



Sentinel Asia

Latest Trends and Perspectives:

Japan's Contribution to disaster risk reduction
in the Asia-Pacific Region through Sentinel Asia

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1 Overview of Sentinel Asia

- ✓ Sentinel Asia is an initiative aiming at space-based international cooperation for disaster management in the Asia-Pacific region
- ✓ In February 2006, Sentinel Asia was established in accordance with the recommendation at APRSAF-12 in October 2005. Sentinel Asia has been operational since 2007
- ✓ Sentinel Asia has 114 member organizations (as of January 2024), composed of space community, data analysis support community, international community, and disaster management community
- ✓ JAXA serves as the Secretariat of Sentinel Asia



Joint Project Team Meeting in Jakarta, Indonesia, in September 2023
co-organized by BRIN and JAXA

2 Concept of Sentinel Asia Strategic Plan

“Support for the entire disaster management cycle through collaboration”

MITIGATION

- Hazard Map
- Early Warning
- Success Story
- Pre-disaster monitoring

RECOVERY

- Mid/Long-term monitoring
- Recovery Status

PREPADNESS

- Training
- Capacity Building
- Standard Operation Procedure (SOP)

RESPONSE

- Emergency Observation
- Data Analysis
- Damage Assessment



3. Sentinel Asia “Data Provider Node” (DPN) currently contributing to Emergency Observations

- ✓ 8 space agencies/research institutes currently contributing to emergency observation
- ✓ If necessary, escalate Emergency Observation Request (EOR) to the International Disaster Charter (IDC)

**International Charter
Escalation from
Sentinel Asia**



ISRO

RESOURCESAT-2, Cartosat-3

JAXA

ALOS-2

MBRSC

KhalifaSat

TASA

**Sentinel Asia
Constellation**

GISTDA

PhilSA

STI/VAST

CRISP

DIWATA-2, NovaSAR-1

FORMOSAT-5

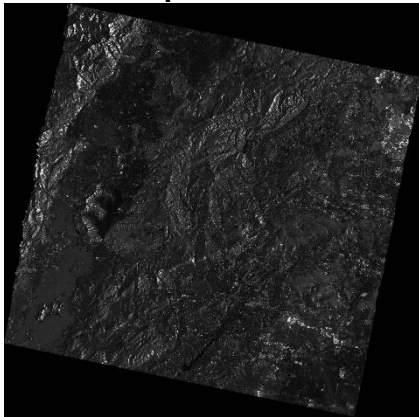
Thaichote (THEOS)

VNREDSat-1A

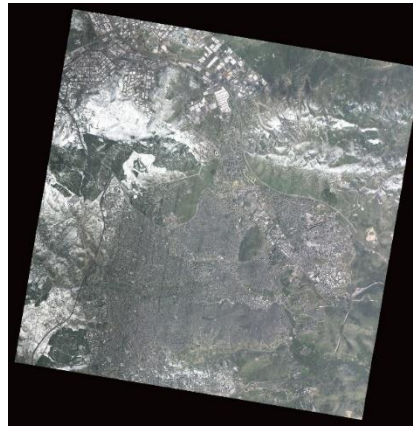
TeLEOS-1

4.1.1 Earthquake in Türkiye in February 2023

- ✓ Disaster and Emergency Management Presidency of Türkiye (AFAD) requested emergency observation
- ✓ AFAD, disaster relief team and UNWFP used disaster assessment map to monitor the impact of the earthquake
- ✓ 5 organizations provided satellite data and 8 organizations provided analyzed disaster assessment maps



