



JAXA Agency Report

December 1, 2022

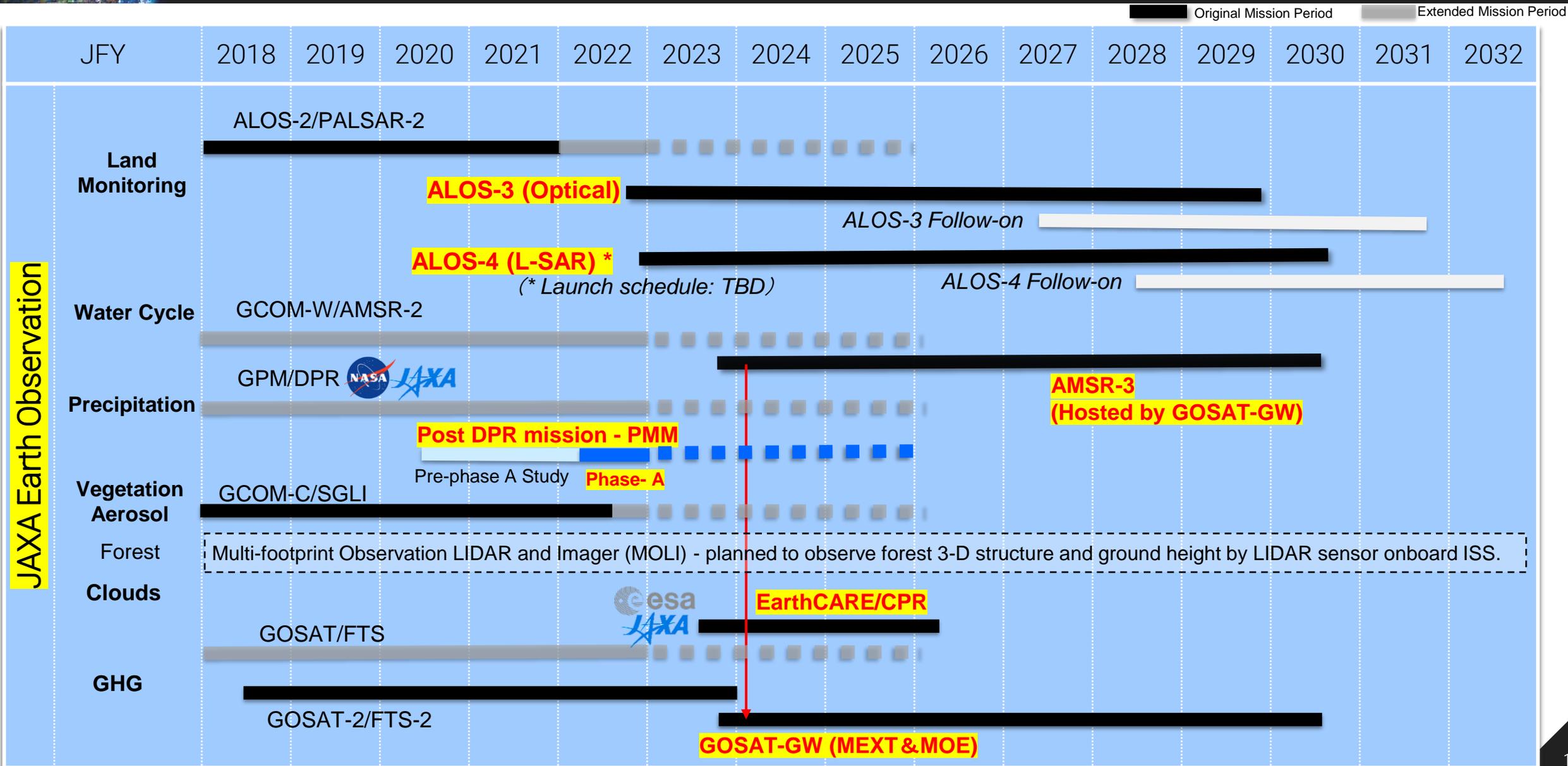
Takeshi Hirabayashi

**Senior Chief Officer of Earth Observation
Missions**

**Director of Satellite Applications
and Operations Center (SAOC)**

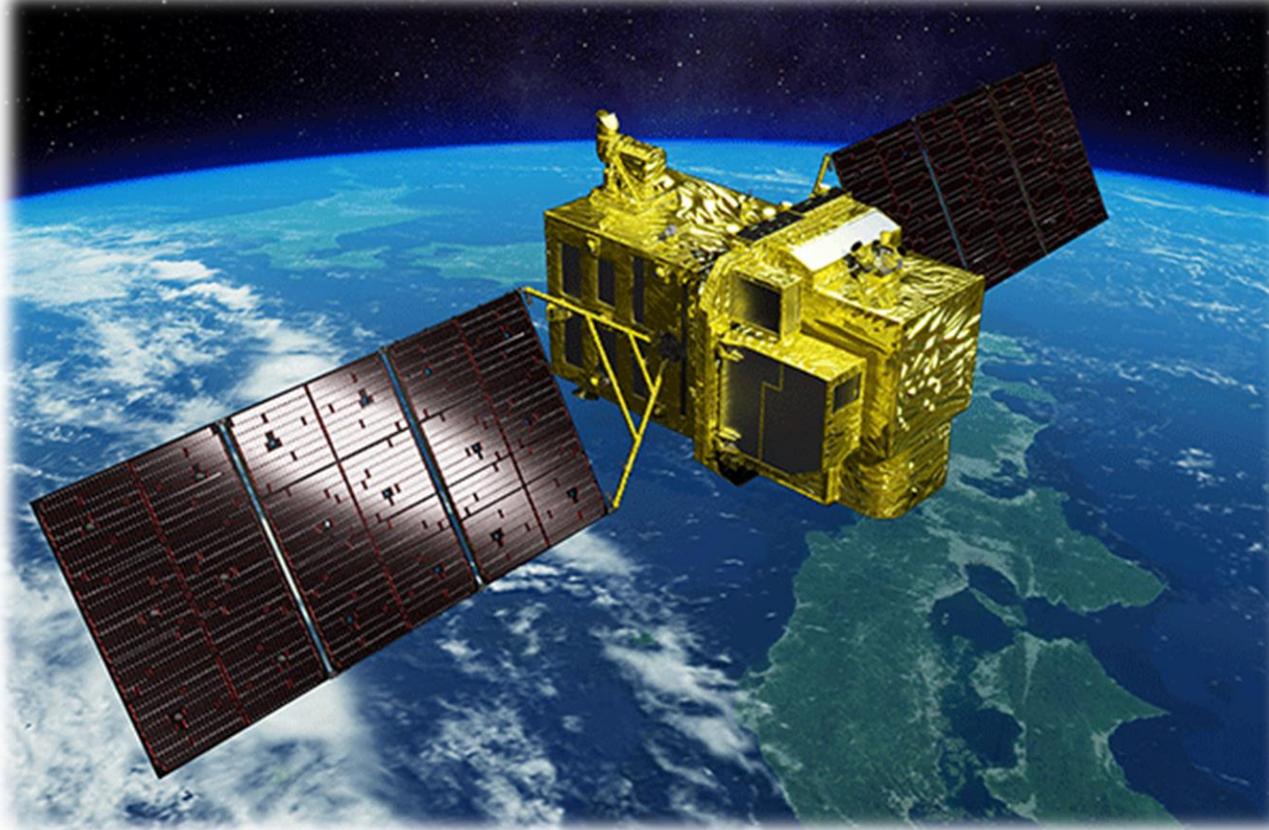
Japan Aerospace Exploration Agency

JAXA's Satellite Development and Operation Schedule



Advanced Land Observing Satellite-3

ALOS-3



- ❑ Achieving improved optical observation with **wide-swath and high-resolution** as a successor of optical mission of ALOS.
- ❑ Contributing to
 - ❑ **Disaster managements and countermeasures** of the central and local governments.
 - ❑ Upgrade of **global geospatial information**.

High-resolution



Observation image by ALOS in 2007

Pansharpening:
ALOS PRISM/AVNIR-2
2.5m resolution
March 1, 2007

Simulated image
based on ALOS-3 resolution

Pansharpening:
0.8m resolution



Wide-swath

70km in width and 4,000km in
the along-track direction per
an orbital path



Free and open access to ALOS/ALOS-2 data



		CY 2022				CY 2023			
		1Q Jan Mar	2Q Apr Jun	3Q Jul Sept	4Q Oct Dec	1Q Jan Mar	2Q Apr Jun	3Q Jul Sept	4Q Oct Dec
ALOS 	AVNIR-2 (10 m)					O/F data distribution on G-Portal & GEE > 30% cloud			
	PALSAR FBS, FBD (10 m)					O/F data distribution on G-Portal			
ALOS-2 	PALSAR-2 ScanSAR (100m)	Asia & Africa region Process CARD4L (L2.2), L1.1				O/F data distribution on G-Portal, GEE & AWS			
						America & other area Process CARD4L (L2.2), L1.1			

Consortium for Satellite Earth Observation

- Establishment of Platform for Industry, Academia, Government Partnership in Japan -

✓ Purpose

- ✓ Gathering players from industry, academia and government, the Consortium will envisage the future of Satellite Earth Observation and realize it through co-creation.

