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Ministry of the Environment

The GOSAT series and the Use and Expectations for Environmental Policy

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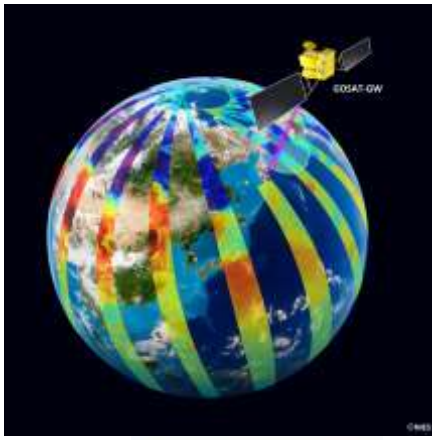
TOPICS

1. Introduction to GOSAT series
2. Utilization of GOSAT series as climate change countermeasures
3. Application to Environmental Policy
4. Private sector applications
5. Activation of the distribution of GOSAT series data
6. Summary

Introduction to GOSAT Series

Overview

- GOSAT series have been continuously monitoring global GHGs (CO2, methane) since 2009.
- GOSAT series delivers long-term, global GHG data to the world without compensation.
- More than 600 papers have been published, and 24 papers are referenced in the IPCC Sixth Assessment Report (AR6) WG1.
- “2019 Refinement to the 2006 IPCC Guidelines” shows expectations for improving the inventory reporting to GOSAT and GOSAT-2.



Objectives

- Continuously monitoring the global atmospheric GHG concentrations
- Monitoring the emissions from the large-scale point sources
- Used for the transparency of the national GHG inventory reports

GOSAT (since 2009)

GOSAT-2 (since 2018)

GOSAT-GW
(Launch planned 2025)

Features of GOSAT-GW/TANSO-3

Global Observation Satellite for Greenhouse gases and Water Cycle (GOSAT-GW)

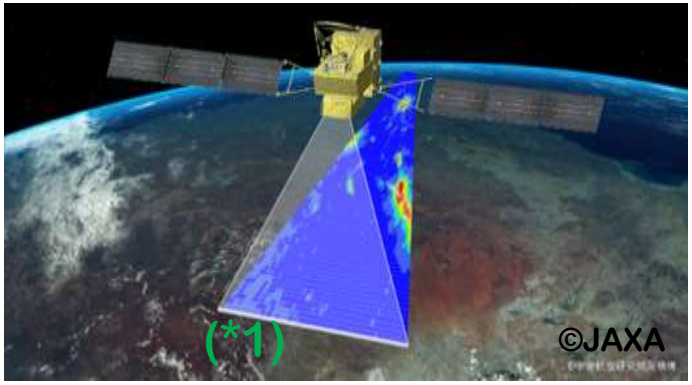
– Launch planned June 24th, 2025. Two weeks later !

<Features of GOSAT-GW/TANSO-3>

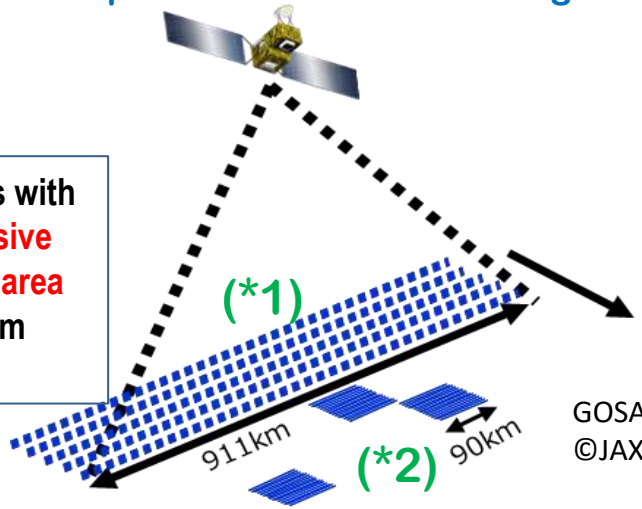
– Whole-area observation without gaps compared to point-observing GOSAT, GOSAT-2 (*1)
  - 100 to 1000 times more data than GOSAT-2 due to continuous seamlessly observation

– Air-pollutant NO2 observation added in addition to CO_2 and CH_4 Globally and simultaneously
  - Simultaneous observation enables identification of the source of anthropogenic CO2 emissions and accurate estimation of emissions.

