

## Synthetic Study on Solar-Terrestrial Phenomena with Widespread Observation Network in Antarctica

KADOKURA, Akira<sup>1\*</sup> ; YAMAGISHI, Hisao<sup>1</sup> ; YUKIMATU, Akira sessai<sup>1</sup> ; MIYAOKA, Hiroshi<sup>1</sup> ; OKADA, Masaki<sup>1</sup> ; OGAWA, Yasunobu<sup>1</sup> ; TANAKA, Yoshimasa<sup>1</sup> ; KATAOKA, Ryuho<sup>1</sup> ; EBIHARA, Yusuke<sup>2</sup> ; MOTOKA, Tetsuo<sup>3</sup>

<sup>1</sup>National Institute of Polar Research, <sup>2</sup>Research Institute for Sustainable Humanosphere, Kyoto University, <sup>3</sup>Applied Physics Laboratory, Johns Hopkins University

A large observation network with the SuperDARN radars and other ground-based instruments at manned and unmanned stations is currently developed in the Antarctic area from sub-auroral latitudes to polar cap region and from nightside to dayside hours under international collaboration. Such a widespread circumpolar observation network is very unique and powerful for studies on the phenomena which occur due to the Sun-Earth interaction, e.g., direct entry of solar wind energy and momentum into the cusp and polar cap regions, explosive energy dissipation during substorm-time, highly energetic particle precipitation into the atmosphere during storm-time. Coordinated observations with several low-altitude satellites (e.g., NOAA, DMSP, etc.) and magnetospheric satellites (e.g., THEMIS/ARTEMIS, Geotail, MMS, ERG, etc.) can be also expected. In our presentation, current status and future plan of NIPR-related project will be introduced, and importance of such a widespread ground-based observation network in Antarctica will be explained and discussed.

Keywords: Antarctica, large area, observation network, Solar-Terrestrial Physics

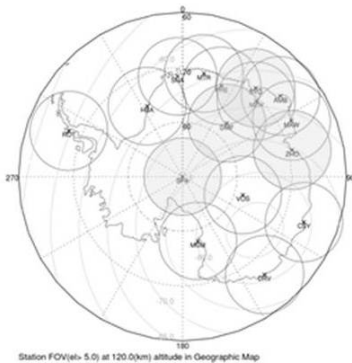


Figure 1. Field of views (FOVs) of Antarctic stations projected at 120 km altitude for elevation above 5 deg. The shaded FOV indicates the station where auroral optical observation is currently carried out. Geomagnetic latitudes are also shown in gray lines.

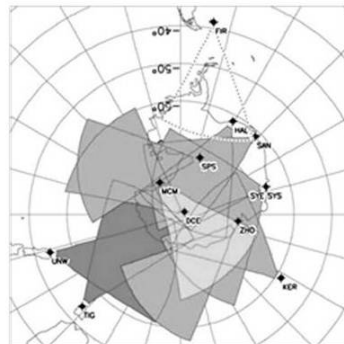


Figure 2. Field of views of the SuperDARN radars in the southern hemisphere in the magnetic coordinates, including two radars at Syowa Station (SYE and SYS).