✓ Vision

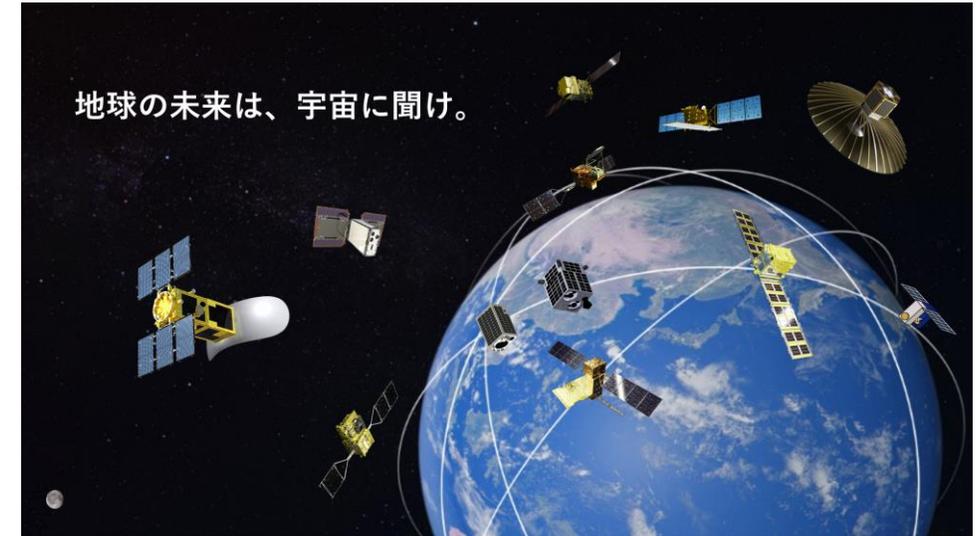
- *For prosperous global future in harmony with the Earth* -

- ✓ Safe, secure, sustainable and prosperous society realized through creating innovation, enhancing space industry and acquiring scientific knowledge

✓ Mission

The Consortium led by industry, academia and government will

1. **Deliver recommendations** of the over all strategy of Earth observation satellite for Japanese society;
2. **Install outcome from Satellite Earth Observation** to the society, **establish an ecosystem** supported by industry, academia and government and **promote co-creation** among them;
3. **Share the value** of Satellite Earth Observation to gain support from the public for its promotion.



✓ Membership

- ✓ Executive Committee: Consists of 24 experts from industry, academia and national institutes
- ✓ Members: 162 Corporations/Organizations, 25 Experts, 14 Groups of Ministries (As of November 18)

✓ JFY2022 (Sept 2022 to March 2023)

- Study the overall strategy (recommendation) of the Earth satellite observation.

✓ JFY2023 onwards (April 2024 -)

- Facilitate industry-academia-government collaboration promotions

Contribution to Global Stocktake in Partnership with Various Players



GHG

1. The decadal global atmospheric greenhouse gas concentration trends observed by Japan's Greenhouse gases Observing SATellite (GOSAT)

- Joint Submission Partner: Institute for Global Environmental Strategies (IGES)

2. The JAXA/GOSAT GHG product for tracking city-level emission changes

- Joint Submission Partner: IGES

3. Real-time anthropogenic emission observations from Japanese passenger aircrafts in support of the monitoring of the climate mitigation progress

- Joint Submission Partner: IGES, ANA HOLDINGS INC. (ANAHD)

AFOLU

4. A satellite-based deforestation monitoring system for tropical forests, "JICA-JAXA Forest Early Warning System in the Tropics (JJ-FAST)"

- Joint Submission Partners: Japan International Cooperation Agency (JICA), Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), IGES

5. Satellite-based map of global mangrove extent and changes: Global Mangrove Watch (GMW)

- Joint Submission Partners: IGES, Aberystwyth University, solo Earth Observation (soloEO), Wetlands International, The Nature Conservancy

Contribution to Global Stock Take in Partnership with Various Partners

1. The decadal global atmospheric greenhouse gas concentration trends observed by Japan's Greenhouse gases Observing SATellite

- Joint Submission Partner: IGES
- Overview: Observation data from Greenhouse gases Observing SATellite (GOSAT), which has monitored global distributions of greenhouse gas concentrations for 13 years, shows an increasing trend in CO₂ and CH₄ concentrations.

