



JAXA Agency Report

October 20-22, 2020

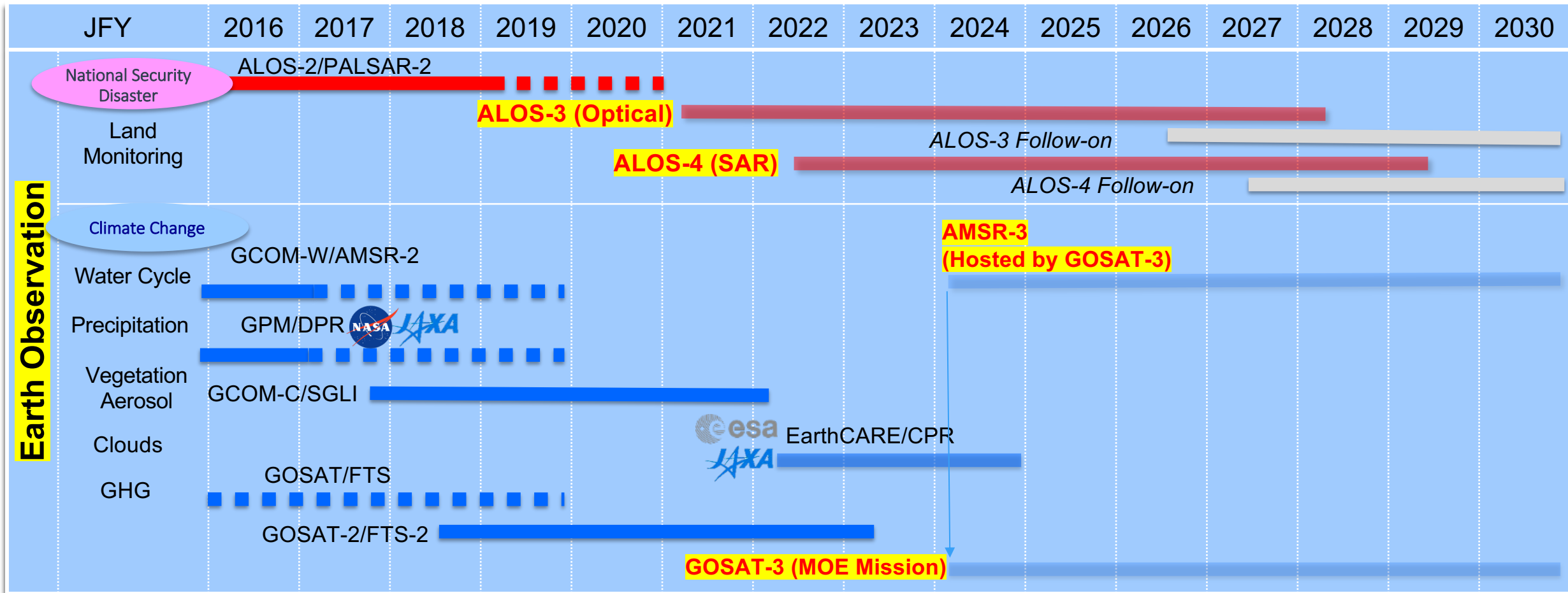
Takeshi Hirabayashi

Senior Chief Officer of Satellite Applications

Space Technology Directorate I

Japan Aerospace Exploration Agency

JAXA's Satellite Development and Operation Schedule



Current JAXA Earth Observation Satellites



Climate Change

GCOM-C



GOSAT



