



Earth Observation Satellite Data for SDGs

Goals

2 ZERO HUNGER 	3 GOOD HEALTH AND WELL-BEING 	6 CLEAN WATER AND SANITATION
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	11 SUSTAINABLE CITIES AND COMMUNITIES 	13 CLIMATE ACTION
14 LIFE BELOW WATER 	15 LIFE ON LAND 	17 PARTNERSHIPS FOR THE GOALS



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Deputy Chief Officer of Earth Observation Missions
Japan Aerospace Exploration Agency



JAXA's Contributions to SDGs

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
ALOS-2		✓									✓		✓	✓	✓		
GOSAT			✓								✓		✓				
GOSAT-2			✓								✓		✓				
GCOM-W		✓				✓							✓	✓	✓		
GPM/DPR						✓							✓				
GCOM-C		✓	✓								✓		✓	✓	✓		
EarthCARE			✓			✓					✓		✓				
ALOS-4		✓							✓		✓		✓	✓	✓		
GOSAT-GW		✓	✓			✓					✓		✓	✓	✓		



Save Tropical Forest

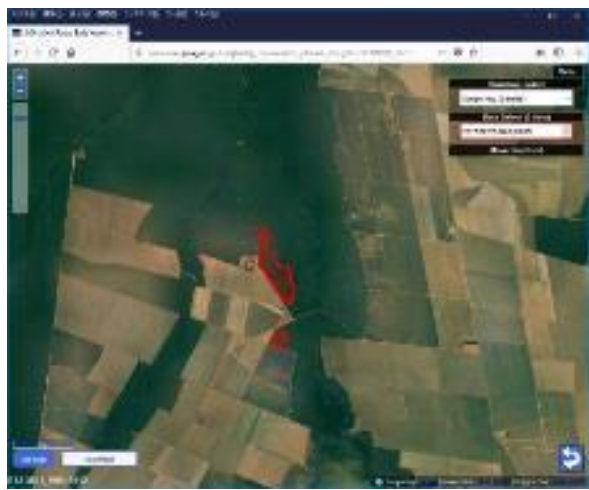


- Monitoring Forest Changes for More Than 25 Years
- Broad Ground Surface Observation by Radar Capable of Penetrating Clouds
- Contributing to the sustainable forest management using satellite data of forest changes

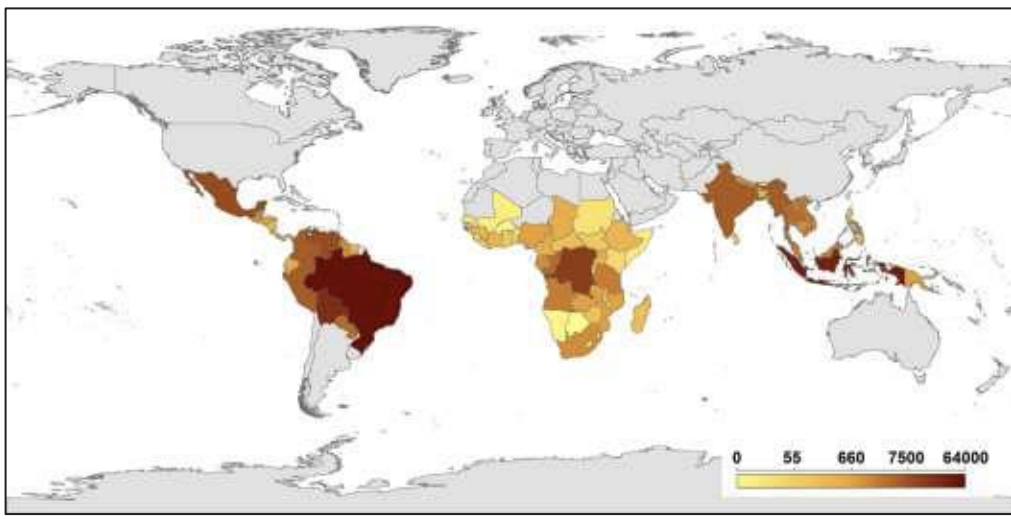


JICA-JAXA Forest Early Warning System in the Tropics (JJ-FAST)

- JJ-FAST has been operated as a deforestation monitoring tool under the JICA-JAXA collaboration project since November 2016
- JJ-FAST covers **78 tropical countries** and disseminates deforestation areas detected by **ALOS-2** for every **1.5 months**



Deforestation polygon



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

Red indicates the latest Deforest Point
Yellow indicates all Deforest Point

JJ-FAST website (http://www.eorc.jaxa.jp/jjfast//jj_index.html)



