

## Importance of integrated data analysis in the Sun-Earth system science

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The Sun-Earth system including the solar atmosphere, interplanetary space, magnetosphere, ionosphere, and atmosphere have been studied with various kinds of observations. The satellite and ground-based observations have provided dynamical variations occurred in the Sun-Earth system. In spite of the abundant observational data being distributed recently, overall processes of the variations are not comprehensively understood until the integrated data analysis taking full advantage of using many kinds of the observation data is realized. So far, the integrated data analysis needs several steps to realize truly ubiquitous for the solar-terrestrial physics community. For example, gathering data files archived at different places in the world wide and combining the data in different formats is quite bothersome and could make researchers lose their motivation. However, the recent development of computer network makes it possible to access the online databases via the internet. The common data formats, such as FITS and CDF, have been increasingly popular in the recent data archives, which paves the way for the users to concentrate their efforts into the data analysis itself, without the detail knowledge of the file format. The Solar-Terrestrial Environment Laboratory (STEL), Nagoya University has started the Hinode science center in collaboration with ISAS/JAXA and NAO, and the ERG science center operated by STEL/Nagoya University and ISAS/JAXA. As one of the important functions for the science centers, we have developed and promoted the database with the standard data format and the integrated data analysis system to gain the science output through the integrated data analysis. Besides the observation data, it is essential to understand the phenomena quantitatively in combination with the simulation data, and the science centers have developed data-assimilation techniques and integrated analysis tools combining the simulation data. In this presentation, we show our activities at the Hinode/ERG Science center at Nagoya University and discuss the possible role of the science center as a leading center for the community projects.

Keywords: Sun-Earth System Science, integrated data analysis, ERG, Hinode