– Intensive observation mode newly installed (*2)
  - More accurate understanding of a country's emissions is possible and Contributing the transparency of BTR



Normal global observations with 10 km resolution or intensive observation of a specified area (90 km width) with 3-1 km resolution



Utilization of GOSAT series as climate change countermeasures

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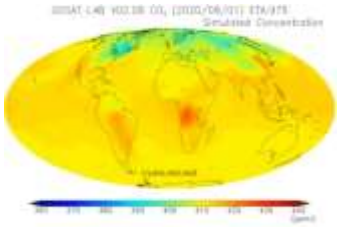
Contributions to the **Science**

- Contribute to **the enhancement of global GHGs measurement system** by using GOSAT series data
- Contribute to the scientific community, including the process for preparation of **the IPCC's 7th report**



Utilization to **Climate Policy**

- Contribute to transparency of GHG reporting by **support to include verification** results using GOSAT series in **country-level reports to the UNFCCC**
- Contribute to the COP, IPCC, and Global Methane Pledge by **providing objective information**

Private sector Uses

- Enhance the reliability of **information on corporate climate actions** by using GOSAT data.
- Avoid green wash and enhance **investments in truly climate-aligned projects**

Application to Environmental Policy

- Under the Paris Agreement, the UNFCCC requires countries to report their GHG emissions.
- At the 2024 G7 Turin Ministerial Conference on Climate, Energy, and Environment, the G7 ministers mentioned in their communiqué about the contribution to transparency through promotion of observation technology and scientific data using satellites, including GOSAT-GW.
- International expectations are growing for science-based emissions estimate, including tracking emissions and absorption progress.

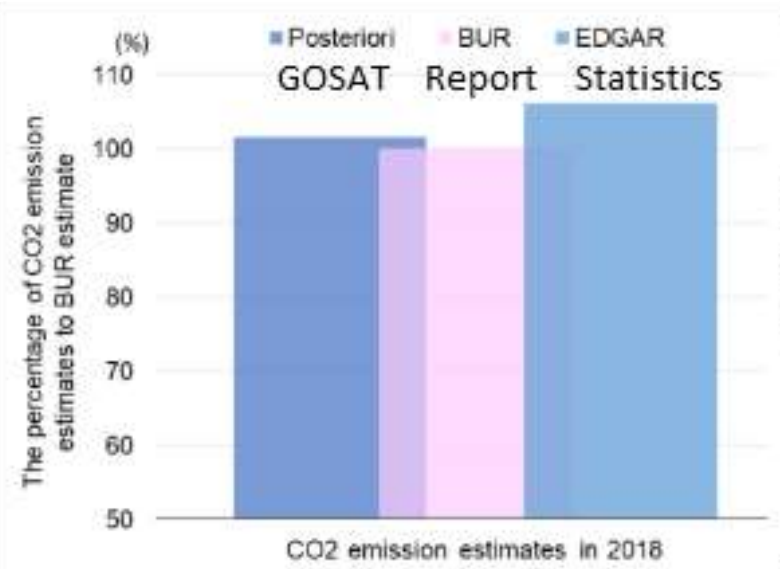
UNFCCC

G7 ITALIA 2024

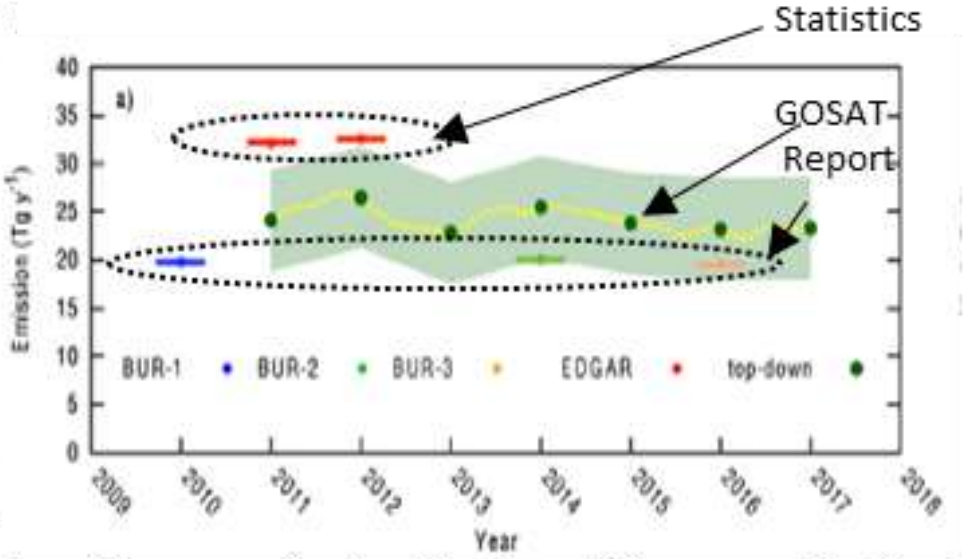
- Japan is providing scientific and objective data with various international initiatives.
- Japan is supporting the improvement of transparency in emissions reporting by each country.

