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The Space Physics Archive Search and Extract (SPASE) Project and the Heliophysics Data Environment

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The Heliophysics division of NASA has adopted the Space Physics Archive Search and Extract (SPASE) Data Model for use within the Heliophysics Data Environment which is composed of virtual observatories, value-added services, resident and active archives, and other data providers. The size of the data sets and the overall data environment has increased tremendously over the past few years. The SPASE Data Model provides a unifying metadata approach to this complex environment. SPASE has also been adopted by the Canadian Space Science Data Portal (CSSDP), NOAA's National Geophysics Data Center (NGDC), and recently by Japan's Inter-university Upper atmosphere Global Observation NETwork (IUGONET). Europe's HELIO project harvests information from SPASE descriptions of resources. The Planetary Plasma Interactions (PPI) Node of NASA's Planetary Data System (PDS) is working to map planetary metadata to SPASE for cross-system exchange. All of the data sets in the Heliophysics Data Environment are intended to be described by the SPASE Data Model. Many have already been described in this way. The current version of the SPASE Data Model (2.2.0) may be found on the SPASE web site at <http://www.spase-group.org>. SPASE data set descriptions are not as difficult to create as it might seem. Help is available in both the documentation and the many tools created to support SPASE description authors. There are now a number of very experienced users who are willing to help as well. The SPASE consortium has advanced to the next step in the odyssey to achieve well-coordinated federation of resource providers by designing and implementing a set of core services to facilitate the exchange of metadata and delivery of data packages. An example is the registry service database shown at <http://vmo.igpp.ucla.edu/registry>. SPASE also incorporates new technologies that are useful to the overall effort, such as cloud storage. A review of the advances, uses of the SPASE data model, and role of services in a federated environment is presented.

Keywords: SPASE, metadata, heliophysics, interoperability, informatics