The GOSAT-GW greenhouse gas observing mission: Updates

Hiroshi
Tanimoto
National Institute for Environmental Studies
Tsuneo Matsunaga, NIES
Takafumi Sugita, NIES
Hisashi Yashiro, NIES
Yu Someya, NIES
Tamaki Fujinawa, NIES
Hirofumi Ohyama, NIES
Satoshi Inomata, NIES
NIES GOSAT-GW Project Team

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As part of the GOSAT-series greenhouse gas observing satellites, the Global Observing SATellite for Greenhouse gases and Water cycle (GOSAT-GW) is to be launched in 2024-2025. The GOSAT-GW satellite will make the first global, space-based observations of the atmospheric carbon dioxide (CO2), methane (CH4) and nitrogen dioxide (NO2) in the Earth's atmosphere at a horizontal/spatial resolution of 1–3 km by the single satellite platform. It will carry two sensors, one of which is TANSO-3, a high-resolution grating spectrometer designed to measure reflected sunlight in the 0.45-um NO2 band, the 0.76-um O2 A-band and the CO2 band at 1.61 um from visible to short-wave infrared wavelength regions to retrieve the column-averaged CO2 and CH4 dry air mole fraction (XCO2 and XCH4, respectively) and vertical column density of tropospheric NO2. The satellite will fly in a 13:30 sun-synchronous orbit with a 3-day ground-track repeat time, achieving a global coverage within 3 days. The objectives of the GOSAT-GW's GHG observing mission include (1) monitoring of whole atmosphere global-mean concentrations of GHGs, (2) verification of national (or country-specific) anthropogenic emissions inventory of GHGs, and (3) detection of GHGs emissions from large emission sources, such as megacities, power plants, and permafrost. A comprehensive validation exercise will be made to ensure that the products' quality meets with the precision needed to quantify the GHG sources and sinks on regional- to national/city-scales, and identify the anthropogenic emissions from large point sources. With a nominal lifetime of 7 years, the GOSAT-GW will provide space-based constraints on the anthropogenic GHG emissions, contributing to the mitigation of climate change, in particular, supporting the Global Stocktake (GST) mechanism, a key element in the Paris Agreement.

Presentation file

Tanimoto-Hiroshi.pdf

Meeting homepage

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