Application to Environmental Policy; Ensuring transparency of emissions using GOSAT

- **Mongolia** conducted **the emissions estimation using GOSAT data**, and the results **agreed with their GHG emissions inventory**. The results were published in the Biennial Update Report (BUR) in 2023.
- **India** also used GOSAT data to estimate **methane** emissions in their country, which were published in NC3.
- The technology developed in Mongolia has been horizontally deployed in **five Central Asian**. In addition, we are planning to expand the technology to **Caucasus region, AZEC**, and **Pacific island countries**.



Source; Mongolia. Biennial Update Report (BUR) 2 (2023) (Some additions)

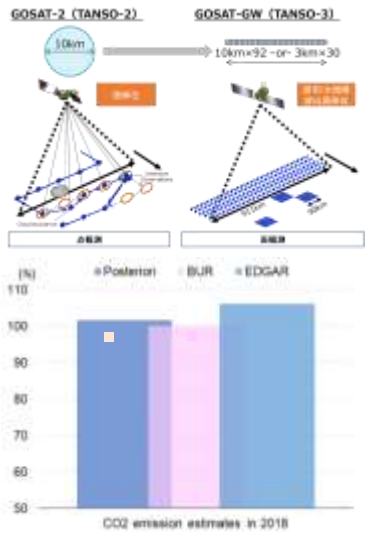


Source; India. National Communication (NC) 3 (2023) (Some additions)

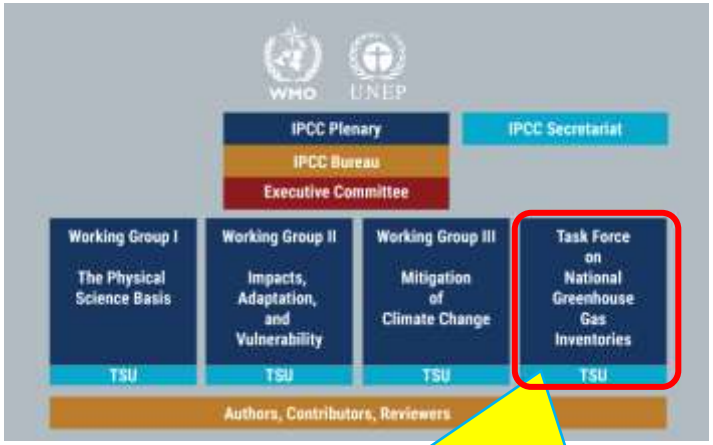
Application to Environmental Policy; International standardization of emission estimation technology

- The GHG emission estimation technology using GOSAT series data is being developed into **the standardization standard as IPCC guideline**
- Each country can estimate its own emissions, ensure transparency of BTR, and measure the effectiveness of reduction actions.
- Furthermore, the goal is to expand **private sector environmental infrastructure projects** and promote emission reductions.

To establish the GHG emission estimation technology using GOSAT series



International standardization as IPCC guideline



Lobbying for Task force on National greenhouse gas inventories

To expand private sector environmental infrastructure projects

IPCC

GREENHOUSE GAS PROTOCOL

CDP
DISCLOSURE INSIGHT ACTION

TCFD
TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Private sector applications (MUFG Bank, Ltd, etc.)

MUFG and other companies are planning to utilize GOSAT-GW data in collaboration with GHGSat.