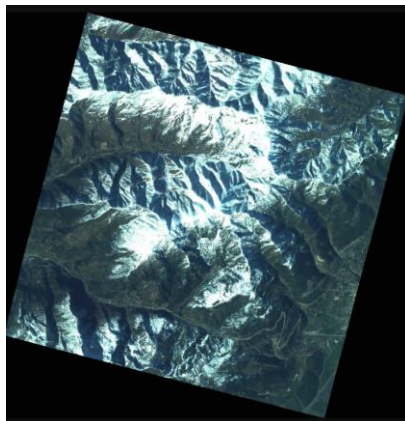
ALOS-2



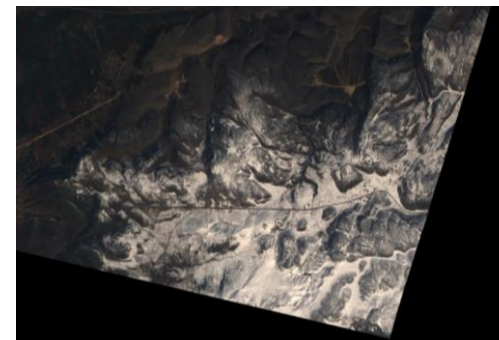
Cartosat-3



FORMOSAT-5

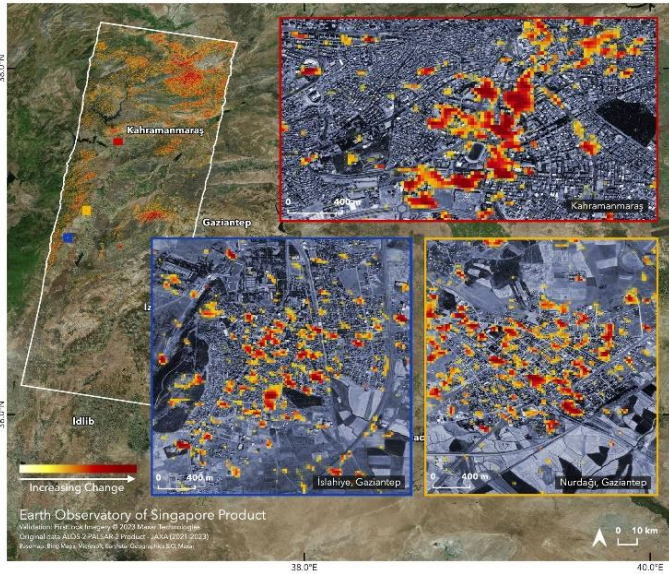


KhalifaSat

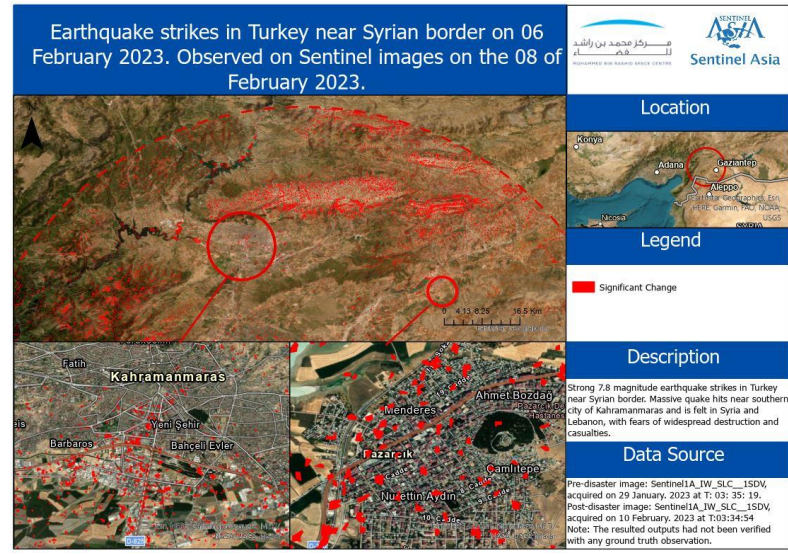


THEOS-1
(Thaichote)

