

Report by JAXA as Data Provider Node



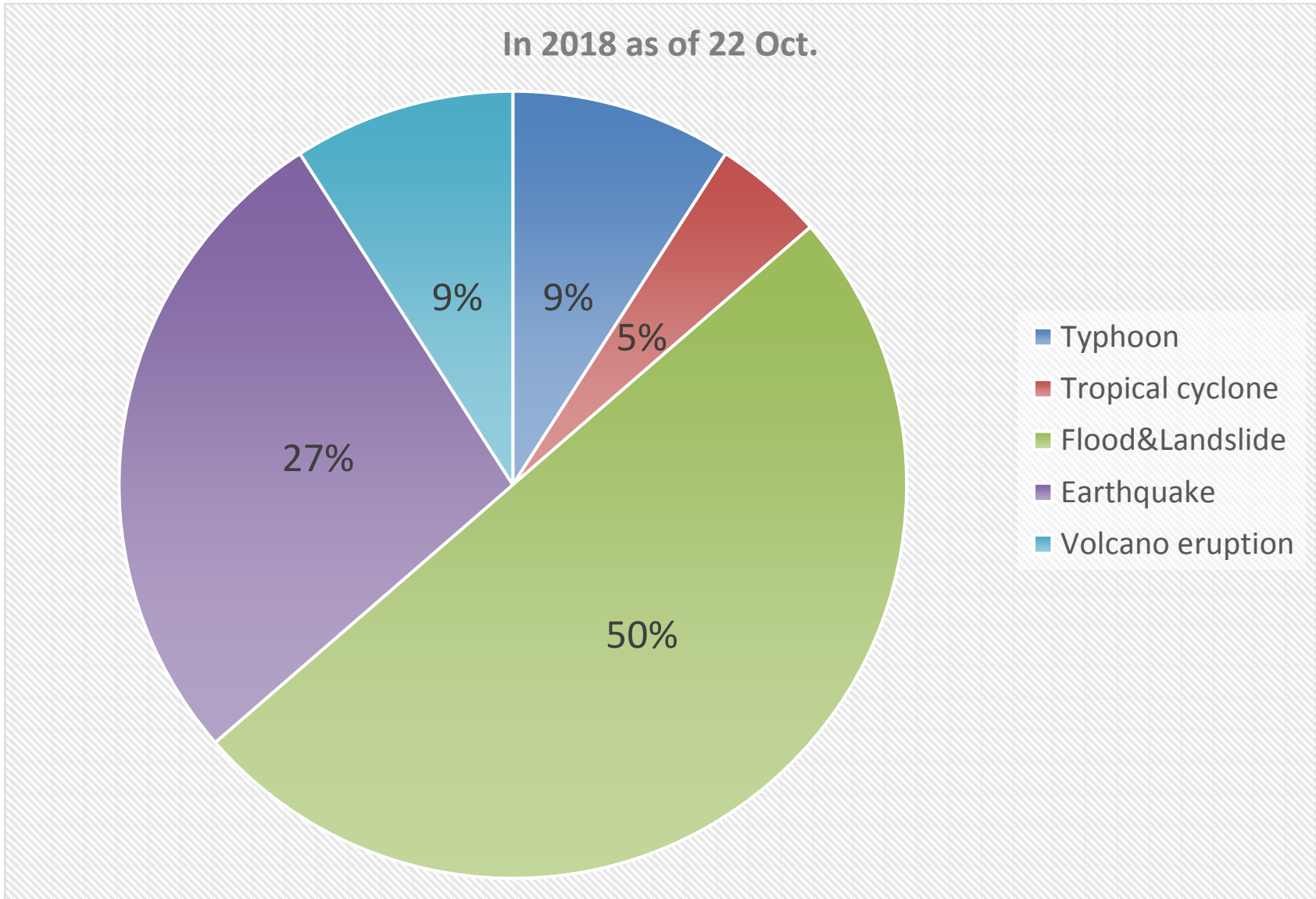
6th Joint Project Team Meeting
1st&2nd November 2018, Awaji, Japan

Yuji TAKADA

Space Applications and Operations Center (SAOC)
Japan Aerospace Exploration Agency (JAXA)

Summary of ALOS-2 Emergency Observations for Sentinel Asia(SA) Activations in 2018

