

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

Oral

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- μ m NO₂ band, the 0.76- μ m O₂ A-band and the CO₂ band at 1.61 μ m 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

[IWGGMS-20 Workshop](#)

[Download to PDF](#)