

Improving Sentinel Asia's Emergency Response Activities: SAR Data Analysis and Mobile App Development

Syams Nashrullah
Angsana Chaksan

Geoinformatics Center - AIT



Outline

- Summary of Sentinel Asia Activations and Generated Maps/Products by GIC in 2022 and 2023
- SAR Data Analysis, with focus on Flood and Earthquake
- Disaster Survey Mobile App
- Case Study: Thailand Flood in 2021

SA Activation List in 2022

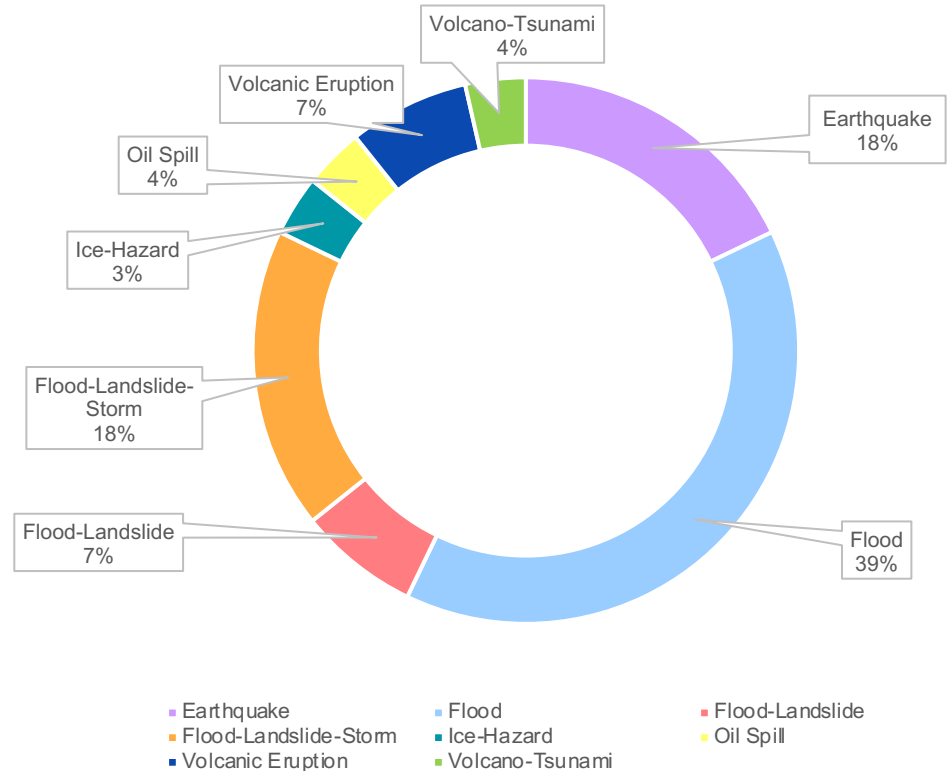
No.	Activation ID	Occurrence Date	Activation Date	Country	Disaster Type	No. of Product
1	434	15-Jan-22	16-Jan-22	Tonga	Volcano-Tsunami	-
2	435	10-Feb-22	11-Feb-22	Thailand	Oil Spill	-
3	436	24-Feb-22	3-Mar-22	Thailand	Flood	2
4	438	12-Apr-22	11-Apr-22	Philippines	Flood-Landslide	1
5	439	15-May-22	20-May-22	India	Flood	3
6	440	23-May-22	27-May-22	Indonesia	Flood	2
7	441	5-Jun-22	13-Jun-22	Philippines	Volcanic Eruption	-
8	442	15-Jun-22	21-Jun-22	India	Flood	2
9	443	18-Jun-22	23-Jun-22	Bangladesh	Flood	1
10	444	22-Jun-22	27-Jun-22	Afghanistan	Earthquake	1
11	445	7-Jul-22	7-Jul-22	Vietnam	Flood-Landslide-Storm	-
12	446	12-Jul-22	13-Jul-22	India	Flood	2
13	447	12-Jul-22	13-Jul-22	India	Flood	2
14	448	27-Jul-22	27-Jul-22	Philippines	Earthquake	1
15	449	17-Aug-22	18-Aug-22	Pakistan	Flood	3
16	450	23-Aug-22	23-Aug-22	Philippines	Flood-Landslide-Storm	-
17	451	23-Aug-22	24-Aug-22	India	Flood	-
18	452	5-Sep-22	5-Sep-22	China	Earthquake	-
19	453	17-Sep-22	18-Sep-22	Taiwan	Earthquake	-
20	454	25-Sep-22	25-Sep-22	Philippines	Flood-Landslide-Storm	1
21	455	28-Sep-22	26-Sep-22	Vietnam	Flood-Landslide-Storm	2
22	456	2-Oct-22	9-Oct-22	Nepal	Ice-Hazard	-
23	457	13-Oct-22	15-Oct-22	India	Flood	2
24	458*	19-Oct-22	19-Oct-22	Thailand	Flood	6
25	459*	29-Oct-22	29-Oct-22	Philippines	Flood-Landslide-Storm	1
26	460	21-Nov-22	22-Nov-22	Indonesia	Earthquake	1
27	461*	4-Dec-22	5-Dec-22	Indonesia	Volcanic Eruption	-
28	462	27-Dec-22	27-Dec-22	Philippines	Flood-Landslide	1

