SPACE WEATHER APPLICATIONS AT BIRA

D. Heynderickx, K. Stegen, J. Demol, B. Quaghebeur and J. Wera

Belgian Institute for Space Aeronomy

For a number of years, BIRA has been involved in developing space weather applications for the European Space Agency and for the COST 724 action (European Co-Operation in the field of Scientific and Technical Research: http://cost724.obs.ujf-grenoble.fr). Through these projects, BIRA is assisting in the creation of a European space weather network and infrastructure.

The COST 724 action has grown out of parallel study programmes funded by ESA. Its objectives include coordinating European research into modelling and prediction of space weather, and setting standards on data exchange. BIRA's contribution to this action involves the development of a framework to remotely run model and database applications from a central Web portal. A model of the dynamic low altitude trapped proton environment, currently under development at BIRA, will be made available through this portal.

In order to coordinate the Space Weather Applications Pilot Projects, ESA has commissioned the Space Weather European Network (SWENET). The SWENET infrastructure is a central resource centre (http://www.esa-spaceweather.net/swenet) for space weather activities, providing interested users access to space weather data and services. BIRA has developed the database engine that gathers and distributes space weather data from a wide variety of sources, and has implemented a set of automated data analysis modules for postprocessing and interpreting the data. In parallel, a Space Weather Yellow Pages (SWYP) interactive catalogue is being developed, which serves as a one-stop interface to locate and retrieve space weather data through a powerful search engine.

Another major product developed at BIRA is the SPace ENVironment Information System (SPENVIS), a Web based engineering tool to run models of the hazardous space environment and its effects on spacecraft and components. SPENVIS is accessible at http://www.spenvis.oma.be, and has become an international standard for mission design and analysis.