Japan Geoscience Union Meeting 2010
(May 23-28 2010 at Makuhari, Chiba, Japan)

AAS003-03 会場: 301B 時間: 5月27日11:15-11:30

国際宇宙ステーション搭載　超伝導サブミリ波サウンダの観測精度

Observation capability of Superconducting Submillimeter-Wave Limb-Emission Sounder (SMILES)

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A new generation of super-sensitive submillimeter-wave receivers, employing SIS (Superconductor-Insulator- Superconductor) technology, will provide new opportunities for precise remote sensing observation of minor constituents in the atmosphere. SMILES had been launched at 11/09/2009, and installed on the Japanese Experiment Module (JEM) in the International Space Station (ISS). SMILES is a collaboration project between NICT and JAXA. Mission objectives of SMILES are:
i) Space demonstration of super-sensitive SIS mixer and 4-K mechanical cooler technology
ii) Demonstration of super-sensitive global observation of atmospheric minor constituents
JEM/SMILES observes the atmospheric species such as O3, H35Cl, H37Cl, ClO, HO2, BrO, HOCl, HOBr, HNO3, CH3CN, Ozone isotope species, H2O, and Ice Cloud with the precisions in a few to several tens percents. The altitude region of observation is from the upper troposphere to the mesopouse. We introduce you SMILES observation capability with the error analysis, early results of global distributions (L3 data). The early comparison/validation of ozone performed with several satellite data, such as MLS, ACE, OSIRIS and Odin.SMR. The statistical analysis showed the differences were less of 5% between SMILES and other satellites data validated.

キーワード:サブミリ波放射,リム観測,オゾン,上部対流圏下部成層圏,気候変動,中間圏

Keywords: Submillimeter-wave, limb observation, ozone, UT/LS, mesosphere, climate change