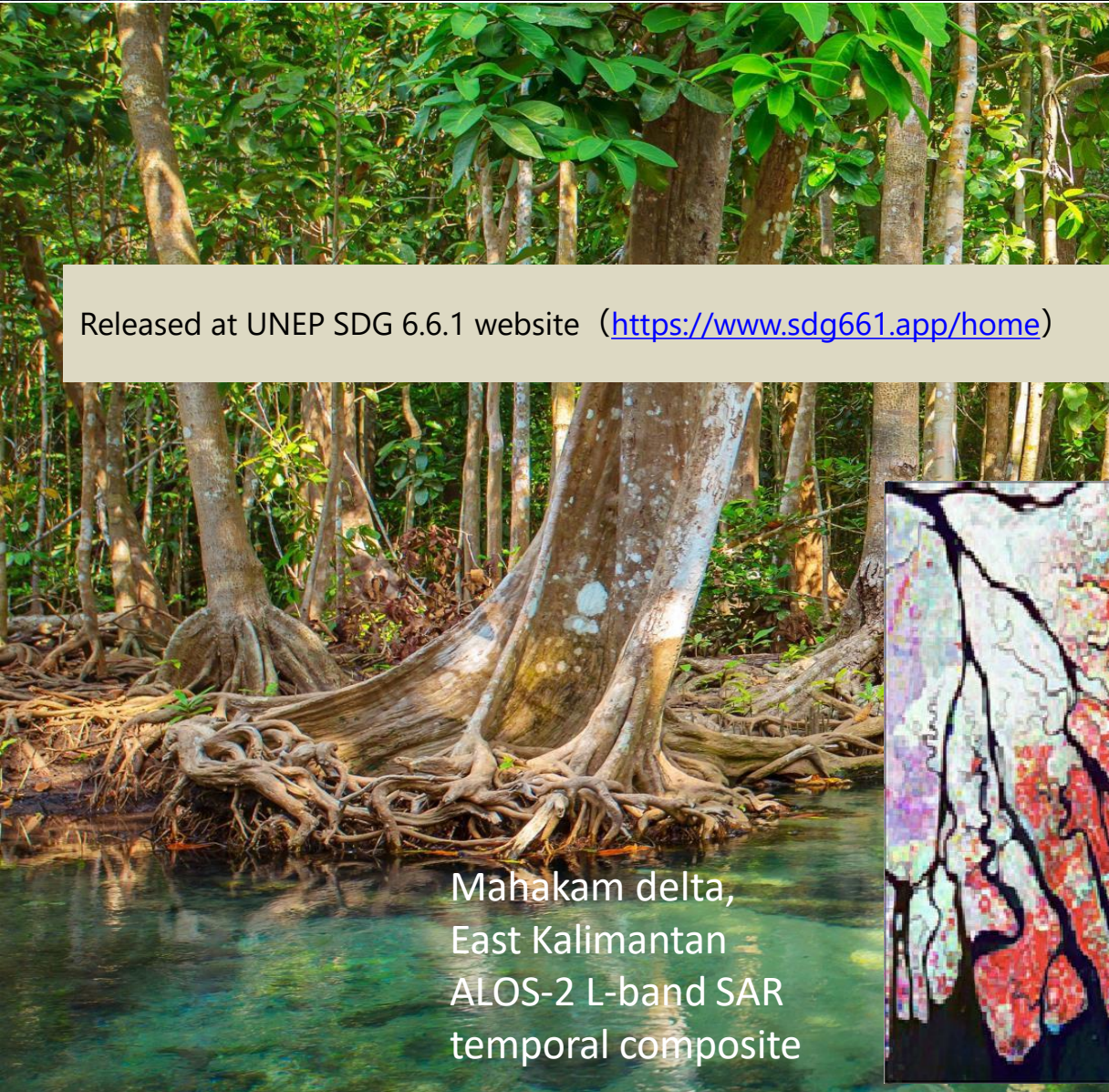
Global Mangrove Watch (ALOS-2)



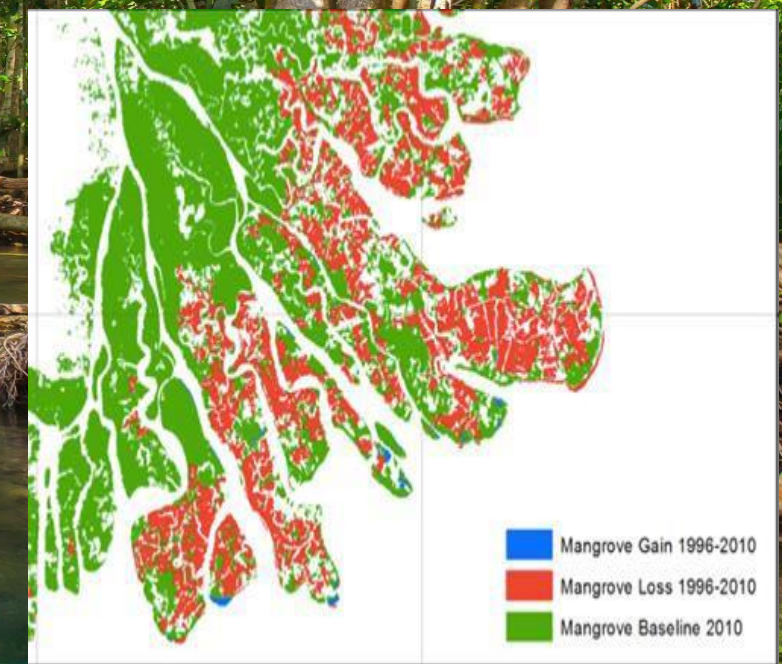
– Mapping Extent and Annual Changes in the Global Mangrove Cover –

The Global Mangrove Watch (GMW) was set up to provide fine resolution (25 m) geospatial information about mangrove extent and changes to Ramsar, national wetland practitioners, decision makers, and NGOs.