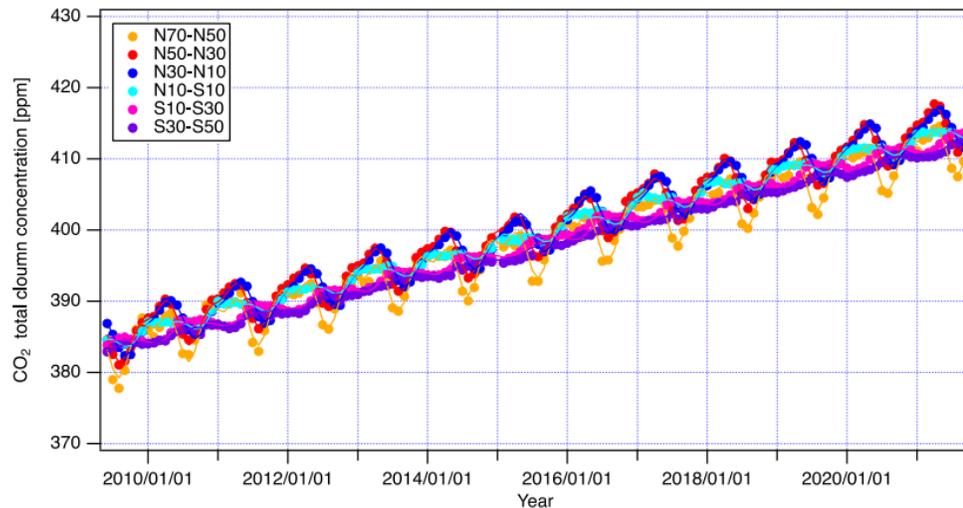


Figure 4. Latitudinal monthly average CO₂ changes with the function fit lines.

The JAXA/GOSAT CO₂ data are averaged for each 20° latitudinal bin. Lines are color-coded by latitude.

2. The JAXA/GOSAT GHG product for tracking city-level emission changes

- Joint Submission Partner: IGES
- Overview: JAXA/GOSAT research product (CO₂) shows emission reductions in Tokyo due to COVID-19 pandemic.

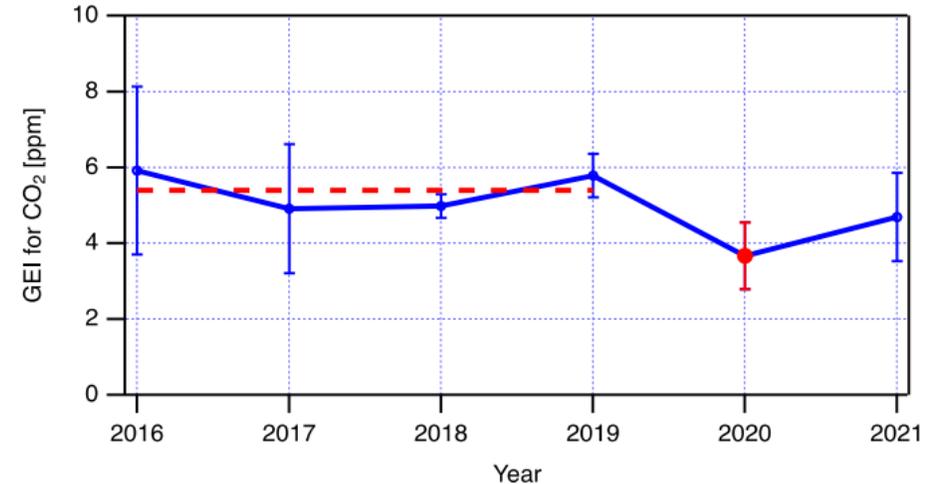


Figure 1. The six-year CO₂ emission trends in the Greater Tokyo area derived from *GEI*.

GEI is calculated with JAXA/GOSAT GHG product from January to April to assess the local concentration enhancement due to local emissions. The average of *GEI* between 2016 and 2019 is plotted with a dotted red line.

Contribution to Global Stock Take in Partnership with Various Partners

3. Real-time anthropogenic emission observations from Japanese passenger aircrafts in support of the monitoring of the climate mitigation progress

- Joint Submission Partners: IGES、 ANAHD
- Overview: Introduction of GOBLEU project, which is the real-time observations and visualization of emission distributions for urban cities in Japan using observation equipment applying GOSAT sensor brought on board ANA flights.



Figure 2. The GOBLEU remote sensing equipment onboard an ANA passenger aircraft.

4. A satellite-based deforestation monitoring system for tropical forests, “JICA-JAXA Forest Early Warning System in the Tropics (JJ-FAST)”

- Joint Submission Partners: JICA、 IBAMA、 IGES
- Overview: Introductions of JJ-FAST using ALOS-2 observation data, including provision of the forest change monitoring service in 78 countries and the use case of application in Brazil to control illegal deforestation.

