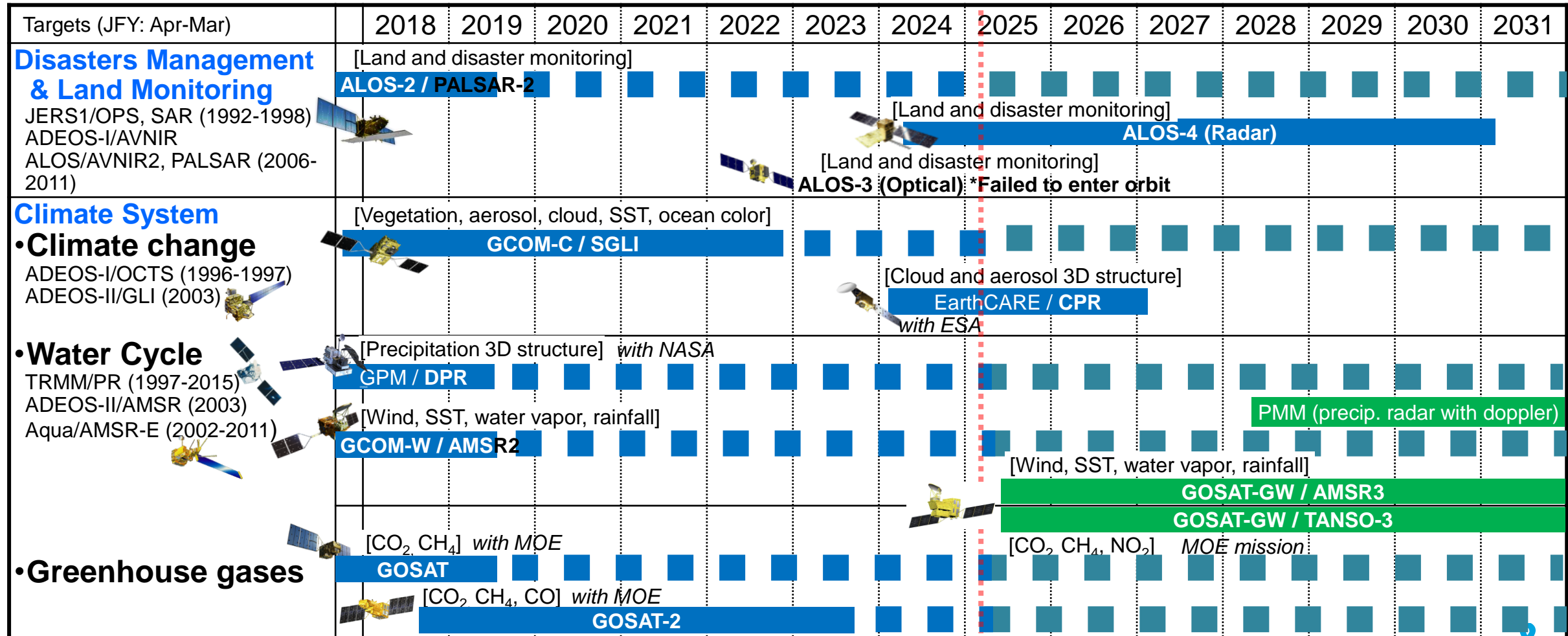




JAXA updates since CGMS-52 and report on the medium to long-term future plans on Earth observation

