GOSAT Project for Global Carbon Observation and Carbon Flux Estimation

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Abstract: The Greenhouse gases Observing SATellite (GOSAT) was launched on January 23, 2009 to accomplish the following objectives: (i) obtaining detailed views of the global distribution and variation of carbon dioxide (CO_2) and methane (CH_4) and complementing the geographical and temporal coverage of the existing greenhouse gas monitoring networks, (ii) improving the monthly source-sink quantification with the space-based observational dataset, and (iii) developing and advancing the space-based greenhouse gas observation technologies for future missions. The GOSAT Project is a joint effort being promoted by Japan Aerospace Exploration Agency, National Institute for Environmental Studies, and the Ministry of the Environment, Japan. Over the past four-and-a-half years since the satellite launch, numerous advancements were made in carrying out these mission objectives. We summarize the progresses by GOSAT made so far especially around Asian regions for accomplishing the objectives. In particular, we will highlight the quality of the GOSAT TANSO-FTS SWIR Level 2 column concentrations (XCO_2 and XCH_4), as well as the latest result of the CO_2 source-sink estimation based on the Level 2 column concentrations, which is disseminated to the general public as the Level 4 data product for the period between June 2009 and May 2010. Data from the other GOSAT sensor TANSO-CAI, which is an imager, has been used to estimate Normalized Difference Vegetation Index (NDVI), to detect advection of plume by volcano eruption and/or biomass burning, and to catch distribution and spread of the Asian dust and aerosols from space. Some examples on these images will be also shown in the presentation.

Keywords: GOSAT, satellite, earth observation, greenhouse gases, carbon flux