* Escalated to International Disaster Charter (IDC) and project management by GIC-AIT

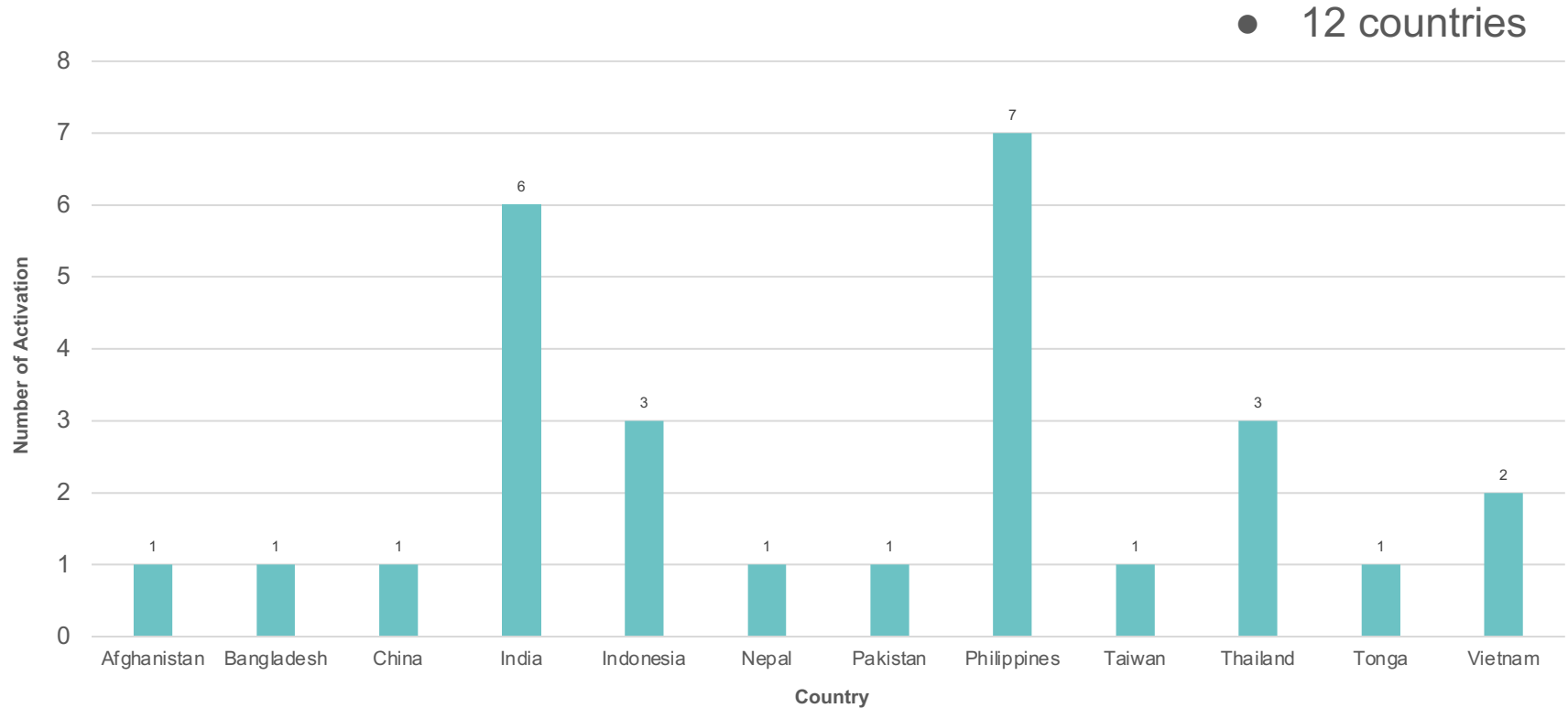
SA Activation Summary in 2022

- 28 Activations
- 8 Types of disaster
- 34 VAPs

Disaster type	Activation
Earthquake	5
Flood	11
Flood-Landslide	2
Flood-Landslide-Storm	5
Ice-Hazard	1
Oil Spill	1
Volcanic Eruption	2
Volcano-Tsunami	1



