



Global column abundances of carbon dioxide and methane retrieved from Greenhouse gases Observing SATellite (GOSAT) observation

Yukio Yoshida, Nawo Eguchi, Yoshifumi Ota, Tomoaki Tanaka, Nobuyuki Kikuchi, Isamu Morino, Osamu Uchino, Shamil Maksyutov, Hiroshi Watanabe, and Tatsuya Yokota

National Institute for Environmental Studies, Tsukuba, JAPAN (yoshida.yukio@nies.go.jp)

The Greenhouse gases Observing SATellite (GOSAT) was launched on January 23, 2009. The main target of the GOSAT observation is obtaining global distribution of carbon dioxide and methane abundances. Thermal And Near infrared Sensor for carbon Observation-Fourier Transform Spectrometer (TANSO-FTS) detects the signal of reflected solar light on the earth's surface as well as that of thermal emitted radiance from the surface and the atmosphere. TANSO-Cloud and Aerosol Imager (TANSO-CAI) is a radiometer to obtain the information on cloud and aerosols that contaminate the FTS signals.

From the middle of April 2009 after the initial check-out of the satellite and the instruments, continuous observation by TANSO-FTS and CAI has started. Retrievals of carbon dioxide and methane column abundances from SWIR spectra for cloud-free scenes are the current target. Optically thick clouds within the field of view of TANSO-FTS (approximately 10 km diameter) are detected using the TANSO-CAI radiances and optically thin cirrus using the solar reflected spectrum in the strong water vapor absorption band in the TANSO-FTS 2.0 μm band. We applied an optimal estimation method to the selected cloud-free scene data for retrieving column abundances of carbon dioxide and methane. At present, retrieved column abundances seem to be underestimated, but global column-averaged concentration patterns and seasonal variabilities agreed with the current knowledge. The retrieval algorithm, known issues, and improvement plan will be also presented.