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Poster
GOSAT-GW (Global Observing SATellite for Greenhouse gases and Water cycle) is the third satellite of the Japanese greenhouse gases observing satellite series and will be launched in Japanese fiscal year 2024. GOSAT-GW will carry two mission instruments: TANSO-3 (Total Anthropogenic and Natural Emission Mapping Spectrometer-3) and AMSR3 (Advanced Microwave Scanning Radiometer 3). TANSO-3 is an imaging grating spectrometer for measuring backscattered sunlight with three spectral bands at 0.45, 0.76, and 1.6 µm and has two observation modes (Wide Mode with ~900 km swath and 10 km footprint size and Focus Mode with observation scenes of 90 km x 90 km observation area and less than 3 km footprint size), allowing observations of carbon dioxide (CO2), methane (CH4), and nitrogen dioxide (NO2) at local to global scales. The NO2 measurements will help to identify anthropogenic CO2 emission sources and quantify the CO2 emissions.
The TANSO-3 Level 2 products will be validated primarily using data from global ground-based observation networks. The TCCON (Total Carbon Column Observing Network) and COCCON (COllaborative Carbon Column Observing Network) data will be used for validation of column averaged dry-air mole fractions of CO2 and CH4 (Xgas), and the PGN (Pandonia Global Network) and MAX-DOAS (Multi AXis Differential Optical Absorption Spectroscopy) data will be used for tropospheric NO2 columns. Air-borne in-situ measurements, satellite measurements (GOSAT, OCO, TROPOMI, etc.), and simulated concentration fields from atmospheric transport models will complement the ground-based data. For the validation of the Focus Mode data in urban areas, it is crucial to evaluate small-scale spatial gradients in Xgas and NO2 columns. We are developing urban operational observing sites in the Tokyo metropolitan area, Japan, and its surroundings by deploying EM27/SUN FTS (COCCON instrument) and Pandora spectrometer (PGN instrument) close to each other. These observations will be complemented by mobile ship-based EM27/SUN and DOAS observations along Japan’s east coast.
In this presentation, we will show the results of our preliminary investigations using Xgas and NO2 column data from the ground-based observation networks and other satellite observations and discuss how to effectively implement the validation of the TANSO-3 Level 2 products.
Meeting homepage
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