

Comparison of GOSAT XCH₄ and airborne measurements over Siberia

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The Greenhouse Gases Observing Satellite (GOSAT) was launched on 23 January 2009. In order to apply the GOSAT products to estimate CH₄ budget by inverse analysis, we need to confirm the quality of the GOSAT CH₄ data carefully. The result of validation of GOSAT XCH₄ (version 02.xx) by comparing them with TCCON XCH₄ is reported in “Summary of NIES the GOSAT Level 2 Data Product Validation Activity” as in Morino et al., [ACP,2011]; GOSAT XCH₄ is biased low by 7.0 ± 12.0 ppb ($0.4 \pm 0.7\%$). However, all TCCON sites are located in background regions, and validation of GOSAT data over the source regions is insufficient. Under the NIES program, airborne measurements have been carried out in Surgut and Novosibirsk, Siberia, since 1993 [Umezawa et al., GBC, 2012]. We apply the aircraft measurements over Siberia to assess the quality of the GOSAT XCH₄ dataset obtained from SWIR band. Conversion of the CH₄ profiles observed by aircraft into XCH₄ includes some uncertainties such as temperature profiles and CH₄ distribution in the stratosphere. In this presentation we report the detailed result of sensitivity analysis for those uncertainties.

Research Topic: Application

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