Ratio of Natural Disaster Type for EORs in 2018



21 Executed ALOS-2 Observations for 23 EORs in 2018



(as of 22 October 2018)

Disaster Occurrence Date(Year/Month/Day)	Country/Region	AOI	Disaster Type
2018/1/15	Philippines	Mt. Mayon	Volcanic Eruption
2018/1/5	Papua New Guinea	Kadovar island	Volcanic Eruption
2018/2/7	Taiwan	Hualien	Earthquake
2018/2/10	Korea	Pohang	Earthquake(*1)
2018/2/12	Tonga	Whole country	Cyclone
2018/5/20	Sri Lanka	Western Province, Southern Province	Flood
2018/6/23	Vietnam	The North-western of Vietnam	Flood and Landslide
2018/7/6	Japan	Western Japan	Flood and Landslide
2018/7/9	Thailand	Southern of Thailand	Oil Spill
2018/7/18	Vietnam	Northern Midlands of Vietnam and provinces from Thanh Hoa to Quang Binh	Flood
2018/7/23	Lao PDR	Attapeu province in south-east Laos	Flood
2018/7/26	Myanmar	Bago Region, Mon State and Kayin State	Flood
2018/7/29	Indonesia	Lombok island	Earthquake
2018/8/5	Indonesia	Lombok island	Earthquake
2018/7/29	Thailand	Sakon Nakhon province in northeastern Thailand	Flood
2018/8/9	India	Kerala State in South India	Flood
2018/8/25	Taiwan	Chiayi and its around area	Flood
2018/8/27	Vietnam	Mekong Delta	Flood(*2)
2018/8/29	Myanmar	Bago Division (from Yedashe township to Madauk township)	Flood
2018/9/6	Japan	Iburi region of Hokkaido	Earthquake
2018/9/15	Philippines	Northern part of Luzon island	Typhoon
2018/9/17	Vietnam	Northern part of Vietnam	Typhoon
2018/9/28	Indonesia	Central Sulawesi	Earthquake

(*1)There was no observation opportunity within 10 days requirement.

(*2)Fortunately flood did not occur.

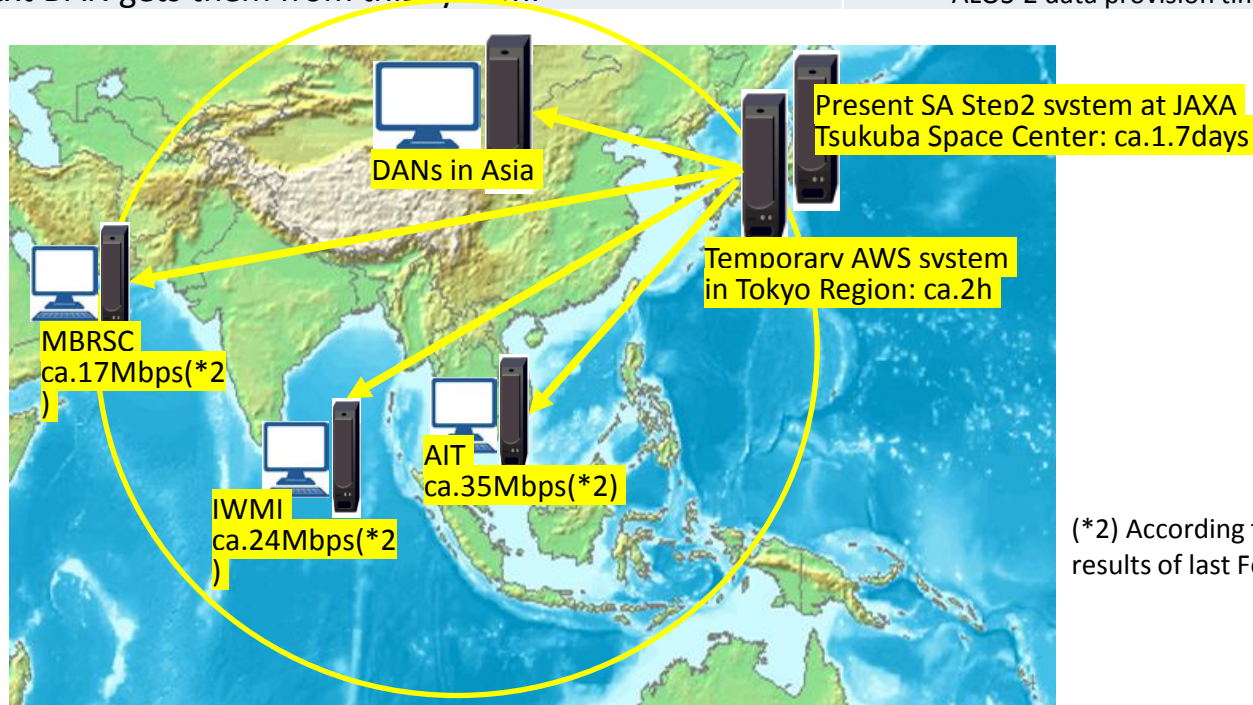
EOR(Tropical Cyclone, 10 October) from UAE is not included due to this EOR was canceled.