GOSAT-2



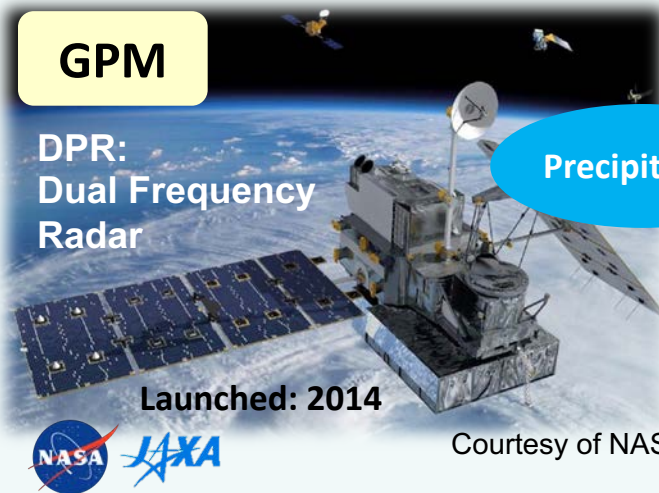
GCOM-W



GPM

DPR:
Dual Frequency
Radar

Precipitation



Courtesy of NASA

Disaster Risk Management

ALOS-2



A-decade-long GHG observation by GOSAT and GOSAT-2



2009

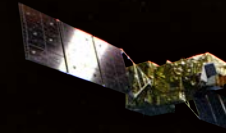
2018

2019

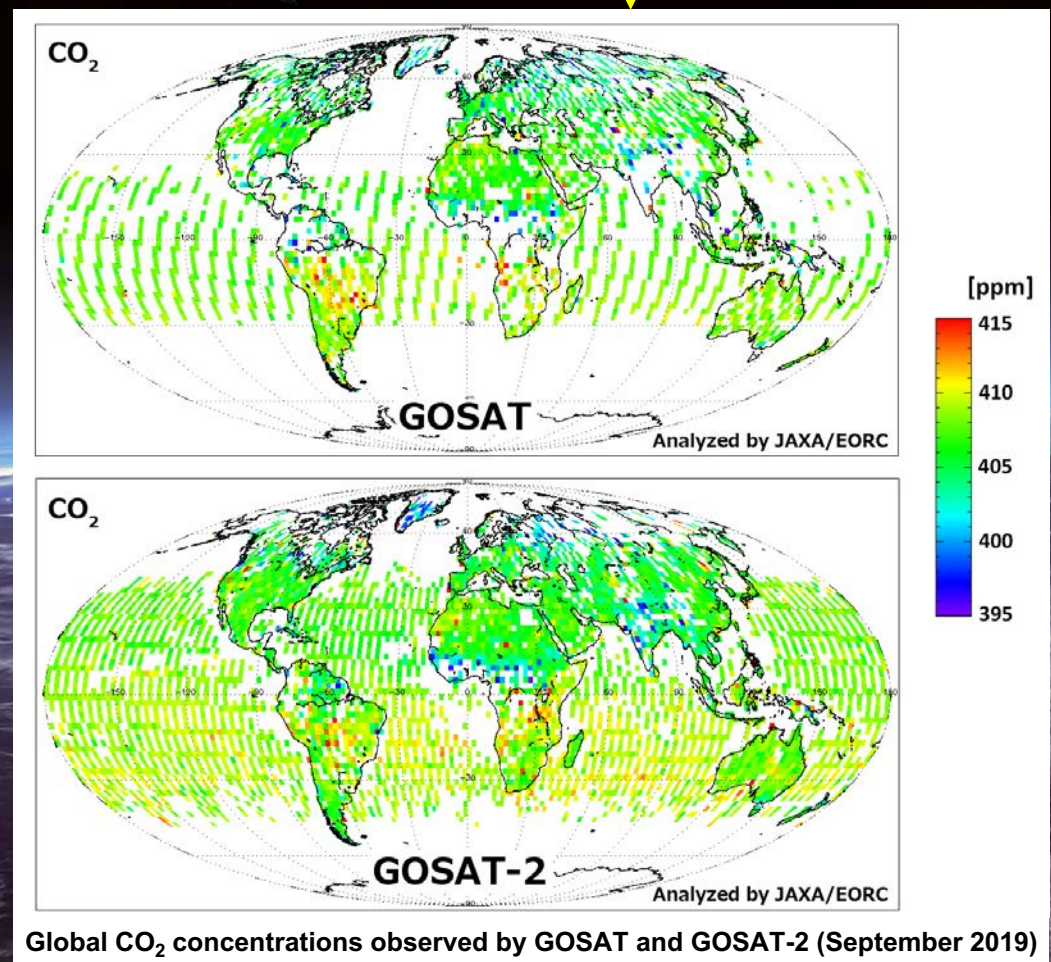
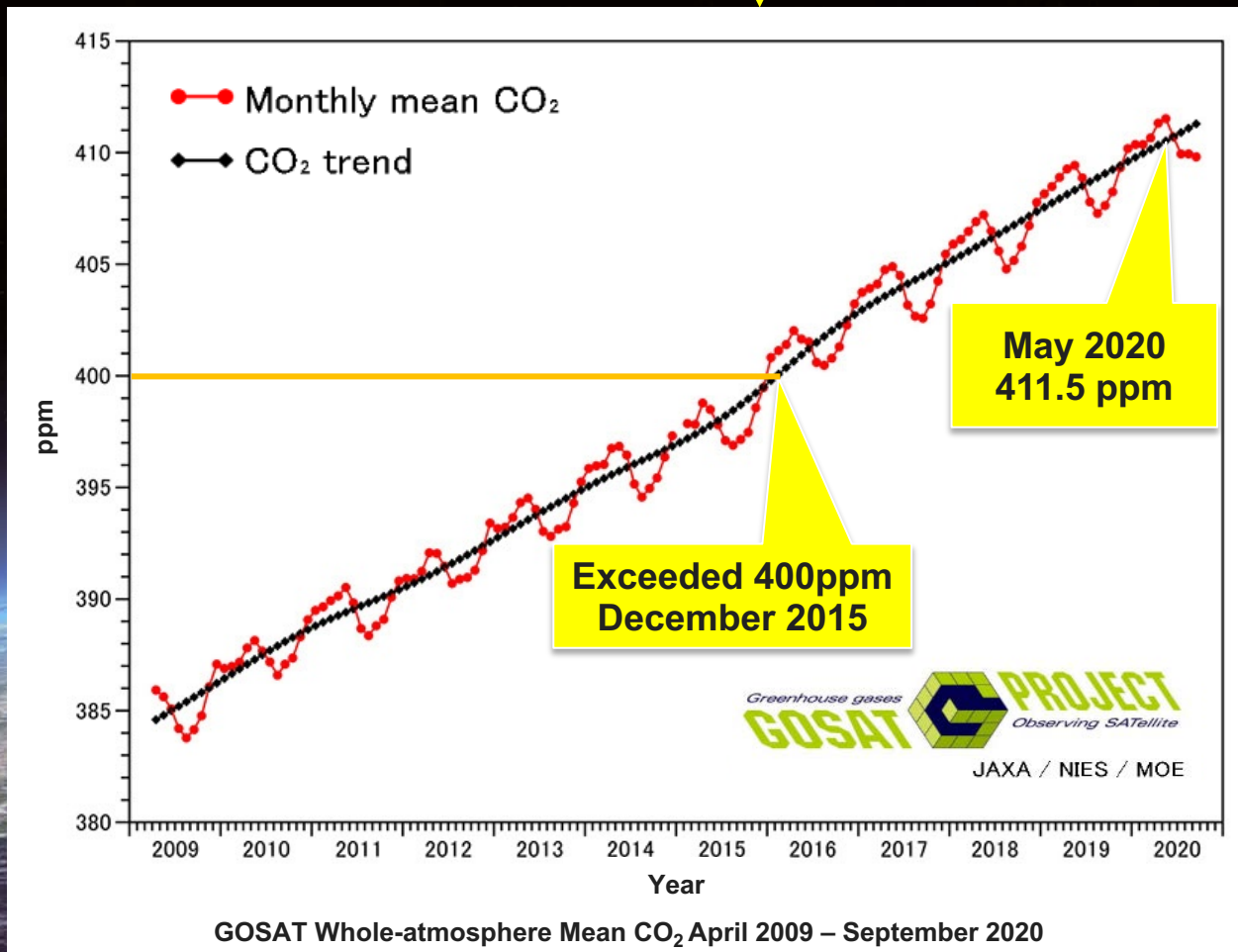
2020



