

Geospace Exploration Mission: ERG project

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The ERG (Energization and Radiation in Geospace) is a geospace exploration mission in Japan for the solar maximum and subsequent declining phase of solar cycle 24. The mission is especially focusing on the relativistic electron acceleration mechanism in the context of the cross-energy coupling via wave-particle interactions as well as the dynamics of space storms. The interplay among different plasma/particle populations of the inner magnetosphere; plasmasphere, ring current/plasma sheet, and radiation belts is a key to understand the energetic particle accelerations. The cross-regional coupling such as magnetosphere-ionosphere via FAC and the potential electric fields causes the spontaneous variations of the ambient fields.

The ERG project consists of the satellite observation team, the ground-based observation team, and integrated-data analysis/simulation team, as well as the science working team and the project science team. The SPRINT-B/ERG satellite of ISAS/JAXA will be launched into inner magnetosphere in FY2014-2015. The comprehensive instruments for plasma/particles, field and waves are installed in the SPRING-B/ERG satellite to elucidate the electron acceleration processes. The newly developed system will directly measure the flow of the Poynting flux between particles and waves in the wave-particle interactions. The Japanese ground-network teams including magnetometer, SuperDARN radar, optical imager, VLF, etc. join the ERG project, which are very powerful tool for geospace remote sensing. The integrated data analysis and simulation team is now developing the simulation tools which can be compared directly with the observations. In this talk, we will present the current status of the ERG project and possible collaborations with other geospace satellite missions such as THEMIS and RBSP as well as the ground-based observations and simulation studies.

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