Provided ALOS-2 Data for EORs in 2018



(as of 22 October 2018)

Number of Scenes	223(*1)
Amount of Data	495GB(*1)
	(*1) Including Pre/Post-disaster data
Data Provision Way	Data Provision Mean Time after Observation
(1)A temporary AWS system by Machine to Machine. To give priority to provide data fast, JAXA as DPN has been using this system. <u>Next SA Step3 system adopts a New AWS fully in 2019, to provide data automatically and to be strict to access a satellite data.</u>	2h10m(± 1h06m) ALOS-2 data provision time in 2018, as of 22 Oct.
(2)Present SA Step2 system by Human operation. First DPN uploads data on this system, next DAN gets them from this system.	1.7days ALOS-2 data provision time in 2017



(*2) According to the data provision test results of last Feb. and April, 2018

Utilization of the Provided Data by DPN for “Heavy Rain in July 2018” in the areas of western Japan

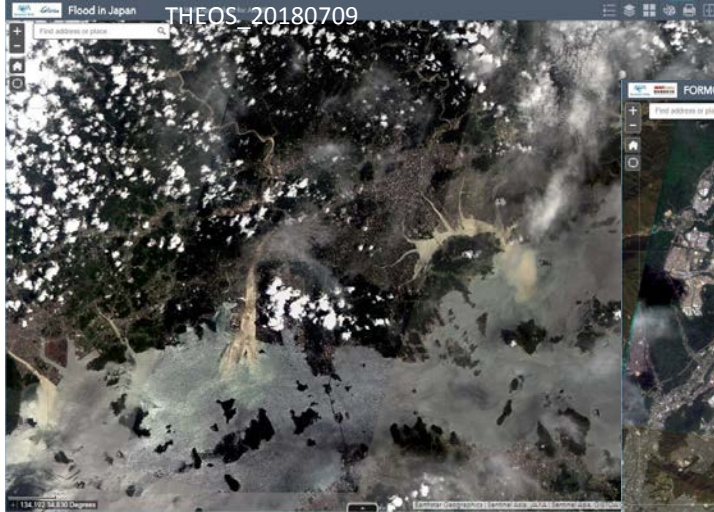
Provided Data by ISRO,GISTDA and NSPO/NARL