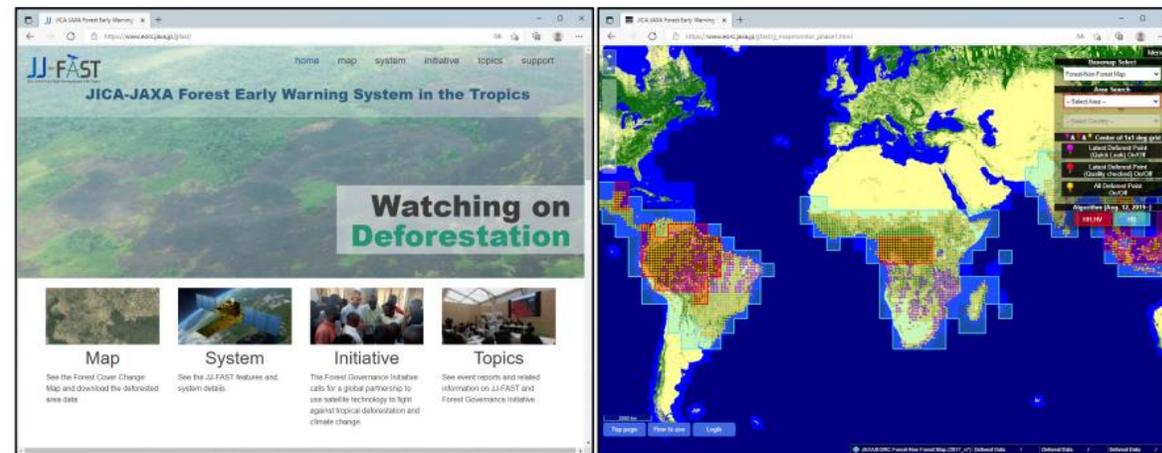
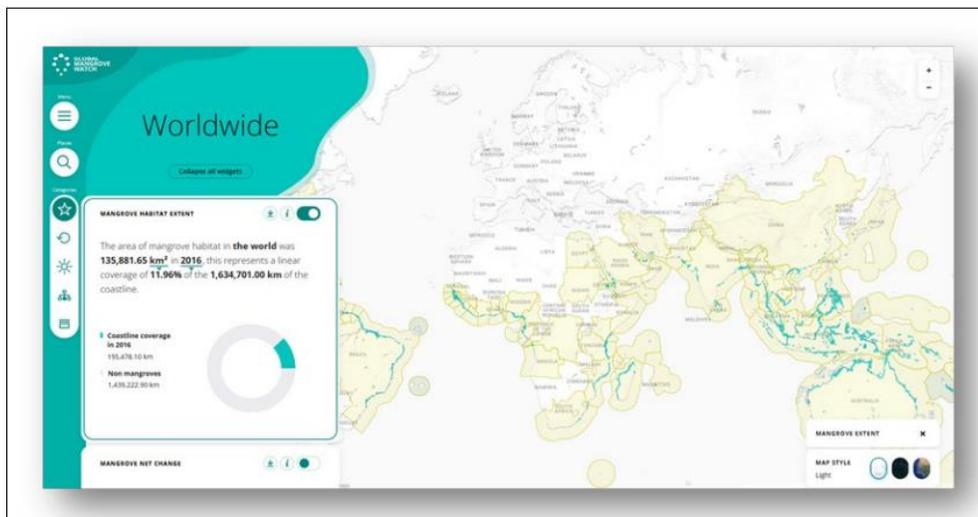


Figure 3. JJ-FAST web page (continued on next page).

Contribution to Global Stock Take in Partnership with Various Partners

5. Satellite-based map of global mangrove extent and changes: Global Mangrove Watch (GMW)

- Joint Submission Partners: IGES, Aberystwyth University, soloEO, Wetlands International, The Nature Conservancy
- Overview: Introduction of efforts to capture annual global mangrove extent and changes, and its results using observation data from SAR onboard JAXA's satellites, JERS-1, ALOS and ALOS-2 as an example of contributions to application and mitigation to climate change.



*The Global Mangrove Watch interactive website platform (globalmangrovetwatch.org)
(Yellow: countries/territories with mangroves; Green: mangrove extent)*

Cooperation in UFCCC/COP27 in Sharm el-Sheikh

GFOI Side Event at COP-27

**“Forests in Africa –
How satellites support climate actions!”**



JAXA will be the in-coming CEOs SIT Chair.



See you in Japan, Spring 2024.