SA Activation by Country in 2022



SA Activation List in 2023

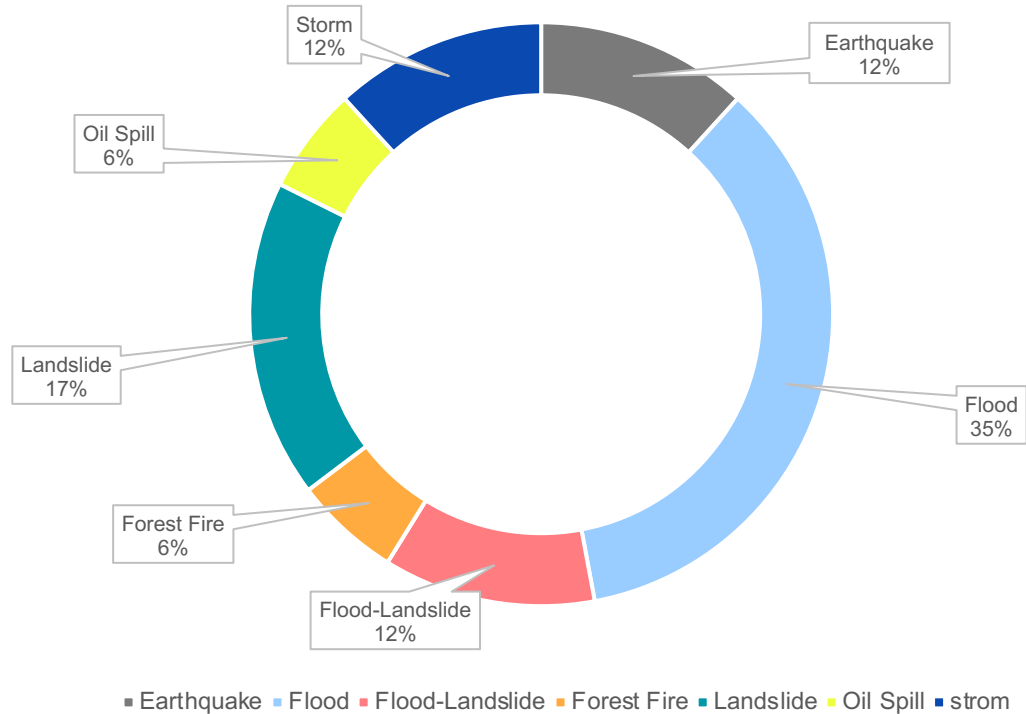
No.	Activation ID	Occurrence Date	Activation Date	Country	Disaster Type	No. of Product
1	463	6-Feb-23	6-Feb-23	Turkey	Earthquake	-
2	464	16-Feb-23	17-Feb-23	Philippines	Earthquake	-
3	465	28-Feb-23	1-Mar-23	Philippines	Oil Spill	-
4	467*	6-Mar-23	7-Mar-23	Indonesia	Landslide	-
5	468*	14-May-23	11-May-23	Myanmar (Burma)	Storm	1
6	469	14-May-23	14-May-23	Bangladesh	Storm	1
7	470	27-May-23	25-May-23	Philippines	Flood, Landslide	1
8	471	15-Jun-23	14-Jun-23	India	Flood	1
9	472	8-Jun-23	14-Jun-23	Kazakhstan	Forest Fire	1
10	473	13-Jul-23	13-Jul-23	India	Flood	1
11	474	18-Jul-23	17-Jul-23	Vietnam	Flood	2
12	475	20-Jul-23	26-Jul-23	Bhutan	Flood	-
13	476	25-Jul-23	28-Jul-23	Philippines	Flood	1
14	477	5-Aug-23	8-Aug-23	Vietnam	Flood	-
15	478	4-Aug-23	16-Aug-23	Vietnam	Landslide	-
16	479	27-Aug-23	30-Aug-23	Tajikistan	Landslide	-
17	480	12-Sep-23	13-Sep-23	Vietnam	Flood, Landslide	-

* Escalated to International Disaster Charter (IDC) and project management by GIC-AIT

SA Activation Summary in 2023

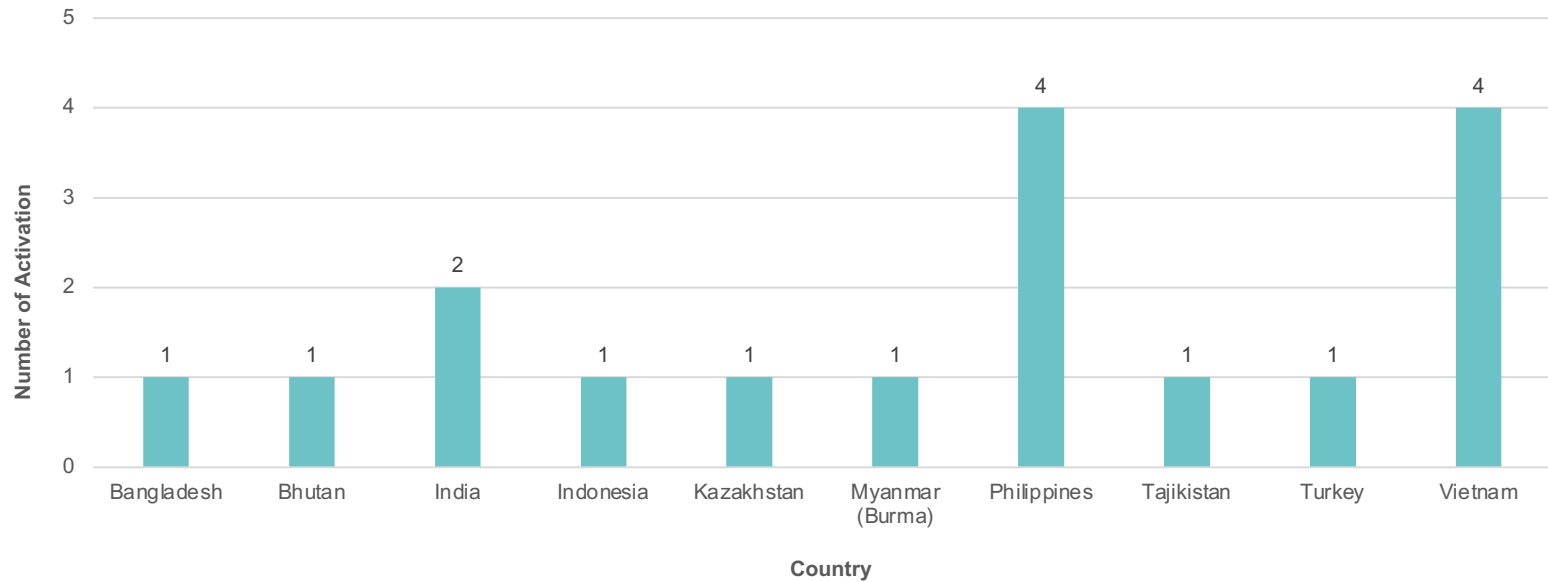
- 17 Activations
- 7 Types of disaster
- 9 VAPs

