Geophysical Research Abstracts
Vol. 14, EGU2012-1463, 2012
EGU General Assembly 2012
© Author(s) 2012

Advanced validation of the GOSAT-observed CO_2 and CH4 at TCCON and prioritized observation sites

O. Uchino (1), I. Morino (1), Y. Yoshida (1), N. Kikuchi (1), M. Inoue (1), K. Nakamae (1), T. Yokota (1), D. Wunch (2), P. Wennberg (2), G. Toon (3), J. Notholt (4), V. Sherlock (5), B. Liley (5), D. Griffith (6), S. Kawakami (7), H. Ohyama (7), T. Nagai (8), T. Sakai (8), K. Arai (9), and H. Okumura (9)

(1) National Institute for Environmental Studies, Ibaraki, Japan (uchino.osamu@nies.go.jp), (2) California Institute of Technology, Pasadena, California, USA, (3) Jet Propulsion Laboratory, Pasadena, California, USA, (4) University of Bremen, Bremen, Germany, (5) National Institute of Water and Atmospheric Research, Lauder, Central Otago, New Zealand, (6) University of Wollongong, Wollongong, New South Wales, Australia, (7) Japan Aerospace Exploration Agency, Tsukuba, Ibaraki, Japan, (8) Meteorological Research Institute, Tsukuba, Ibaraki, Japan, (9) Saga University, Honjo, Saga, Japan

Preliminary validation of the Greenhouse gases Observation SATellite (GOSAT) products of the column-averaged dry-air mole fraction of carbon dioxide (XCO_2) and methane (XCH4) released in August 2010 (version 01.xx) was made with the Total Carbon Column Observing Network (TCCON) data. The standard deviation of the GOSAT XCO_2 and XCH4 is about 1 % (1σ) after correcting the negative biases of XCO_2 and XCH4 by 8.85 ppm and 20.4 ppb, respectively. Therefore we investigated the influence of aerosols and thin cirrus clouds on XCO_2 by lidar and sky radiometer at Tsukuba TCCON site, and found that it was important to take into account vertical profiles of aerosols and thin cirrus clouds and to use more adequate solar irradiance database in order to improve the GOSAT XCO_2 data.

Based on these results, the National Institute for Environmental Studies (NIES) algorithm team is applying a new retrieval algorithm to the new GOSAT L1B spectral data (version 140) provided by the Japan Aerospace Exploration Agency (JAXA). We will compare the new products of XCO_2 and XCH4 (version 02.00) with those data obtained from TCCON and the prioritized observation sites of Tsukuba (36.051N, 140.122E) and Saga (33.241N, 130.288E) in Japan and Lauder (45.038S, 169.684E) in New Zealand which have respectively a ground-based high-resolution Fourier Transform Spectrometer (FTS), lidar and sky radiometer. The new GOSAT products of XCO_2 and XCH4 are expected to be improved compared with the version 01.xx products.