

SMILES によるオゾン及び塩素化合物観測データの検証 Validation of ozone and chlorine compounds data observed by SMILES

今井 弘二¹, 鈴木 睦¹, 佐野 琢己^{1*}, 光田 千紘², 眞子 直弘³, 内藤 陽子⁴, 秋吉 英治⁵, 塩谷 雅人⁶

Koji Imai¹, Makoto Suzuki¹, Takuki Sano^{1*}, Chihiro Mitsuda², Naohiro Manago³, Yoko Naito⁴, Hideharu Akiyoshi⁵, Masato Shiotani⁶

¹ 宇宙航空研究開発機構, ² 富士通エフ・アイ・ピー株式会社, ³ 千葉大学環境リモートセンシング研究センター, ⁴ 京都大学大学院理学研究科, ⁵ 国立環境研究所, ⁶ 京大大学生存圏研究所

¹Japan Aerospace Exploration Agency, ²Fujitsu FIP Corporation, ³Center for Environmental Remote Sensing, Chiba University, ⁴Graduate School of Science, Kyoto University, ⁵National Institute for Environmental Studies, ⁶Research 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 O₃, HCl, ClO, HO₂, HOCl and BrO, with high sensitivity. Especially, O₃, 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 characteristics of diurnal variation are also presented.

キーワード: 成層圏, 中間圏, 日変化, オゾン, リムサウンディング, サブミリ波

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