Disaster type	Activation
Earthquake	2
Flood	6
Flood-Landslide	2
Forest Fire	1
Landslide	3
Oil Spill	1
Storm	2



SA Activation by Country in 2023

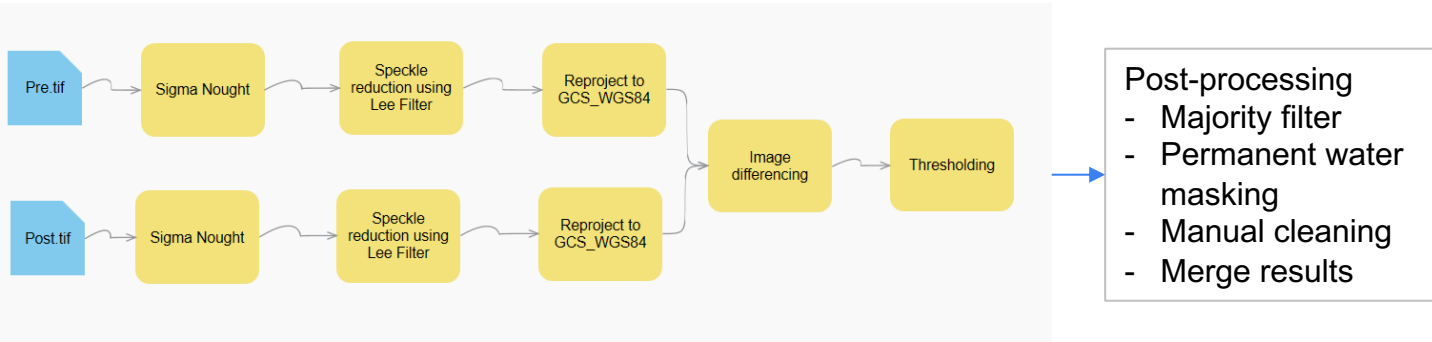
● 10 countries



Flood Mapping (SAR Data)

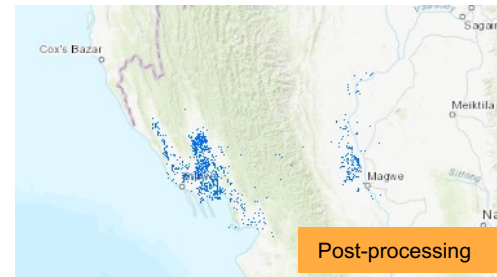
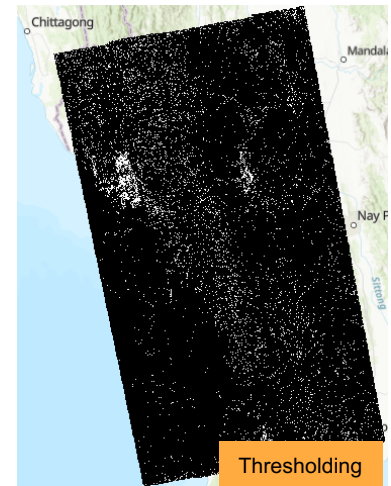
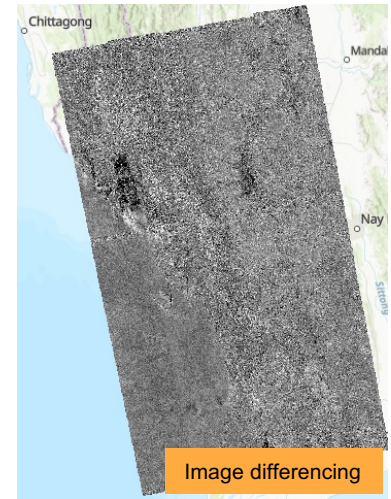
Method 1

(Step using Raster Function in ArcGIS Pro) Radiometric calibration, Speckle filtering, Coordinate transformation, Image differencing and Thresholding of backscatter changes.



