Introductory Remarks (Part I)

As a major enterprise of the International Magnetospheric Study (IMS) which was conducted in 1976–1978, the coordinated observations were carried out in order to acquire a full understanding of upper atmosphere disturbances in the polar regions. The Japanese IMS projects in Antarctica consisted of the following four items: 1) 1) Ground-based network observations, 2) Satellite data acquisition, 3) Rocket and balloon experiments, and 4) Syowa-Iceland conjugate experiments.

A geomagnetic meridional station array which contained two manned stations and two unmanned observatories was constructed around Syowa Station for observing the space-time variations of auroral phenomena, such as auroras, magnetic variations, cosmic noise absorptions and VLF-ULF emissions. The same kinds of observations were also carried out at Husafell in Iceland which is located near the geomagnetical conjugate point of the southern station array. Satellite data acquisition facilities were built at Syowa Station in 1976 and the data from ISIS-1 and 2 satellites and Japanese polar-orbiting satellite Kyokko have been received on a routine basis since April 1976. Active and successful operations of the above observations have led to the significant information on magnetospheric and ionospheric substorms.

The comprehensive studies of substorm phenomena are required to be made in coordination with the investigations of the data from the other areas as well as the polar regions. For this reason, the results obtained from the middle and low latitudes and from the ATS-satellite, the data of which were not received at Syowa Station, are presented and discussed in Part I in addition to the scientific results of the above-mentioned Antarctic observations.

Takeo HIRASAWA
National Institute of Polar Research