Released at UNEP SDG 6.6.1 website (<https://www.sdg661.app/home>)

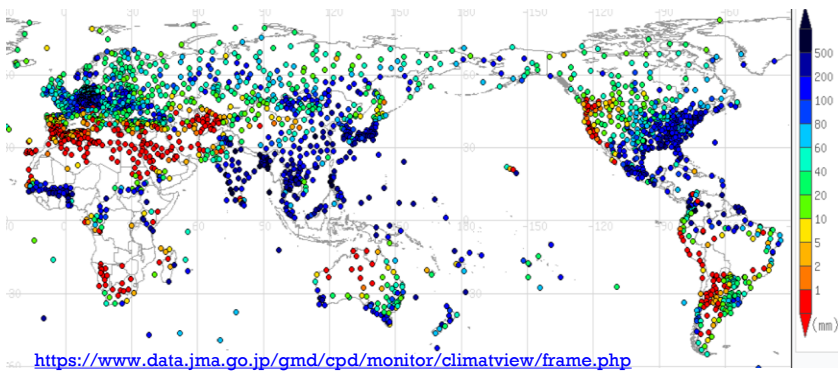


Mahakam delta,
East Kalimantan
ALOS-2 L-band SAR
temporal composite

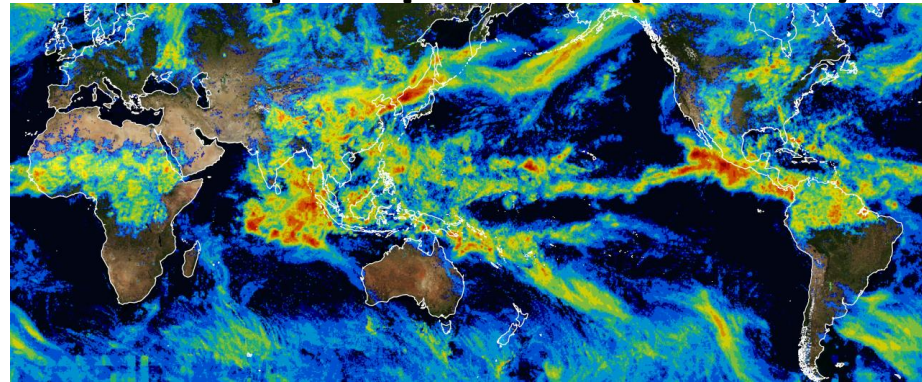


Flood Prediction: Realized by Integration of Ground Observations and Satellite Precipitation (GSMaP)