- Post-processing
- Majority filter
 - Permanent water masking
 - Manual cleaning
 - Merge results

Workflow for Detected Flood from ALOS-2



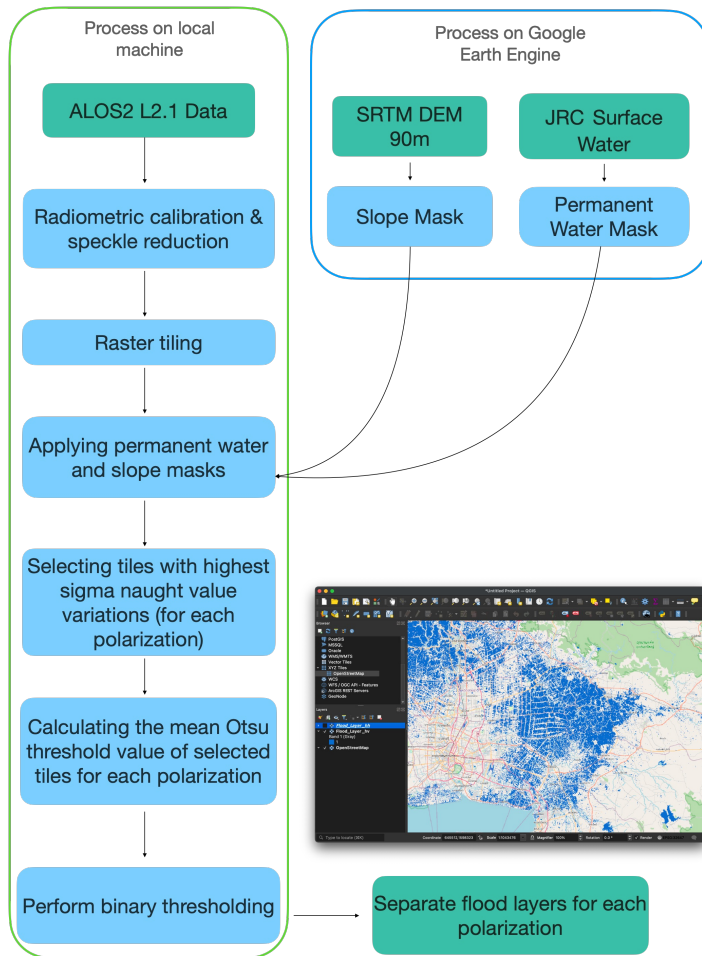
Flood Mapping (SAR Data)

Method 2

Automatic Flood Mapping

<https://github.com/chathumal93/ALOS2-Flood-Mapping>

- This repository includes an automatic statistical-based flood mapping approach for ALOS2 Level 2.1 data. (Geometrically corrected and orthorectified data in .tif format). The below chart gives a brief overview of ALOS2 L2.1 data.
- The flood extraction process is carried out in a local machine Jupyter Notebook with the help of additional data from the Google Earth Engine.



Flood Mapping (SAR Data)

Method 3

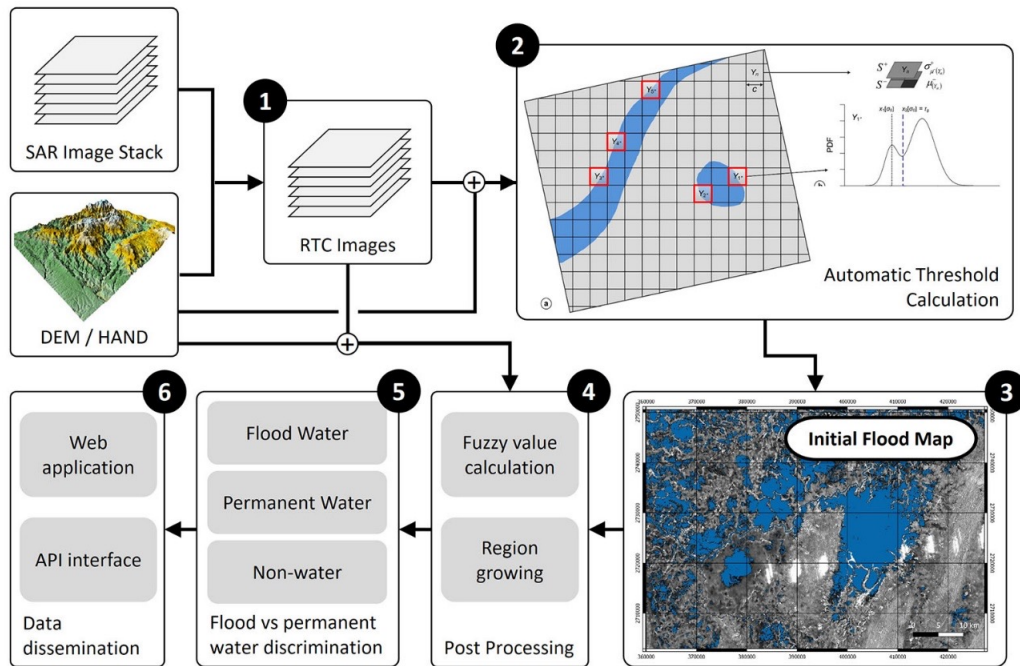
HydroSAR Approach

<https://github.com/fjmeyer/HydroSAR>

OpenSARLab Platform

<https://opensciencelab.asf.alaska.edu/>

<https://github.com/ASFOpenSARlab/opensarlab-notebooks>



The workflow of the Sentinel-1-based processing chain in HydroSAR:

1. Image Geocoding and Calibration (RTC Processing),
2. Automatic and adaptive threshold calculation,
3. Initial flood map product,
4. Post processing to remove false alarms using fuzzy-logic-based classification refinement,
5. Final flood map product including the use of auxiliary data,
6. Data and product dissemination.