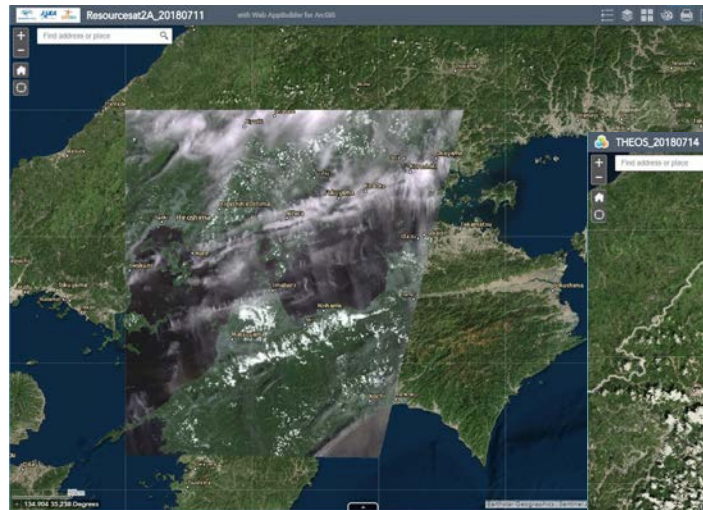
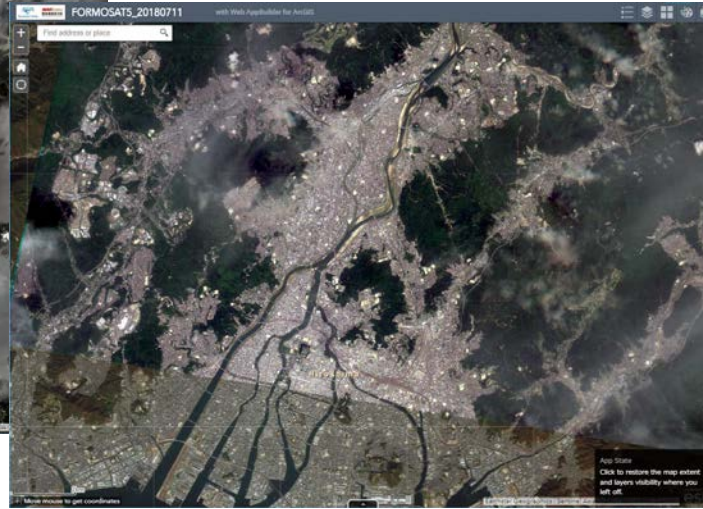
Thank you for your data.

Observation date:9 July 2018

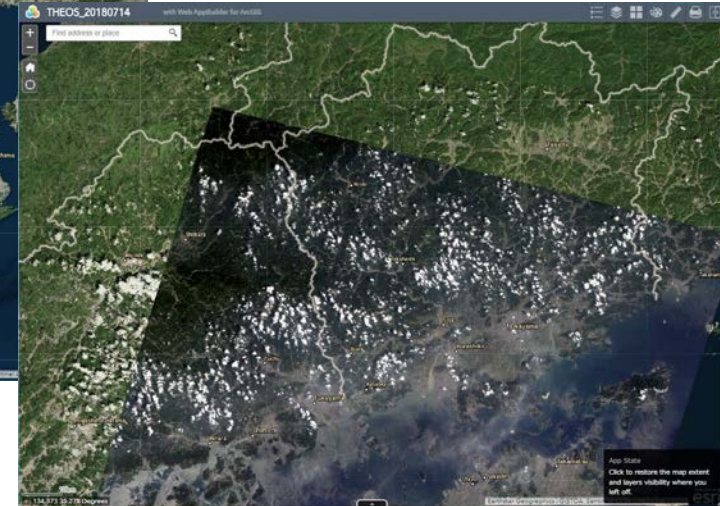
THEOS_20180709



Observation date:11 July 2018



Observation date:14 July 2018



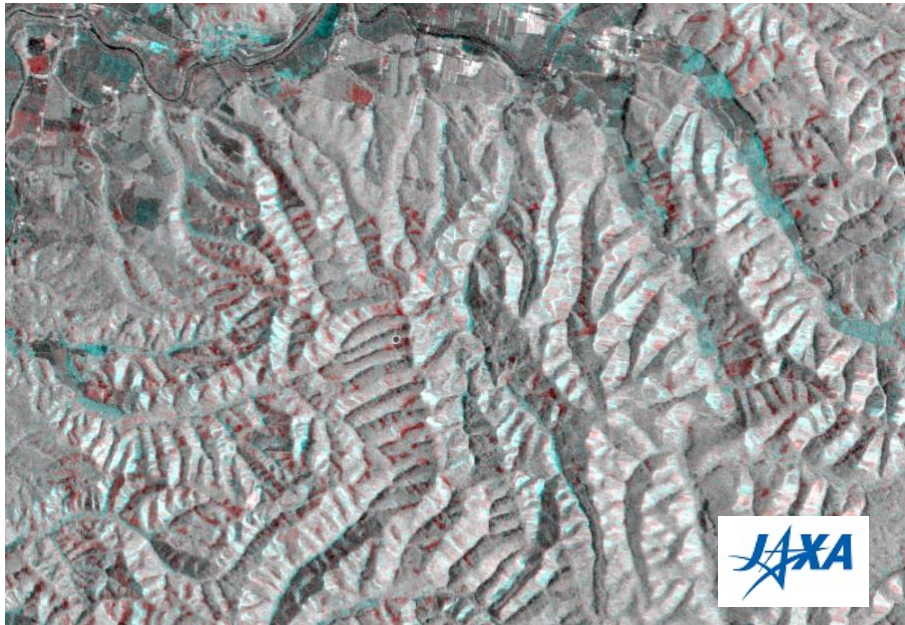
These images were shared with the disaster officials using Web-GIS online.