4.1.2 Earthquake in Türkiye in February 2023

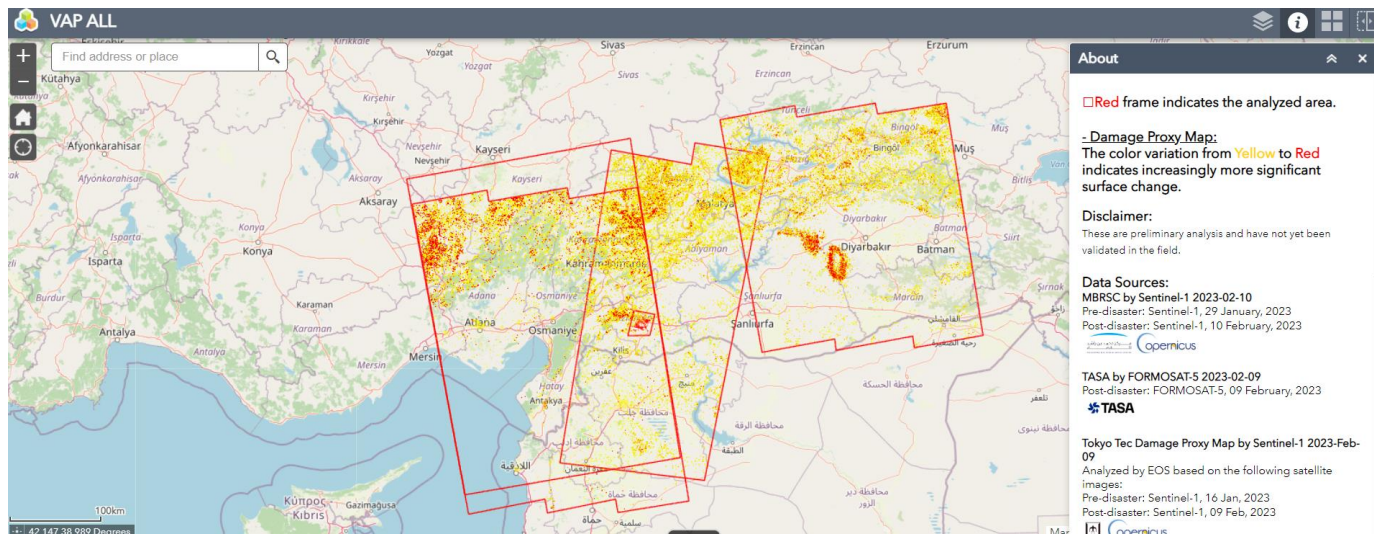


Damage Proxy Map by Earth Observatory of Singapore (EOS)



Significant damage map by Mohammed Bin Rashid Space Center (MBRSC)

Web-GIS overlaying potentially damaged areas and maps

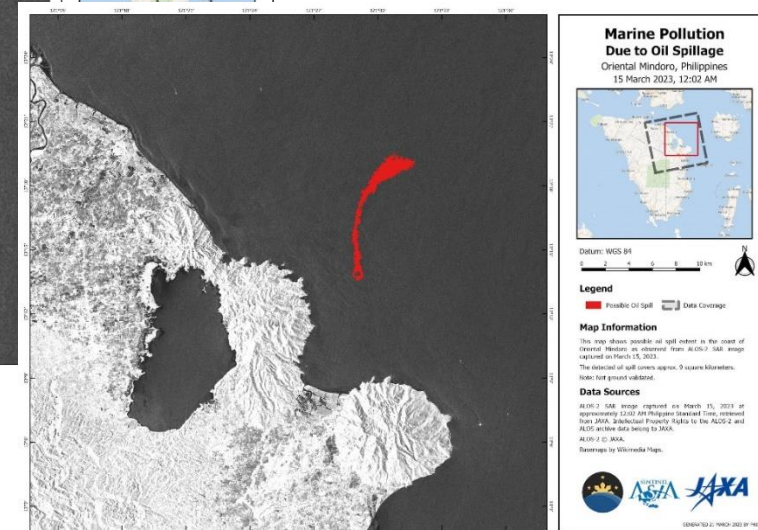
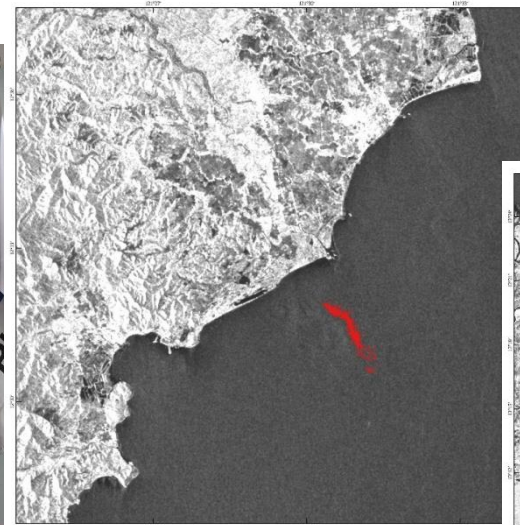
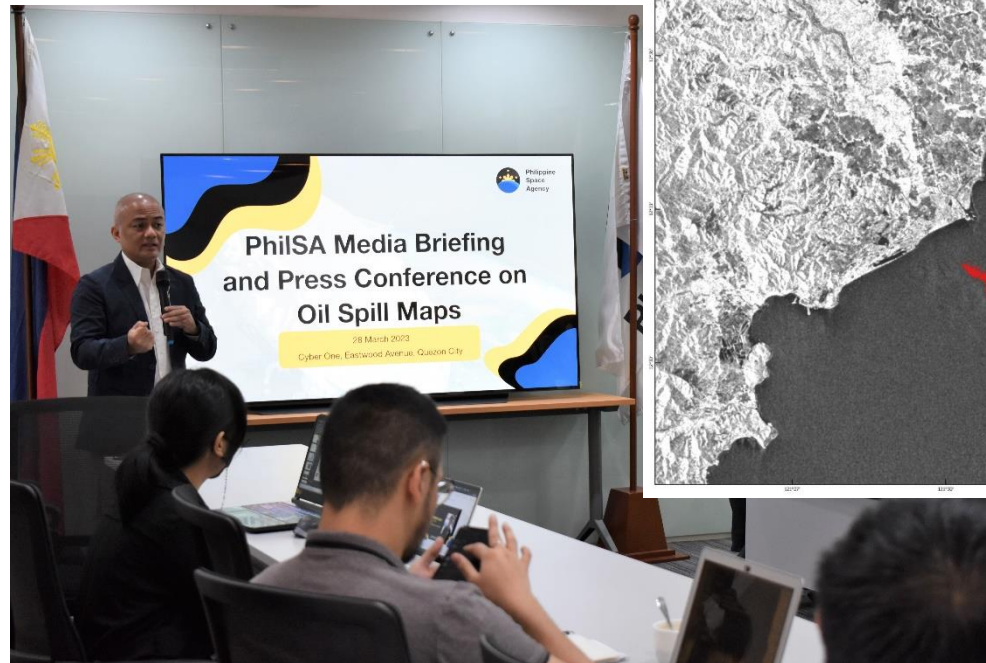


