

## Six-year-long GHG observation by GOSAT and three-year carbon flux estimation

YOKOTA, Tatsuya<sup>1\*</sup>; KIKUCHI, Nobuhiro<sup>1</sup>; YOSHIDA, Yukio<sup>1</sup>; INOUE, Makoto<sup>1</sup>; MORINO, Isamu<sup>1</sup>; UCHINO, Osamu<sup>1</sup>; KIM, Heon-sook<sup>1</sup>; TAKAGI, Hiroshi<sup>1</sup>; SAITO, Makoto<sup>1</sup>; MAKSYUTOV, Shamil<sup>1</sup>; KAWAZOE, Fumie<sup>1</sup>; AJIRO, Masataka<sup>1</sup>

<sup>1</sup>CGER, National Institute for Environmental Studies

The Greenhouse gases Observing SATellite (GOSAT) has operated for about six years since January 23, 2009. During the past six years, all of the GOSAT standard data products were opened to general users, and many of them went through several updates. From the spectral data that GOSAT collected, the concentrations of major greenhouse gases (GHGs), namely carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>), were retrieved, and their precisions (excluding biases) are now about 0.5% and 0.7%, respectively. These concentration data were used to estimate the monthly surface fluxes of CO<sub>2</sub> and CH<sub>4</sub> on sub-continental and ocean-basin scales in the first three years of GOSAT operation (2009 - 2012). The concentration data were also utilized to monitor GHGs' temporal and spatial changes. Various reports on the results of GOSAT data analysis have appeared in peer-reviewed journals so far.

In 2014, GOSAT went through some technical difficulties in the functioning of its solar paddle and sensor pointing mechanism, and the characteristics of the Fourier transform spectrometer onboard were therefore altered to some degree. The influence of this alteration on the retrieved concentrations has been detected.

In this presentation, we will summarize the six-year-long GHG observation by GOSAT and present the global distributions and variations of the GHG concentrations and the surface flux estimates. We will explain the changes in the characteristics of the GOSAT data products after June 2014 owing to the influence of the technical difficulties. Also, we will touch on the current status of researches conducted within the framework of the GOSAT Research Announcement.

Keywords: greenhouse gases, carbon dioxide, methane, column concentration, flux, GOSAT