Utilization of the Provided Data by DPN for Earthquake of 6th September, 2018 in Hokkaido, Japan

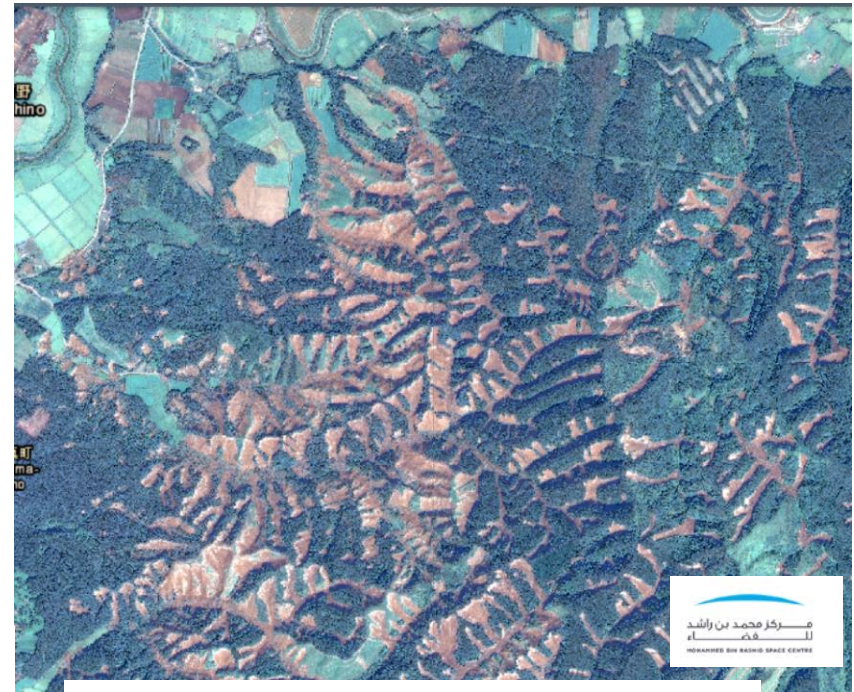
【1】Landslides comparison with RGB Color Composite Analysis and DubaiSat-2 data



Thank you for your data.



Red color shows a landslide. A surface scattering intensity decreased.
Blue color shows a deposited earth and sand. A volume scattering intensity increased.



