
Recent Progresses of Sentinel Asia -Japan's contribution to disaster management in the Asia-Pacific region through cooperation-

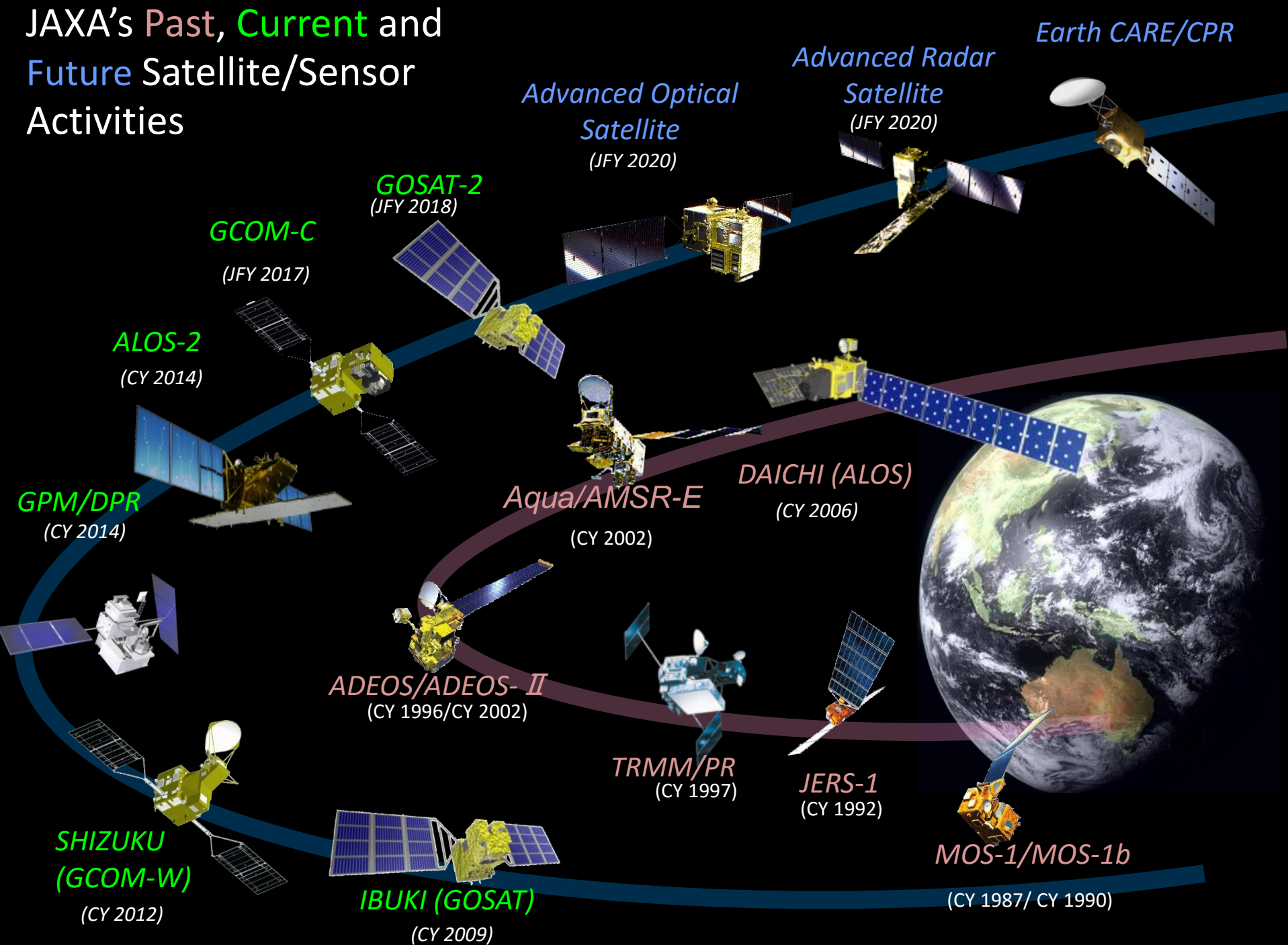
**Committee on the Peaceful Uses of Outer Space
56th Scientific and Technical Subcommittee
11-22 February 2019**

**Takanori Miyoshi
Administrator**

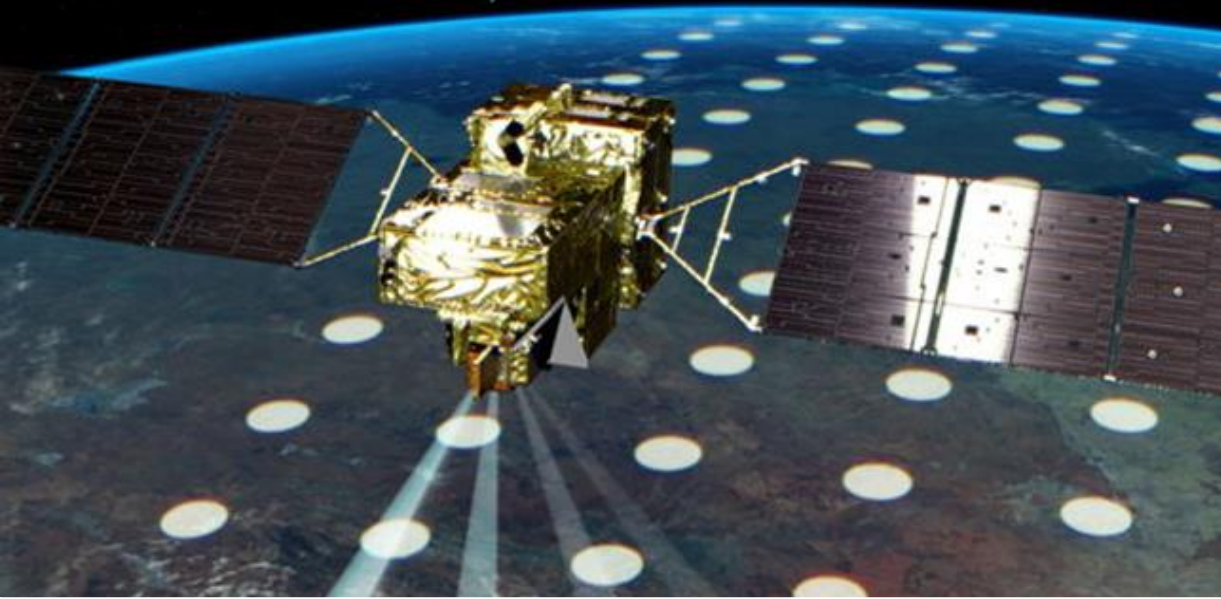
**Satellite Applications and Operations Center (SAOC)
Japan Aerospace Exploration Agency (JAXA)**

Introduction

JAXA's Past, Current and Future Satellite/Sensor Activities



Greenhouse Gases Observing Satellite -2



Launch Date:

29 October 2018 (JST)

Main Objectives

- Providing data that help to create and release reliable emission inventories of CO₂ caused by human activities.
- Contributing to the Paris Agreement that requires the Parties to submit their annual greenhouse gas emission data.

A cooperative project among JAXA, NIES and MOE.



Paris Agreement and IPCC Guidelines

Paris Agreement

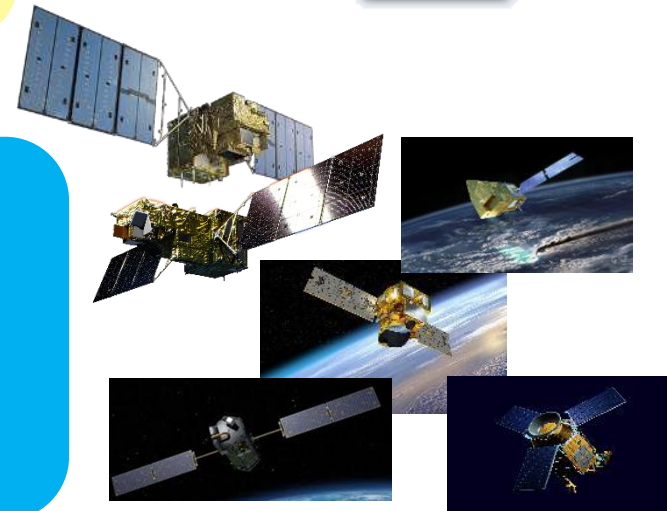
- ❑ Parties will account for anthropogenic emissions and removals corresponding to their nationally determined contributions
- ❑ Parties will provide national inventory reports under the transparency framework

Task Force on National Greenhouse Gas Inventories (TFI) is refining 2006 IPCC Guidelines for National GHG Inventories.

