IEEJ Webinar “The Increasing Role of Detection and Monitoring from the Sky and Space - Changing Landscape of GHG Emission Management and Reduction”

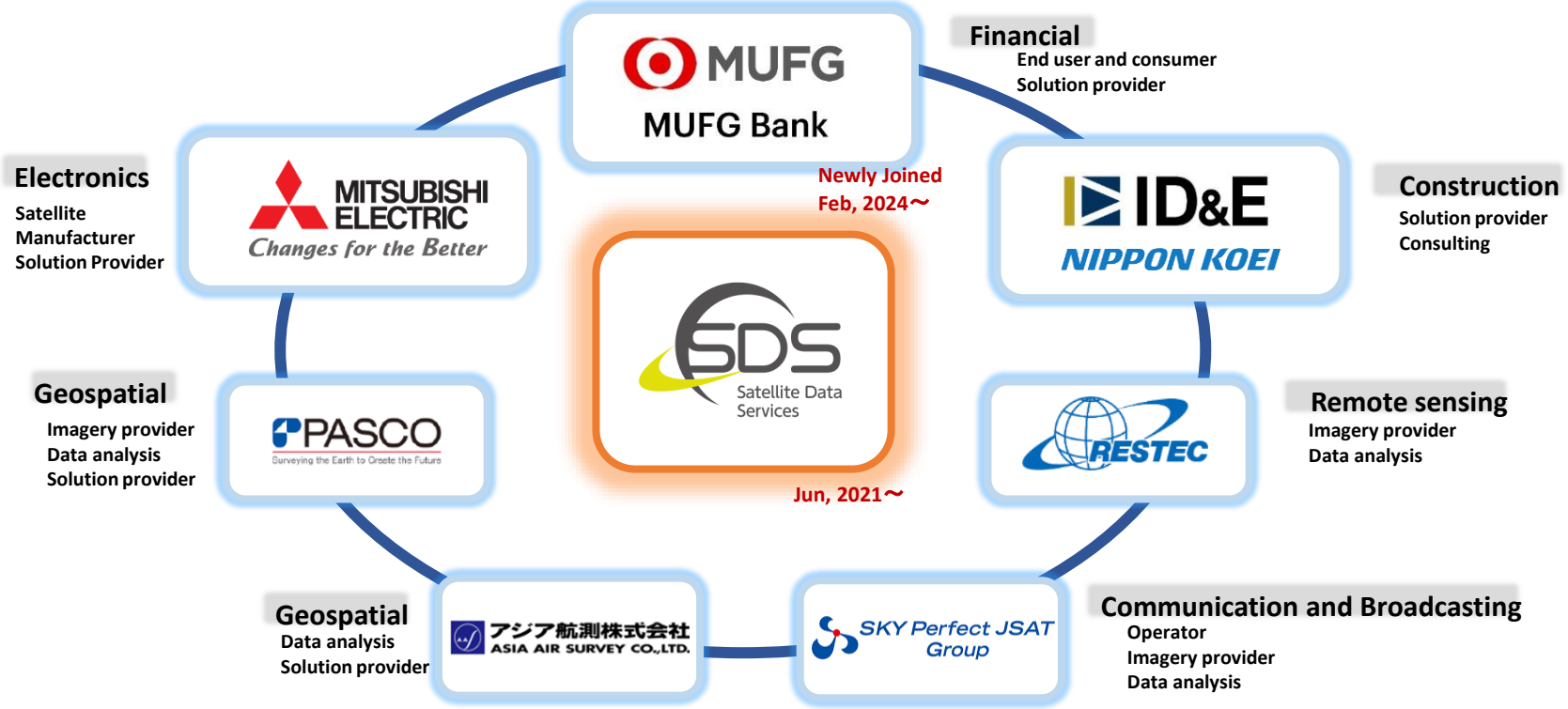
Enhancing GHG Transparency and MRV through Satellite Data Solutions

Friday, 1 August 2025

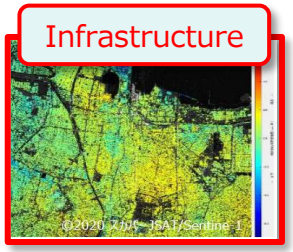
Satellite Data Services, Mitsubishi Electric Corporation and MUFG Bank

Satellite Data Services Co., Ltd. Founded!

