

The Japanese Geospace Satellite Mission: ERG

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It has been known that the energetic particles in the ring current and radiation belts are significantly changed during magnetic storms. The dynamics of such energetic particles are result of coupling processes contributed from particles and plasmas in a wide energy range through field-particle interactions. The study of the energetic particle is an exciting subject for not only space plasma physics on the particle acceleration but also the space weather study. Comprehensive observations of particle, fields and waves are necessary to understand key processes of particle acceleration in Geospace. Besides the physics of the radiation belts, the investigation of ring current and plasmasphere evolution during storm time is an important subject in Geospace, and the measurement of ion species is key observations for those studies. In order to examine the acceleration process of relativistic particles in the inner magnetosphere and the global dynamics of Geospace, the satellite mission; ERG (Energization and Radiation in Geospace) is proposed in Japan. The ERG satellite will be launched into a geosynchronous transfer orbit with small inclination during next solar maximum. The ERG satellite will measure particles in a wide energy range from a few eV to 10 MeV with measurement of ion species. The ERG satellite will also observe fields and waves in a wide frequency range for both electric and magnetic component. The combination studies with ground based networks such as SuperDARN, CPMN magnetometers and optical measurements are planned in the ERG project, and these comprehensive project will provide the chance for the global monitoring of Geospace. It is possible that international collaborative observations with LWS/RBSP (US) and ORBITALS (Canada) during same period, and the ERG project will make an important contribution to the ILWS program. The data of the ERG satellite can be correlated with those of other simultaneously operating satellites in order to provide space-time coverage and will contribute to new understandings of Geospace.