



## **Diurnal variation climatology of short-lived atmospheric compositions (ClO, BrO, HO<sub>2</sub> and HOCl) derived from SMILES NICT data**

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We present a diurnal variation climatology for short-lived atmospheric compositions, such as ClO, BrO, HO<sub>2</sub> and HOCl, as well as for longer life time species, like O<sub>3</sub> and HCl from observations of unprecedented sensitivity with the Superconducting Submillimeter wave Limb-Emission Sounder (SMILES), which is installed on the Japanese Experiment Module (JEM) at the International Space Station (ISS). With its non sun synchronous orbit, SMILES measurements comprise observations at all local times. The target altitude range is between lower stratosphere and mesopause. Differences in diurnal variation chemistry of strato-, and mesospheric BrO and ClO of the diurnal climatology are presented.

The data employed is produced by the SMILES level 2 retrieval algorithm version 2.1.5 at the National Institute of Information and Communications Technology (NICT). The SMILES climatology data sets are available via the SMILES data distribution homepage in NICT at [https://smiles-p6.nict.go.jp/products/research\\_latitude-longitude.jsf](https://smiles-p6.nict.go.jp/products/research_latitude-longitude.jsf)