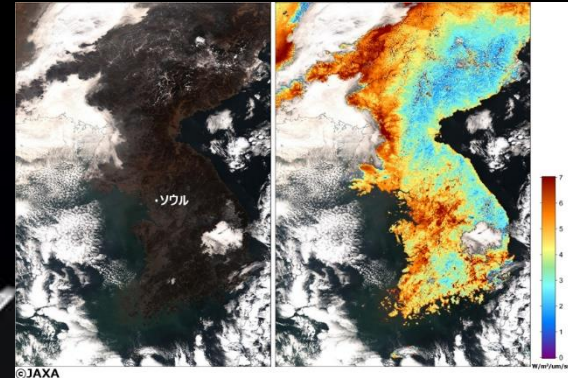
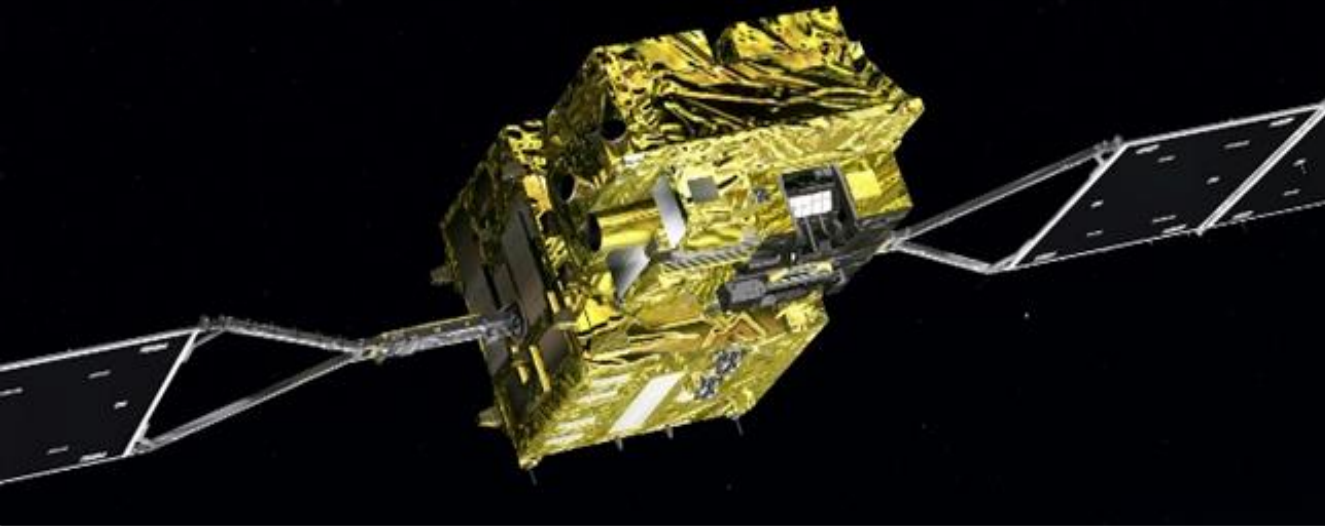
⇒ Refined guidelines will be adopted in **Kyoto/Japan**, in May 2019



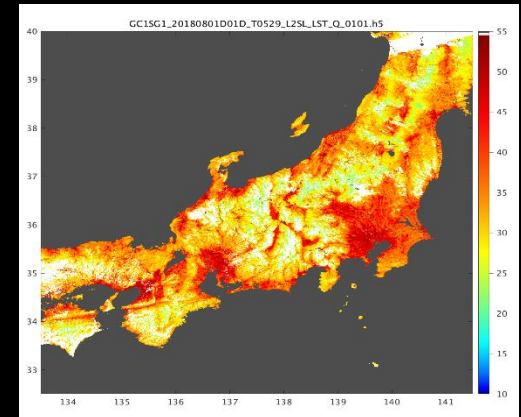
Towards the refinement of Inventory Guidelines, Japan aims to include satellite data utilization into the evaluation of GHG emission reporting.



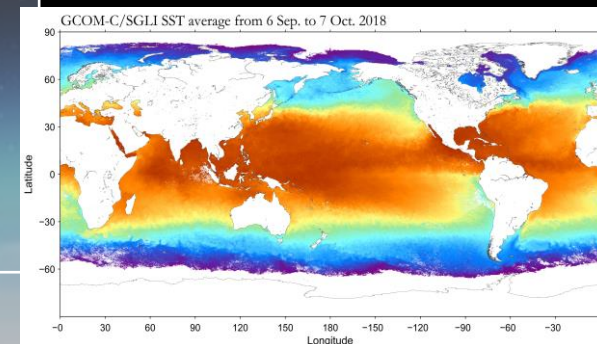
Global Change Observation Mission - Climate (GCOM-C)



Aerosol



Land Surface Temperature



Sea Surface Temperature

Launch Date: 23 December 2017 (JST)

Main Objectives

- improving our understanding of climate change mechanisms through long-term monitoring of aerosols and clouds, as well as vegetation and temperatures, in the land and ocean regions.
- contributing to enhancing the prediction accuracy of future environmental changes.

- The data are provided via “G-Portal”:
<https://gportal.jaxa.jp/gpr/>

ALOS-2: Advanced Land Observing Satellite -2

ALOS
(2006-2011)



DAICHI PALSAR.
(Resolution: about 10 m)

ALOS-2
(2014-)

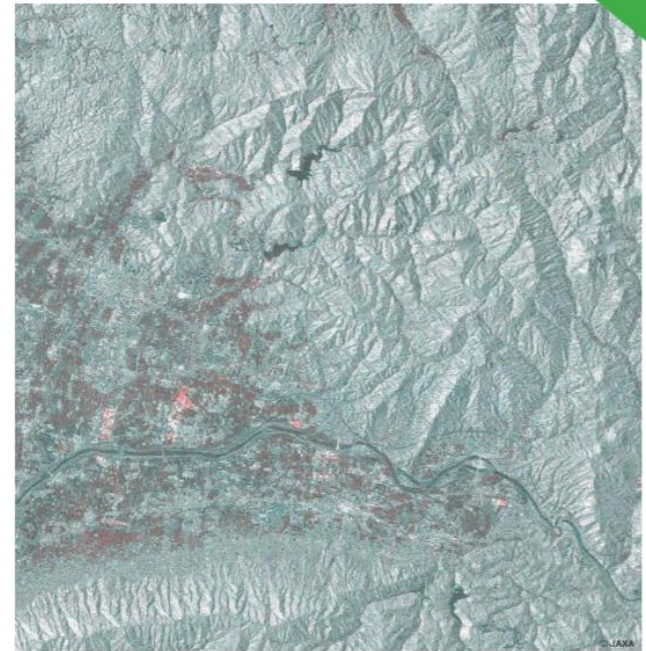


DAICHI-2 PALSAR-2.
(Resolution: about 3 m)



 Space Application for Disaster Monitoring

Collection of Good Practice in Disaster Emergency Observation
by ALOS-2 "DAICHI 2"
from 2014 to 2017
(Excerpts)