GOSAT



GOSAT-2

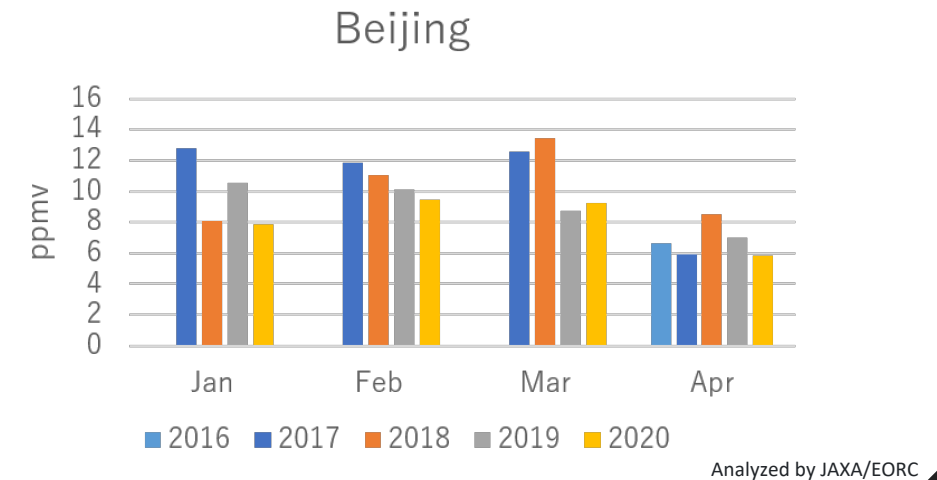
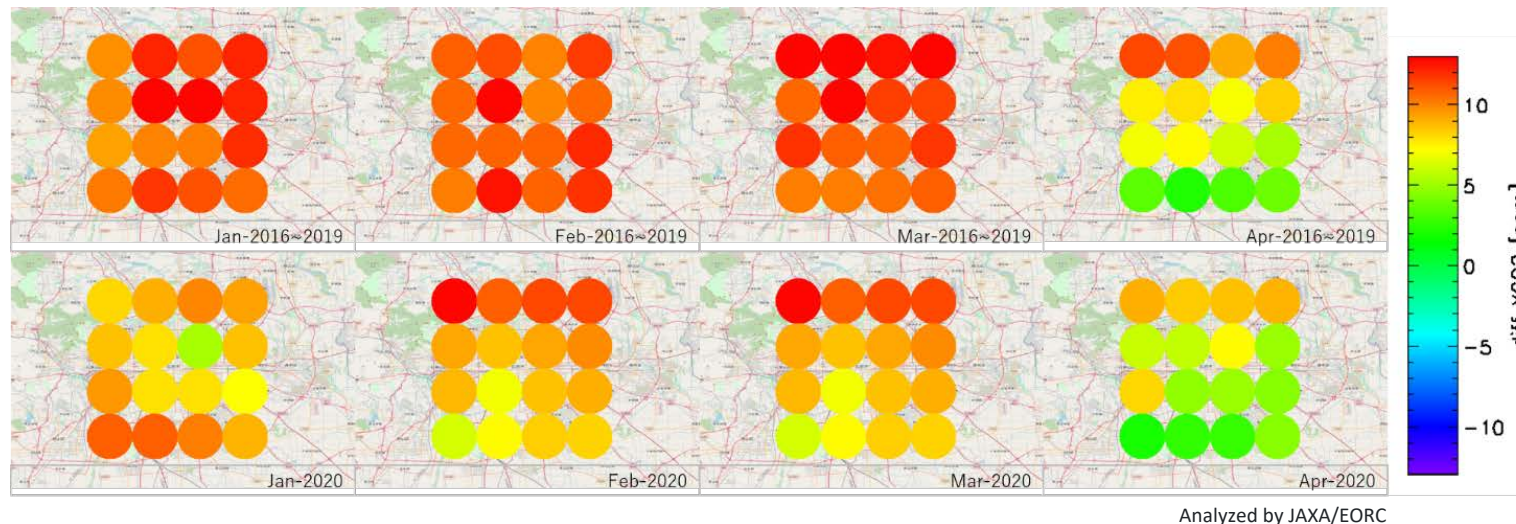
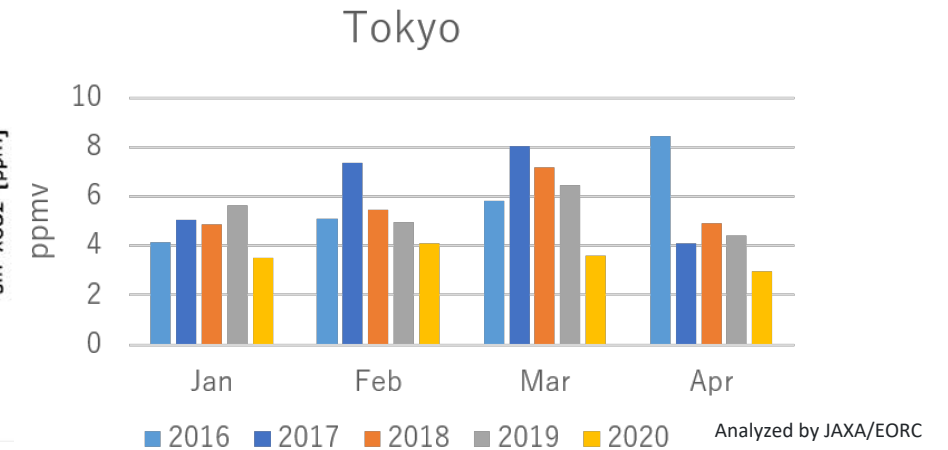
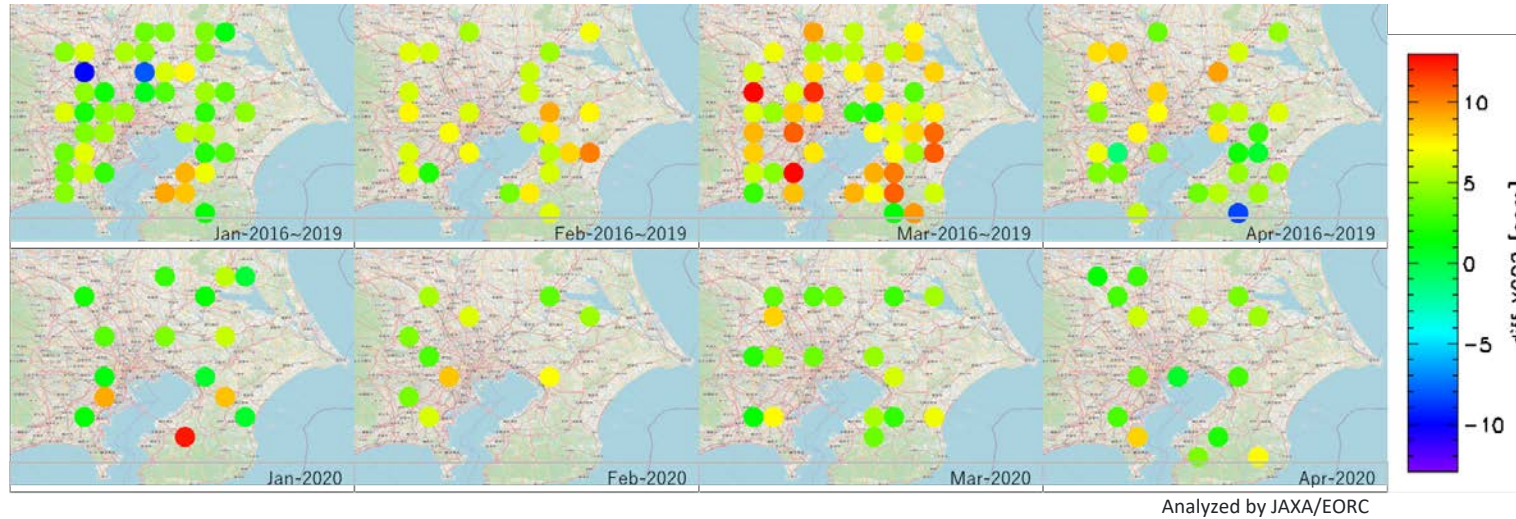




City Scale GHG Monitoring on COVID-19

Average monthly abundances of CO₂ in the lower troposphere for the past 4 years (upper) and 2020 (lower) from GOSAT