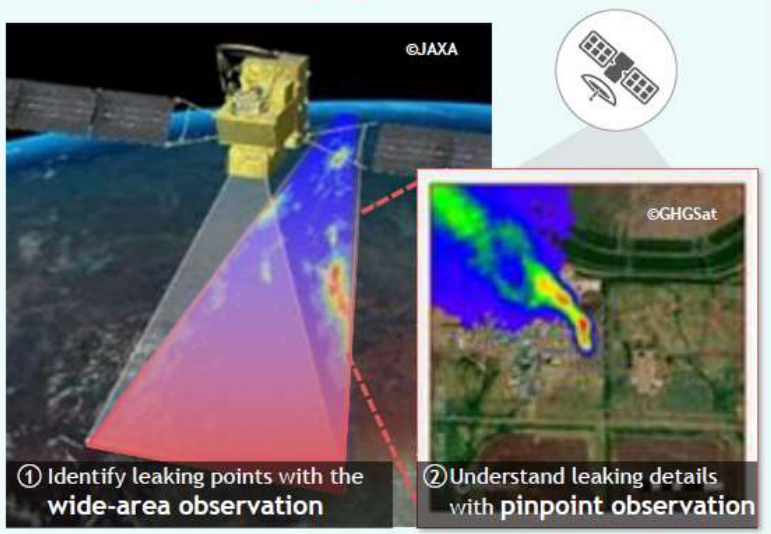
➡ Synergy between GOSAT-GW's wide-area observations and GHGSat's local observations.

Emitted?

2 Visualization of "Emission"

GHG emission monitoring of LNG plants/pipelines

- Linking Japan's core large satellites with small commercial satellites from overseas to ① wide-area observation and ② pinpoint observation



Trends in methane emissions management

External factors

- International discussions/initiatives underway to manage methane emissions in LNG value chain

UN environment programme
MMRV[1] framework in OGMP[2] 2.0 etc.

JP-Korea collaboration in LNG value chain

Issues

- Earth Observation is attracting global attention including COP28 as one of the objective observation methods
- Need for Japan to actively participate in building a mechanism based on international collaboration

1. Measurement, Monitoring, Reporting and Verification; 2. Oil Gas Methane Partnership
Source: Collaborative demonstration of Mitsubishi Electric Corp., SDS, GHGSat, MOE, JAXA, and MUFG

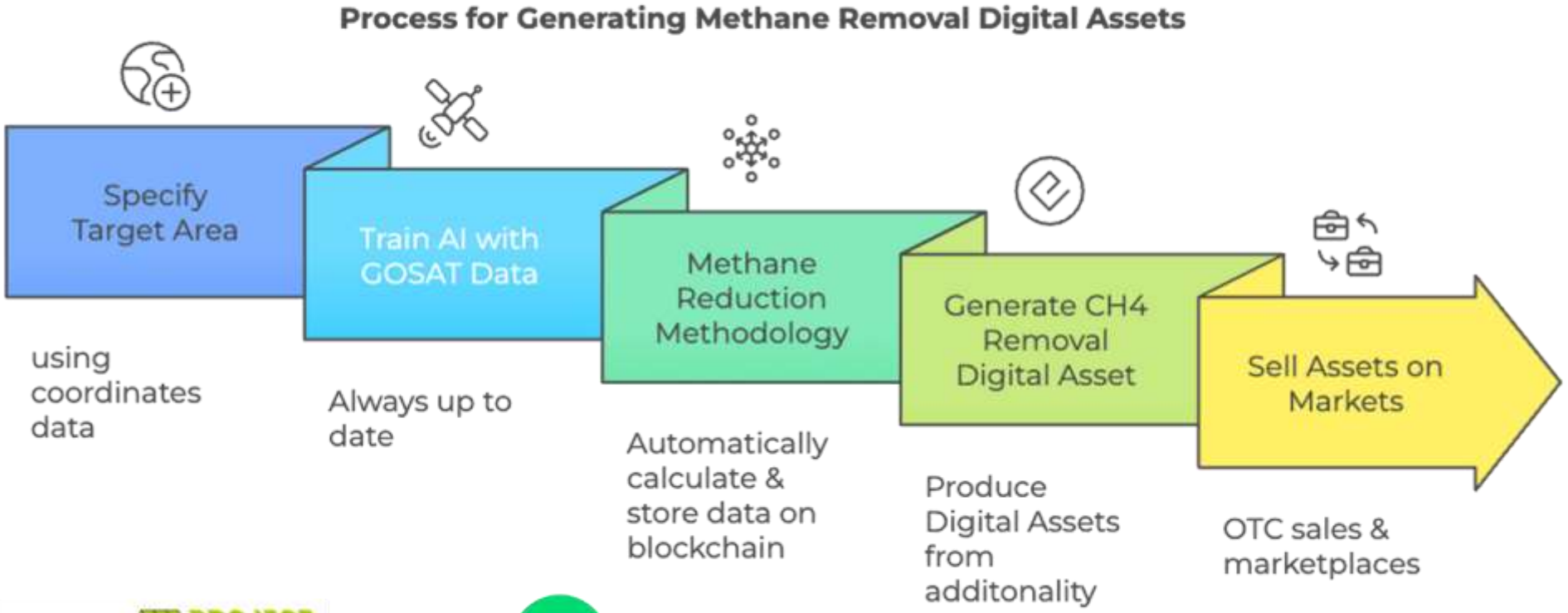
Source: Presentation by MUFG and GHGsat at COP29