Established by a consortium of leading companies in the satellite data business value chain, aiming to promote and expand the satellite data service market.



Mission: Navigating the Sustainable Future

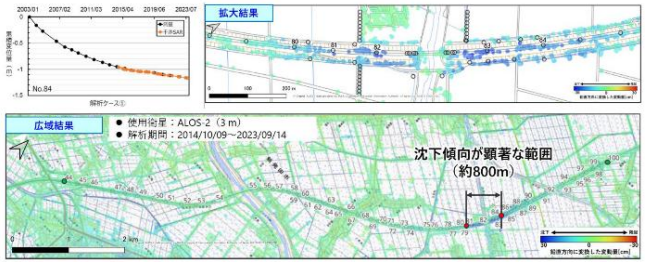


Leveraging satellite data to address global challenges such as climate change, increasing severe disasters, declining workforce due to depopulation, and geopolitical risks.

Not enough staff for on-site inspections!

Before

Leave it to us! We've inspected road inspections and identified areas that require paving.



After

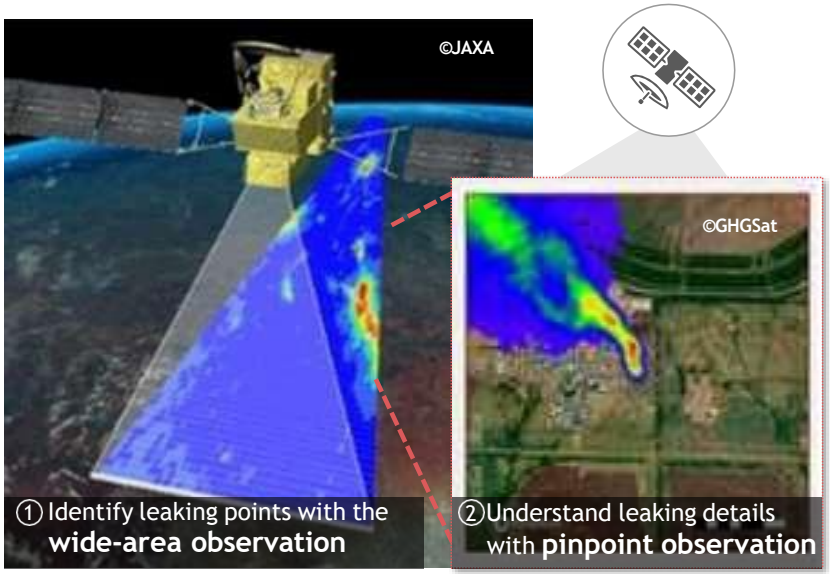
Satellite-based GHG Emission Monitoring

Monitoring of GHG Emission by satellites is gaining attention as reliable and transparent data, and its importance is increasing in efforts to reduce emission. Japan has developed the GOSAT satellite, leading the world in GHG observation, and has been monitoring for 15 years.

We are planning to offer an unprecedented service to support comprehensive methane emission monitoring by utilizing latest Japanese satellite, GOSAT-GW, in collaboration with GHGSAT.

MITSUBISHI ELECTRIC *Changes for the Better*
MUFG Bank
GHGSAT
Satellite Data Services

Partnership Signed!