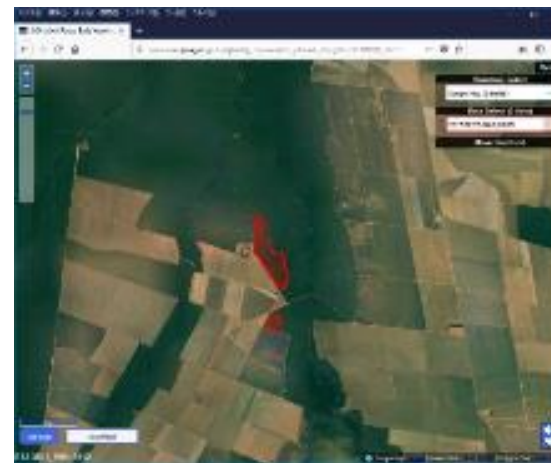
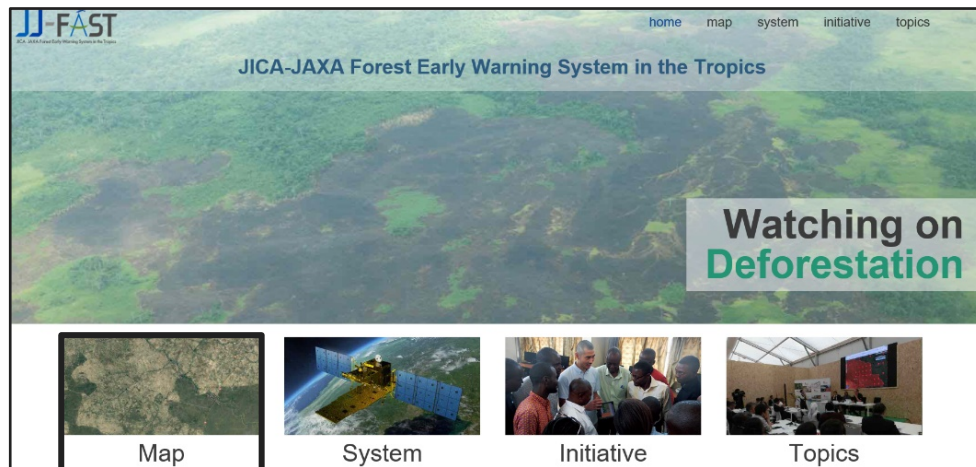
The difference in CO₂ density in the upper and lower troposphere is **smaller** in 2020 compared to 2016-2019 in Tokyo and Beijing.



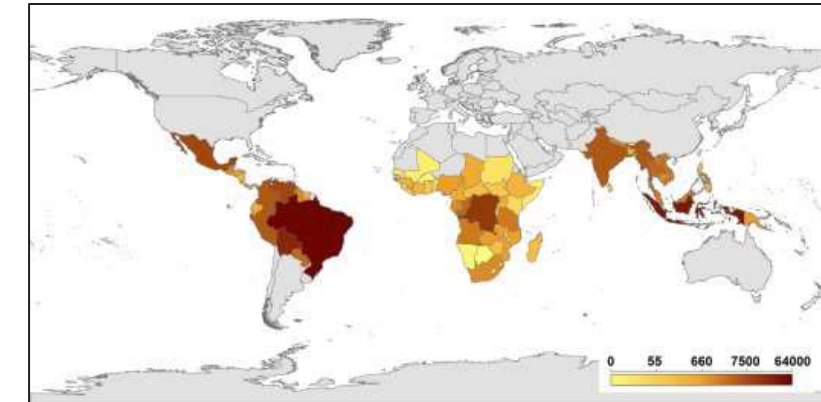
JICA-JAXA Forest Early Warning System in the Tropics (JJ-FAST)



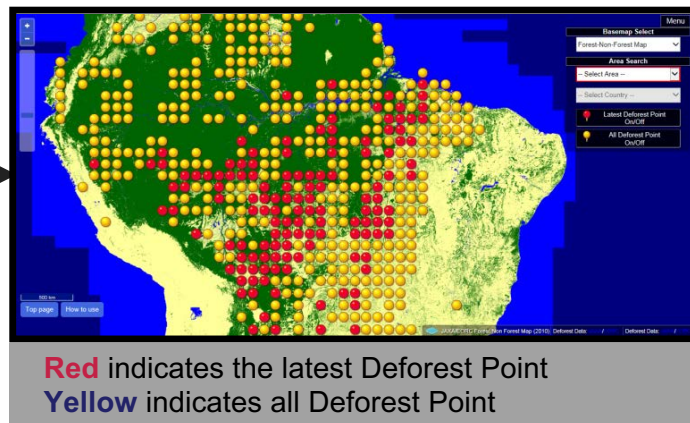
- JJ-FAST has been operated as a deforestation monitoring tool under the JICA-JAXA collaboration project since November 2016
- JJ-FAST covers **77 tropical countries** and disseminates deforestation areas detected by **PALSAR-2/ALOS-2 (ScanSAR)** for every **1.5 months**



Deforestation polygon



Total detected number: 308,353 points as of April, 2020
(92,787 points were detected in Brazil)



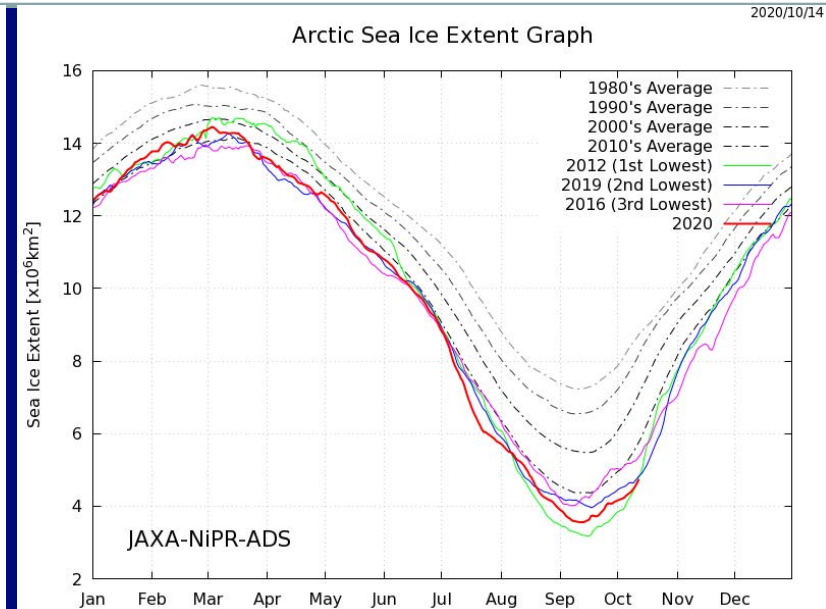
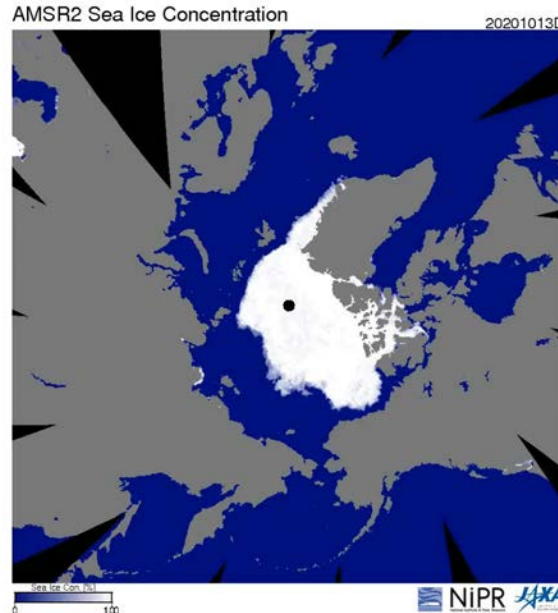


Monitoring Sea Ice



Arctic Sea Ice Concentration

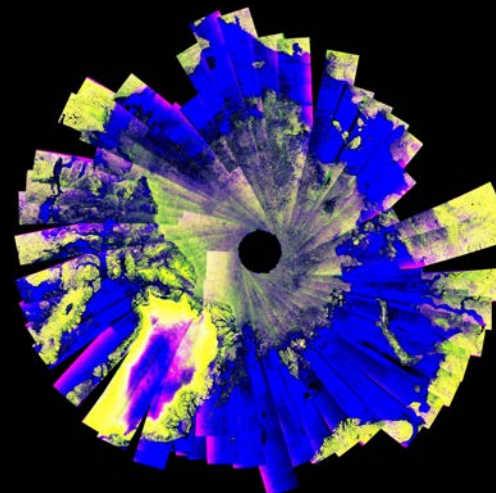
GCOM-W/AMSR2
observes sea ice
concentration everyday.



