
    - It is not necessary to install the decided application.
    - It is possible to download dataset naturally.
    - Many people can use like as surfing the net

- Our web application should achieve below requisite
    - Everyone can use easily with the GUI.
    - User can use without background knowledge
    - The application provides the result information as various file format

Developing Applications

- KIWA : metadata management system
- VISION : online visualization and analysis tool
- VISHOP : quasi-real time polar environmental observation monitor
- Real-Time Monitor : real-time observational data plotting tool
- Arctic Sea Route Search System

KIWA

- System to search collected data in time and space using web-map tool
- cooperation with GCW in WMO.
- coordination with GEO-Portal
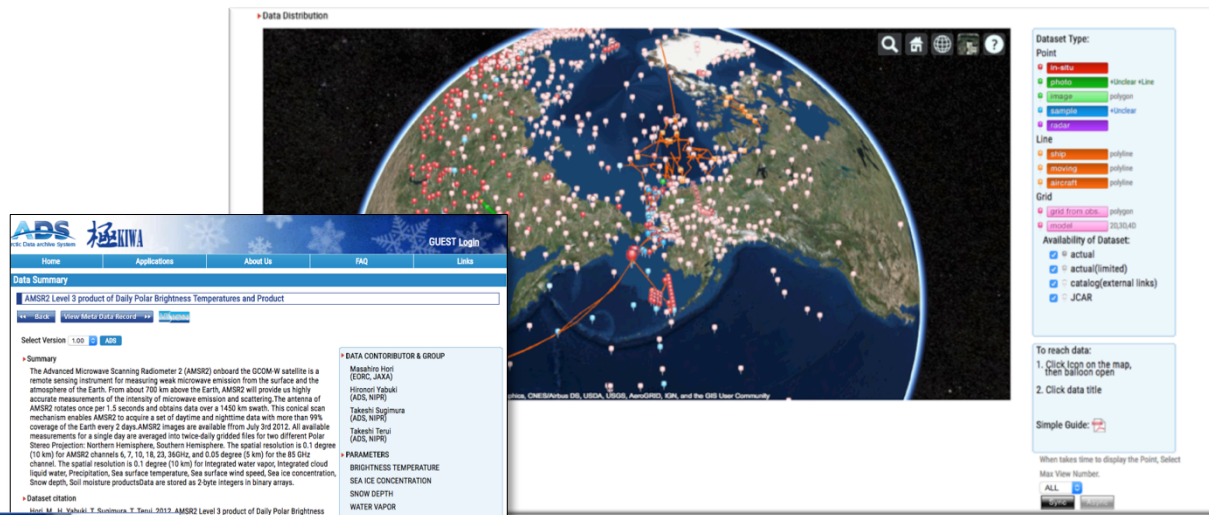
including

- Metadata exchange system by using OAI-PMH, GI-cat.
- DOI registration system

(350 metadata, 2201points)

VISION

- Data visualizing and analyzing system by only using the GUI on the web screen
- Features :
  - ➢ shade map
  - ➢ contour plot
  - ➢ time-step animation
  - ➢ cross-section graph
  - ➢ time-series graph
  - ➢ data output
- implemented data :
  - ➢ AMSR-E/AMSR2 satellite product (polar and global)
  - ➢ SSM/I satellite product (polar)
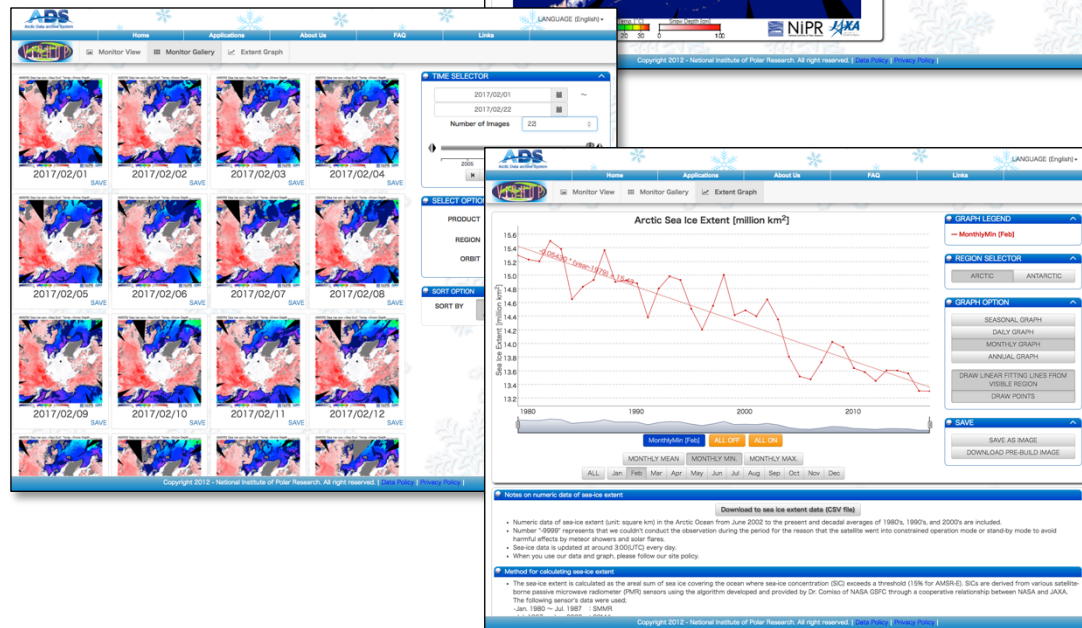 - ➢ reanalysis data
  - ➢ model output data

