Outline of the Arctic Data Archive System (ADS)

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Summary. Arctic Data archive System(ADS), through proceed with the visualization and the development of online analysis system of integrated big data, aiming for integrated analysis information platform, not only as a mutual distribution platform of data, we have developed a system that enables open access research data and scientific knowledge obtained in the Arctic research. Various applications and services developed by ADS should not be used only in the Arctic but should be used as a bipolar data publish platform. The ADS team is currently preparing to publish not only Arctic data but also Antarctic data.

Keywords. Arctic Global warming, ArCS, Data Management.

1. Introduction

The easy access use is made possible from the industrial and the social public using research results(thesis and research data, etc.) using a public research fund, and a concept as open science aiming at linking it to creation of innovation by opening the new way as well as promoting a scientific technical research effectively is showing a rapid expanse to creation of worldwide. And the principle opening to the research result and data by a public research fund by GRC (Global Research Council), OECD (Organization for Economic Cooperation and Development) and G8 in 2013 etc.

Under these background, even in Arctic research, open access of a variety of variation mechanism and scientific knowledge, such as future prediction result brought about by actual grasp their environment change has been demanded.

In order to clarify the environmental variation system of complex Arctic with a variation of the time-space scale that is different consisting of air-land- marine, and human sphere, through interdisciplinary research, through interdisciplinary research, a wide variety of observational data, simulation data, satellite data, and even there is a need for the creation of A New knowledge of using the big data that integrates the research results. Also those integrated with the big data, scientific knowledge by using these, it is necessary to continue to properly publish to society.

2. Development of Arctic Data archive System(ADS)

Arctic Data archive System(ADS: https//ads.nipr.ac.jp), through proceed with the visualization and the development of online analysis system of integrated big data, aiming for integrated analysis information platform, not only as a mutual distribution platform of data, we have developed a system that enables open access research data and scientific knowledge obtained in the Arctic research.

ADS has been doing the systems development of following up to now.

- Metadata Management System by own metadata schema.(KIWA: Fig.1)
  - Metadata exchange system by using OAI-PMH, GI-cat.
  - Currently, this service is carried out in cooperation with GCW in WMO. Also this service have done coordination with GEO-Portal.
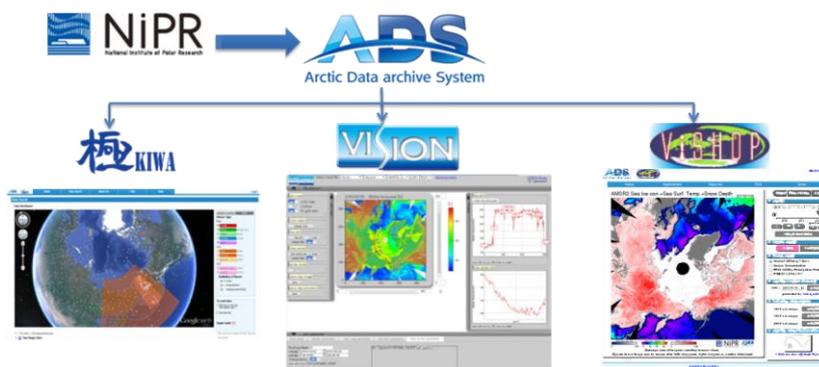
Fig.1 : Structure of ADS, Research data registration system and Metadata search service(KIWA), Online visualization application for Climate, Satellite and Simulation data(VISION) and Semi-real-time polar environ. obs. Monitor and Sea Ice prediction(VISHOP)

- ➤ A system for space-time search using GoogleEarth collected data
- ➤ DOI (Digital Object Identifier) registration system
- Visualization and analyzed system for the satellite data and grid data by online(VISION: Fig1)
- System to Semi-real-time polar environ. obs. monitor and sea ice prediction in the Arctic, Antarctic by using the satellite data (AMSR2) that is delivered in near-real-time from JAXA.(VISHOP:Fig1)
- System for visualizing numerical data such as time-series data(VISION-Graph)

3. Future development and challenges

ADS is not only a system that provides the data to various data users and stakeholders, in order to promote joint research and international cooperation in the Arctic region, anyone that is aimed at developing integrated analysis platform through the available Web interface. Furthermore in ADS, to developing of the information providing service of push-type in accordance with the needs of stakeholders.

By widely publish the technology developed in ADS, to promote the technology transfer system construction, to help the same technical problem solved in other areas. In ADS future, to carry out research and development the following items.

- Advancement of data and meta-data registration and retrieval system
- Promotion of data registration and data usage
- Enhanced of international cooperation of data and metadata
- Advancement of visualization, basic data analysis and the like of software and Web applications in order to provide an integrated analysis platform
- System construction of the push-type information service
- Advancement of small and medium-sized data server linkage function by ADS grid
- System Technology publishing, which is research and development in the ADS and technology transfer promotion to other systems.

4. Conclusions

The share of research data and scientific knowledge in the Arctic and non-Arctic nations, there are need for coordination of data repository and data center in a various country.

Important to drive the open-science, it is important data published and data cited, it is necessary to promote these data published and data cited. We, through the development of ADS activity, believe that can contribute to the sharing of research data and scientific knowledge in the Arctic and non-Arctic nations.