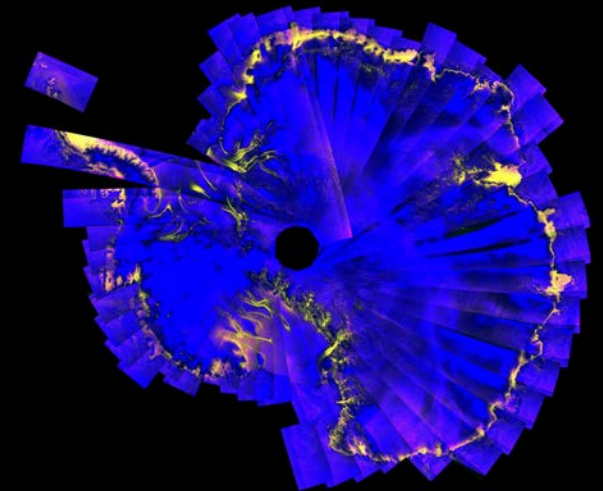
Arctic/Antarctic Sea Ice Mosaic Products

ALOS-2/PALSAR-2 ScanSAR Mosaic
Products in Arctic and Antarctic for 2017.

Arctic: August 2017



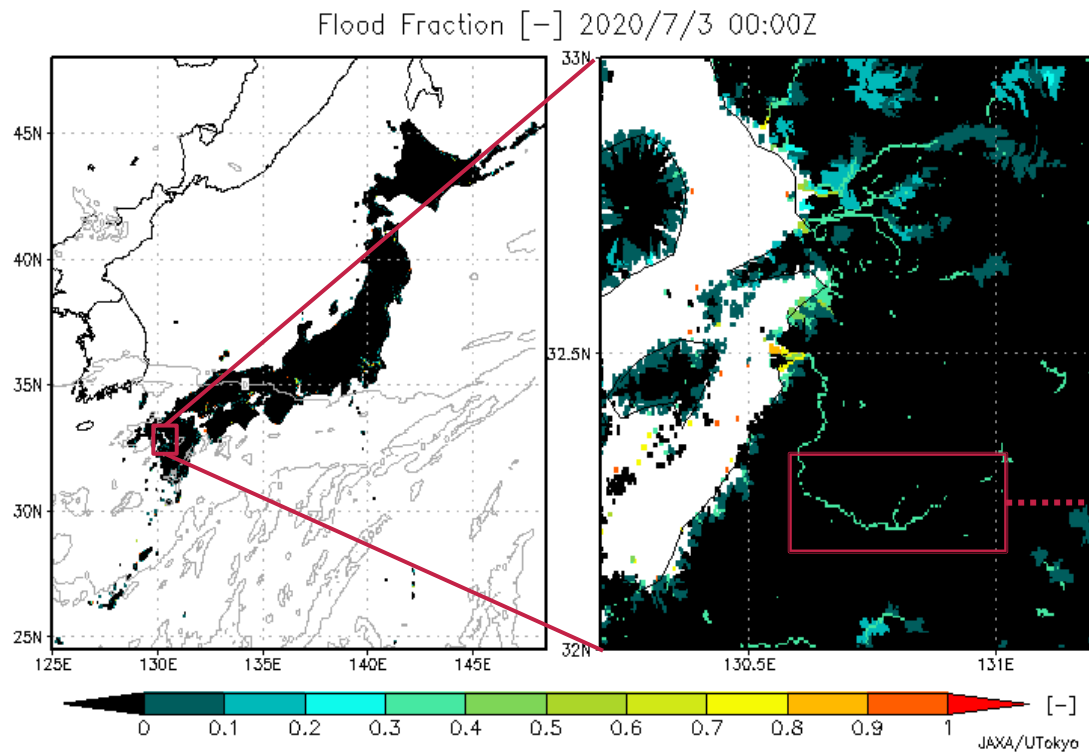
Antarctic: August 2017



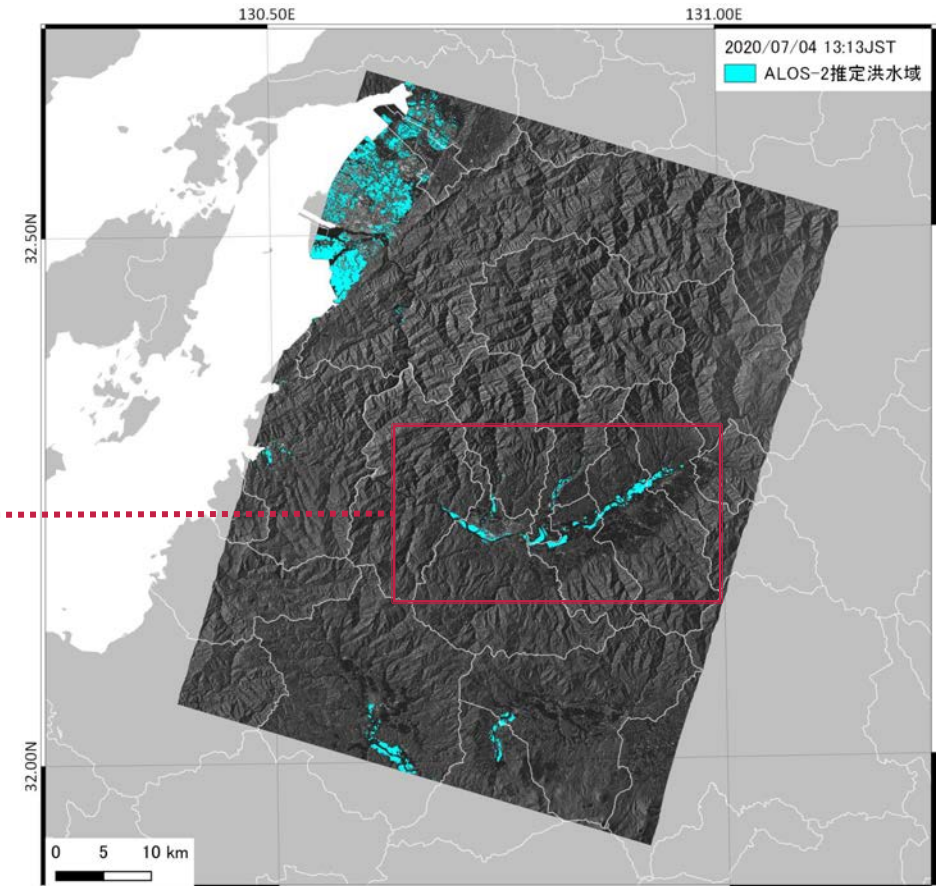
Land surface & river simulation system: Today's Earth



