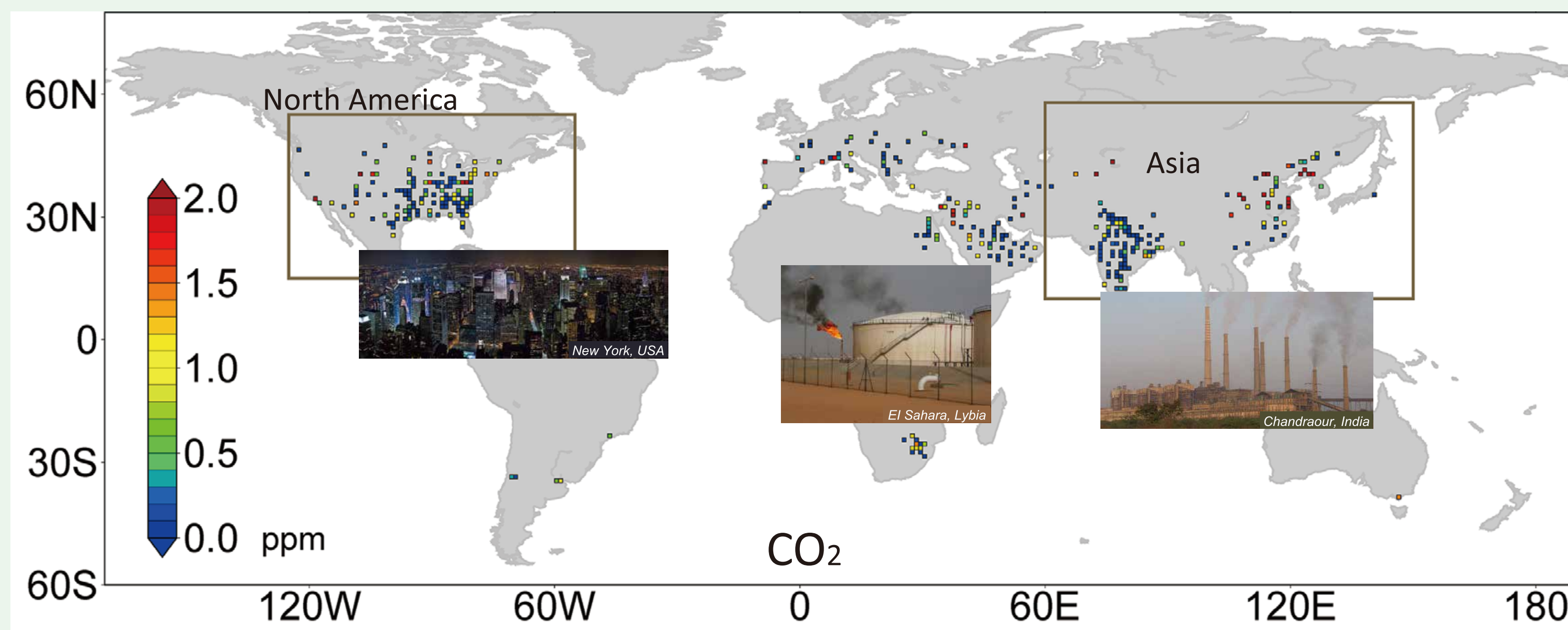


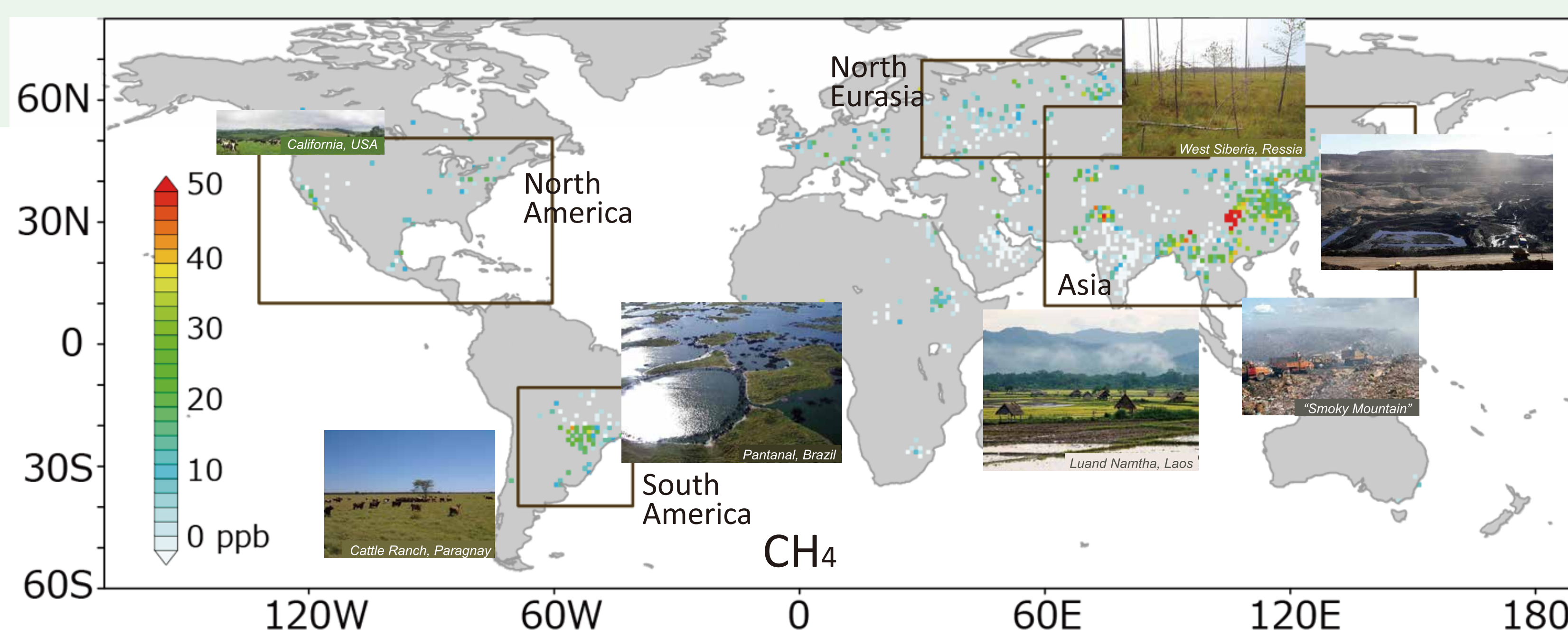
GLOBAL GHG OBSERVATION from SPACE



GOSAT to Detect Anthropogenic CO₂ and CH₄ Emissions



CO₂ concentration was analyzed for 5.5 years from June 2009 to December 2014, CH₄ for 3.5 years from June 2009 to December 2012 based on GOSAT data. CO₂ increases in mega-cities and energy industry areas, and CH₄ in densely populated, intense farming, or oil/natural gas producing areas, have the tendency for higher concentrations than those in their surroundings. The study demonstrates the potential utility of monitoring anthropogenic emissions** of these greenhouse gases from space.

