Geophysical Research Abstracts
Vol. 14, EGU2012-12873, 2012
EGU General Assembly 2012

A Collaborative Research Environment for Heliophysics

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Heliophysics is the study of the effect of the Sun on the Solar System; it is a relatively new science that combines the solar, heliospheric, geophysics and planetary communities. The subject is an example of the increasing desire to address science problems that span disciplinary boundaries and provides a good example of the issues involved.

The communities that constitute heliophysics have grown up independently and there are differences in the way that their data are stored and used. Although a number of capabilities relevant to heliophysics have been established under auspices of various projects and organisations, the fact that they have not followed any underlying strategy is now inhibiting our ability to do this type of science.

The Heliophysics Integrated Observatory (HELIO), a research infrastructure funded under Capacities programme of the EC's 7th Framework Programme (FP7), was designed around a service-oriented architecture with needed capabilities that support metadata curation and search, data location and retrieval, and data processing and storage being established as independent services. In addition, a number of virtual observatories have been established that address aspects of the overall problem of heliophysics within the NASA's Heliophysics Science Division.

We examine the capabilities of these resources and look at where their strengths and weaknesses lie. We identify some of the steps that are needed to improve interoperability between the initiatives and consider how they could be brought together to form a Collaborative Research Environment for Heliophysics (CREH).

The Coordination Action for the integration of Solar System Infrastructure and Science (CASSIS) has the objective of exploring ways to improve interoperability for all aspects of Solar System Science. CASSIS is funded under Capacities specific programme of the European Commission's Seventh Framework Programme (FP7) and grew out of the HELIO, Europlanet RI and SOTERIA projects; it also includes other key partners such as NASA, ESA, and NOAA. We welcome participation by other interested organisations