GOSAT-GW

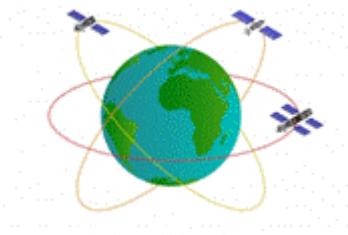
GHGSAT

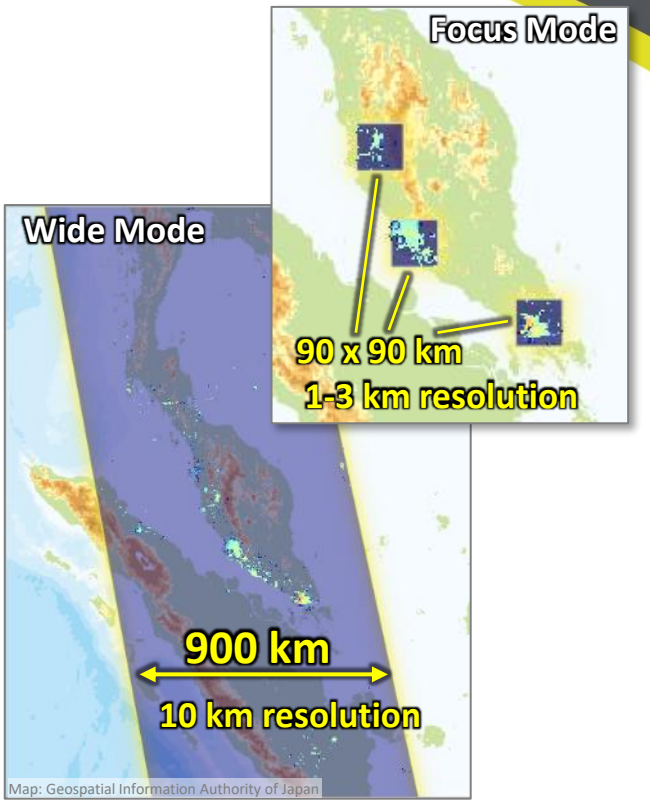
The advantages of using Satellites

1.Wide coverage : Satellites can observe large areas of the Earth at once, providing immediate information on wide regions.

2.Observations anywhere : Satellites can monitor anywhere in the world, including remote islands, offshore sites and inaccessible places.

3.Periodic Monitoring : Satellites can collect data periodically and identify the trend from short-term to long-term.

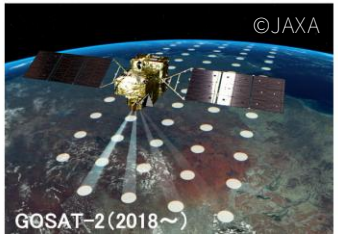


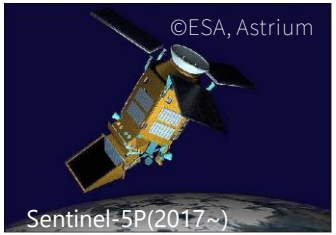


Ex. GOSAT-GW Observation

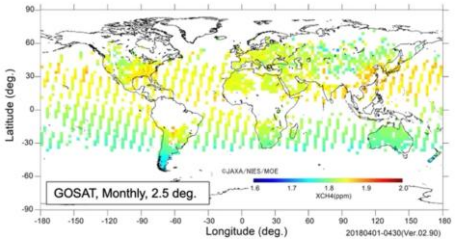
Current Satellites in GHG Monitoring and Reporting

Wide-area observation,
low resolution, high latency





	GOSAT	GOSAT-2	Sentinel-5P
Targets	**CO2, CH4**	**CO2, CH4, CO**	**CH4**
Swath	**Discrete(1-9 points)**	**Discrete(5 points)**	**2,600km**
Footprint	**10.5km**	**9.7km**	**7 x 3.5 km**
Launch	**2009/In operation**	**2018/In operation**	**2017/In operation**

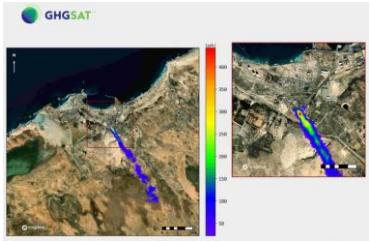


Good at measuring the absolute concentration of global GHG

GAP

Narrow-area observation
higher resolution, low latency

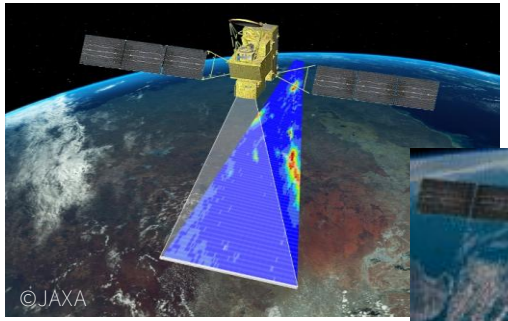
GHGSAT
CH4, (CO2*)
12km x 12km (Field of View)
~ 25m
12 satellites in orbit

