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ERG Science Center

KEIKA, Kunihiro[1]* ; MIYOSHI, Yoshizumi[1] ; SEKI, Kanako[1] ; HORI, Tomoaki[1] ; MIYASHITA, Yukinaga[1] ; SHOJI, Masafumi[1] ; SEGAWA, Tomonori[1] ; SHINOHARA, Iku[2] ; TAKASHIMA, Takeshi[2] ; TANAKA, Yoshimasa[3] ; ERG, Science center team[4]

[1]Solar-Terrestrial Environment Laboratory, Nagoya University, [2]Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, [3]National Institute of Polar Research, [4]ERG Science Center Team

ERG (Exploration of energization and Radiation in Geospace) is a Japanese geospace exploration project, and the ERG satellite will be launched in Japanese FY 2015. The project consists of the satellite observation team, the ground-based network observation team, and the integrated data analysis/simulation team. Besides these research teams, the ERG Science Center has been organized to promote close collaborations of these teams and thereby maximize scientific output. For studies of geospace, where different plasma populations are dynamically coupled with one another via cross-energy and cross-regional couplings, the environment for integrated data analysis is critical for comprehensive understanding using various kinds of data sets including data from physics-based models developed by the GEMSIS (Geospace Environment Modeling System for Integrated Studies) project of the Solar-Terrestrial Environment Laboratory, Nagoya University.

A standard data format and integrated data analysis tools are essential to realize the seamless data analysis environment. The ERG project data after Level-2 will be open to the public in the NASA CDF format. The integrated data analysis tool is developed as a plug-in tool of SPEDAS (Space Physics Environment Data Analysis System) in collaboration with the THEMIS (Time History of Events and Macroscale Interactions during Substorms) and IUGONET (Inter-university Upper atmosphere Global Observation NETwork) teams. It should be noted that other project data, such as THEMIS and Van Allen Probes, can be easily analyzed with SPEDAS if the data are converted to the CDF format. Thus the integrated data analysis using many kinds of data is truly realized through SPEDAS. Other useful tools in the web browser have been developed by the science center: ERGWAT (ERG Web Analysis Tool) is an interactive visualization tool, and CEF (Conjunction Event Finder) is a web-based tool enabling users to easily find conjunctions between satellites and ground-based observations. These tools will contribute to a part of the capacity building activity of the SPeCIMEN (Specification and Prediction of the Coupled Inner-Magnetospheric Environment) project carried out under the VarSITI (Variability of the Sun and Its Terrestrial Impact) program for 2014-2018.

Keywords: ERG, GEMSIS, IUGONET, Integrated analysis tool, SPEDAS, SPeCIMEN