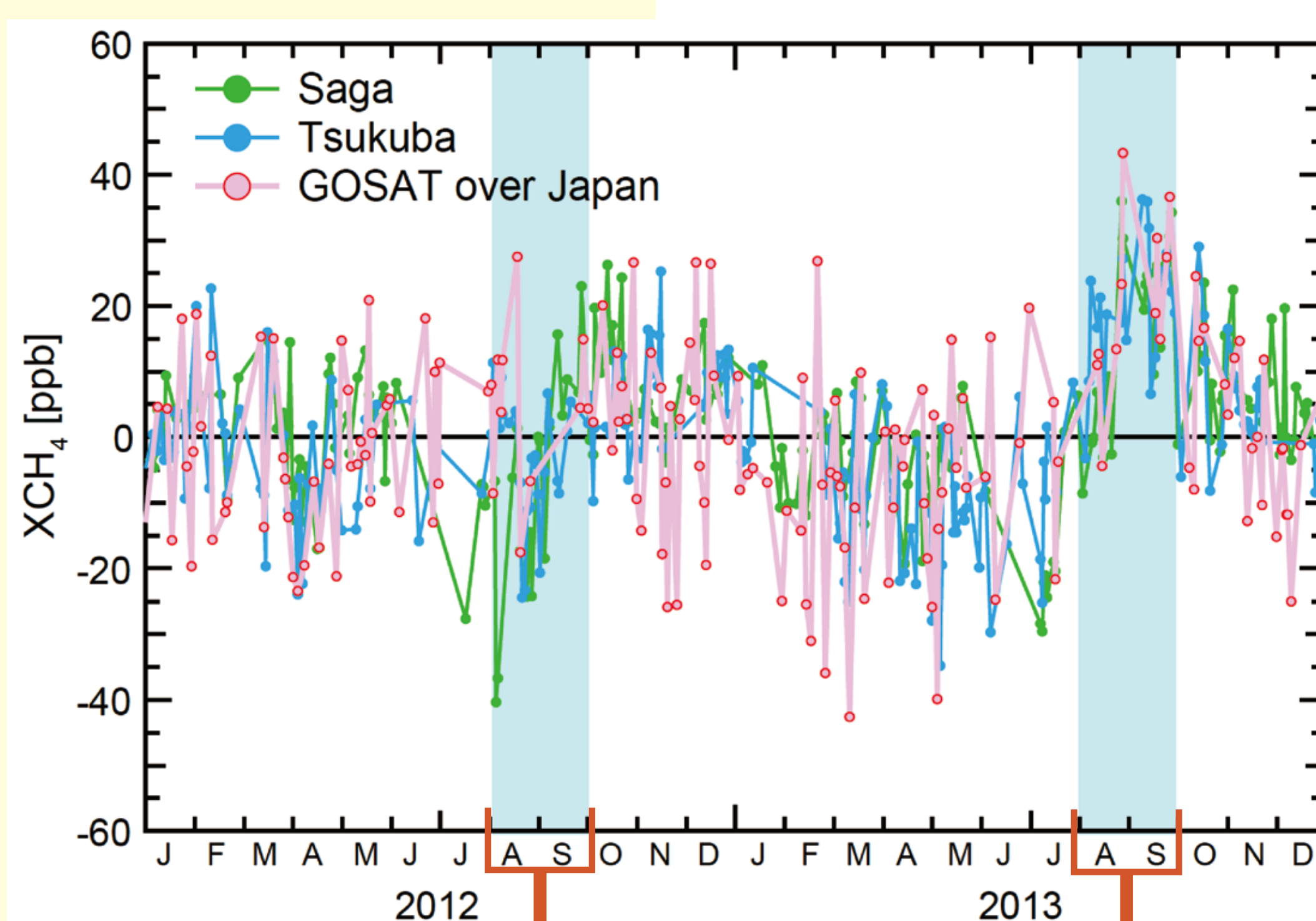


** Higher CO₂ concentration is found at China: Zhangjiakou, Anshan, Harbin, and Tianjin; India: Kolkata; Eastern part of Uzbekistan; Southern edge of Kazakhstan; Eastern area of Kyrgyzstan; Northern edge of Tajikistan; Northwestern part of Saudi Arabia; Jordan; US: Pittsburg, Los Angeles; Mexico: Acapulco. Higher CH₄ concentration is found at China: Chengdu, Chongqing; India: Kolkata, Meghalaya; Bangladesh: Dacca; Pakistan: Lahore; US: Pittsburg, New York, Los Angeles; Brazil: Campo Cerrado, Pantanal; Russia: Surgut.

* Photo by David Iff; Javier Blas; Sndhansha; Ninabalkar; Cgoodwin; NASA; Alice Yo; Peter V; Takas Bahay.

