

Challenge to Data-intensive Science: cooperation of metadata database for upper atmospheric research and author ID

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Science is changing because of the impact of information technology. Experimental, theoretical, and computational science are all being affected by the data deluge, and a fourth, "data-intensive" science paradigm is emerging.

To investigate the mechanism of long-term variations in the upper atmosphere, we need to create integrated links between a variety of ground-based observations made at various locations from the equator to the poles because what we observe is the result of complicated processes. However, the Japanese observational databases (e.g., by a global network of radars, magnetometers, optical sensors, helioscopes) have been maintained and made available to the community by each institution that conducted the observations. Then researchers encountered the problem that is difficult to look for various kinds of observational data to clarify the global scale physical phenomena.

In order to solve the problem, we built the metadata database for upper atmosphere by using extended DSpace¹. The extended point is to handle the IUGONET common metadata format which include resource types for dataset and human resources² instead of Dublin Core. Thereby, the researchers can reach distributed observational raw data via metadata [1].

From a viewpoint of data publication, International Council for Science (ICSU) - World Data System (WDS) members are considering to put Digital Object Identifier (DOI) to dataset by using registration agency like DataCite. Then ICSU - CODATA's Data Science Journal is considering to realize data citation. On the other hand, Open Researcher & Contributor ID (ORCID) launched its registry service on Oct. 2012. Under these situation, we planned to put the both IDs into above mentioned metadata to create linkage between raw data and data contributor. As a first step, we put ORCID ID into the metadata.

[1] Koyama et al., "Metadata Database for Upper Atmosphere by using DSpace", OR2012.

¹<http://search.iugonet.org/iugonet/>

²<http://www.iugonet.org/data/schema/iugonet.xsd>