

## Contribution of GOSAT Project to global carbon observation and carbon flux estimation

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The GOSAT (Greenhouse gases Observing SATellite) Project is a joint effort being promoted by Japan Aerospace Exploration Agency, National Institute for Environmental Studies, and the Japanese Ministry of the Environment. The primary objective of the Project is to observe the global distributions of the two major greenhouse gases and their temporal variations. Nearly four-years-worth of observational data was collected with the satellite by now, and the concentration data, retrieved from the GOSAT observational data, were found to effectively fill out gaps in the distribution of CO<sub>2</sub> and CH<sub>4</sub> data collected in ground-based monitoring networks. The latest version of the Level 2 CO<sub>2</sub> and CH<sub>4</sub> concentration data products (version 02.\*\*\*) are now publicly available. Through data validation activities, the uncertainties of both the CO<sub>2</sub> and CH<sub>4</sub> concentrations were now found to be less than 1%, which is smaller than originally targeted. Seasonal variations and annual growth trends were found from the four-year-long datasets; the data will be further analyzed together with more data to be accumulated. The concentration data are also being utilized for estimating regional CO<sub>2</sub> fluxes. The result of the estimation for the period between June 2009 and May 2010 was recently released to the public in December 2012 as the Level 4A data product. Efforts in improving the quality of these data products, which are the results from one of the "top-down" approaches to reveal global carbon cycle, will be continued. We herein summarize the progress of the Project.

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