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Greenhouse gases observation from space by GOSAT series satellites since 2009

Akihiko KUZE, Kei SHIOMI, Hiroshi SUTO

GOSAT and GOSAT-2, Japan
Aerospace Exploration Agency

JAXA has been operating the GOSAT and GOSAT-2 satellites, which have been measuring carbon dioxide (CO2) and methane (CH4) for more than a decade. Over this period, we have accumulated data on radiance spectra of reflected sunlight with two linear polarizations and thermal emissions. Utilizing the multiplex advantages of the Fourier Transform Spectrometer (FTS), the EORC L2 algorithm retrieves the partial column densities of lower- and upper- tropospheric CO2 and CH4, at roughly 0- 4 km and 4- 12 km, respectively. Thirteen years of total and partial columns data on 2, 2, and 11 vertical layers of CO2, CH4 and water vapor (H2O), respectively, and solar-induced chlorophyll fluorescence (SIF) are available at

https://www.eorc.jaxa.jp/GOSAT/GPCG/download_v2/.

We have examined the lower-tropospheric CO2 products from GOSAT target observations to estimate emissions over global megacities.