

Activity for promoting interdisciplinary studies of solar-terrestrial physics

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Inter-university Upper atmosphere Global Observation NETwork (IUGONET) is a Japanese inter-university project whose goal is to effectively utilize upper atmospheric data, including solar and planetary data, which have been separately archived by Japanese universities and institutes for more than 60 years. This project was established in FY2009 originally by Tohoku University, Nagoya University, Kyoto University, Kyushu University, and National Institute of Polar Research, that have been conducting global ground-based network observations of the upper atmosphere, and several other universities and institutes joined in the project later. We present our activities for sharing the data, facilitating interdisciplinary studies of solar-terrestrial physics, and promoting open science.

We have mainly developed two tools, i.e., an analysis software and a metadata database for the upper atmospheric data. The analysis software is based on Space Physics Environment Data Analysis Software (SPEDAS) that is a grass-roots software written by Interactive Data Language (IDL) for space physics community and supports multiple missions. We have provided a plug-in software for SPEDAS, which allows users to load, visualize, and analyze the IUGONET data with SPEDAS. The metadata database enables users to cross-search various kinds of the upper atmosphere data distributed across the IUGONET members. We have registered the metadata of more than 1,000 dataset made in the Space Physics Archive Search and Extract (SPASE) format to our metadata database. Recently, we newly released IUGONET Type-A, which is a one-stop web service based on the metadata database. The IUGONET Type-A provides services to search data, show information of data (i.e., metadata), display quick-look (QL) plot of data, and plot data interactively with SPEDAS. It is useful for users to find interesting solar-terrestrial phenomena and proceed to more detailed analysis of them by using SPEDAS. In order to explain how to use these IUGONET data and tools, we hold tutorial seminars several times a year in Japan and sometimes foreign countries. In addition, we introduce our various activities for data sharing and open science.

Keywords: upper atmosphere, metadata database, data analysis software, solar terrestrial physics, IUGONET project