

JEM/SMILES Observation Capability

YASUKO KASAI[1]; Philippe Baron[1]; Jana Mendrok[1]; Satoshi Ochiai[1]; Takuki Sano[2]; Toshiyuki Nishibori[2]; Kenichi Kikuchi[2]; Mission Team JEM/SMILES[3]

[1] NICT; [2] JAXA; [3] -

<http://www2.nict.go.jp/y/y222/THz/>

A new generation of sub-millimeter-wave receivers employing sensitive SIS (Superconductor-Insulator- Superconductor) detector technology will provide new opportunities for precise remote sensing measurements of minor constituents in atmosphere.

Superconductive Submillimeter-Wave Limb-Emission Sounder (SMILES) was designed to be onboard the Japanese Experiment Module (JEM) on the International Space Station (ISS) as a collaboration project of Japan Aerospace Exploration Agency (JAXA) and National Institute of Information and Communications Technology (NICT). SMILES scheduled to launch in September 2009 by the H-II Transfer Vehicle (HTV). Mission Objectives are: i) Space demonstration of superconductive mixer and 4-K mechanical cooler for the submillimeter limbemission sounding, and ii) global observations of atmospheric minor constituents. JEM/SMILES will allow to observe the atmospheric species such as O₃, H³⁵Cl, H³⁷Cl, ClO, CH₃CN, HNO₃, HOCl, HO₂, BrO, H₂O₂, ¹⁷O₂, ¹⁸O₂, and Ozone isotope species with the precisions in a few to several tens percents from upper troposphere to the mesosphere. We have estimated the observation capabilities of JEM/SMILES. This new technology may allow us to shade new light the open issue in atmospheric science.