- JAXA has developed “Today's Earth” under the joint research with University of Tokyo (<https://www.eorc.jaxa.jp/water/>)
- Today's Earth distributes & visualizes various hydrological products with **1km resolution for Japan** and **25km resolution for global**



Today's Earth **3 days** simulation results, flood area fraction for heavy rain event (July 3 -6, 2020) in Kumamoto prefecture



Flooded areas detected by ALOS-2 on July 4, 2020

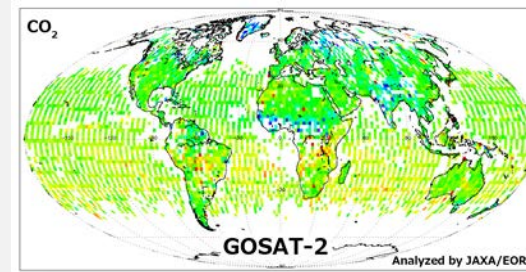
Sharing EO data for tackling Climate Change



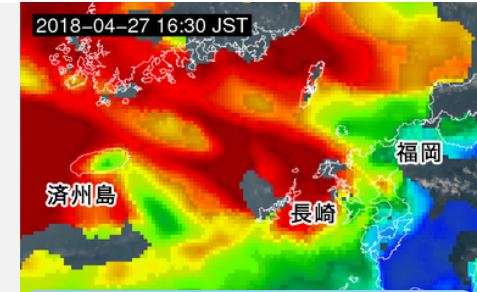
Atmosphere



Precipitation

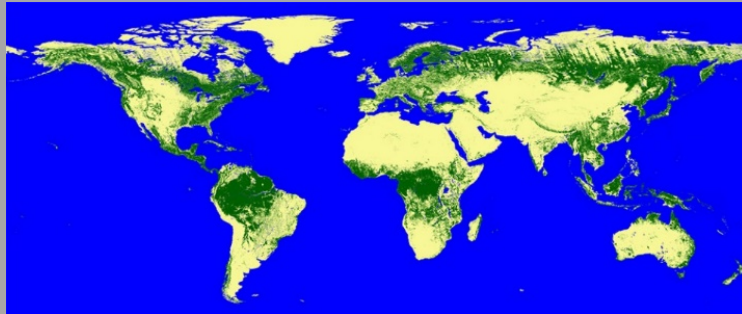


Greenhous Gasses

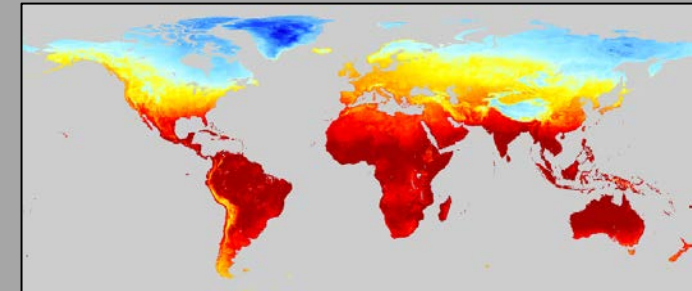
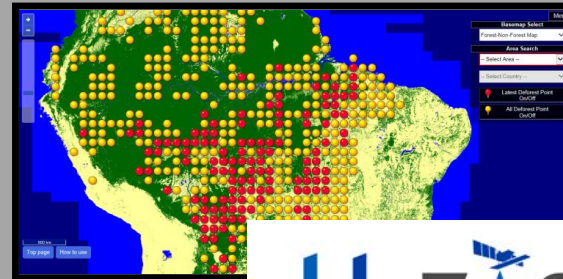


