Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

AAS22-P06 Room:Convention Hall Time:May 20 18:15-19:30

Validation of ozone and chlorine compounds data observed by SMILES

Koji Imai[1], Makoto Suzuki[1], Takuki Sano[1*], Chihiro Mitsuda[2], Naohiro Manago[3], Yoko Naito[4], Hideharu Akiyoshi[5], Masato Shiotani[6]

[1]Japan Aerospace Exploration Agency, [2]Fujitsu FIP Corporation, [3]Center for Environmental Remote Sensing, Chiba University, [4]Graduate School of Science, Kyoto University, [5]National Institute for Environmental Studies, [6]Research Institute for Sustainable Humanosphere

The Superconducting Sub-millimeter Limb-emission Sounder (SMILES) onboard Japan Experiment Module (JEM) of the International Space Station (ISS) have observed atmospheric minor constituents related with ozone chemistry, such as O_3, HCl, ClO, HO_2, HOCl and BrO, with high sensitivity. Especially, O_3, HCl and ClO can be detected with altitude up to the mesosphere (around 80km). In comparison with the stratosphere, ”in situ” photochemistry controls concentration of minor constituents, so that we can examine current understanding of whole atmospheric chemical reactions by the direct comparison with SMILES observational data and results from numerical model calculations. In this study, we report the characteristics of ozone and chlorine compounds in stratosphere and mesosphere observed with SMILES instrument. Some results of comparative validation with past satellite data and numerical model calculations, and their characterisics of diurnal variation are also presented.

Keywords: stratosphere, mesosphere, diurnal variation, ozone, limb sounding, submillimeter wave