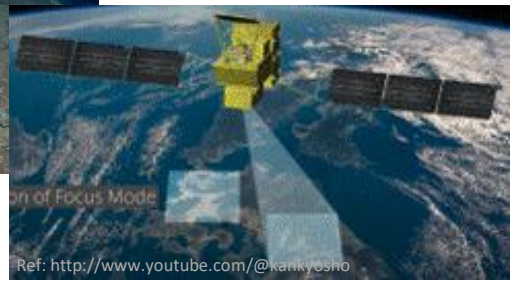


Good at detecting local GHG changes

Role of GOSAT-GW for Comprehensive Monitoring

GOSAT-GW Features





Designed and manufactured by MITSUBISHI ELECTRIC *Changes for the Better*

	GOSAT-GW
Targets	**CO2, CH4, NO2**
Swath	**911 km (Wide) / 90km (Focus)**
Footprint size	**10km (Wide) / 1 - 3km (Focus)**
Launch	**2025/6 Just launched!**

Wide Mode

Focus Mode

Wide Mode

Ref: http://www.youtube.com/@kankyosho

Role of GOSAT-GW for Comprehensive Monitoring

	Global mapping	Area mapping	Local mapping
Range	~900 km	~90km	~ 12km
Resolution	~10km	~1km	~ 25m
Flow Rate	~1000kg/h	~300kg/h	~100kg/h

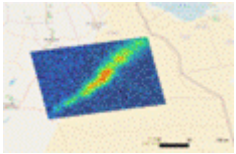
GOSAT-1/2 (Sentinel-5P)

