

南極昭和基地 (39.6°E, 69°S) における中層・超高層大気観測

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Recent observations and studies of the middle and upper atmosphere at Syowa Station (39.6E, 69S)

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JARE (Japanese Antarctic Research Expedition) has been carrying out a six year prioritized project of the Antarctic research observations since 2010. One of the sub projects is on the precise profiling of Antarctic middle and upper atmosphere from the ground by radio and optical observations at Syowa, in the Antarctic (39.6E, 69.0S). The PANSY (Program of the Antarctic Syowa MST/IS) radar, a Rayleigh/Raman/Resonance scatter lidar, and a millimeter-wave spectrometer are the new instruments which were installed at Syowa and started observations during the project. We report recent studies and observations of this project at Syowa Station. The PANSY radar has almost continuously been observing troposphere/lower stratosphere and mesosphere with the 1/4 of full-array antenna system since winter in 2012. In the last austral summer season in 2014/2015, the full array system have been installed and adjusted and observations with the full system is planned since winter season of 2015. The Rayleigh/Raman lidar has been observing gravity waves in the upper troposphere/stratosphere/mesosphere by temperature perturbations. A resonance scatter lidar system is being developed for mesosphere lower thermosphere studies and experimental observations in Tokyo at mid-latitude have been carried out. The millimeter-wave spectrometer has been observing both ozone and NO, and revealing their seasonal and short-term variabilities related to the solar activities and atmospheric circulations. Sodium airglow imaging data at 90 km altitude since 2002 have extensively been analyzed for clarifying a behavior of short-period gravity waves in the MLT region. A plan in the next six year term (Phase IX) with a full-power operation of PANSY radar will also be introduced in the presentation.