Aerosols

Land

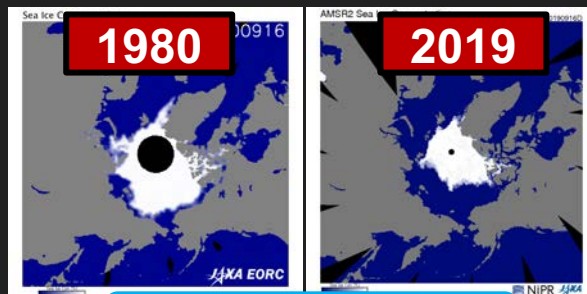


Forest/Non-Forest

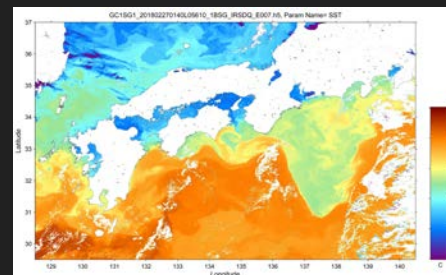


LST

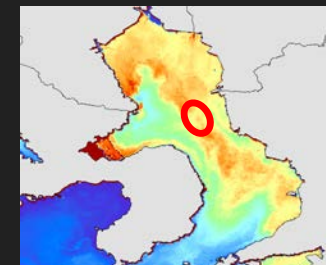
Ocean



Arctic Sea Ice



SST



Chlorophyll-a Concentration

JAXA for Earth on COVID-19

<http://earth.jaxa.jp/covid19/en.html>



GOSAT

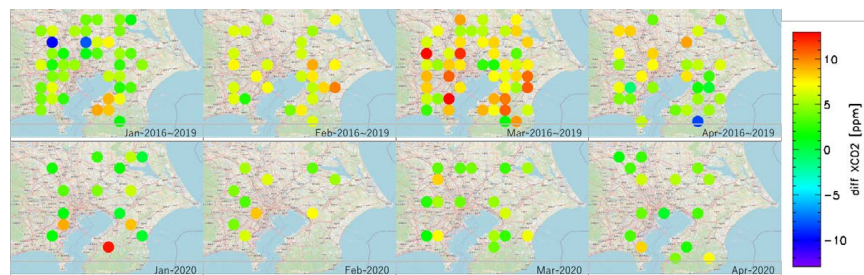


GCOM-C

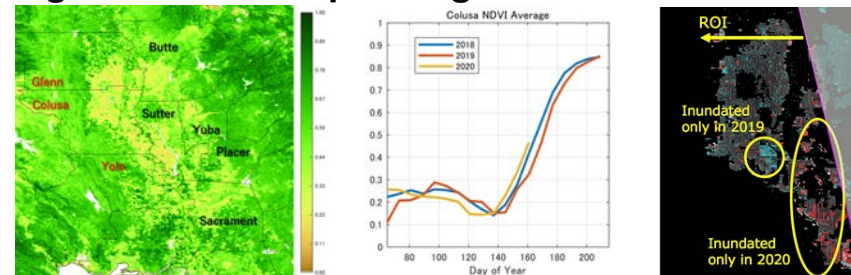


ALOS-2

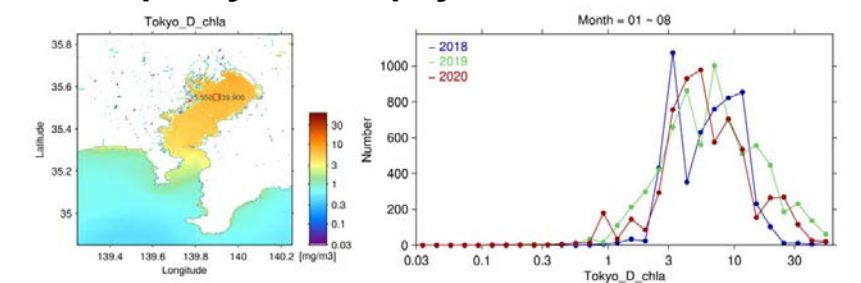
Climate: City scale greenhouse gasses



Agriculture: Rice planting



Water quality: Chlorophyll-a concentration

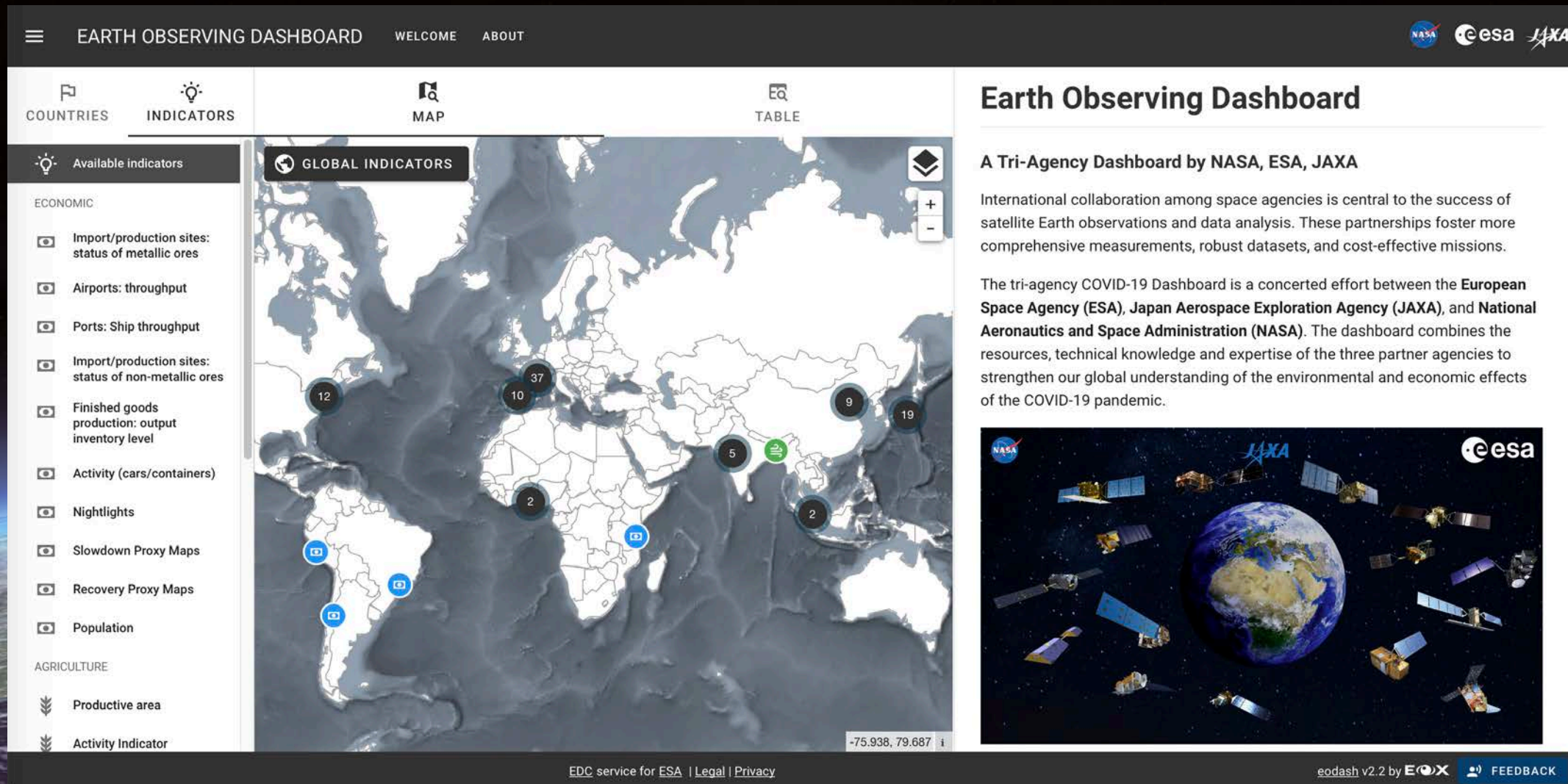


Industry & E activity : Airport throughout



NASA-ESA-JAXA cooperation: Earth Observing Dashboard

<https://eodashboard.org>

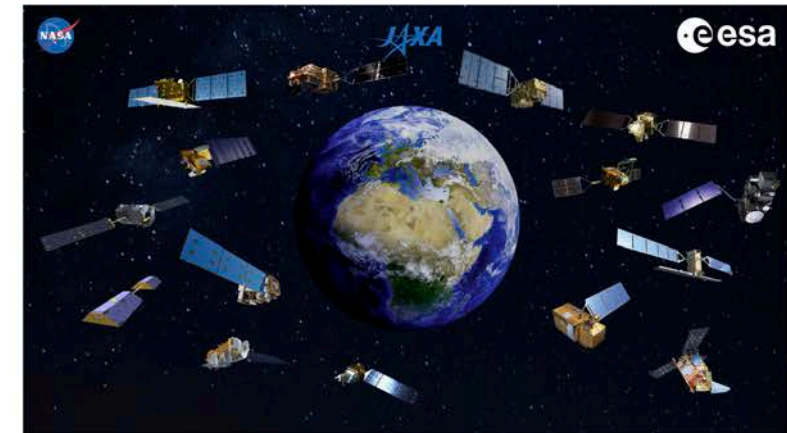


Earth Observing Dashboard

A Tri-Agency Dashboard by NASA, ESA, JAXA

International collaboration among space agencies is central to the success of satellite Earth observations and data analysis. These partnerships foster more comprehensive measurements, robust datasets, and cost-effective missions.

The tri-agency COVID-19 Dashboard is a concerted effort between the **European Space Agency (ESA)**, **Japan Aerospace Exploration Agency (JAXA)**, and **National Aeronautics and Space Administration (NASA)**. The dashboard combines the resources, technical knowledge and expertise of the three partner agencies to strengthen our global understanding of the environmental and economic effects of the COVID-19 pandemic.