Disaster Maps and Products (Floods)

Flood in Pakistan, August 2022

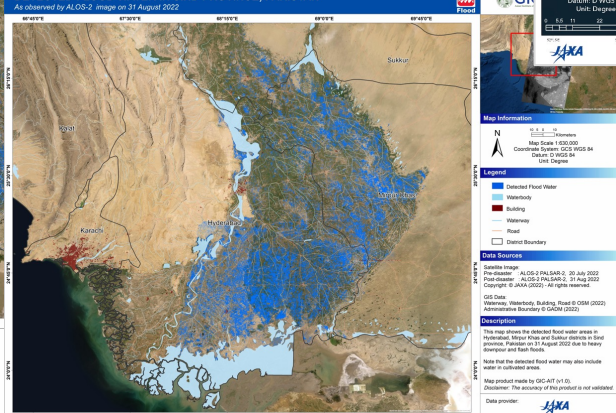


DETECTED FLOOD WATER IN SIND PROVINCE, PAKISTAN

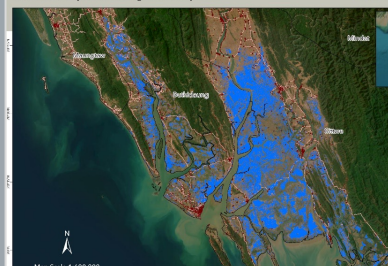
As observed by ALOS-2 image on 21 August 2022

DETECTED FLOOD WATER IN SIND PROVINCE, PAKISTAN

As observed by ALOS-2 image on 21 August 2022



Flood in Myanmar, May 2023

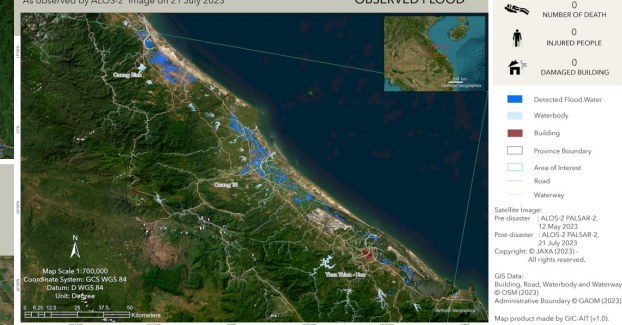


DETECTED FLOOD WATER IN SOUTHERN REGION, VIETNAM

As observed by ALOS-2 image on 21 July 2023



Flood in Vietnam, Jul 2023

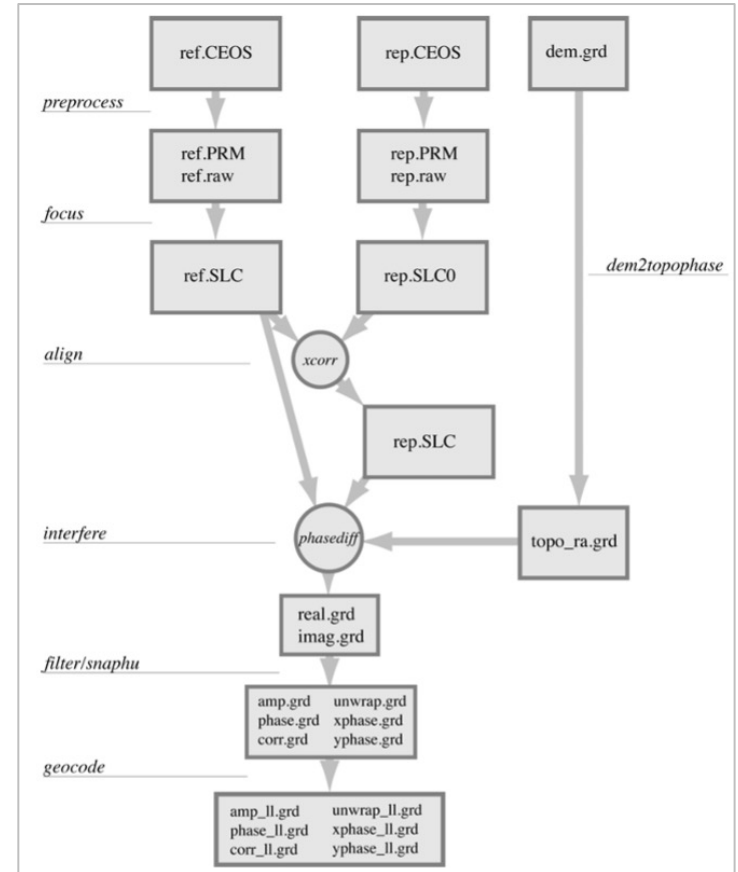


Ground Deformation (SAR Data)

Method 1

GMT5SAR

- Flow diagram of 2-pass processing beginning with raw SAR and orbital data and a digital elevation grid (dem.grd) and ending with geocoded grids of interferometric products.
- There is a set of preprocessing codes for each of the satellites – currently ERS-1, ERS-2, Envisat, Sentinel-1, ALOS, and ALOS-2.