Presented to CGMS-53 Plenary, agenda item 3

JAXA's Earth Observation Satellites/Sensors



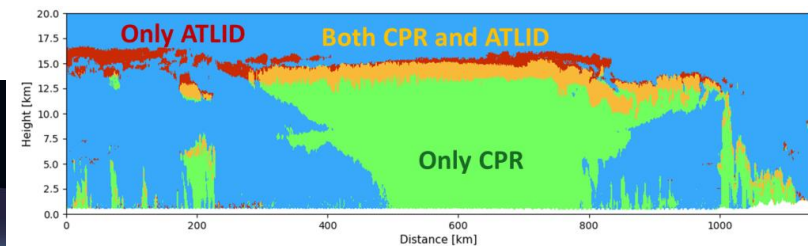
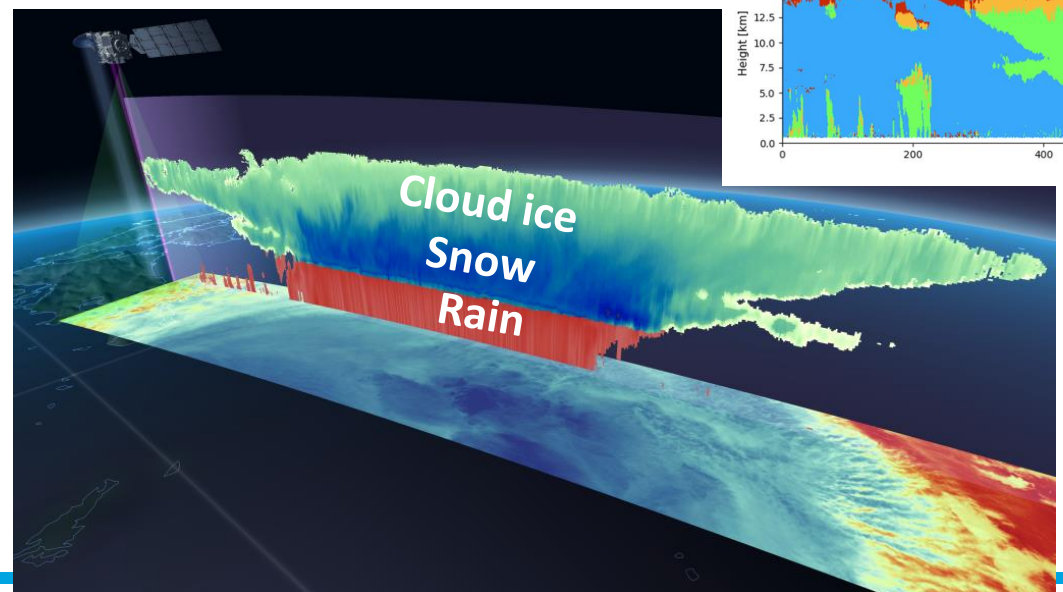
Mission status ■ Completed ■ On orbit ■ Developing ■ Planning

EarthCARE (Earth Cloud Aerosol and Radiation Explorer)



- Europe-Japan joint mission
- The EarthCARE Level 1 products were released to the public on Jan. 2025, and Level 2 single-sensor products and 2-sensor synergy products were release on Mar. 2025.
 - ✓ 3-sensor and 4-sensor synergy products are scheduled to be released in Dec. 2025 (planned).
- EarthCARE will improve satellite algorithms, numerical weather predictions, climate model projections of CGMS agencies.

Orbit	Sun-synchronous sub-recurrent orbit Altitude: approx. 400km Inclination angle: 97.05° Local Sun Time at Desc.: 14:00 Revisit time: 25 days
Instruments	- Cloud Profiling Radar (CPR) by NICT & JAXA - Atmospheric Lidar (ATLID) by ESA - Multi-Spectral Imager (MSI) by ESA - Broad-Band Radiometer (BBR) by ESA
Mass	Approx. 2.2 tons at launch
Designed lifetime	3 years



First Synergistic cloud images



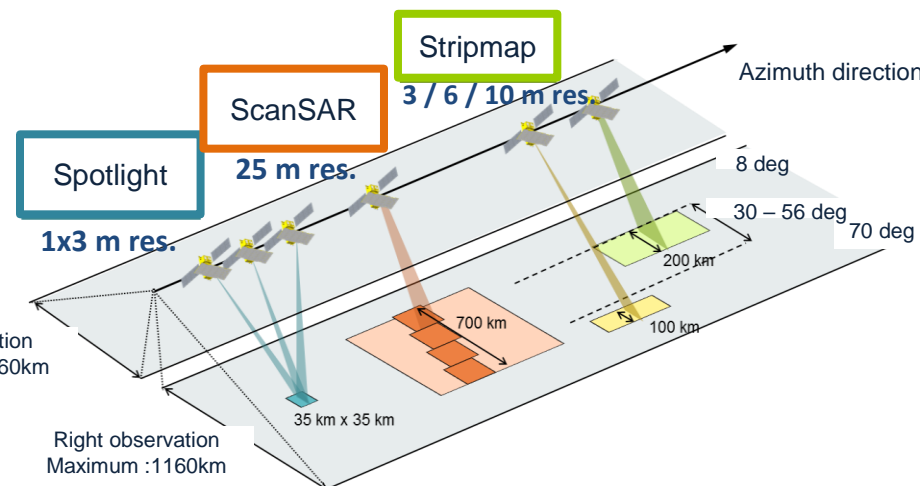
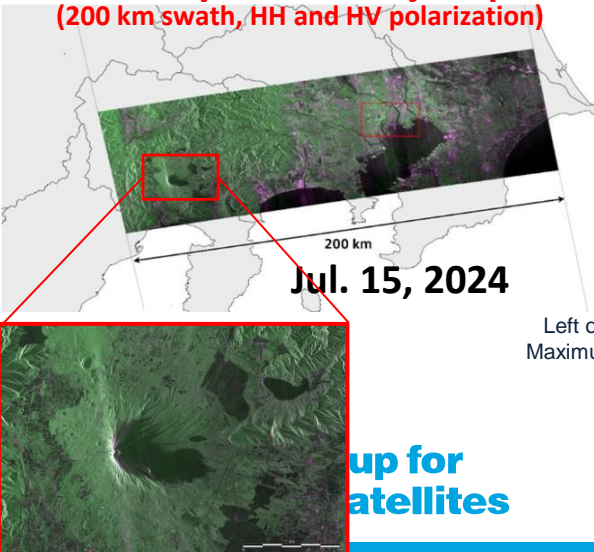
ALOS-4 (the Advanced Land Observing Satellite-4)