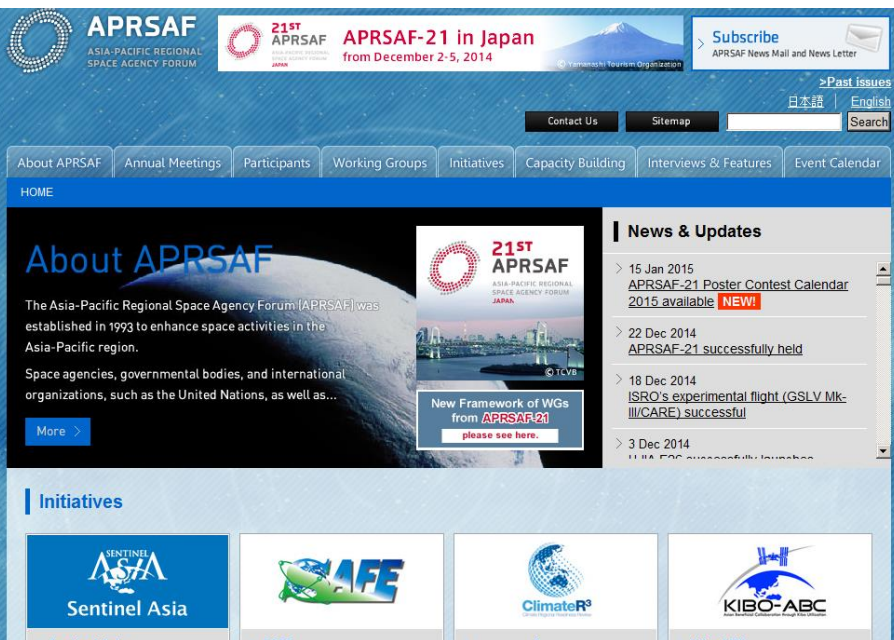
Good practices of ALOS-2 are available on
[https://sentinel-
asia.org/reports/20180730_ALOS-
2%20disaster%20monitoring.pdf](https://sentinel-asia.org/reports/20180730_ALOS-2%20disaster%20monitoring.pdf)

Improvement of Data Acquisition Abilities

Overview of Sentinel Asia

APRSAF-12 REPORT

October 11-12, 2009
Kitakyushu, Japan



The screenshot shows the APRSAF website homepage. At the top, there is a navigation bar with the APRSAF logo, the text "ASIA-PACIFIC REGIONAL SPACE AGENCY FORUM", and a banner for the "21st APRSAF APRSAF-21 in Japan from December 2-5, 2014". There are also links for "Subscribe" and "Past issues". Below the navigation bar is a menu with categories like "About APRSAF", "Annual Meetings", "Participants", "Working Groups", "Initiatives", "Capacity Building", "Interviews & Features", and "Event Calendar". The main content area features a "HOME" section with a large image of Earth and the text "About APRSAF". It states: "The Asia-Pacific Regional Space Agency Forum (APRSAF) was established in 1993 to enhance space activities in the Asia-Pacific region. Space agencies, governmental bodies, and international organizations, such as the United Nations, as well as..." There is a "More >" button. To the right, there is a "News & Updates" section with a list of recent news items, including "15 Jan 2015 APRSAF-21 Poster Contest Calendar 2015 available NEW!", "22 Dec 2014 APRSAF-21 successfully held", "18 Dec 2014 ISRO's experimental flight (GSLV Mk-III/CARE) successful", and "3 Dec 2014 USA FOC successfully launches". Below the news section, there are four boxes representing initiatives: "Sentinel Asia", "SAFE", "ClimateR3", and "KIBO-ABC".



The screenshot shows the Sentinel Asia website. At the top, there is a navigation bar with the Sentinel Asia logo and the text "Sentinel Asia". There are links for "HOME", "Announce", "About Sentinel Asia", "JPI Member", "FAQ", "Contact US", "Links", and "Site Policy". The main content area features a "WEB GIS" section with a "Welcome To Sentinel Asia Web Site" message. It states: "Sentinel Asia is a voluntary basis initiative led by the APRSAF (Asia-Pacific Regional Space Agency Forum) to support disaster management activity in the Asia-Pacific region by applying the WEB-GIS technology and space based technology, such as earth observation satellites data." Below this, there is a list of "Emergency Observation" events, including "25/dec/2009 Volcano eruption in Philippines", "16/dec/2009 Flood in Sri Lanka", "02/Nov/2009 Flood in Vietnam", "06/oct/2009 Flood in Nepal", "04/oct/2009 Flood in Philippines", "30/sep/2009 Earthquake in Indonesia", "26/sep/2009 Flood in Vietnam", "26/sep/2009 Flood in Philippines", "02/sep/2009 Earthquake in Indonesia", and "18/Aug/2009 Flood in Nepal". There is a "more..." button. Below the list, there is a "Current Topics" section with links to "02/dec/2009 Philippine Regional Server is opened ! link...", "02/dec/2009 Thailand Regional Server is opened ! link...", and "15/oct/2009 New Sentinel Asia Step2 System is opened ! link...". There is another "more..." button. At the bottom, there is a row of logos for various organizations, including JAXA, MEXT, and ICIMOD.

Sentinel Asia

- Initiative under the Asia-Pacific Regional Space Agency Forum (APRSAF)
- Established in accordance with the recommendation at APRSAF in Kitakyushu, Japan, co-hosted by MEXT/JAXA

Member Status

(As of 31 December 2018)

Space Community

APRSAF

Satellite Image

Promotion of Utilization

Capacity Building

SENTINEL ASIA

92 organizations from **28** countries & regions and **16** international organizations
In total: **108** organizations

Joint Project Team (JPT)

Disaster Reduction Community

ADRC
Member Countries
(31 member countries)

Disaster Information

Utilization (User)

International Community

UNESCAP, UNOOSA
ASEAN, AIT and
International Disaster Charter
etc.

International Cooperation



JPT Meeting in Awaji, Japan in 2018
Co-organized by ADRC and JAXA

Emergency Observation Flow

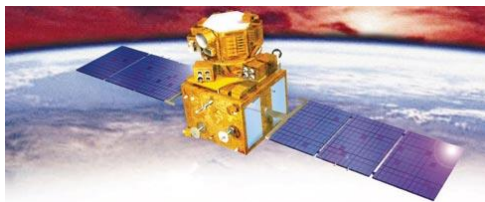


Recent progresses of Sentinel Asia

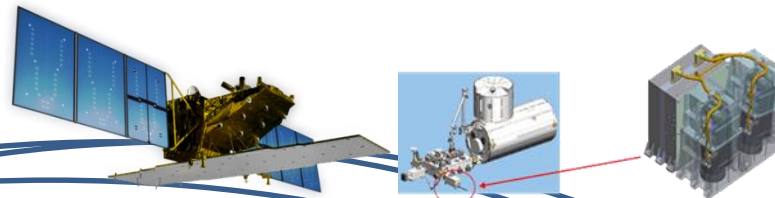


ISRO

RESOURCESAT-2, OCEANSAT-2/OCM
IMS-1, CARTOSAT-1&2, RISAT-1

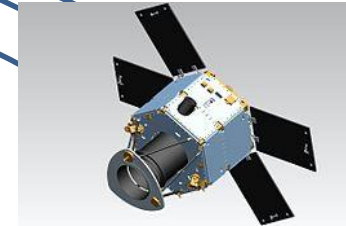


JAXA



ALOS-2

KIBO HDTV-EF2



NARLabs

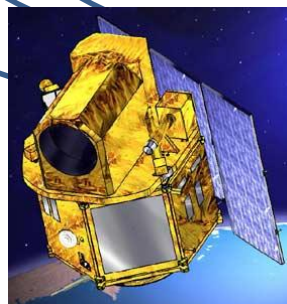
*Sentinel Asia
Constellation*

MBRSC
DubaiSat-2

KARI
KOMPSAT-1

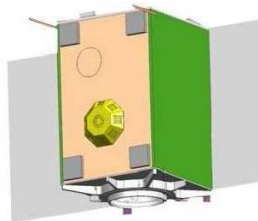


GISTDA



Thaichote (THEOS)