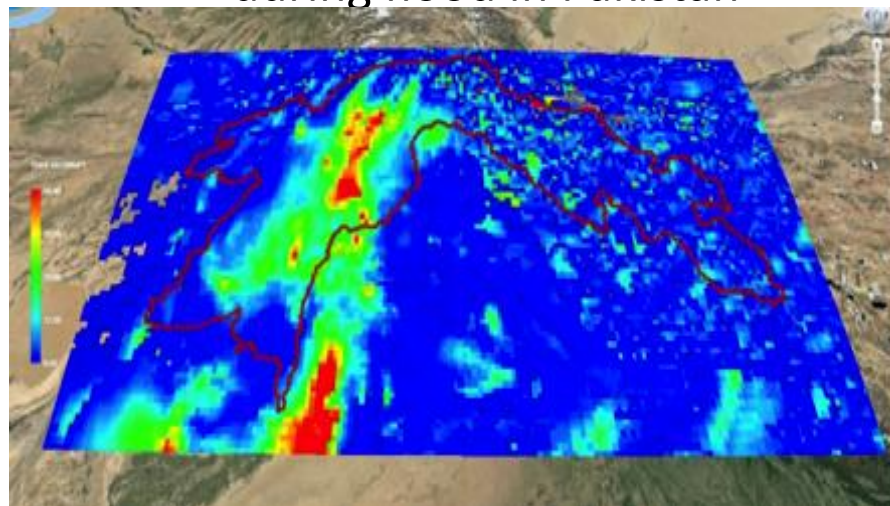
Ground observations



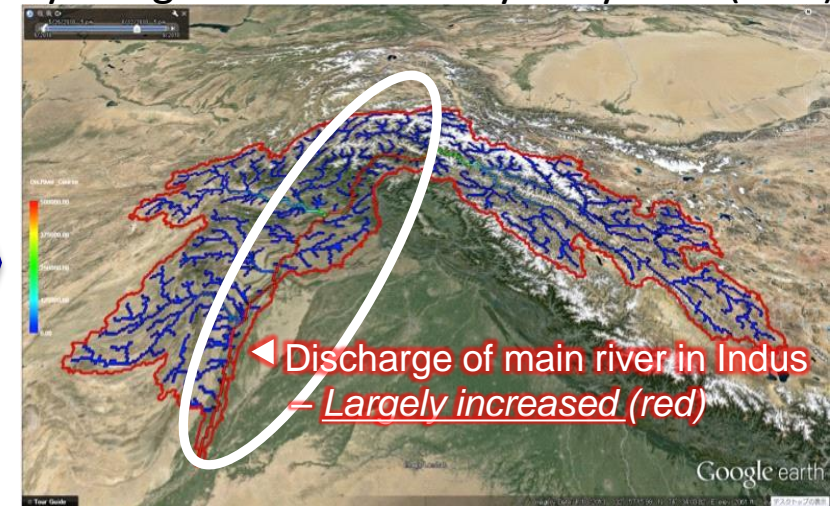
Satellite precipitation (GSMaP)



Rainfall over the river basin during flood in Pakistan



River discharge using GSMaP by Integrated Flood Analysis System (IFAS)



Partners



(Images provided by ICHARM)



Agriculture Monitoring



◆ Utilization for rice crop estimation in Southeast Asia

- **Rice Growing Report is released monthly in cooperation with AFSIS(ASEAN +3 Food Security Information System) and countries in Southeast Asia** using JASMIN providing agricultural meteorological information (precipitation/soil moisture/temperature) from satellite observation data
- Rice crop information is provided to AMIS (the Agricultural Market Information System) operated by FAO through **GEOGLAM(the Group on Earth Observations Global Agricultural Monitoring Initiative, lunched at the summit/the G20 Agriculture Ministers in 2011)**

The screenshot shows the JASMIN web interface with the following elements:

- Header: JASMIN - Jaxa's Satellite based MonItoring Network system for FAO AMIS Market Monitor
- Navigation: Top, Image, Time Series Graph, Data Source
- Filters: area: Indonesia, year: 2015, month: Jul, day: First half
- Data Grid:
 - Row 1: Precipitation, Drought index, Soil Moisture, Solar Radiation, Surface Temperature, Vegetation Index
 - Row 2: Precipitation anomaly, Drought Index anomaly, Soil Moisture anomaly, Solar Radiation anomaly, Surface Temperature anomaly, Vegetation Index anomaly
- Footer: Copyright ©2013 Japan Aerospace Exploration Agency, Earth Observation Research Center All rights reserved. JAXA EORC

➤➤➤➤➤

Rice Growing Outlook Report (released monthly by AFSIS)

Market Monitor (released monthly by AMIS)

JASMIN: Jaxa's Satellite based MonItoring Network system(JAXA)

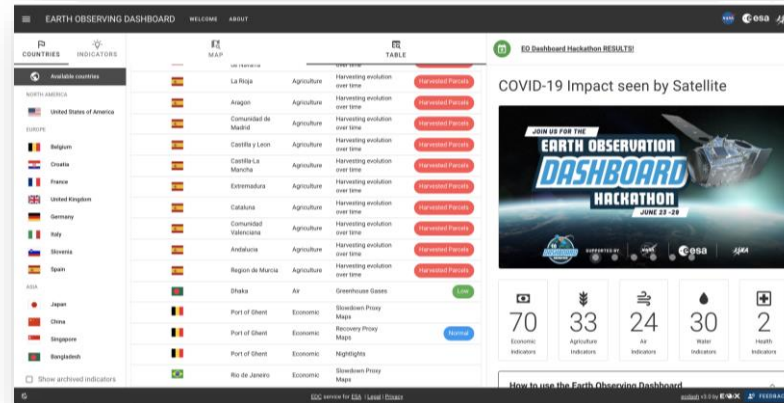
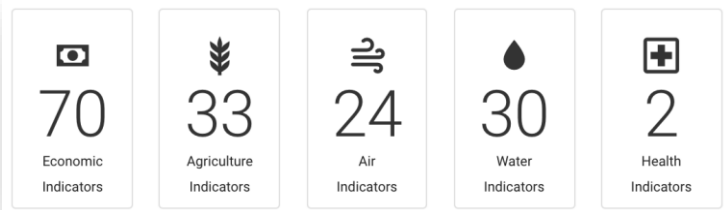
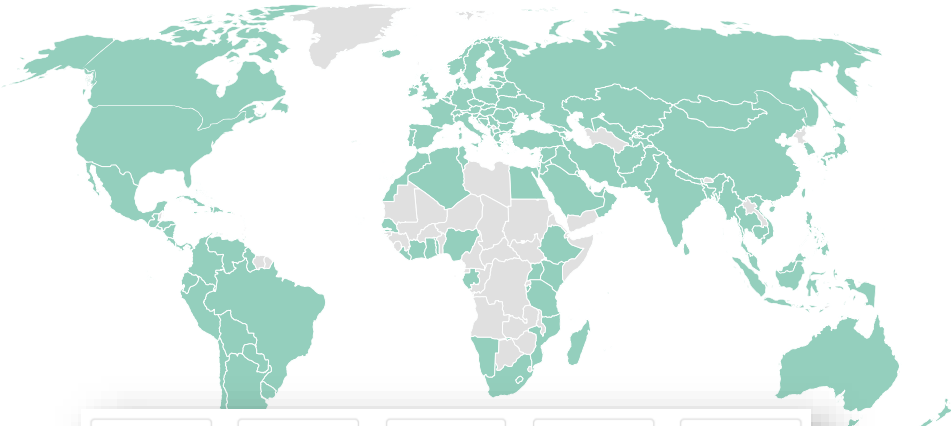