Private sector applications (Carbontribe Labs OÜ; carbon credit certification)

Carbontribe Labs plans to utilize GOSAT-GW data for carbon credit certification.
➡ Train AI with GOSAT data.

Source: Presentation by Carbontribe at COP29

GOSAT CH4 Removal Methodology Concept



Private sector applications (Sompo Japan; insurance business)

Sompo Japan is planning to utilize GOSAT-GW data in collaboration with Momentick Ltd.
➡ Utilize as wide-area observation, detect methane leaks through multiple analysis, and utilize for risk management business.

3. Hypothesis through PoC

Source: Presentation by SOMPO Japan and Momentic at COP29

Potential use of GOSAT-GW in the field of risk management

Global Monitoring × Pinpoint Monitoring

GOSAT-GW momentick

SOMPO analyzes the GOSAT-GW data to identify the mass emission points around the globe and contacts clients with assets in those areas. If the client desires a detailed satellite analysis, Momentick performs the analysis at an additional cost to the client.

Provide customers with leakage data through multifaceted analysis

SOMPO not only provides the results of the analysis by Momentick, but also provides the customer with the results of the analysis at the same location using GOSAT-GW data to better support the analysis.

Activation of the distribution of GOSAT series data

Japan Greenhouse Gas Information Center

- Disseminate Japanese research and policy initiatives that contribute to climate change mitigation
- Contribute to the transparency of the Paris Agreement/IPCC and Global Stocktake

Project Contents

1. **Centralization** of Japan GHG information

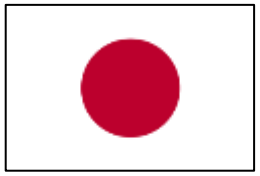
   Satellite, aircraft, ship, ground observation, atmospheric modeling