    etc.
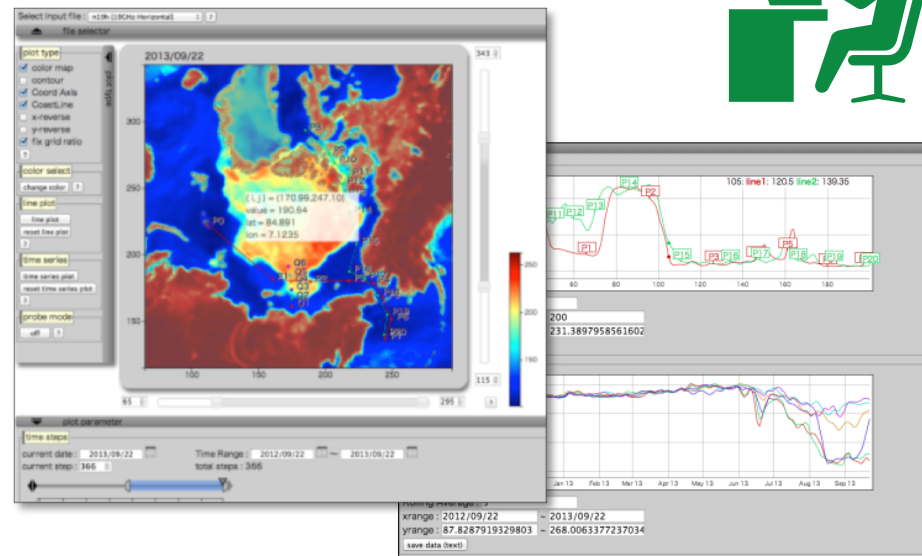
Introduce the VISION
https://ads.nipr.ac.jp

VISHOP

- quasi-real-time information about polar satellite data is available
- The sea ice extent graph is updated daily.
- Most accessed in ADS (about 80,000 monthly access)
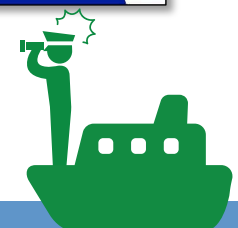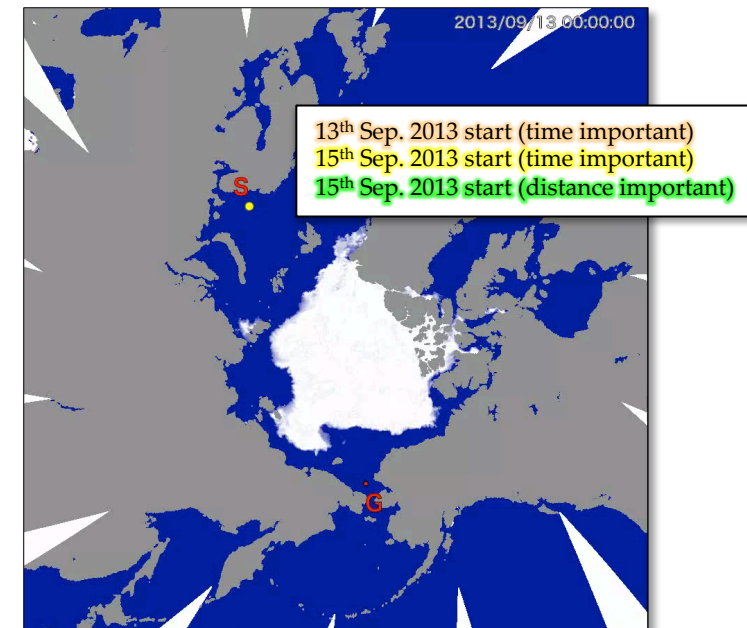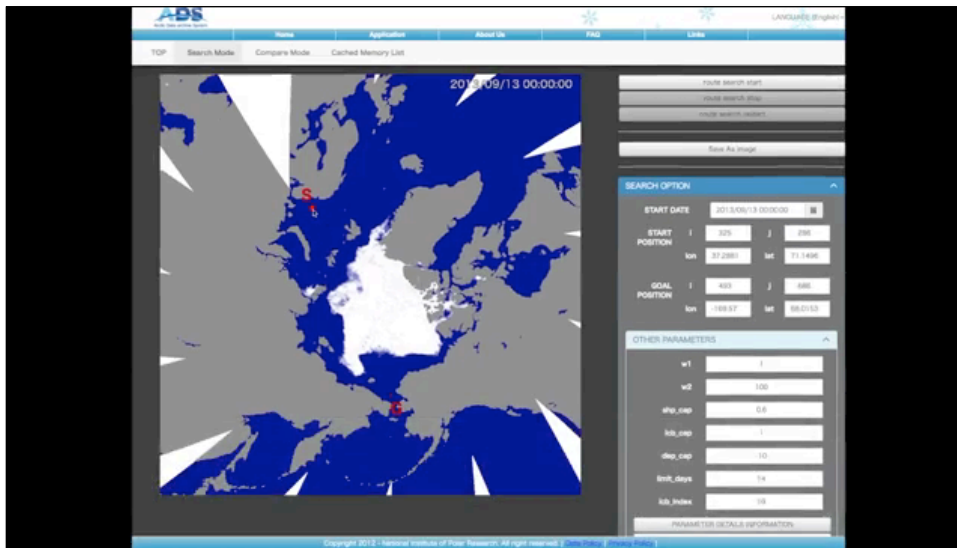- The gallery feature of the image data was added in the latest version.