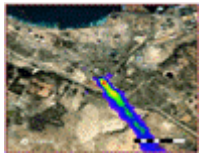
GOSAT-GW

Wide Mode

Focus Mode

GHGSAT

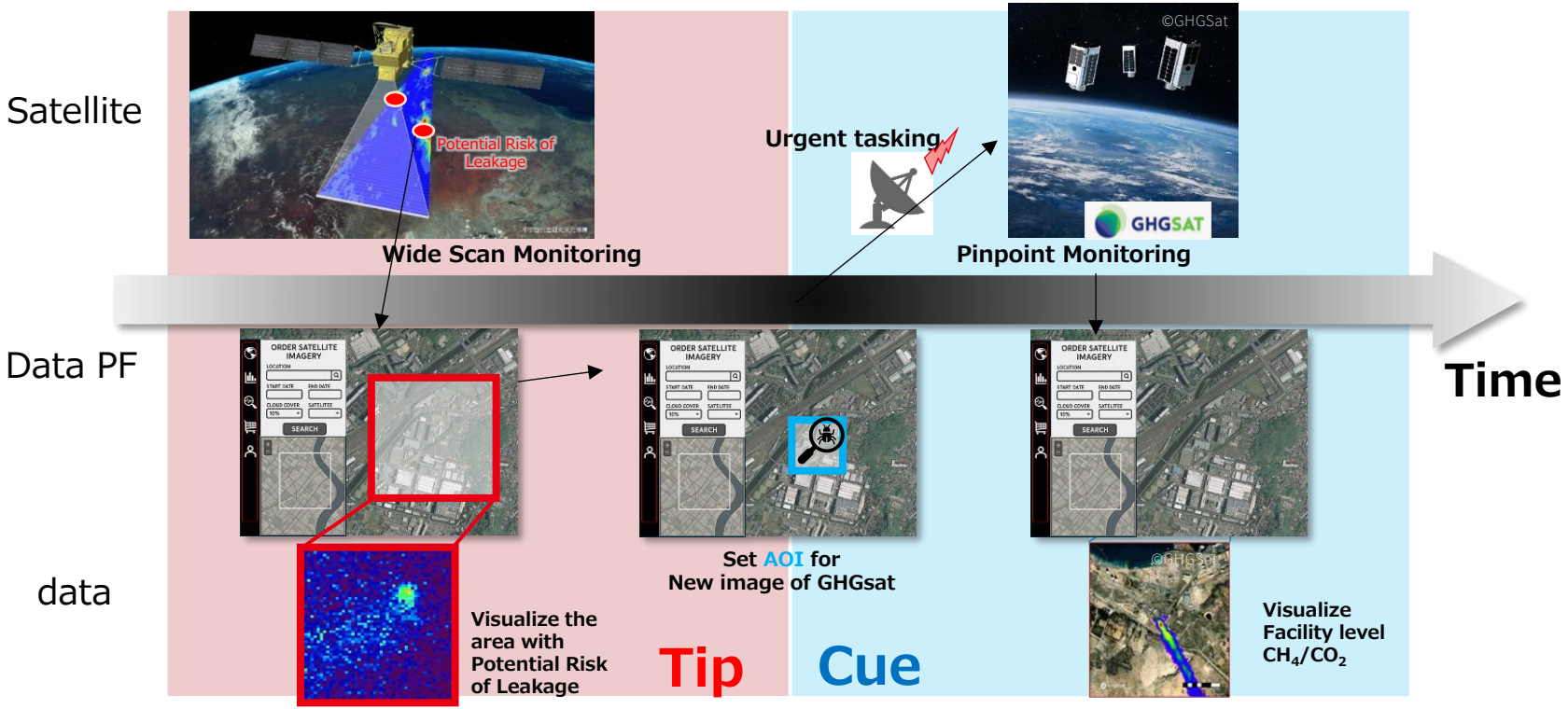




With the arrival of GOSAT-GW, we'll be able to do comprehensive observation!

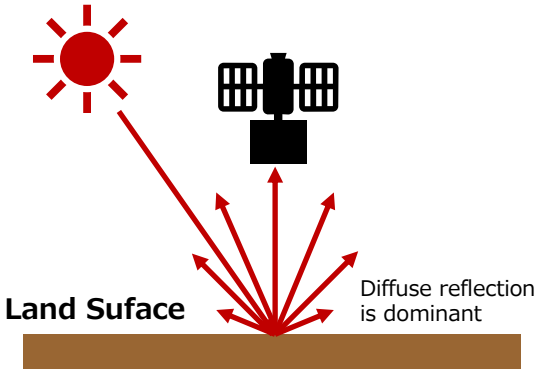
GHG Direct Measurement and Tip & Cue Concept

GOSAT-GW & GHGSAT: Efficient monitoring, **widely**, **quickly**, and **in detail.**

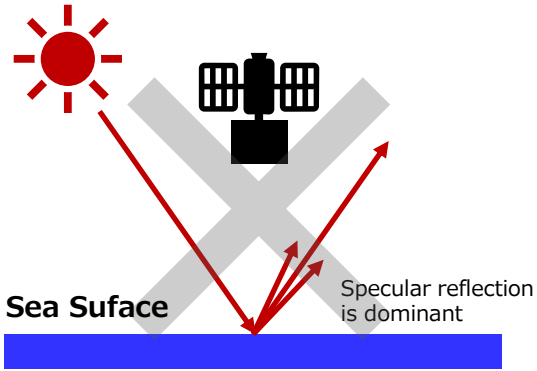


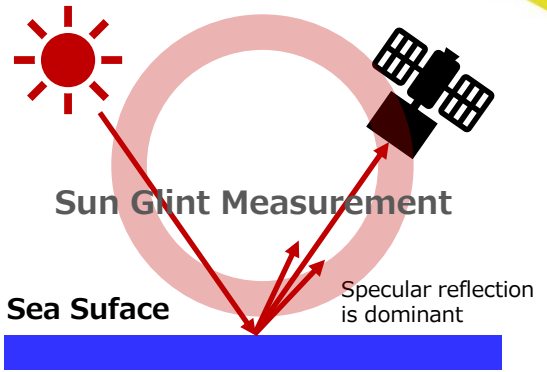
Offshore Monitoring Using Sun Glint

Onshore Observation

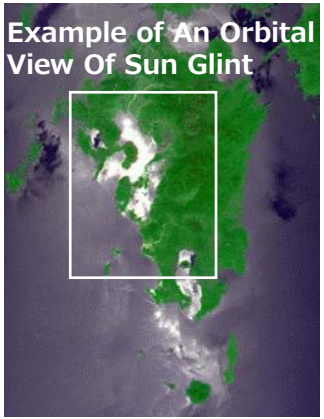


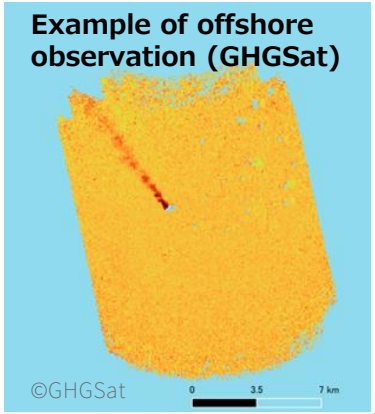
Offshore Observation





- ✓ By aligning the GHG sensor's pointing direction close to the direction of the sun's specular reflection, offshore observations are possible (Sun glint measurement).
- ✓ GOSAT-GW (Focus mode) and GHGSat have high pointing capabilities in two directions, allowing for effective observation of offshore facilities.





