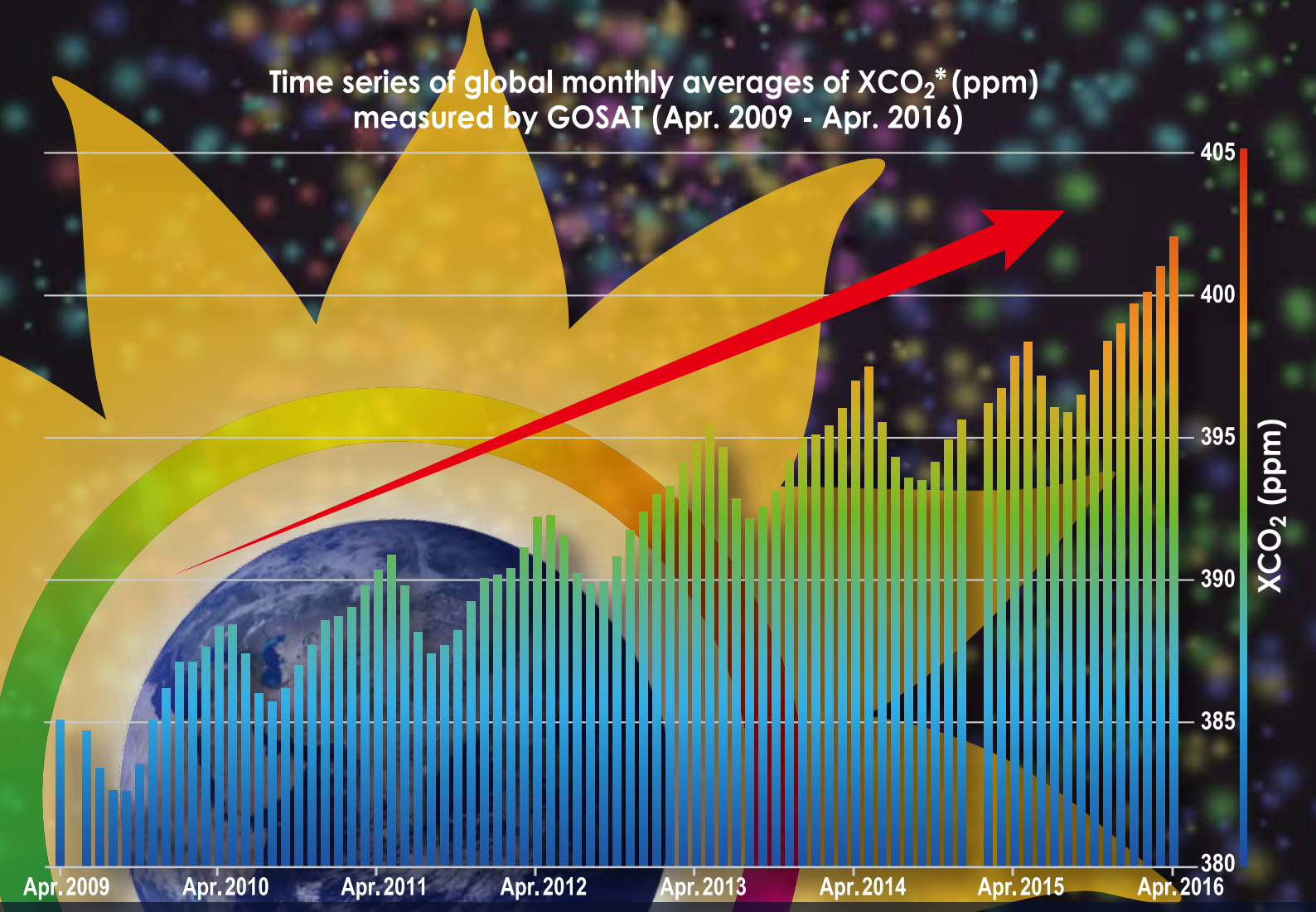
# GOSAT-2

## PROJECT

AT THE NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES




# Measuring Greenhouse Gases from Space

MOE / JAXA / NIES

* $XCO_2$ means column-averaged volume mixing ratio of atmospheric $CO_2$.
The graph is created based on the observational data (FTS SWIR L2 products V02.21+V02.31+V02.40+V02.50+V02.60) acquired fromGOSAT.. The known bias from -1ppm to -1.5ppm is not corrected.