CRISP
XSAT

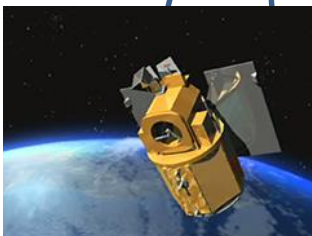


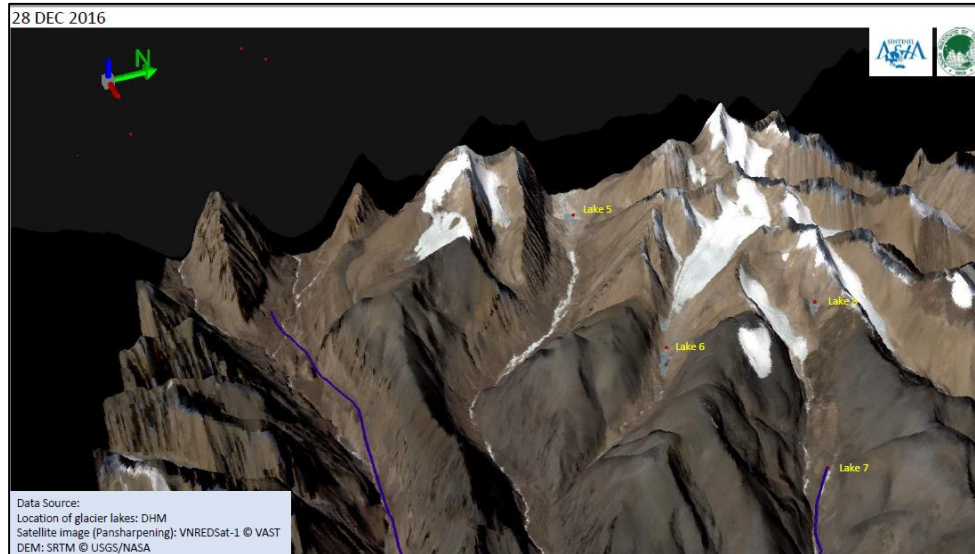
STI/VAST



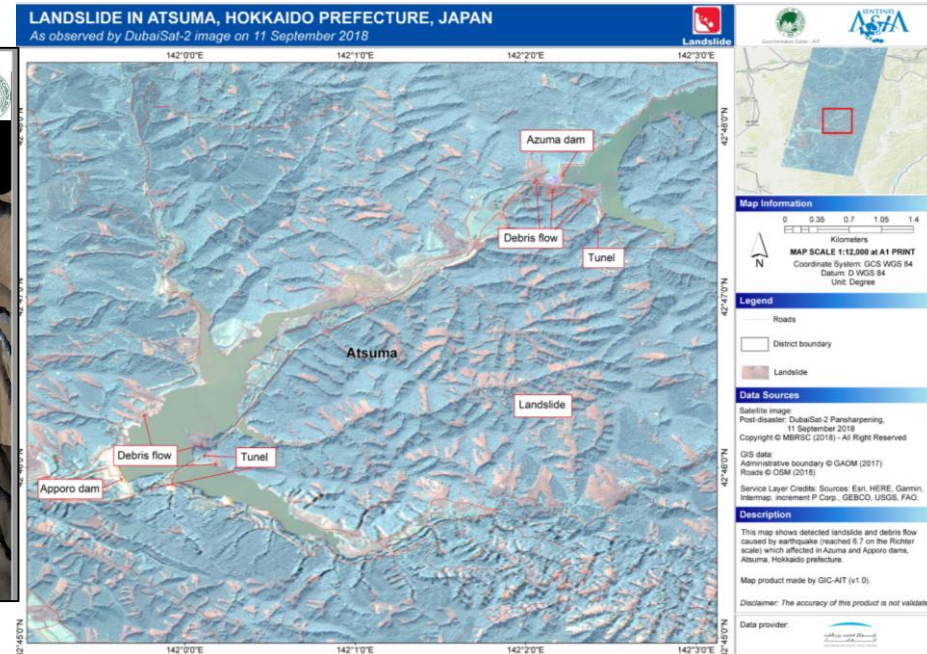
VNREDSat-1A

FORMOSAT-5





Floods in Nepal in December, 2016
Value-added products derived from
VNREDSat-1A by VAST/STI
(Courtesy: VAST/STI ,USGS, AIT)



Landslides in Japan in September, 2018
Value-added products derived from
Dubaisat-2 by MBRSC
(Courtesy: MBRSC, AIT)



- Main
- Constellation Parameters
- SA Members
- Users Account
- Emergency Request Management
- DPN Management
- DAN Management
- Charts
- Logout

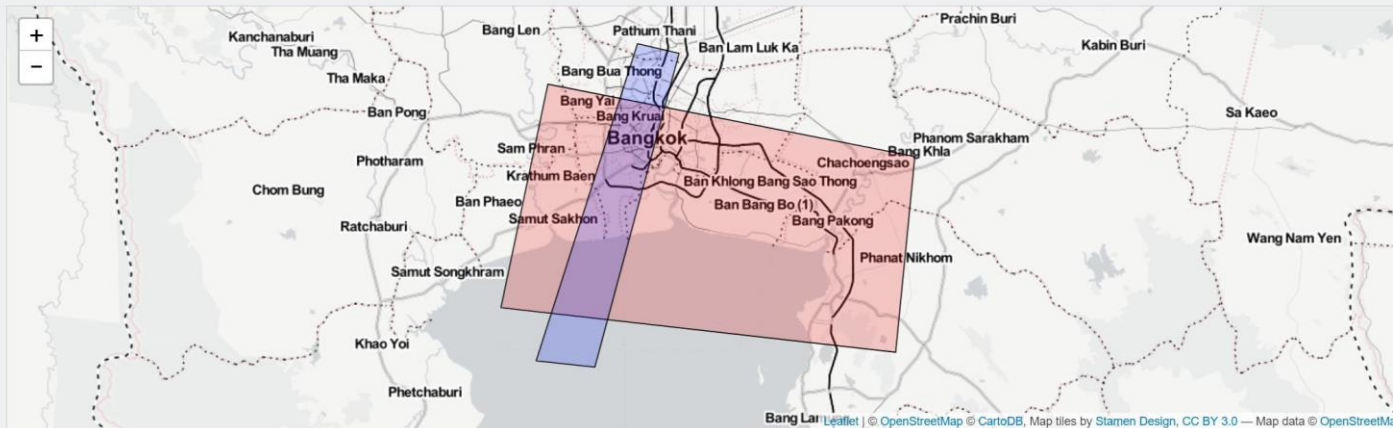
Request Information and Tracking

Request Number: 8fuPVbkq

[Download Shapefile \(AOI \)](#)

[Send Email](#)

[Back](#)



Request Data

Approve Request Decline Request

Type of Disaster	Purpose	Period	Detail
<ul style="list-style-type: none"> • Flood • Forest fire • Earthquake 	<ul style="list-style-type: none"> • Emergency Response • Post Disaster Needs Assessment(PDNA) • Detection of an advance warning of hazardous situation 	Start : 18/07/2017 End : 19/07/2017	