<https://storymaps.arcgis.com/collections/78e00fd34fec4a5c86b1dfae99dc0e75?item=1>

4.2 Oil Spill in the Philippines in March 2023

PhilSA requested emergency observation on oil spill, and held media briefing/press conference with estimated extent of oil spill maps provided by Sentinel Asia

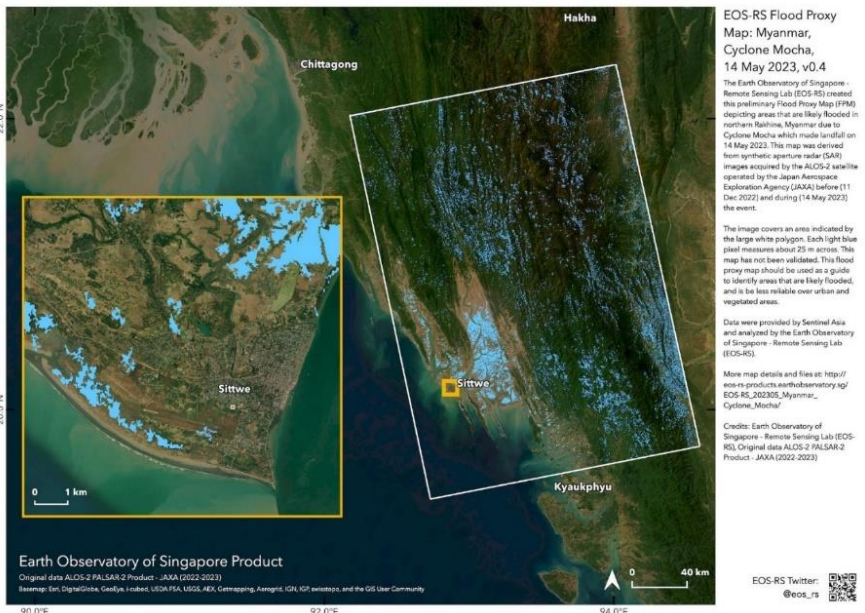
- ✓ In response to this incident, the Japan Disaster Relief (JDR) Expert Team was dispatched for gathering information on the oil spill situation, checking oil removal and control activities and technical advisory
- ✓ JDR Expert Team used estimated extent of oil spill maps provided by Sentinel Asia
- ✓ 4 organizations provided satellite data and 2 organizations provided estimated extent of oil spill maps



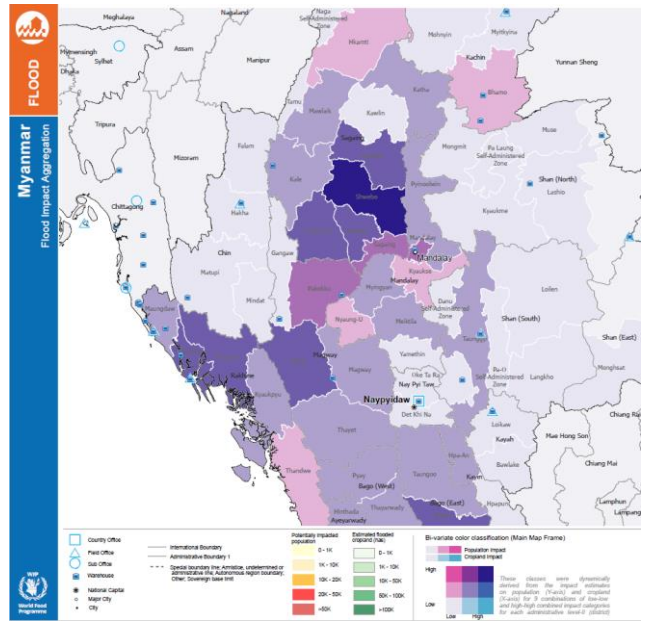
PhilSA showed journalists extent of Mindoro oil spill as captured by satellite images

