Monitoring of environmental changes in the Antarctic using remote sensing data from Earth observing satellites during the Japanese Antarctic Program IX (2016-2022)

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Data acquisition from Earth observing satellites has been continuously conducting as a monitoring research project of Japanese Antarctic Research Program using a L/S & X-band Terascan receiving system (SeaSpace Co, US) at Syowa station since 1997 to monitor wide area physical conditions on ground/sea surfaces, clouds, troposphere, stratosphere and upper atomosphere in the Antarctic region. These remote sensing data from space are critically important to complement sparse and discrete ground/marine-based observations in the most difficult-to-access area on the planet, with a merit of recurrent data acquisition of same area repeatedly from polar orbiting satellites. In the current Japanese Antarctic Program IX (2016-2022), this monitoring project is decided to continue to collect basic and multi-dimensional data to study environmental changes of ocean, cryosphere and atmosphere in the Antarctic. The following satellite data are now automatically received and processed in near-real time on site.

-NOAA, MetOp, NPP/AVHRR: Surface temparature, Seaice/Cloud distribution
-NOAA, MetOp, NPP/TOVS: Vertical profile of temperature, wind, water vapor in the atmosphere
-TERRA, AQUA, NPP/MODIS: Seaice/Cloud distribution, Snow particle/Impurity distribution
-DMSP/OLS, NPP/VIIRS: Auroral particle precipitation & image

In this paper, we will present an overview, current status and prospect of this project, including several scientific topics with products which have been so far achieved in this project.

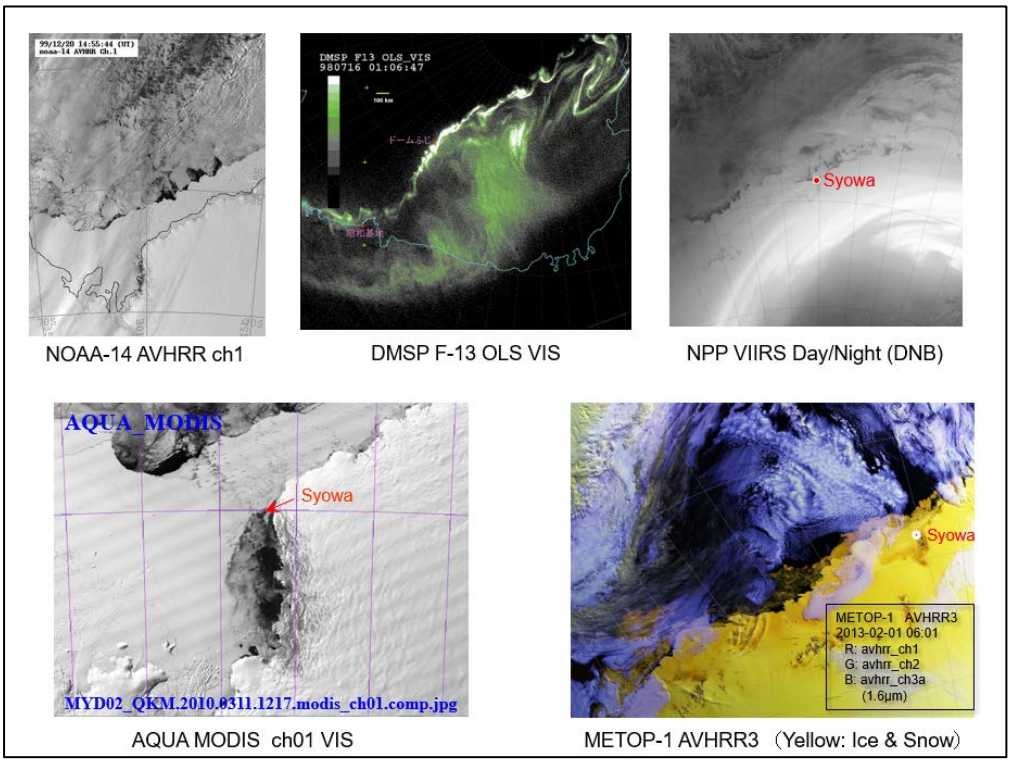

Fig.1 Satellite images received at Syowa station.