NASA-ESA-JAXA EO DASHBOARD



- **EODASHBOARD.ORG** launched in June 2020
- Demonstrate joint capabilities of **NASA-ESA-JAXA** to observe COVID-19 environmental and economic impacts from space
- Communicate indicators to the general public and decision makers
- Engage the wider public via competitions, e.g. **EODashboardHackathon**, SpaceApps

161.000+ visitors from 146 countries



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Correspondence | Published: 13 September 2021

Can space-based technologies help manage and prevent pandemics?

Farhan M. Asrar, David Saint-Jacques, Helena J. Chapman, Dave Williams, Shirish Ravan, Ross Upshur & Jonathan B. Clark

Nature Medicine 27, 1489–1490 (2021) | Cite this article

1080 Accesses | 8 Altmetric | Metrics

To the Editor—The COVID-19 pandemic has put the world at a standstill and has changed the way everyone works, communicates, studies and provides healthcare. Global vaccination strategies offer hope, but many health inequalities hinder access to vaccines, and there are increasing concerns about SARS-CoV-2 variants.

<https://www.nature.com/articles/s41591-021-01485-5>

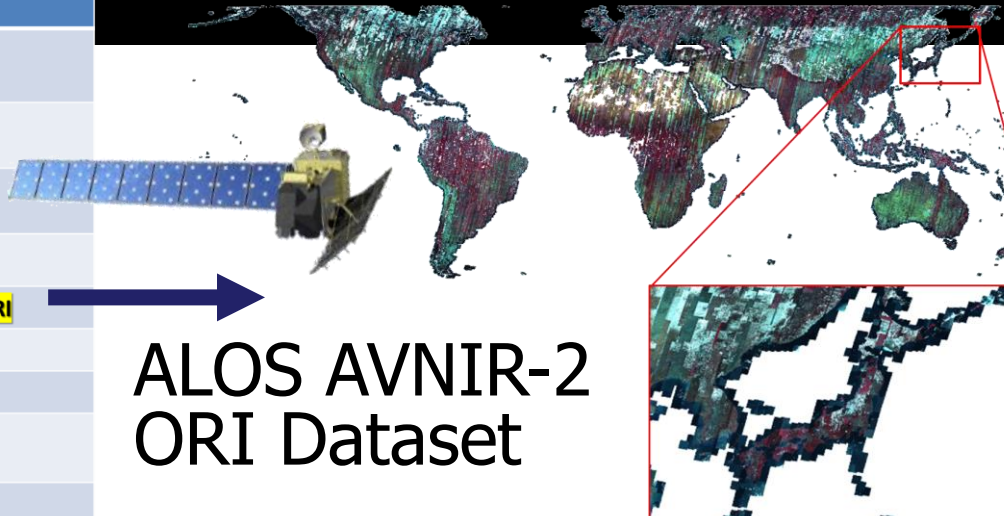
509 Teams
4.337 participants
132 countries



JAXA 's Open and Free Data



Satellite/ Sensor		Before	NOW
MOS/JERS/ADEOS/ADEOS-2/ AMSR-E/TRMM		○	○
GOSAT		○	○
GCOM-W and GCOM-C		○	○
GPM		○	○
ALOS	AVNIR-2 (10m)	—	○ AVNIR-2 ORI
	PALSAR (10m)	—	○
	DSM (30m)	○	○
Annual Global Forest map / mosaic (25m)		○ JERS/ALOS	○ ALOS-2
ALOS-2	ScanSAR (100m)	—	○
	Fine mode (10m)	—	Under Negotiation with PD



ALOS AVNIR-2 ORI Dataset

AVNIR-2 Ortho Rectified Image (ORI)