4.3 Cyclone MOCHA in Myanmar in May 2023

- ✓ AHA Centre requested emergency observation on Cyclone MOCHA in Myanmar in May 2023 utilizing the Standard Operation Procedure (SOP) of Sentinel Asia EOR
- ✓ Thanks to disaster information provided by Earth Observatory of Singapore (EOS), Nanyang Technological University, Asian Institute of Technology (AIT) and MBRSC, AHA Centre could monitor the impact of the cyclone
- ✓ The flood proxy map provided by EOS was introduced in the report of AHA Centre.
- ✓ Japanese TV program, “TV Asahi Hodo Station” broadcasted flood detected area map provided by Sentinel Asia



Flood Proxy Map by Earth Observatory of Singapore(EOS)

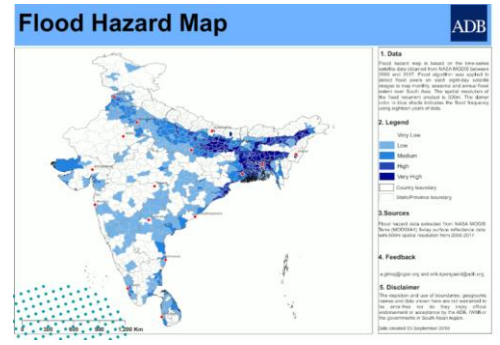


Population and Cropland Impact Map by WFP

5. Applications of Sentinel Asia by End Users

- ✓ Annual meeting of Sentinel Asia was held in Indonesia in September 2023
- ✓ Sentinel Asia members shared their **applications utilizing Sentinel Asia's data** in various phases of disaster management cycle such as **mitigation, preparedness, response and recovery**

- **Flood forecasting**
- **Drought monitoring/ forecasting**
- **Hazard Map** (Flood, wildfire, tsunami...)

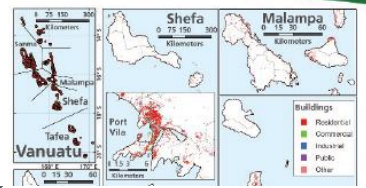


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Country Risk Profile of Vanuatu



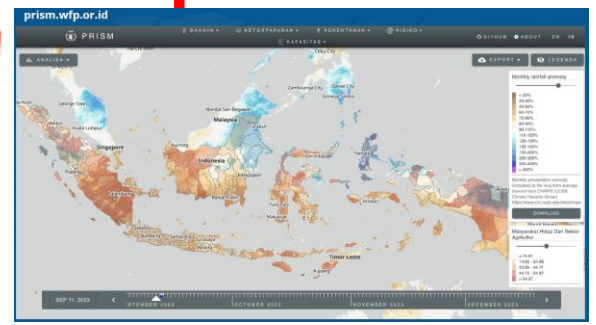
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Mitigation
Recovery



Preparedness
Response

- **Identify the suitable areas for relocation**
- **Validate the impact of disaster and implement to the urban planning**
- **To estimate the replacement cost of the buildings and infrastructures to inform risk financing aspect of the country**



©WFP

Estimate affected population and amount of humanitarian aids

6. Summary

- ✓ Sentinel Asia is an international cooperative initiative that aims to contribute to disaster management in the Asia Pacific region by utilizing space technology. JAXA serves as the secretariat.
- ✓ Sentinel Asia has been operational since 2007 and responded to over 430 emergency observation requests.
- ✓ Now, Sentinel Asia is expected to implement the activities covering the entire disaster management cycle. While Sentinel Asia continues to support emergency observation through strengthened partnership incorporating new member organizations, Sentinel Asia is addressing mitigation, preparedness, and recovery phase as witnessed at the annual general assembly meeting in Indonesia last September.
- ✓ JAXA will continue to be committed to Sentinel Asia as the Secretariat and will contribute to disaster management activities in the Asia-Pacific region, through cooperation with partners.