

## Importance of coordinated ground-based, satellite observations

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The ERG (Exploration of energization and Radiation in Geospace) is Japanese geospace exploration project. The project focuses on the geospace dynamics in the context of the cross-energy coupling via wave-particle interactions. The project consists of the satellite observation team, the ground-based network observation team, and integrated-data analysis/simulation team. The ERG satellite will be launched in FY2015. Comprehensive instruments for plasma/particles, and field/waves are installed in the ERG satellite to understand the cross-energy coupling system. In the ERG project, several ground-network teams join; magnetometer networks, radar networks, optical imager networks, etc. Moreover, the modeling/simulations play an important role for the quantitative understanding. In this presentation, we will discuss the importance of coordinated observations toward the ERG era. As an example, we show the cooperative observations between the geospace satellite Van Allen Probes and EISCAT to observe the pulsating aurora. The EISCAT measured the height profile of the electron density that can provide the energy of the precipitating electrons. The Van Allen Probes measured the plasma waves in the magnetosphere, which can be used to investigate the origin of the pulsating aurora. In fact, the GEMSIS-RBW simulation that used the observed plasma waves as an input reproduces characteristics of the observed precipitation. Such coordinated observations including the modeling provide a comprehensive view on cause and result.

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