DubaiSat-2 Data of 11/Sep/2018 by MBRSC

RGB Color Composite Analysis by JAXA

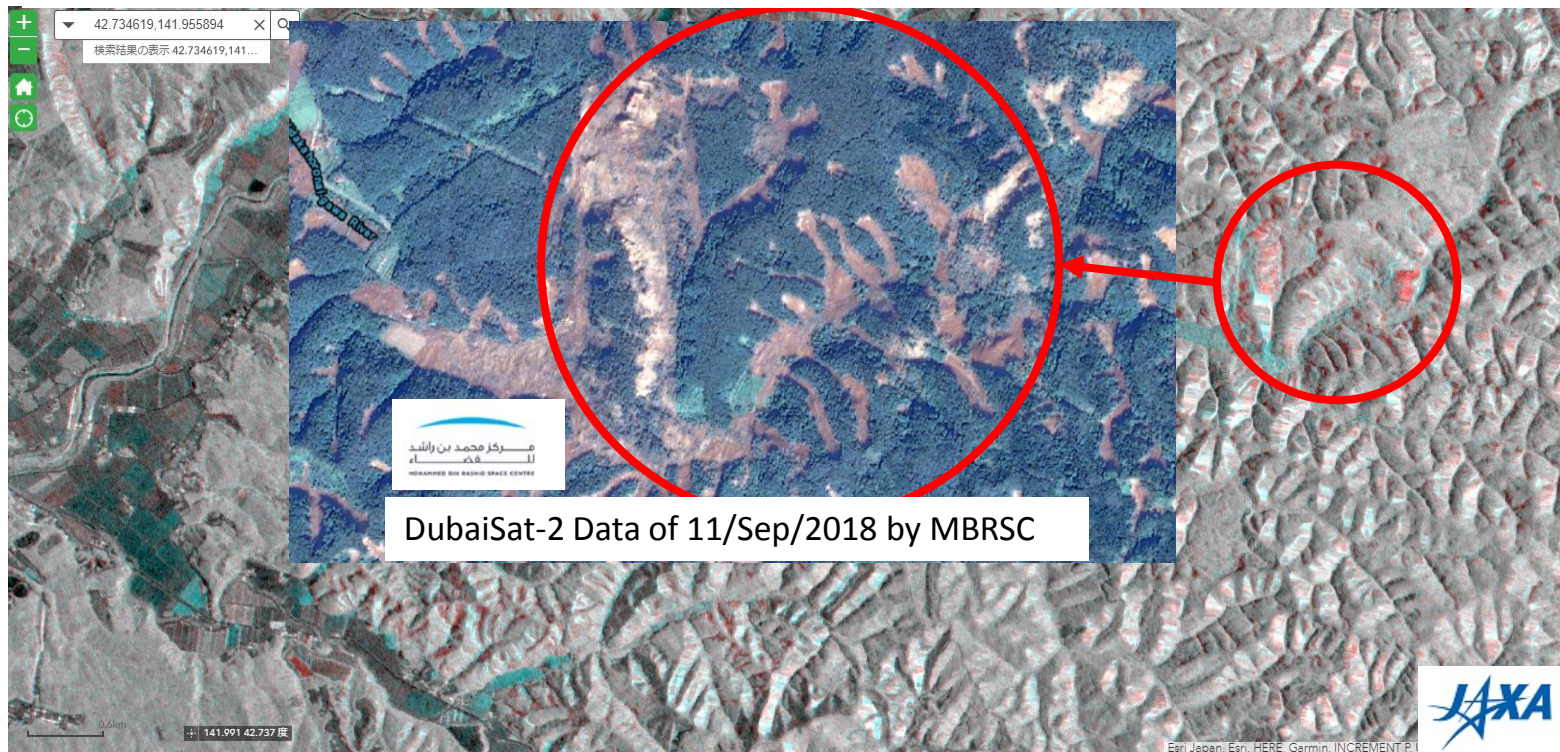
Data source: ALOS-2

RGB=Data of 23/Aug/2018:Data of 6/Sep/2018:Data of 6/Sep/2018

【2】Landslides comparison with RGB Color Composite Analysis and DubaiSat-2 data

RGB Color Composite Analysis by JAXA

Data source: ALOS-2 RGB=Data of 23/Aug/2018:Data of 6/Sep/2018:Data of 6/Sep/2018

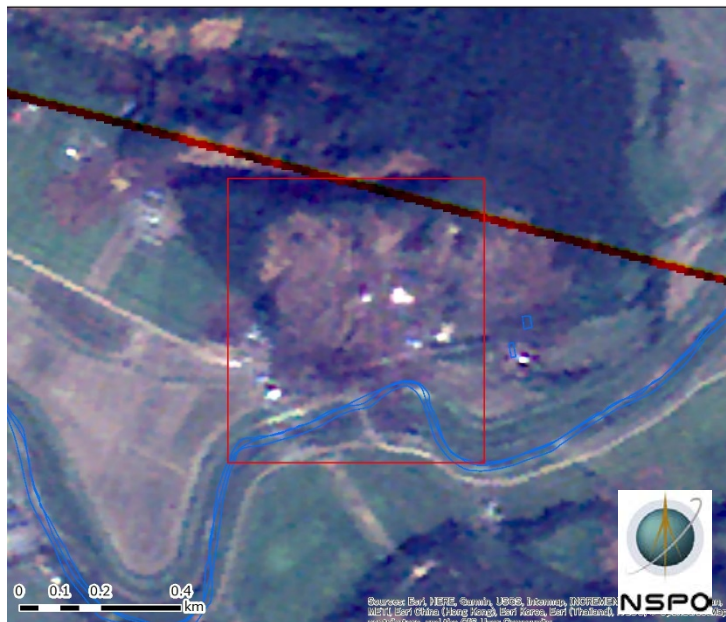


Provided optical data was used for confirming the SAR data analysis results.