Free and open access to ALOS/ALOS-2 data



JAXA will provide free and open access to the wide-swath observation data from the L-band Radar satellites, such as ALOS (ALOS/AVINIR-2, PALSAR) and ALOS-2(ALOS-2/ScanSAR)

		CY 2020				CY 2021			
		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)	Data Processing (Antarctic area)				Open to public			
				< -60 deg.		Global			
	PALSAR FBS, FBD (10 m)	Data Processing				Open to public			
				Japan		Global			
ALOS-2	PALSAR-2 ScanSAR (25m)			Data Processing				Open to public	
						Japan			

JAXA's Data distribution system: G-Portal



G-Portal
Globe Portal System

First of all, search the data you seek (no registration required)
* Registration required for download.

Search bar

Physical quantities
precipitation, ocean color, etc.

Spacecraft
spacecraft, sensor, level, etc.

Direct download
How to download via FTP, etc.

INFO [2019/04/24] (* Resumed) GPM and GSMaP products are not available temporarily.
All GPM products and GSMaP Near Real-Time Products were not available for about 10 hours from 18:30(UTC) April 23rd. The service has been resumed since that period.

Use cases
Drift Ice in the Okhotsk Sea

- ☐ **Atmosphere**
 - ☐ Precipitation
 - ☐ Cloud
 - ☐ Water Vapor
 - ☐ Radiation Balance
 - ☐ Aerosol
 - ☐ Radiance
 - ☐ Atmospheric Corrected Reflectance
- ☐ **Cryosphere**
 - ☐ Sea Ice
 - ☐ Snow Pack
- ☐ **Terrestrial**
 - ☐ Snow Pack
 - ☐ Soil Moisture
 - ☐ Radiance/Reflectance
 - ☐ Vegetation
 - ☐ Radiance
- ☐ **Ocean**
 - ☐ Sea Surface Temperature
 - ☐ Sea Surface Wind
 - ☐ Ocean Color
- ☐ **Others**
 - ☐ Radiance/Brightness Temperature
 - ☐ Radar/Lider
 - ☐ Geometric Information
 - ☐ Environment Auxiliary

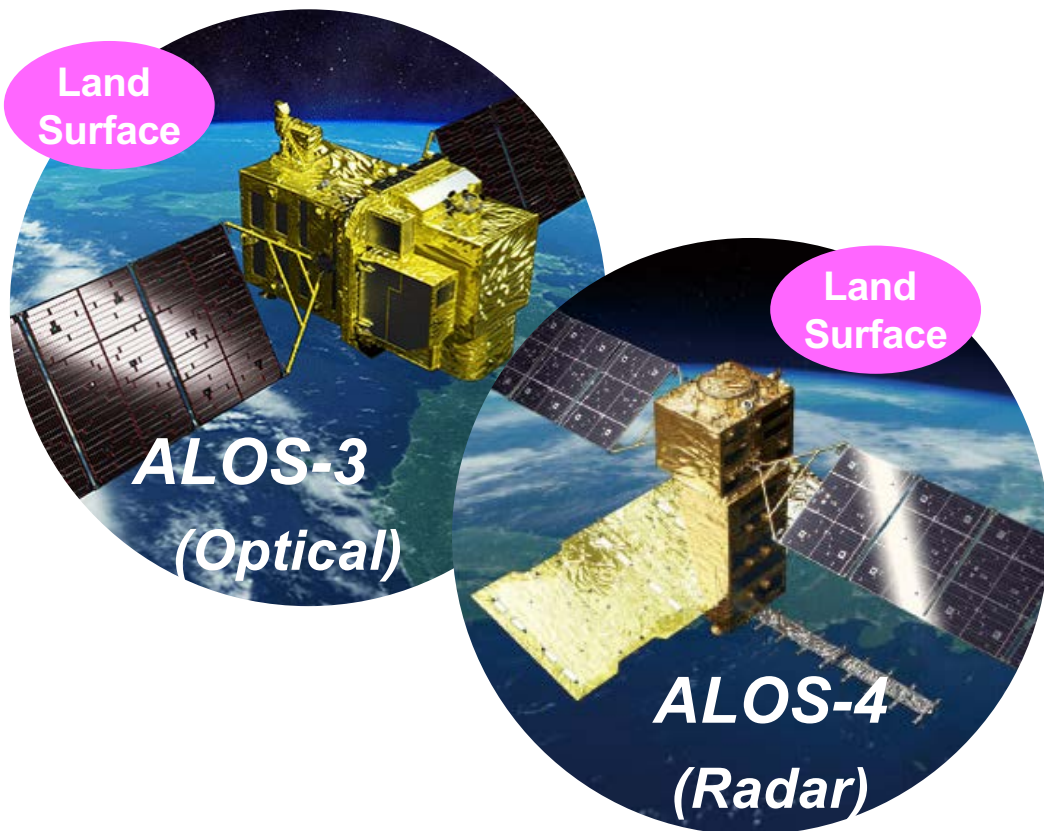
<https://gportal.jaxa.jp/gpr/>

Future JAXA Earth Observation Satellites



2021-2022

**ALOS-3, ALOS-4
Launch**



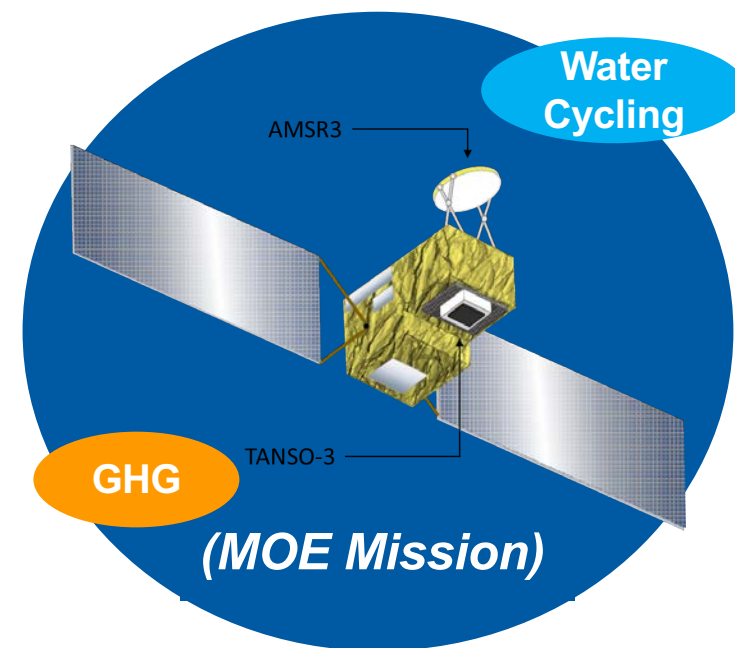
2022-2023

**EarthCARE
Launch**



2023-2024

**GOSAT-2 Follow-on Mission
/ AMSR3
Launch**





For Our Sustainable Future



Thank you for your attention.

*Images of the Earth about 340,000 km from the center of the Earth took by the Hayabusa2
after the swing-by on December 4, 2015.*