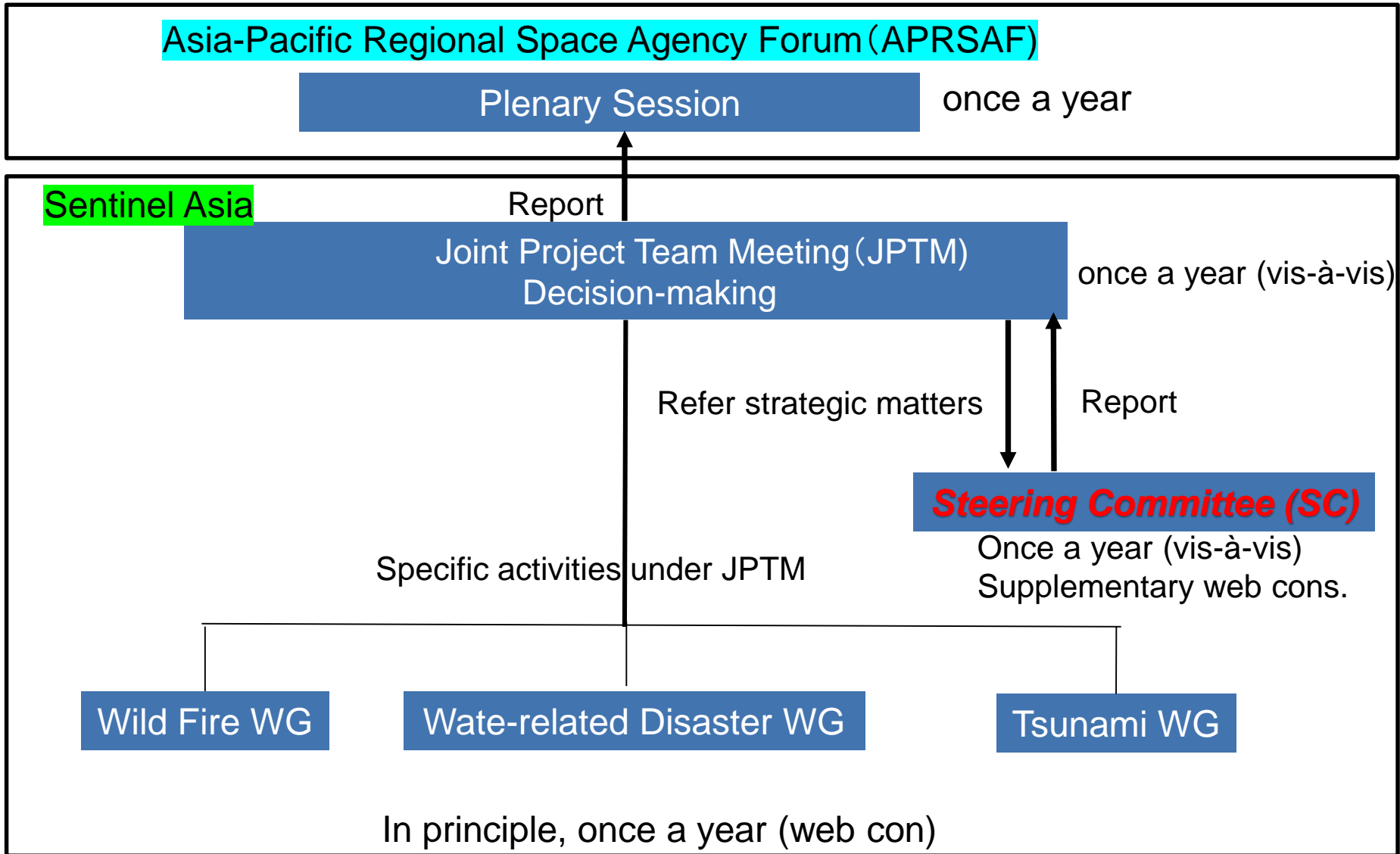
Tracking

Organization	Area (Km ²)	Status				Comments	Acquisition Area
		Acknowledge	Planned	Processed	Uploaded		
Indian Space Research Organization (ISRO)							
Japan Aerospace Exploration Agency (JAXA)							
Korea Aerospace Research Institute (KARI)							
Geo-Informatics and Space Technology Development Agency (GISTDA)		✓	✓	✓		please wait 2 days	Download
Vietnamese Academy of Science and Technology (VAST)							

Courtesy: GISTDA

Establishment of the Steering Committee

Sentinel Asia's relevant conference bodies



- ✓ Composed of 15 dedicated experts from the Sentinel Asia community
- ✓ Co-chairs: Dr. Samarakoon & Mr. Suzuki
- ✓ Discussion on strategic matters and programmatic issues



Steering Committee Meeting
29-30 January 2019
Co-organized by GISTDA and JAXA
At GISTDA Space Krenovation Park

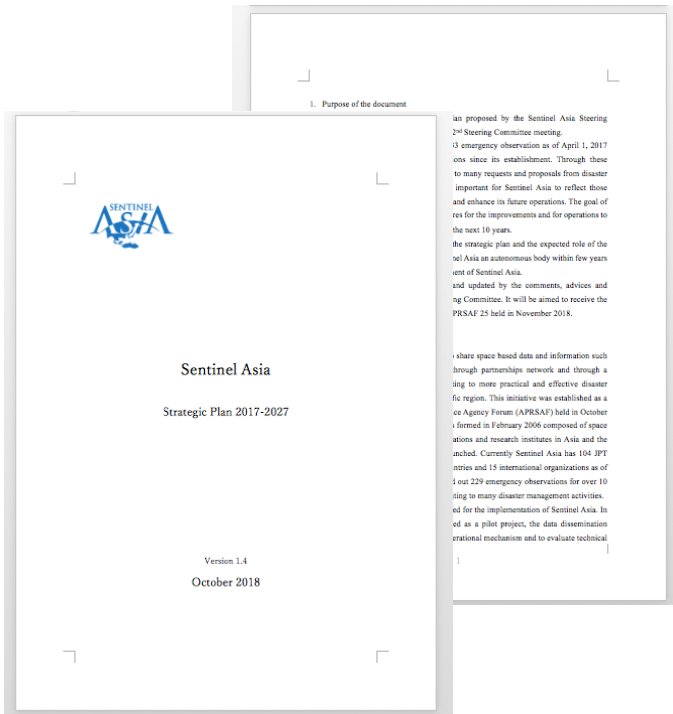
- ✓ Clarify inputs of the Steering Committee members through series of discussions & web meetings, starting from 2017
- ✓ Address needs & gaps in Sentinel Asia for more practical and effective system that could stand for regional to local disaster risk management needs.

5 pillar items ;

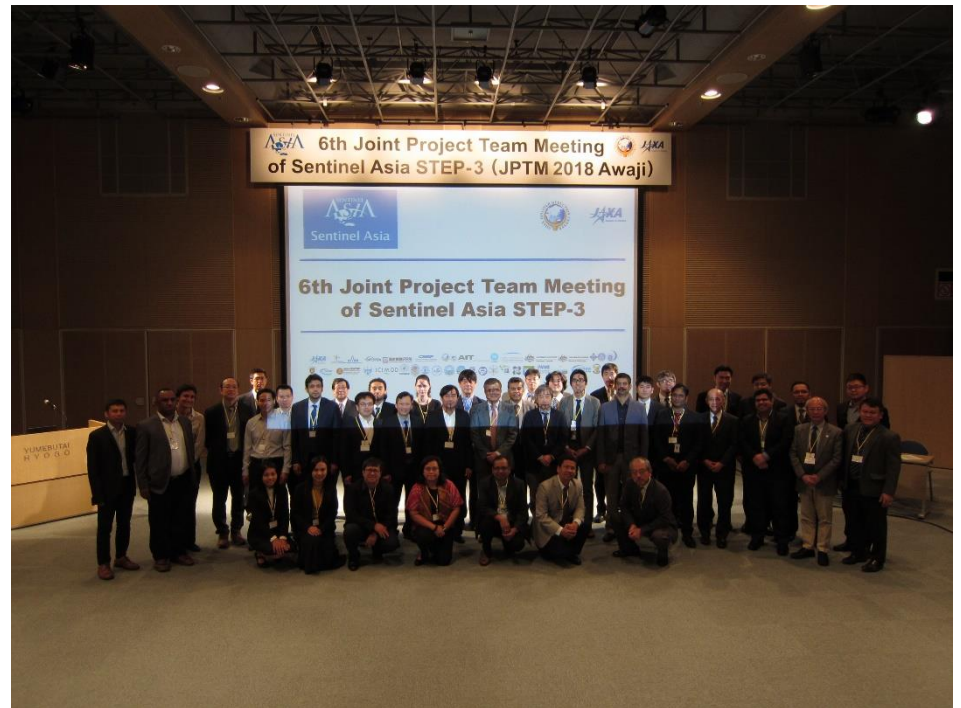
1. Satellite Data Provisions and Systems
2. Value Added Product (VAP)
3. End-user Enhancement
4. Step-3 Activities (Complete Disaster Risk Reduction cycle)
5. Communication, Collaboration and Cooperation

The final draft Strategic Plan was discussed at the **JPTM 2018** in Awaji, Japan.

The Plan was endorsed by JPTM members on 2nd November



Sentinel Asia Strategic Plan.