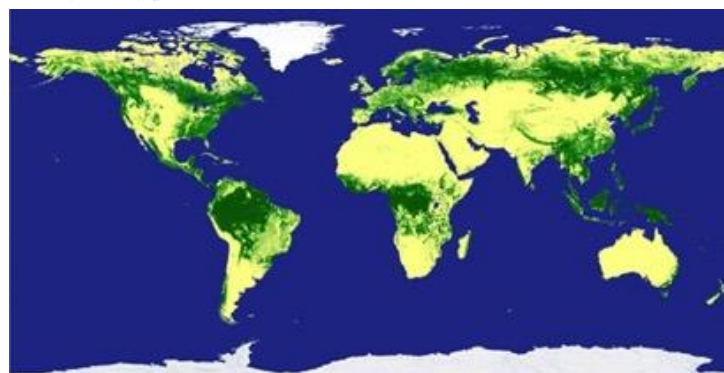
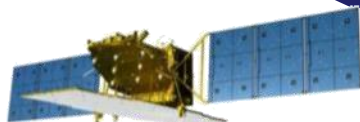
- Automatic processing using PRISM DSM and ORI.
- Areas within 60 deg. latitude had priority.
- Global areas will be done in 2019.
- < 30 % clouds / scene is processed.
- Scene-based product in total 0.8 mil. scenes.
- Acquired date: 2006 to 2011.
- This will be complemented Landsat-7.**
- These does not apply atmospheric correction.
- Any suggestions?

Download site on JAXA EORC web

<http://www.eorc.jaxa.jp/ALOS/en/alos-ori/index.html>

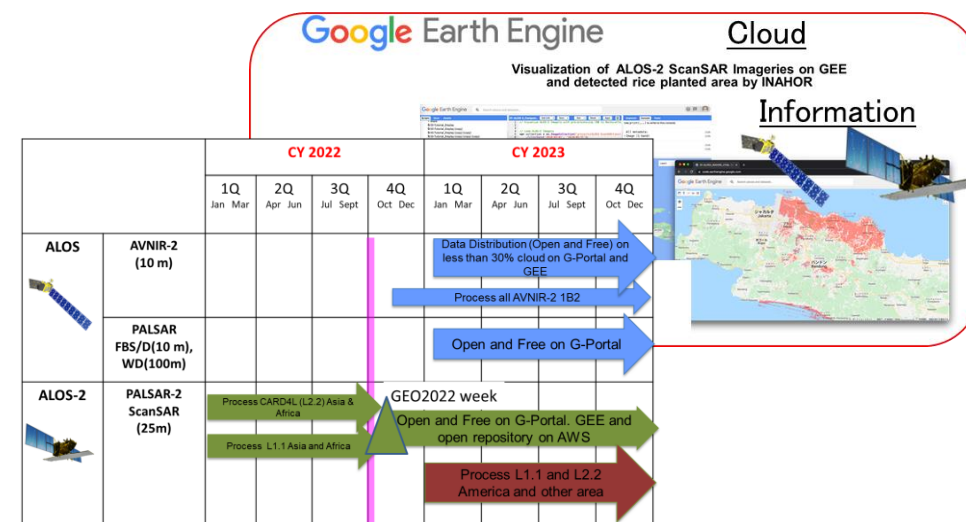


- ✓ Satellite: JERS-1/SAR (1996), ALOS/PALSAR (2007-2010), and ALOS-2/ PALSAR-2 (2015-)
- ✓ Frequency: Annual summer data (June-September)
- ✓ Data: gamma-zero image and forest/non-forest (FNF), ancillary data (local incidence, mask, etc.), spaced in 0.8 arcsec (approx. 25 m) and averaged in 100 m, ortho-rectified, and slope corrected
- ✓ Geometric accuracy: 10 m
- ✓ Expression: 2 byte data (unsigned short integer) for amplitude image
- ✓ Area: Global Land
- ✓ Download unit: 1 x 1 deg. or 5 x 5 degrees in lat/long unit



JAXA's SAR ARD available from the web site:

