Geophysical Research Abstracts
Vol. 15, EGU2013-5324, 2013
EGU General Assembly 2013

Conjugate High Latitude Measurements along the 40 degree magnetic meridian: Autonomous Adaptive Low-Power Instrument Platforms on the East Antarctic Plateau

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We report on the development, testing and deployment of the next generation of autonomous adaptive low-power instrument platforms (AAL-PIP) for use in remote Antarctic locations. Specifically, we are in the process of deploying a dense chain on the east Antarctic plateau along the 40 degree magnetic meridian. These stations are magnetically conjugate to the west coast of Greenland and enable us to investigate solar wind – magnetosphere – ionosphere coupling simultaneously in both polar regions. The Antarctic stations on this chain provide data from fluxgate and induction magnetometers, dual-frequency GPS receivers as well as a variety of engineering and environmental parameters. Two-way communication with the stations is achieved using the Iridium satellite system. This enables acquisition of the data and the ability to change the operational parameters of the data collection programs. The stations are solar powered with battery storage for winter operation. We will discuss the design, technical characteristics, and operation results. This research is supported by the National Science Foundation through a Major Research Infrastructure (MRI) grant ATM-922979 and a research grant ANT0839858.