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HELIO - A Research Environment for Heliophysics

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HELIO, the Heliophysics Integrated Observatory, is a research infrastructure funded under Capacities programme of the EC's 7th Framework Programme (FP7). It provides a collaborative environment where scientists can discover, understand and model the connection between solar phenomena, interplanetary disturbances and their effects on the planets. The project is 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.

HELIO provides integrated access to the data and metadata from the domains that constitute heliophysics - solar, heliospheric, geophysics and planetary. More than 50 event catalogues can be used in the search, together with just under 10 feature catalogues; data from more than 150 instruments from nearly 50 observatories can be accessed. A comprehensive user interface is available and the serves can also be accessed through IDL; a workflow tool provides the ability to combine services together and it is possible to execute programmes on demand including propagation models.

We will report on the status of HELIO and the services that are available and demonstrate how these resources can be used to address use cases involving multiple spacecraft and modelling. We will also describe how we hope to combine the tools developed by HELIO into a Collaborative Research Environment for Heliophysics.

We have been holding a series of Coordinated Data Analysis Workshops (CDAW) in which we demonstrate the capabilities of the project and participants are able to use them to address science use cases. Two CDAWs have been held so far, in Dublin and Trieste; a third will be held in February 2012 in Orsay, and a fourth is planned in May/June 2012. Typical use cases relate to phenomena propagating from the Sun and being observed by at least two observatories in different parts of the inner Solar System.

The HELIO Consortium includes thirteen groups from the UK, France, Ireland, Italy, Switzerland, Spain and the US; the project started in June 2009 and has a duration of 36 months