Real-Time Monitor

- Automatically graph the time series data such as observation station
- You can also automatically draw 3D shaded image as well as 2D graphs
- You can always get the latest graphs because data is Updated daily or hourly.
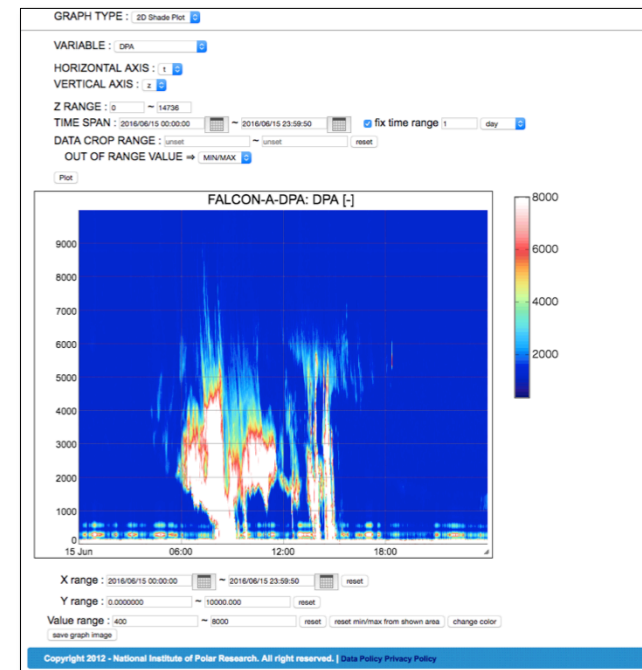
Arctic Sea Route Search System

- This system automatically determine the optimum route path from multiple choice using sea ice data.
- This is built on ADS based on "Arctic Sea Route Search" research results.
- improving to use forecast data

13th Sep. 2013 start (time important)
15th Sep. 2013 start (time important)
15th Sep. 2013 start (distance important)

Achievement Status

- We can provide tools for visualizing and analyzing for specific datasets.

- Data retrieval and visualization can be done automatically by the Web Application, so users don't be required any special skills.

- The GUI can be used with only intuitive operation (without any background knowledge).

- You can download the result as a file such as CSV, image, or movie.

improving in response to user requirements

Unachieved Task

- Automatically visualizing and analyzing tools for all registered data
  - ⇒ There are too many types of data to handle in a unified way.
    data format, variable, dimension (1D, 2D, 3D), time steps (regular, irregular), coordinates, etc.
  - ⇒ Because the meta data does not have an obligation to describe these information, we need to survey. In some cases, we may need to contact to registrant.
  - o I would not like to add an item to metadata because registration work increases.

Near Future

- will be improved to load data in applications regardless of data format by adding the setting file separately from the metadata.

https://ads.nipr.ac.jp

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