Sentinel Asia Joint Project Team Meeting in Awaji, Japan (1-2 November 2018)

Standard Operating Procedure (SOP) for Sentinel Asia Workshops in Myanmar, Thailand, and Viet Nam



In Myanmar

Date: 30 January 2018

Venue: Horizon Lake View Resort

Participants: 39
(RRD, DMH, ADPC, MIMU, One map Myanmar)



In Thailand

Date: 22 February 2018

Venue: Wayupak Convention Center

Participants: 21
(DDPM, GISTDA, MOI, RID, DWR, RFD, ADPC)



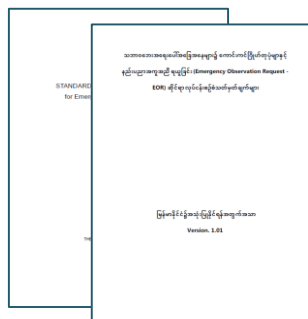
In Viet Nam

Date: 19-20 March 2018

Venue: STI building

Participants: 36
(STI, MONRE, DMPTC)

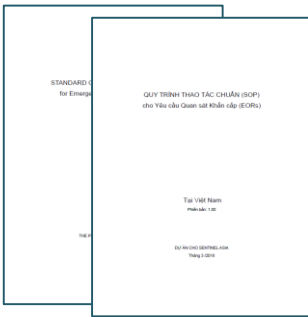
Establishment of Standard Operating Procedure (SOP) for Sentinel Asia