Orbit	Same orbit as ALOS-2 Altitude: 628 km at the equator Inclination angle: 97.9° Local sun time at Desc.: 12:00 +/- 15 min Revisit time: 14 day (15-3/14 rev/day)
Instruments	- PALSAR-3 (Phased Array type L-band Synthetic Aperture Radar-3) - SPAISE3 (SPace based AIS Experiment 3)
Satellite Mass	Approx. 3 tons at launch
Designed lifetime	7 years

- ✓ Successfully observed over a **200 km swath width with 3 m resolution**. PALSAR-3 can observe 4 times wider than the 50 km swath of PALSAR-2.
- ✓ Use of the new Ka-band data transmission enabling observations of large volumes of dual-polarization data.

ALOS-4/PALSAR-3 image over Tokyo to Mt. Fuji, Japan
(200 km swath, HH and HV polarization)



Swath width of PALSAR-3/-2

Modes	PALSAR-3 (ALOS-4)	PALSAR-2 (ALOS-2)
Stripmap (res. 3 / 6 / 10 m)	100-200 km	30-70 km
ScanSAR (res. 25m*)	700 km	350-490 km
Spotlight (res. 1 x 3 m)	35km x 35km	25km x 25km

*single look

GOSAT-GW (Global Observation SATellite for Greenhouse gases and Water cycle)



To be launched
in June 2025

- GOSAT-GW will carry two instruments, AMSR3 & TANSO-3
 - **AMSR3**, developed by JAXA, will succeed AMSR series observations adding new high-frequency channels for solid precipitation retrievals and water vapor analysis in NWP.
 - **TANSO-3**, led by Japanese Ministry of the Environment (MOE), will improve observation capability of greenhouse gases from GOSAT-2/TANSO-2. (Choose grating spectrometer to enable spatially detailed observation)
- **Launch is scheduled in June 2025!**

GOSAT-GW
satellite at
Tanegashima
Space Center
in May 2025



• Status of development

- GOSAT-GW system development is in the final stage for launch
- Development Completion Review was completed in April 2025, and the GOSAT-GW satellite was transferred to the launch site, Tanegashima Space Center, Japan, for launch preparation
- Public data release of AMSR3 is panned 1-year after the launch from the JAXA G-Portal system (<https://gportal.jaxa.jp/gpr/>).

AMSR3 Major Improvements

- ① Additional **166 & 183 GHz** channels to enable monitoring of global precipitation (rain & snow) and contribute to water vapor analysis in NWP
- ② Additional **10.25 GHz channels with improved NEDT** to enable robust SST retrievals in higher spatial resolution

Satellite specification

Mission Instruments		AMSR3 (JAXA) TANSO-3 (MOE/NIES)
Orbit	Type	Sun-synchronous, Sub-recurrent orbit
	Altitude	666km, recurrent cycle 3days (same as GOSAT)
	Local sun time at ascending	13:30±15min (same as GCOM-W)
	Revisit time	3 days
Satellite Mass		2.6 tons (including propellant)
Designed lifetime		> 7 years
Launch		June 2025 by H-IIA #50 rocket

Summary

JAXA updates since CGMS-52

- Contribution to water cycle and climate studies, disaster mitigation, and various operational applications, including weather forecast, fishery, and agriculture, are big targets of JAXA's Earth observation missions
- To this purpose, JAXA currently operates eight EO satellites/missions in orbit and will continue those contributions by launching new satellites in near future.
 - ESA-JAXA EarthCARE mission to carry cloud profiling radar was launched in May 2024
 - ALOS-4, a L-band SAR mission to succeed ALOS-2 was launched in Jul. 2024
 - GOSAT-GW, carrying AMSR3 and TANSO-3, will be launched in JFY2025