

## 4.077 Analysis of the carbon dioxide in the upper troposphere and lower stratosphere by the data from GOSAT TANSO-FTS TIR.

Early Career Scientist

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Abstract:

It is said that the carbon dioxide (CO<sub>2</sub>), which is a major greenhouse gas, causes the stratosphere cool. While, the concentration of CO<sub>2</sub> in the stratosphere is not well understood, nor are the exchange processes between the upper troposphere and lower stratosphere (UT/LS ; 300-100hPa). The present study investigated the seasonal and inter-annual variations of CO<sub>2</sub> to understand the concentration and exchange process between UT and LS. Analysis of seasonal and inter-annual variations in UT/LS was conducted by using vertical profile data of CO<sub>2</sub> derived from thermal infrared (TIR) region (Band 4: 5.5 - 14.3 μm) of the Thermal And Near-infrared Sensor for carbon Observation (TANSO) - Fourier Transform spectrometer (FTS) on board Greenhouse gas Observing SATellite (GOSAT). The data used for the analysis were Level 2 (version 01.xx ; latest edition), the analysis period is four years from January 2010 to December 2013. We adapted the correction values derived from Saitoh et al. [AMT, 2016] which validated the TIR CO<sub>2</sub> profiles at UT/LS region with the Comprehensive Observation Network for TRace gases by AirLiner (CONTRAIL). Detailed results of the seasonal and inter-annual variations of CO<sub>2</sub> in UT/LS are shown in the presentation.