2. **Provision and dissemination** of data domestically and internationally

   Foreign countries, municipalities, businesses sector

3. **Collaboration** with overseas partners

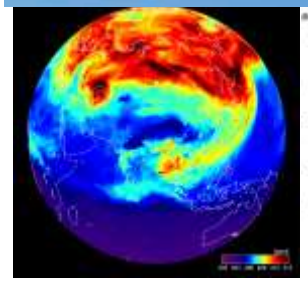
   NASA, EU/Copernicus, UNEP/IMEO

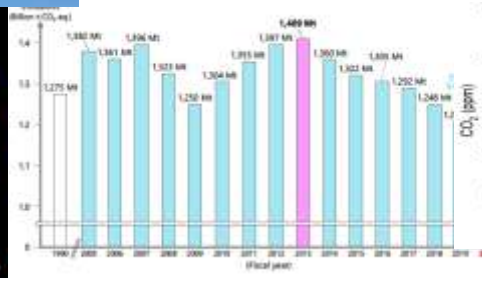


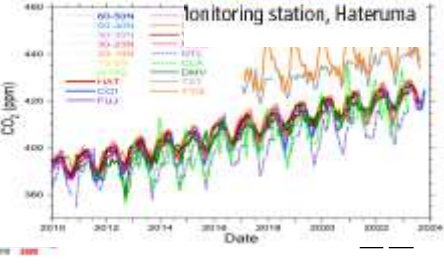

Trans Future 5


Monitoring station, Cape Ochiishi


Monitoring station, Hateruma





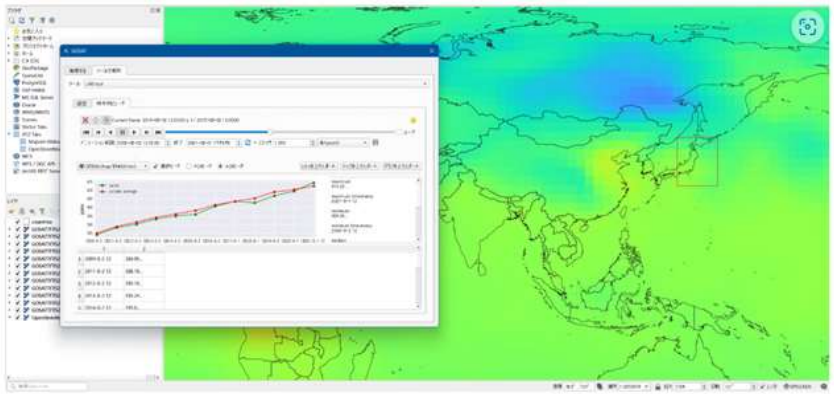


Activation of the distribution of GOSAT series data

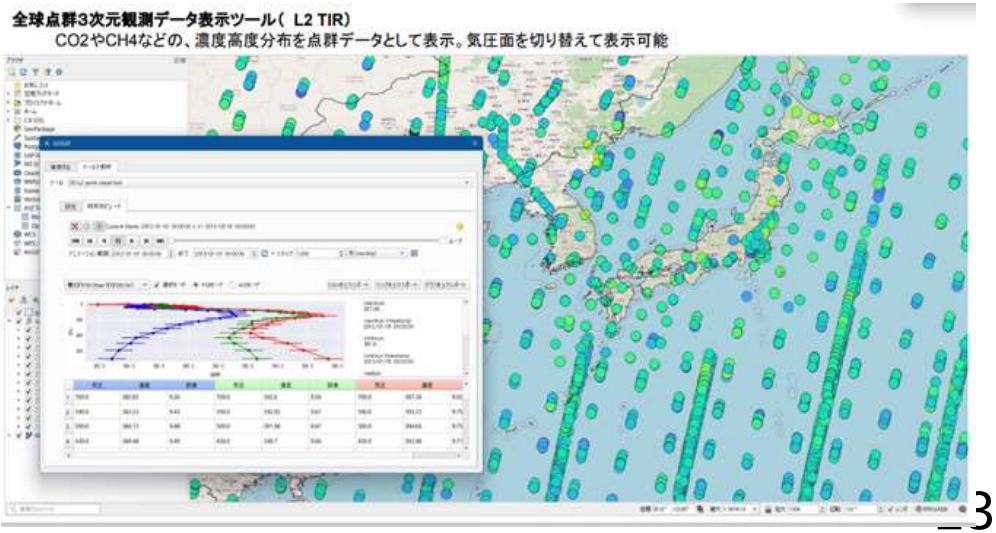
The satellite data platform “Tellus”

In addition to the use of data for science and policy, GOSAT data is now available from “Tellus” to expand its use in private sector.

- “Tellus” was established by the Ministry of Economy, Trade and Industry (METI). Currently operated by a private company, Tellus Inc.
- Mapped information can be easily viewed.
- Overlapping with other satellite data is possible.
- GOSAT data is provided free of charge.
- https://www.tellusxdp.com/en-us/



GOSATプラグインでの解析イメージ
©OpenStreetMap contributors,©Tellus Orginal data provided by JAXA/NIES/MOE,



Original data provided by JAXA/NIES/MOE

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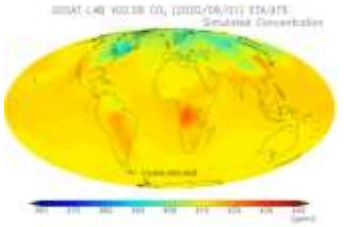

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- **Provide scientific data to objectively support emissions reporting**
- **Contribute to global emission reductions toward net-zero**