http://www.eorc.jaxa.jp/ALOS/en/palsar_fnf/fnf_index.htm



JAXA G-portal: <https://gportal.jaxa.jp/gpr/?lang=en>

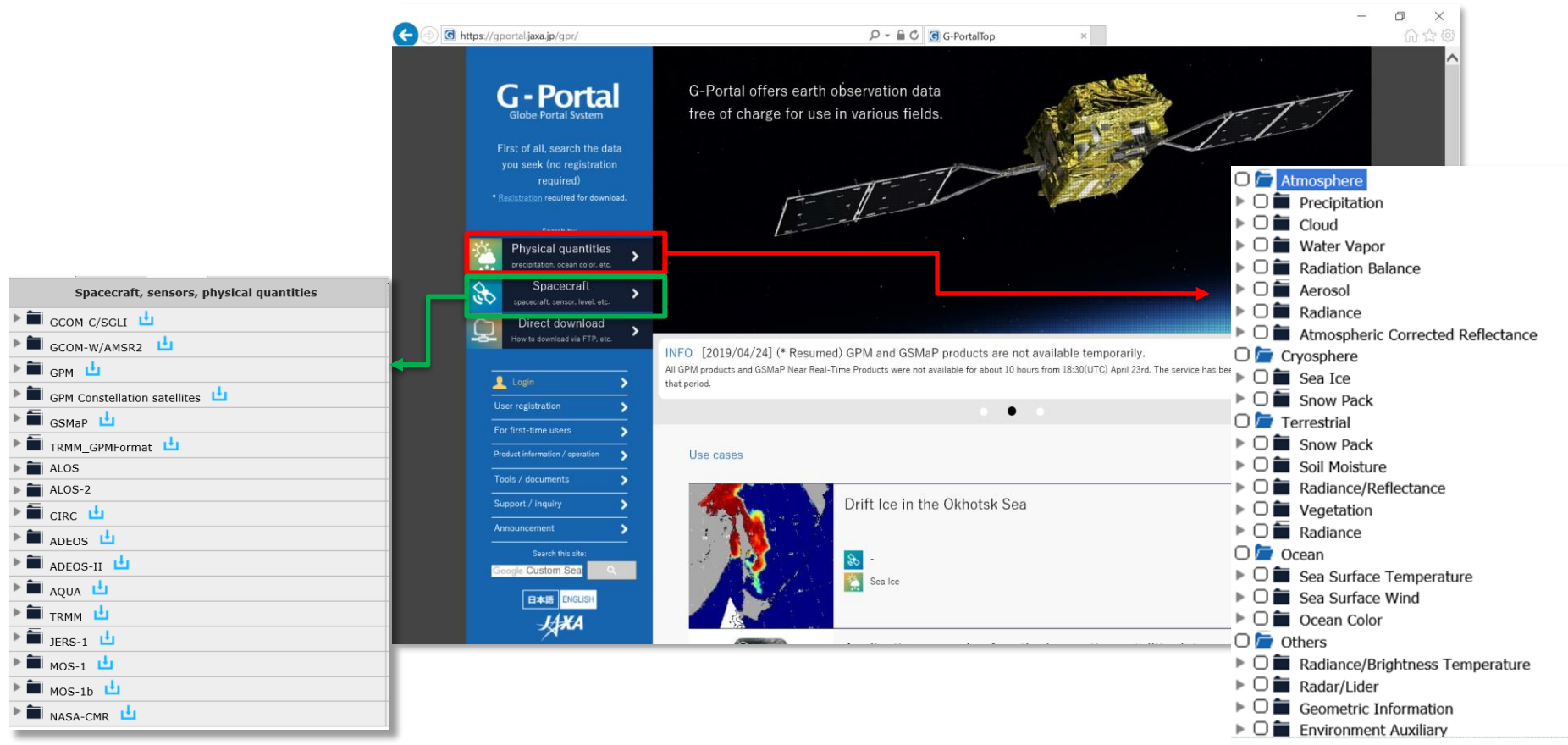
AVNIR-2 EORC HP(Japan area): https://www.eorc.jaxa.jp/ALOS/en/dataset/ori_e.htm



APPENDIX G-PORTAL ACCESS

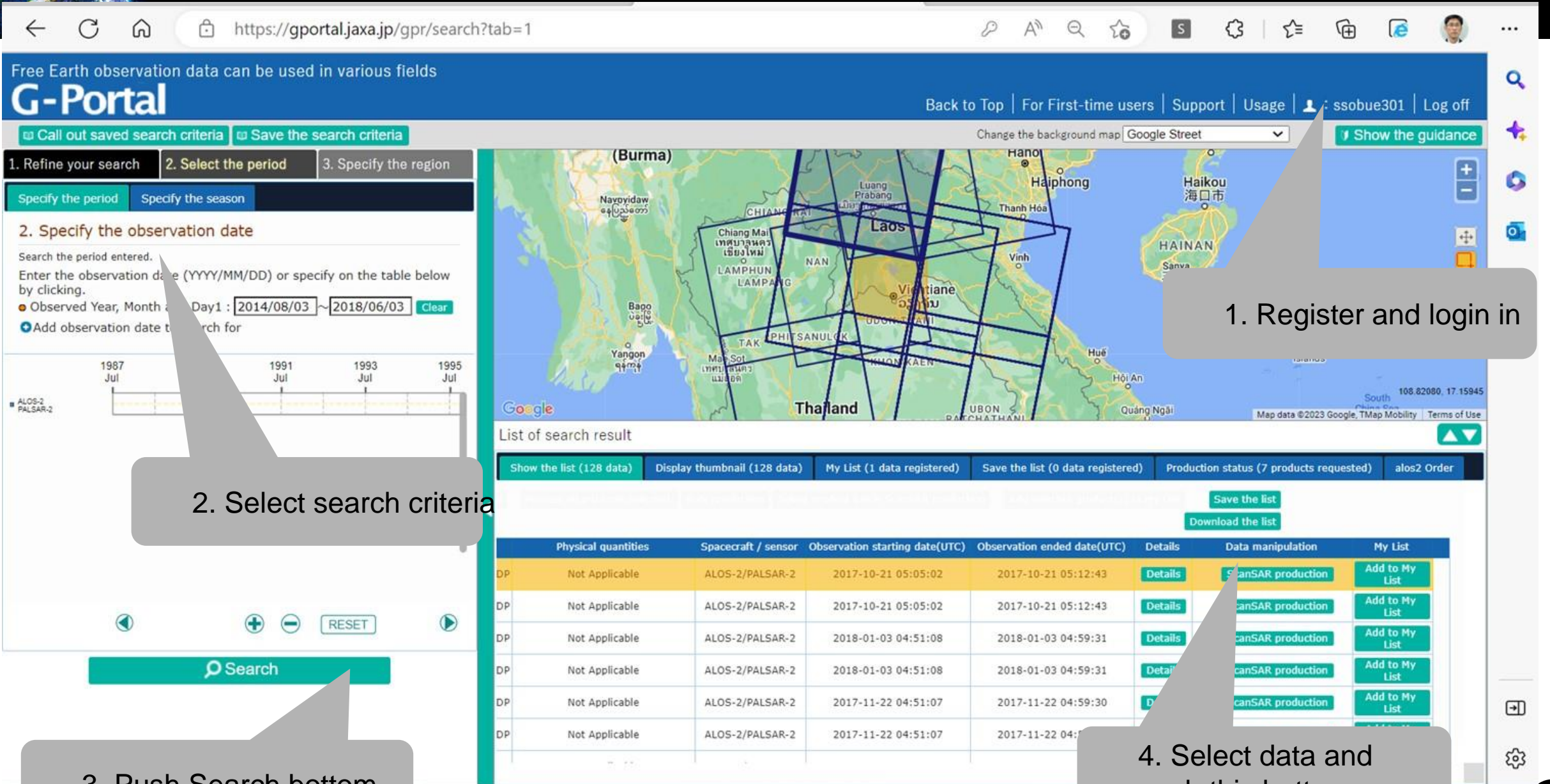
JAXA's Data distribution system: G-Portal