GOSAT-2, the second Greenhouse gases Observing SATellite (GOSAT), is scheduled for launch in 2018.

GOSAT-2 will carry two instruments for observation of the Earth - the FTS-2 (Fourier Transform Spectrometer 2) and the CAI -2 (Cloud and Aerosol Imager 2).

FTS-2 SWIR data will be used to estimate global distributions of greenhouse gases such as $CO_2$ and $CH_4$. $XCO_2$ and $XCH_4$ data derived from FTS-2 will be used to estimate monthly fluxes of these gases.

# GOSAT-2 from 2018


Artist rendition of GOSAT-2 in space

GOSAT-2 will fly in a sun-synchronous orbit, typically at an altitude of 613 km with a 6-day repeat cycle. A new Intelligent Pointing camera system will be used to identify cloud-free locations for FTS-2 observation. The spacecraft will be built with a planned operational life of 5 years.

## Requirements for the GOSAT-2 instruments

### Requirements for the FTS-2

| | Band 1 | Band 2 | Band 3 | Band 4 | Band 5 |
|---|---|---|---|---|---|
| Targeted gases | $CO_2$, $CH_4$, $O_2$, $O_3$, $H_2O$, CO | | | | |
| Spectral coverage ($cm^{-1}$) | 12,950～13,250 | 5,900～6,400 | 4,200～5,200 | 1,188～1,800 | 700～1,188 |
| Spectral resolution ($cm^{-1}$) | 0.2 | | | | |
| Polarized light observation | Performed | | | Not Performed | |
| Field of view at nadir (km) | 9.7(Spacecraft altitude = 613km) | | | | |

### Requirements for the CAI-2

| | Band 1 | Band 2 | Band 3 | Band 4 | Band 5 | Band 6 | Band 7 | Band 8 | Band 9 | Band 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Targeted objects | Clouds and Aerosols | | | | | | | | | |
| Centre wavelength (μm) | 0.340 | 0.443 | 0.674 | 0.869 | 1.630 | 0.380 | 0.550 | 0.674 | 0.869 | 1.630 |
| Tilt angle (deg.) | +20 | | | | | -20 | | | | |
| Spatial resolution at nadir (km) | 0.46 | | | | 0.92 | 0.46 | | | | 0.92 |
| Swath (km) | 920 | | | | | | | | | |

* The instrument requirements shown here are valid as of May 2014. They may be revised without prior notice.

The GOSAT-2 Joint Project is promoted by the Ministry of the Environment (MOE), the Japan Space Exploration Agency (JAXA), and the National institute for Environmental Studies (NIES).

MOE is mainly responsible for the application of GOSAT-2 data to environmental policy.

JAXA is principally in charge of the design, development, test, launch, and operation of GOSAT-2 spacecraft, and the calibration and Level 1 processing of GOSAT-2 data.

The major responsibilities of NIES is the Level 2 to 4 processing, validation, and distribution of GOSAT-2 data.

## International Collaborations

GOSAT and GOSAT-2 are promoted by means of various international collaborative initiatives. Under the GOSAT RA (Research Announcement) initiative, over 100 scientists from more than 20 countries worldwide are engaged in scientific research which utilizes GOSAT data. The international collaborative initiatives among European, the U. S. and Chinese satellites and GOSAT/GOSAT-2 will be strengthened to ensure long-term and continuous measurement of greenhouse gases from space.

The 7th GOSAT Research Announcement (RA) Principle Investigator (PI) Meeting
June 15 (Mon), 2015, Caltech, Pasadena, USA

For inquiries relating to the distribution of the GOSAT data products please refer to: **http://data.gosat.nies.go.jp/**

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