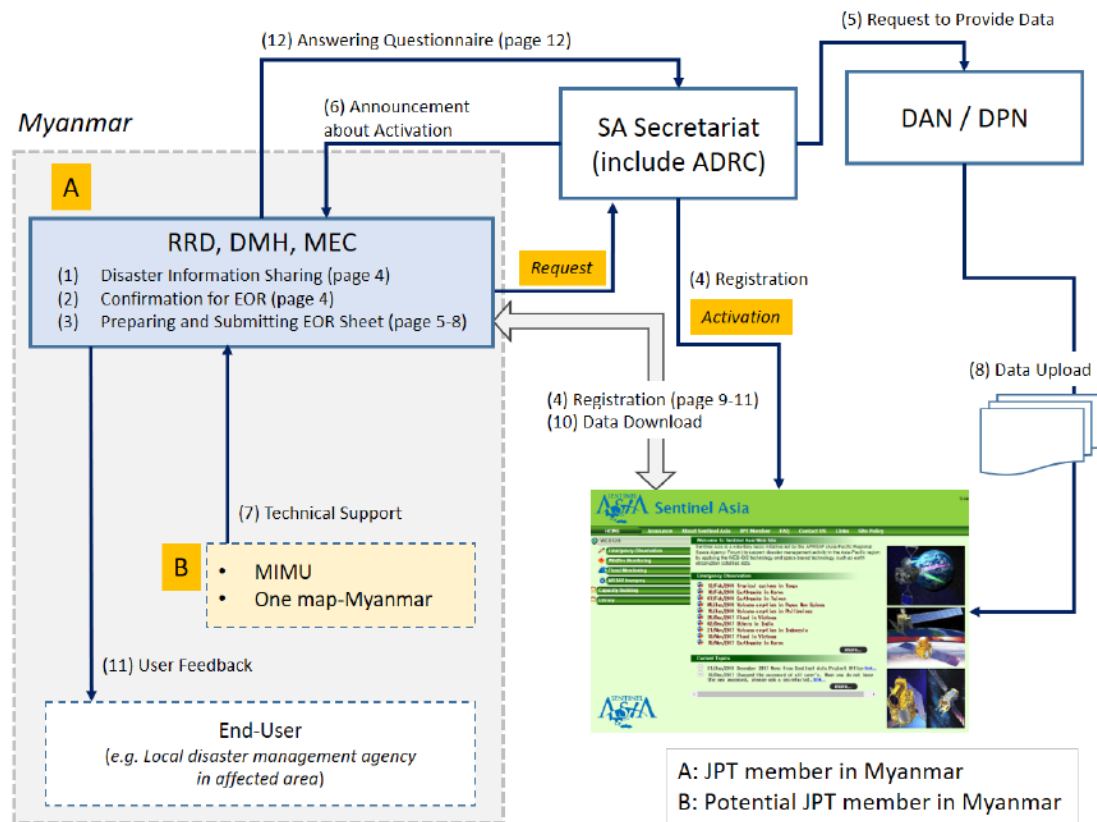
English and Burmese language



English and Thai language



English and Vietnamese language

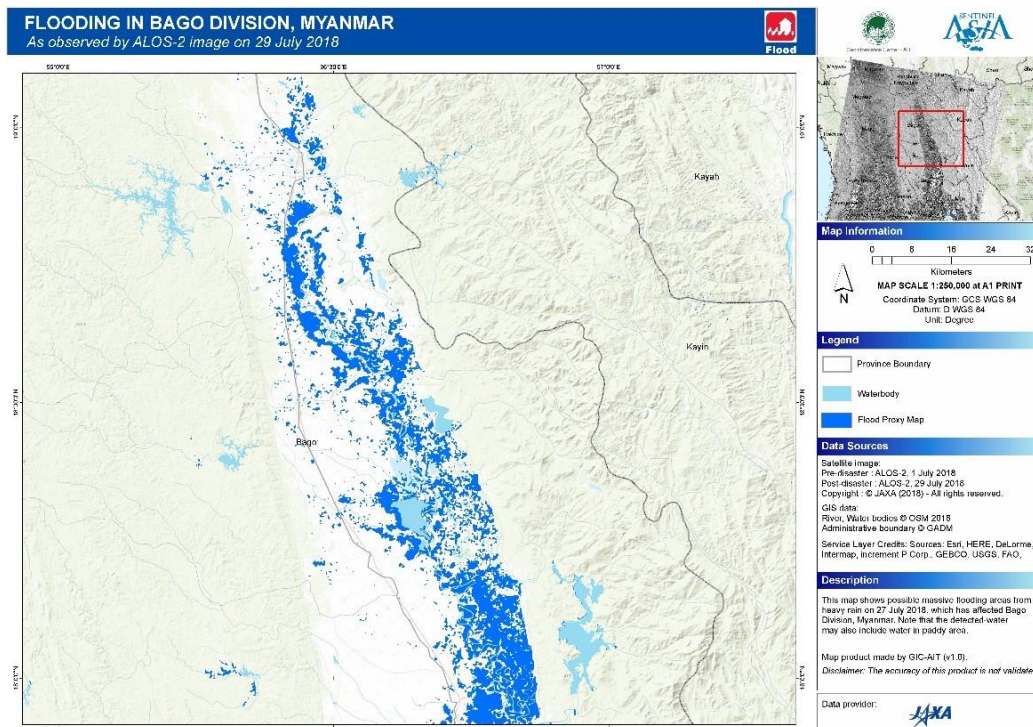


A: JPT member in Myanmar
B: Potential JPT member in Myanmar

(Example) Myanmar Version

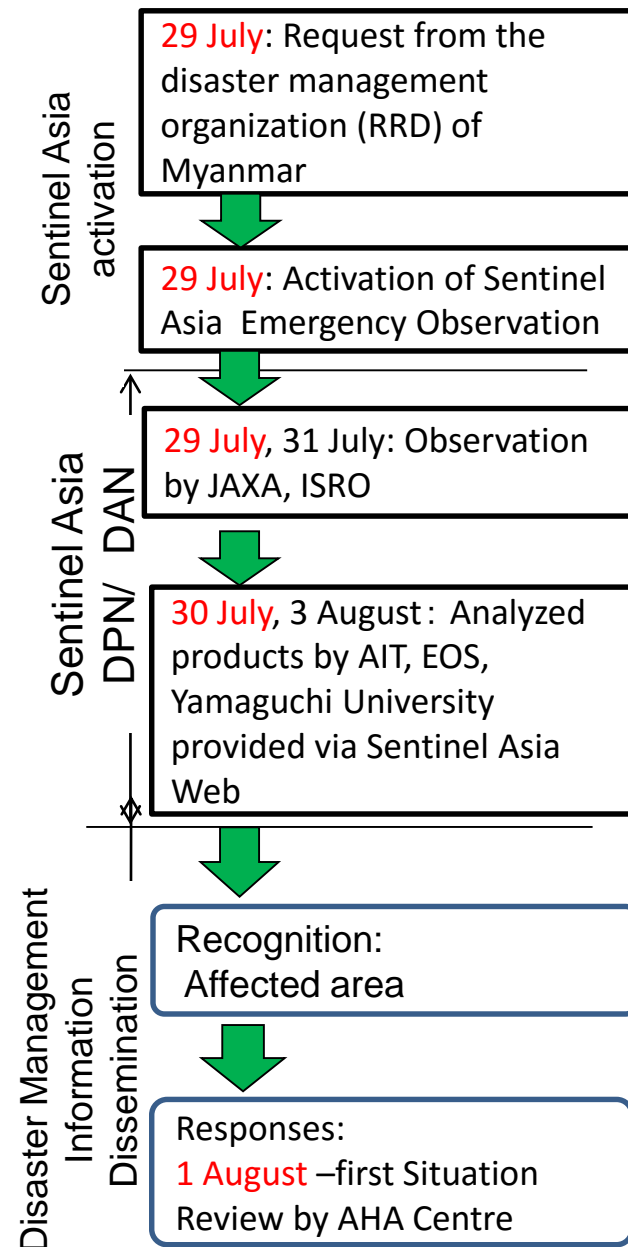
Floods in Myanmar, July 2018

Taninthayi Township, Myeik District in Taninthayi Region, was flooded as monsoon rains led the water level of the local river rise above the danger level, affecting many homes, lakes and wells in the villages and towns. Reportedly more than 100,000 were affected and more than 16,000 people were displaced.



The first analyzed product provided by AIT on 30 July

Courtesy: AIT



The first “Situation Update” published by AHA Centre on 1 August 2018

- Detailed assessment of damages
- Dissemination on the estimated needs for humanitarian support

SITUATION UPDATE No. 1

Monsoon Flood, Myanmar

No. 1

Official website: www.aha-centre.org/monsoon18 | Email: aha-centre@aha-centre.org | Tel: +65 6887 7344

Wednesday, 1 August 2018, 20:00 hrs (UTC+7)

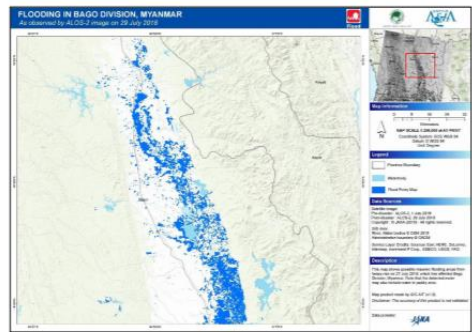
This situation update is provided by AHA Centre for the use of ASEAN Member States and relevant parties among ASEAN Member States. The information presented is collected from various sources including but not limited to ASEAN Member States, UN, IFRC, REDCS, A, News Agencies.

- 1. HIGHLIGHTS**
- a. Due to heavy torrential rains as a result of Southwest Monsoon since 4 June 2018, 9 provinces were affected thus far with widespread flooding and landslides reported. Currently there are 4 provinces which are most affected. These provinces are Kayin, Mon, Tanintharyi and Bago. The AHA Centre has provided two Flash Update on the situation, which available [here](#) and [here](#).
 - b. The AHA Centre sent In-Country Liaison Team and activated in-country ASEAN Emergency Response and Assessment Team (ERAT) to support coordination on emergency response operations with Government of Myanmar and preparation for local procurement of relief items. An Incident page in ASEAN WebEOC opened for potential ASEAN collective response.
 - c. In view of current number of evacuees, evacuation sites and ratio of people within evacuation site, humanitarian partners may wish to reconsider all the number and space of evacuation site, particularly in the State of Bago.

- 2. SUMMARY OF EVENTS & FORECAST**
- a. On 31 July, the Department of Meteorology and Hydrology (DMH) issued an update on the Sittaung River at Madauk Station, Bago Region, indicating that the water level may drop but remains at its danger level. Also, the water level of the Shwekyin River at Shwekyin station may decline but will remain at its danger level. For the Thanlin river in Kayin State may decline and may remain at its danger level.

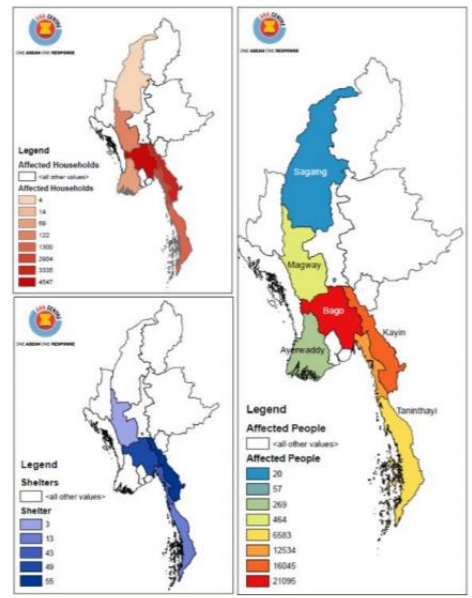
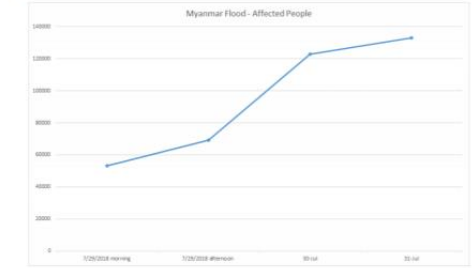


- b. Monsoon is strong to vigorous over the Andaman Sea and Bay of Bengal. Rain or thundershowers will be scattered in Lower Sagaing, Mandalay and Magway Regions, fairly widespread in Southern Shan State and widespread in the remaining Regions and States with regionally heavy falls in Tanintharyi Region, Rakhine, Kayin and Mon States and isolated heavy falls in Upper Sagaing Region and Kachin State.
- c. As the region is experiencing effect of Southwest Monsoon marked by heavy rainfall and strong winds between early June and late September/early October. Risk of exposure to flash floods with likelihood of localised landslides increases. Please refer to Potential Landslide Exposure in northern ASEAN Region (PDC).



3. ASSESSMENT OF DAMAGE, IMPACT, AND HUMANITARIAN NEEDS

- a. According to the DDM in Nay Pi Taw, as of 31 July, in three regions and two states that are affected by floods, there are a total of 299 Camps where 132,972 people (28,481 households). The number raised from the initial date (29 July), although in some regions flood water have recede and people returns to their houses.



4. ACTIONS TAKEN AND RESOURCES MOBILISED

- Response by Government of Myanmar**
- a. Government of Myanmar provided [Flood Warning](#) have been issued by Department of Meteorology and Hydrology (DMH), for Thabaung Township, and the availability of Myanmar [Disaster Alert Notification](#) enable sufficient evacuation by the people.
 - b. Department of Disaster Management, Ministry of Social Welfare, Relief and Resettlement, is carrying out initial assessment of the situation in order to estimate the impact and damage due to the flooding.