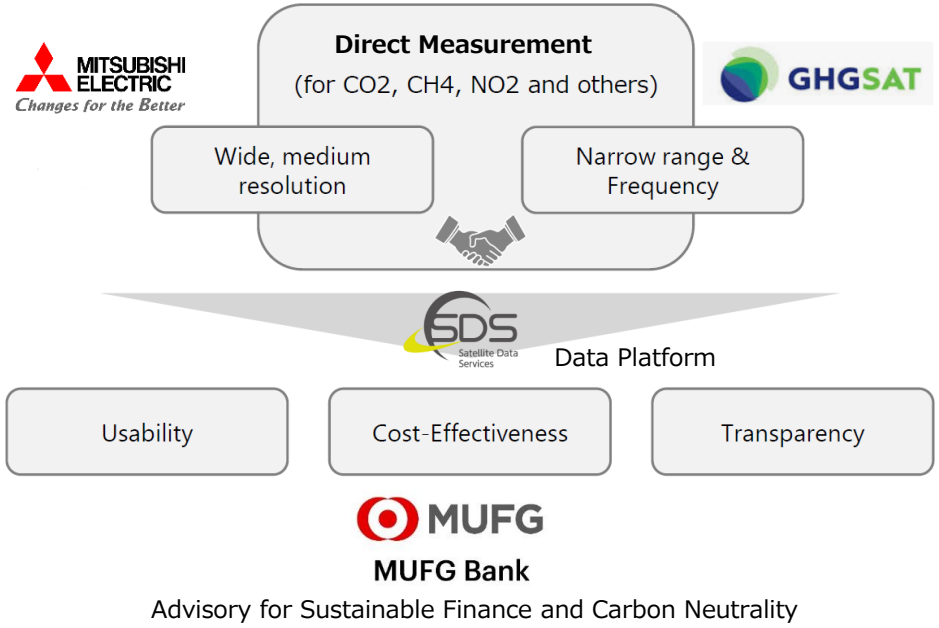
GHG Emission Monitoring Initiative

1.Enhancing transparency

Reducing omissions by integrating GOSAT-GW's wide observations with GHGSat's detailed observations.

2. Enhancing MRV

Improving data accuracy by using multiple observation satellites to interpolate and align observed data.



Collaboration with JOGMEC : Satellite-Centric MRV

Partnering with JOGMEC to Pioneer Full-Stack Satellite Methane MRV solution ready for global methane regulations such as OGMP 2.0

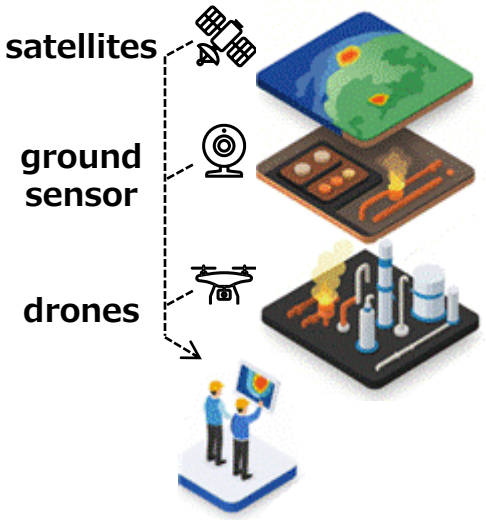
Joint Verification Scheme

GOSAT-GW
wide-area detection

Tip & Cue
high-resolution focus

GHGSat
pinpoint tracking

Hybrid integration



Demonstration Schedule

FY 2025
25
Protocol design & site selection

FY 2026
26
Launch joint PoC with JOGMEC
Continuous monitoring & data trials

FY 2027+
27+
Algorithm enhancement & scale-up

Overview of Satellite Data Services Co., Ltd.	
Company name	Satellite Data Services Co., Ltd.
Address	4-6-1 Iidabashi, Chiyoda-ku, Tokyo, 21 Towa Building
Representative	Kazutaka Kumeno (seconded from Mitsubishi Electric)
Date of incorporation	June 2021
Shareholders	Mitsubishi Electric, MUFG Bank, ID&E Holdings, Pasco, SKY Perfect JSAT, Asia Air Survey, Remote Sensing Technology Center of Japan (RESTEC)
Capital Stock	410 million yen

Thank you !