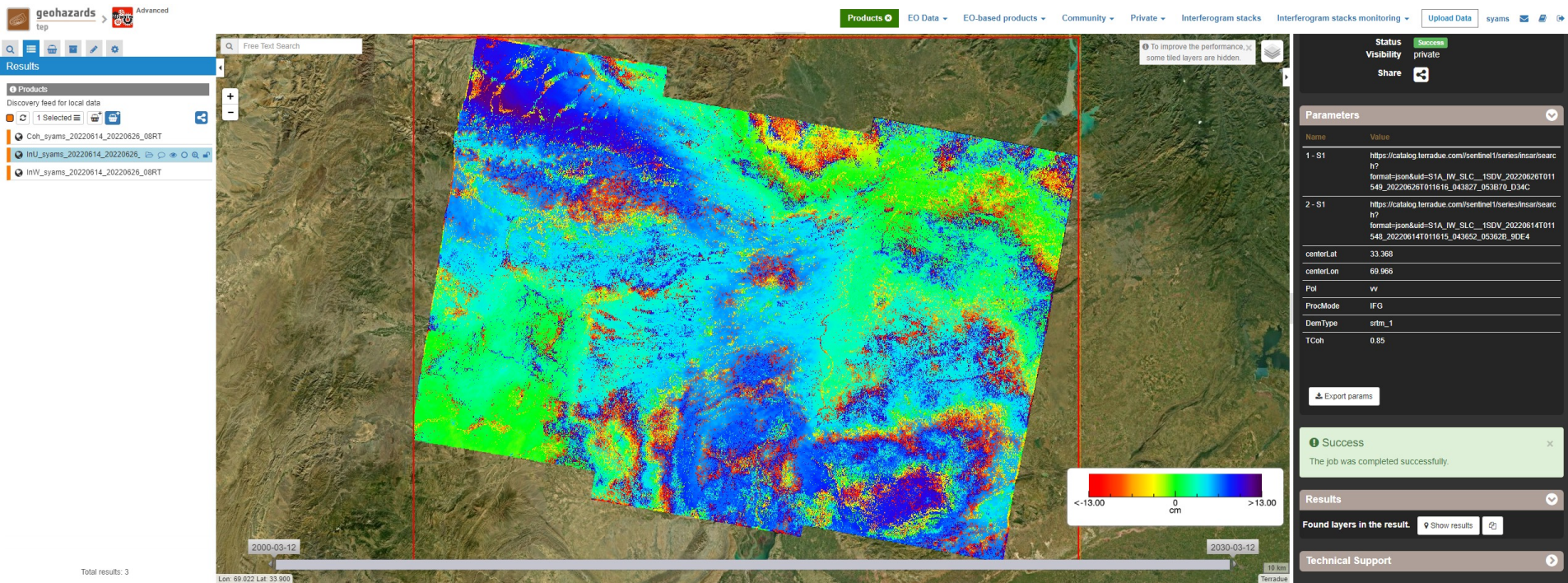


Ground Deformation (SAR Data)

Method 2

Geohazard Exploitation Platform (GEP)

<https://geohazards-tep.eu/>



Ground Deformation (SAR Data)

Method 3

ASF DAAC HyP3 using GAMMA software

<https://search.asf.alaska.edu/#/>

The screenshot displays the ASF Data Search web application. At the top, there is a navigation bar with the ASF logo and search filters. The main area features a map of Indonesia with a red-outlined SAR data footprint over the Java region, labeled "Approximate Placement Only". Below the map, a list of search results is shown, including product names, dates, and file sizes. The interface also includes a sidebar with navigation options and a footer with copyright information.

Search Filters:
Search Type: On Demand | Project Name: IndoEQ2022_31Oct_24Nc | Start Date: | End Date: | Product/Source Scene: | Job Status: | SEARCH

Map Controls:
Map View: | Zoom: | Layers: | Scale: 100% | 50 km

Search Results:

Product Name	Expiration Status
S1AA_20221030T111507_202211..._48FD.zip	Expired...
S1AA_20221018T111507_202211..._9686.zip	Expired...
S1AA_20221111T111506_202211..._36BF.zip	Expired...
S1AA_20221030T111507_202211..._318B.zip	Expired...