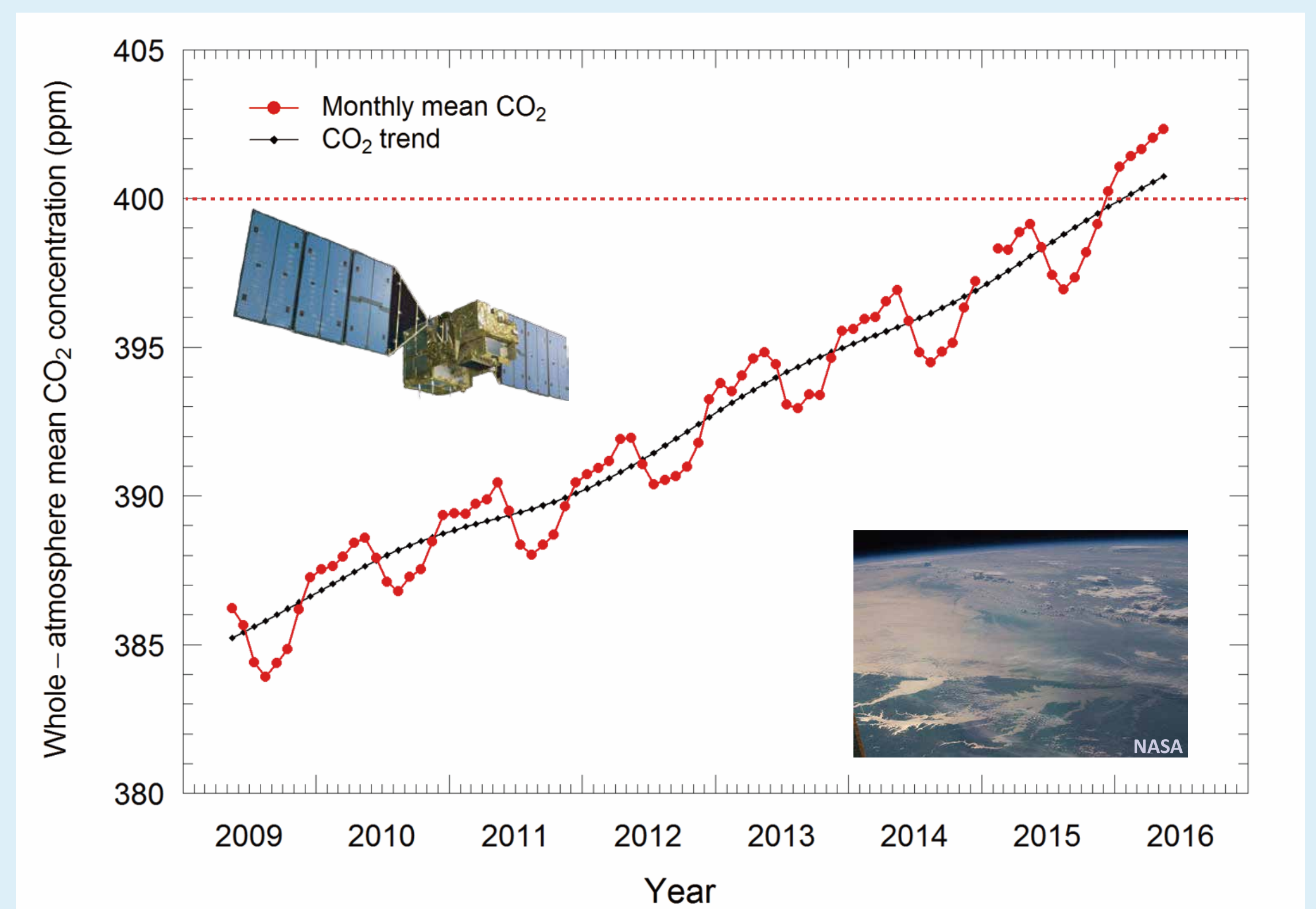
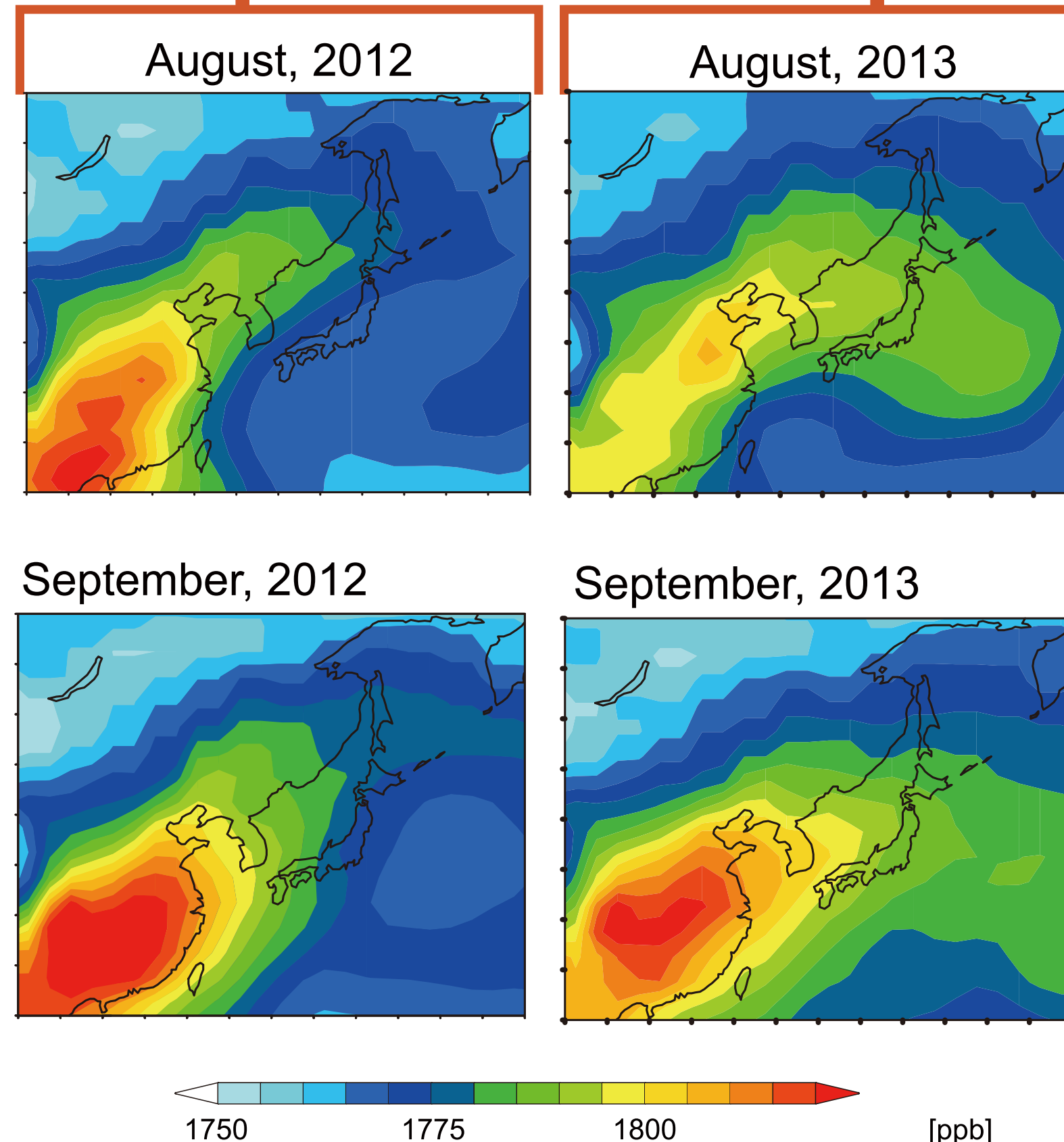
Whole-atmosphere Monthly Mean CO₂ Concentration by GOSAT

Large XCH₄ anomaly in summer 2013 over Northeast Asia observed by GOSAT



In the Summer of 2013, GOSAT detected large XCH₄ anomaly over Japan. The extreme XCH₄ event is attributed to the anomalous atmosphere pressure pattern that transported a CH₄-rich air from strong CH₄ source areas in East China. Our analysis demonstrates GOSAT is capable of monitoring an XCH₄ event on a synoptic scale.

Ishizawa et al. Atmos. Chem. Phys., 16,9149-9161,2016



The whole-atmosphere mean CO₂ concentration was calculated based on GOSAT data, covering from the surface to the top of the atmosphere (70km above the surface), for more than 7 years after May 2009. Monthly mean CO₂ concentration reached 402.3 ppm in May 2016, and CO₂ trend* reached 400.2ppm in February 2016 (seasonal fluctuations subtracted).

* The values constituting the black line show the average of 1 – 2 years.