① : Tomisato Atsuma-cho

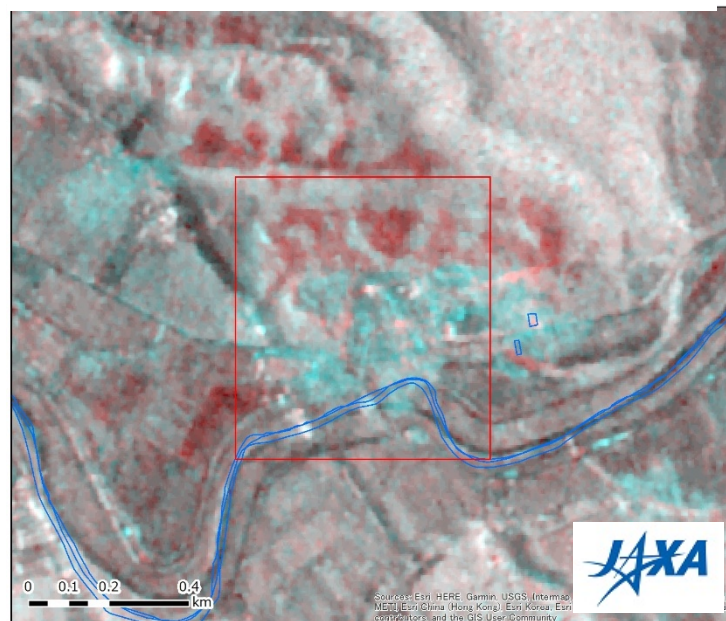
Blue line shows a river and a water area. This information of Geospatial Information Authority of Japan (GSI).

(Formosat-5 Data of 11 September,2018)



Lat. : 42.755671
Long. : 141.939419

(ALOS-2 data of 6 September, 2018 Ascending.)



Data source: ALOS-2 of 23 August 2018 and 6 September 2018)
RGB=23/Aug/2018:6/Sep/2018:6/Sep/2018
Red color shows a landslide. A surface scattering intensity reduced.
Blue color shows a deposited earth and sand. A volume scattering intensity increased.

② : Horonai Atsuma-cho

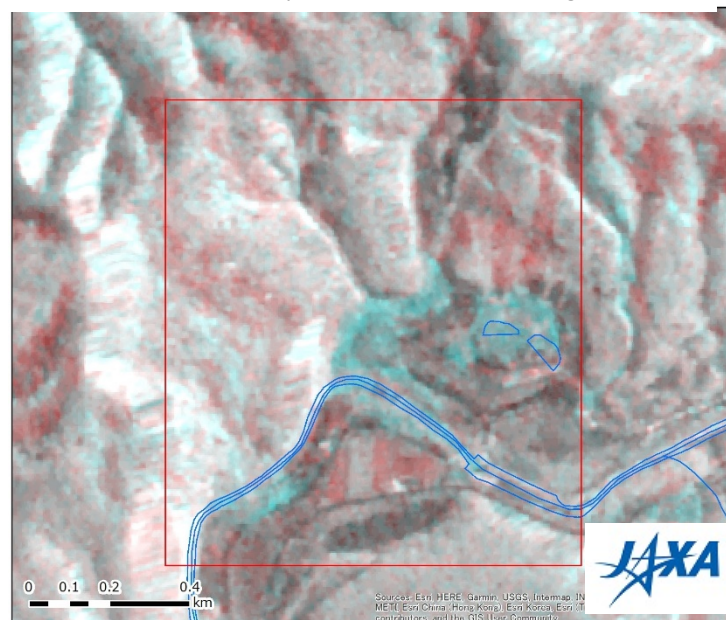
(Formosat-5 Data of 11 September, 2018)



Lat. : 42.766463
Long. : 141.982282

Blue line shows a river and a water area. This information of Geospatial Information Authority of Japan (GSI).

(ALOS-2 Data of 6 September, 2018 Ascending.)