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



The screenshot displays the G-Portal website interface. On the left, a sidebar menu lists various spacecraft and sensors, including GCOM-C/SGLI, GCOM-W/AMSR2, GPM, and others. The main content area features a header with the G-Portal logo and a navigation menu with options like 'Physical quantities', 'Spacecraft', and 'Direct download'. A red box highlights the 'Physical quantities' menu item, with a red arrow pointing to a detailed list of data categories on the right. This list includes '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), and 'Others' (Radiance/Brightness Temperature, Radar/Lider, Geometric Information, Environment Auxiliary). A search bar and language selection options are also visible at the bottom of the main content area.

G-Portal offers various earth observation data for free.



Free Earth observation data can be used in various fields

G-Portal

Back to Top | For First-time users | Support | Usage | User: ssobue301 | Log off

Call out saved search criteria | Save the search criteria

Change the background map: Google Street | Show the guidance

1. Refine your search | 2. Select the period | 3. Specify the region

Specify the period | Specify the season

2. Specify the observation date

Search the period entered.
Enter the observation date (YYYY/MM/DD) or specify on the table below by clicking.

Observed Year, Month and Day 1 : 2014/08/03 ~ 2018/06/03 Clear

Add observation date to search for

1987 Jul 1991 Jul 1993 Jul 1995 Jul

ALOS-2 PALSAR-2

RESET

Search

List of search result

Show the list (128 data) | Display thumbnail (128 data) | My List (1 data registered) | Save the list (0 data registered) | Production status (7 products requested) | alos2 Order

Save the list | Download the list

	Physical quantities	Spacecraft / sensor	Observation starting date(UTC)	Observation ended date(UTC)	Details	Data manipulation	My List
DP	Not Applicable	ALOS-2/PALSAR-2	2017-10-21 05:05:02	2017-10-21 05:12:43	Details	ScanSAR production	Add to My List
DP	Not Applicable	ALOS-2/PALSAR-2	2017-10-21 05:05:02	2017-10-21 05:12:43	Details	ScanSAR production	Add to My List
DP	Not Applicable	ALOS-2/PALSAR-2	2018-01-03 04:51:08	2018-01-03 04:59:31	Details	ScanSAR production	Add to My List
DP	Not Applicable	ALOS-2/PALSAR-2	2018-01-03 04:51:08	2018-01-03 04:59:31	Details	ScanSAR production	Add to My List
DP	Not Applicable	ALOS-2/PALSAR-2	2017-11-22 04:51:07	2017-11-22 04:59:30	Details	ScanSAR production	Add to My List
DP	Not Applicable	ALOS-2/PALSAR-2	2017-11-22 04:51:07	2017-11-22 04:59:30	Details	ScanSAR production	Add to My List

2. Select search criteria

1. Register and login in

3. Push Search bottom

4. Select data and push this bottom



Free Earth observation data can be used in various fields

G-Portal

Back to Top | For First-time users | Support | : ssobue301

ALOS_PALSAR_AVNIR-2_PRISM_ALOS-2_PALSAR-2

Parameter setting If you omit the parameter setting, default parameter is used.

No.	Cancel	<input type="checkbox"/>	ID	Observational day	Additional informa	Center latitude	Center longitude	Proseccing level
1		<input checked="" type="checkbox"/>	ALOS2184243200-171021	2017-10-21 05:05:02	Mode: WD1	20.724	101.964	2.2



order

5. Push this bottom
Receive data ready notification e-mail
and download data by sftp