

A wish list toward utilization of earth observation data

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The human society must have knowledge of spatio-temporal structure of environmental variables (e.g. solar radiation, winds, water flow, photosynthesis) in order to live with renewable energy resources. Also, in order to adapt to changing climate, we need environmental data, not only results of prognostic simulations by numerical models, but also observational data which are needed to evaluate and correct model results.

In order for all countries of the world to conduct observations and collection, management and exchange of data, we need international collaboration with respect to science and technology including appropriate capacity building.

We need adjustments of policies of data provision between countries and between institutions. We should promote sharing data as public goods, but we also need to develop mechanisms to share proprietary data.

We also want institutions which maintain data from finished projects including experimental observations and rescue of past data.

Styles of data use are various. Web services will increase the share. But researchers (including those who assess environment and resources) will mainly use them on computers running their own programs. Data provision services are needed, where the providers of web services and research users can search, select and download data. Such functions as browsing, slicing, averaging etc. are also desirable. Data provision services will be implemented as a distributed manner, but their metadata should be standardized and shared to facilitate discovery and access to data.

In addition, it is desirable to have integrated systems on which users can directly access multiple large-volume data. People at any institutions should be eligible if their plans are approved on the grounds of social or scientific relevance. User support functions are crucial. Support about the content of data may be provided by external institutions which provide the data as well. Support about how to handle data may be covered by mutual help of users. The tasks of the institutions which hold the integrated systems should be management of the computer systems, management of data (including access control respecting data policies), provision and support of basic software, provision and support of the frameworks which hold data and documents, provision of the frameworks for mutual help of users.

There seems to be no institutions yet in Asia (including Japan) ready for sustainable operations of such integrated systems or large-volume data provision services. Policy decisions including design of institutions are needed. Operational agencies in Japan already provide their data to Japanese people. We wish them to gain functions to combine data from multiple institutions, and to support provisional users from foreign countries. Research institutions and universities are able to conduct

technological developments during limited terms. Also they have operational divisions such as computer centers, libraries and museums, so data archives may be added. Data archives for Asia-wide data sharing and contribution to the world must work with data providers and users in multiple countries. Should Japan do the tasks as its contribution to the world, or should we make organizations consisting of multiple nations?

Also, we must overcome barriers between natural languages as well as between disciplines. When there are common concepts but just different expressions, automated access to glossaries combined with metadata is hopeful. When the structures of concepts are different, we will need to build packages of knowledge, more detailed than glossaries but simpler than full education of experts. We will also need people who can answer questions. As for natural languages, we should use English consciously as a hub of translation to and from various national languages.

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