Data source: ALOS-2 of 23 August 2018 and 6 September 2018)
RGB=23/Aug/2018:6/Sep/2018:6/Sep/2018
Red color shows a landslide. A surface scattering intensity reduced.
Blue color shows a deposited earth and sand. A volume scattering intensity increased.

There were no landslide dams. Information of Landslide Dams was provided to Ministry of Land.

Next ALOS-2 Observation Plan

Plan to Expand ALOS-2 Base Maps (SM3) of Asia Region in 2019,
to increase the EO opportunity compatible with them so that
we could get more accurate analysis.



6.5 days in the case of Asia Region (present situation)

There is one Base Map within 14(*) days, the mean waiting time to make ALOS-2 observation that is compatible with it, will be **6.5** ($= 13/14+12/14+11/14+ \dots +2/14+1/14$) days in a simple calculation model. (*)This 14 days is the ALOS-2 revisit time.

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14
													B1
S													

B:Base Map(Archived data)
S:Start to plan Observation

Plan to Expand ALOS-2 Base Maps of Asia Region in 2019

To be 3.3 days in the case of Asia Region

When there are two Base Maps within 14 days, the mean waiting time to make ALOS-2 observation that is compatible with them, will be **3.3** ($=4/14+3/14+2/14+1/14+8/14+7/14+ \dots +1/14$) days.

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14
				B2									B1
S					S								

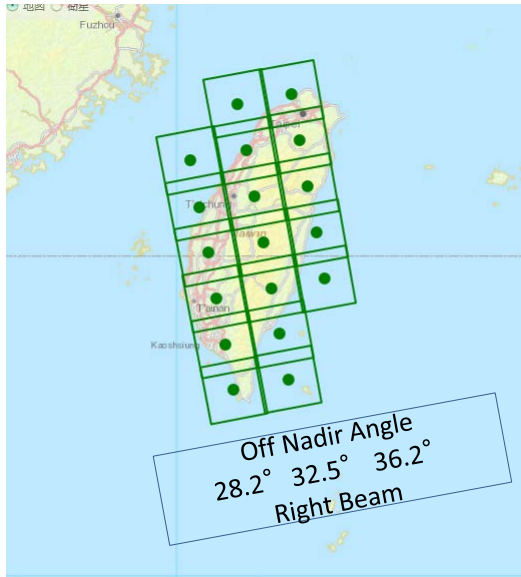
B:Base Map(Archived data)
S:Start to plan Observation

Way to Expand ALOS-2 Base Maps (SM3) in the case of Taiwan

SM3 (HH+HV, Right Beam, Resolution 10m)

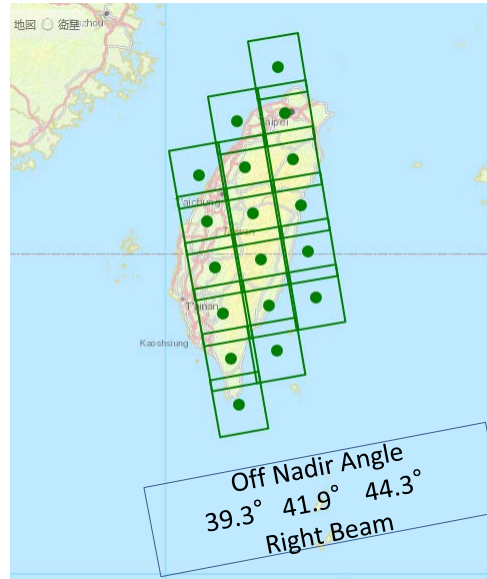


Present SM3 Base Maps



Mean waiting time to observe
by ALOS-2 is 6.5 days

To be extended SM3 Base Maps
using another orbit path



Mean waiting time to observe
by ALOS-2 is 3.3 days



- JAXA tries to expand the Base Maps as best as possible in 2019, to increase the EO opportunities compatible with them

- JAXA makes ALOS-2 Emergency Observations for EOR by SA activations as ever

- JAXA provides a pre&post-disaster data for an damage analysis purpose as speedily as possible
 - L1.1 data for an Interferometric Analysis
 - L1.5(*1)/L2.1(*2) data for a Polarization Analysis
 - (*1)Non-Orthorectified data (*2)Orthorectified data