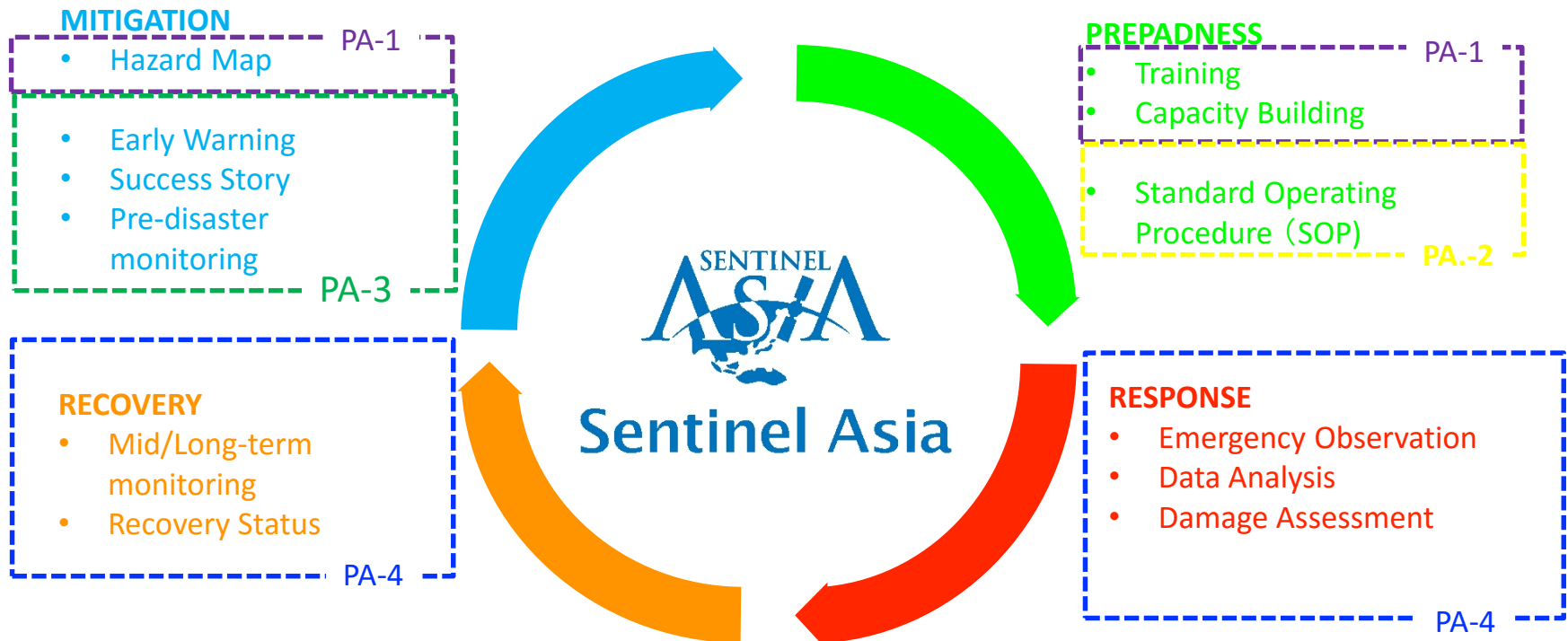
Four specific priorities for action;

Priority Action-1(PA-1); Understanding disaster risk

Priority Action-2(PA-2); Strengthening disaster risk governance to manage disaster risk

Priority Action-3(PA-3); Investing in disaster risk reduction

Priority Action-4(PA-4); Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction.

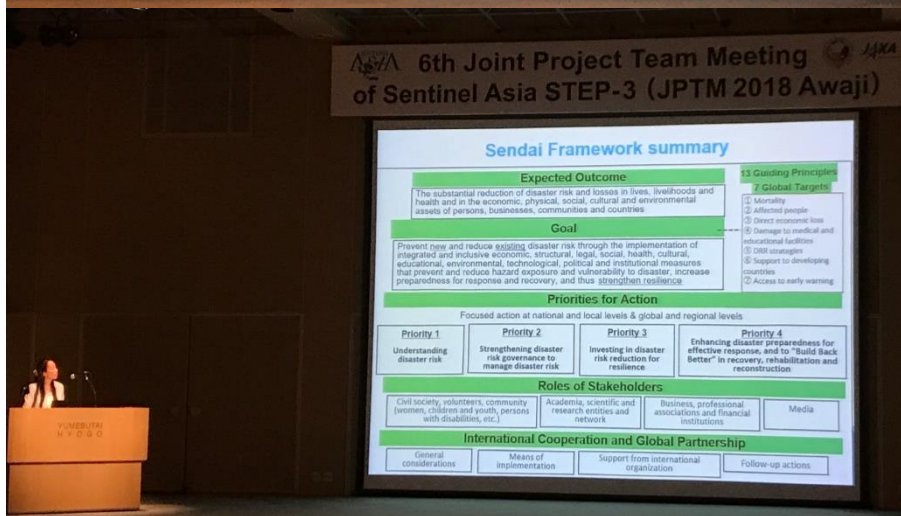
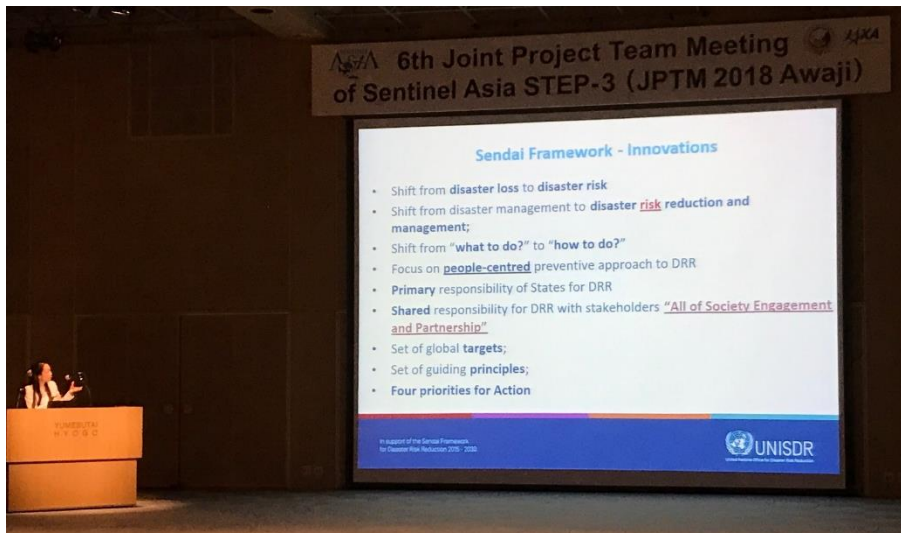


Sentinel Asia and the Sendai Framework

-strengthened link with the UNISDR community-

Sentinel Asia's presence at the AMCDRR co-organized by UNISDR and the government of Mongolia (5 July 2018)

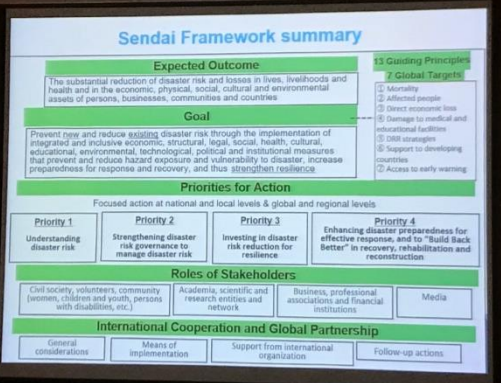
Special session on the link between Sendai Framework and Sentinel Asia at JPTM Awaji (2 November 2018)



6th Joint Project Team Meeting of Sentinel Asia STEP-3 (JPTM 2018 Awaji)

- ### Sendai Framework - Innovations
- Shift from disaster loss to disaster risk
 - Shift from disaster management to disaster risk reduction and management;
 - Shift from "what to do?" to "how to do?"
 - Focus on **people-centred** preventive approach to DRR
 - **Primary** responsibility of States for DRR
 - **Shared responsibility** for DRR with stakeholders "**All of Society Engagement and Partnership**"
 - Set of global targets;
 - Set of guiding principles;
 - Four priorities for Action

6th Joint Project Team Meeting of Sentinel Asia STEP-3 (JPTM 2018 Awaji)



- Sentinel Asia was launched in accordance with the recommendation from APRSAF in Kitakyushu, Japan and has developed ever since as part of its initiative.
- Recently, through cooperation and dedicated commitment from members, Sentinel Asia has further developed toward joint implementation, practical operation, and contribution to Sendai Framework.
- JAXA will continue to commit itself to Sentinel Asia as the Secretariat and will contribute to disaster management activities in the Asia-Pacific region, through cooperation with partners.

Thank you for your attention!