Scene Detail:
S1A_IW_SLC_1SDV_20221111T111506_20221111T111536_045845_057C1D_22C2
Sentinel-1 - C-Band

Metadata:
Start Time: 11/11/22, 11:15:06Z
Stop Time: 11/11/22, 11:15:36Z
Beam Mode: IW
Path: 98
Frame: 1154
Flight Direction: ASCENDING
Polarization: VV+VH
Absolute Orbit: 45845
Data courtesy of ESA
Citation

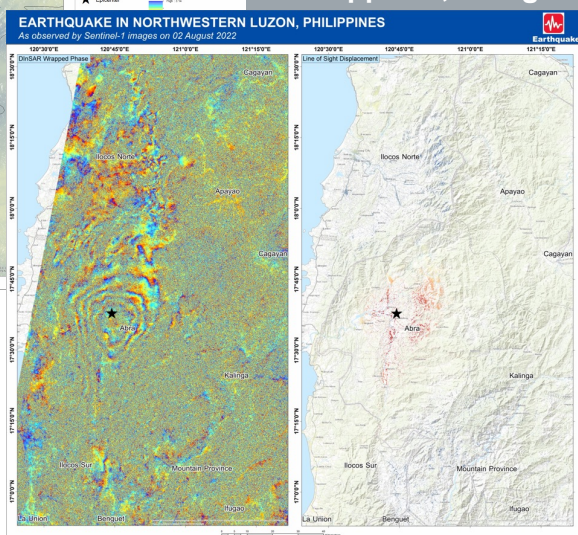
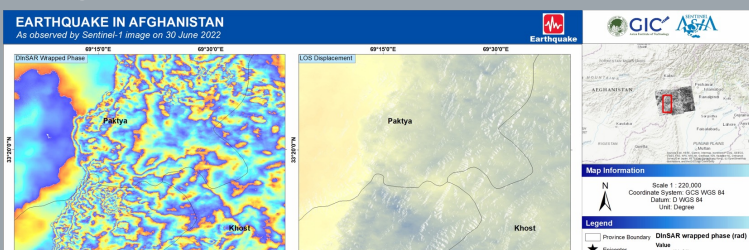
Metadata (Secondary Scene):
S1A_IW_SLC_1SDV_20221030T111507_20221030T111536_045670_057638_AC4F (Secondary Scene)
Start Time: 10/30/22, 11:15:07Z
Stop Time: 10/30/22, 11:15:36Z
Beam Mode: IW
Path: 98
Frame: 1154
Flight Direction: ASCENDING
Polarization: VV+VH
Absolute Orbit: 45670
Data courtesy of ESA
Citation

Product Information:
Type: IN SAR, GAMMA, SLC
Project Name: IndoEQ2022_31Oct_24Nov
Job Submitted: November 24 2022 10:06:02Z
Looks: 10x2
Water Mask: true
DEM: true
Incidence Angle Maps: true
Look Vectors: true
Displacement Maps: true
Wrapped Phase: true

Page Footer:
© 2023 ASF | Contact | Non-Discrimination

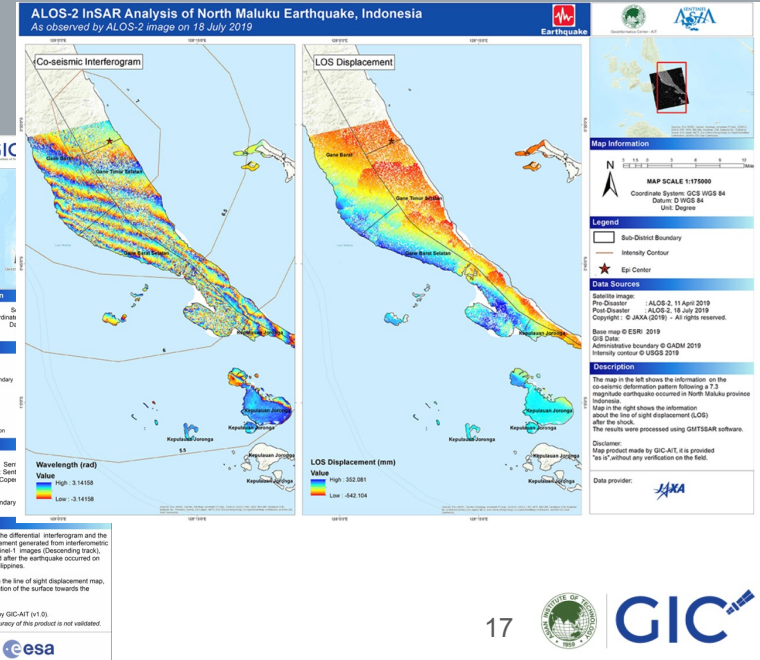
Disaster Maps and Products (Earthquake)

Afghanistan, 30 Jun 2022



Philippines, 2 Aug 2022

Indonesia, 18 July 2019



Disaster Survey Mobile App



Access using a web link or QR Code

<https://arcg.is/1HWGWX0>



A screenshot of a mobile application interface for a disaster survey. At the top, there is a logo for GIC (Geomatics Institute of Technology) and the text 'Disaster Survey'. Below the logo, there is a paragraph of text explaining the app's purpose: 'The mobile app is developed to collect information on current disasters and its impact to important objects, properties, and infrastructures. The collected information will be useful for disaster response and post-disaster activities, including for the satellite-based disaster mapping for Sentinel Asia.' This is followed by a request to 'Please complete the following survey regarding disaster occurring in your area.' The form includes a 'Date/Time' field with a calendar icon and the value '13 Sep BE 2566 17:16'. Below that is a 'Disaster Type*' dropdown menu with 'Flood' selected. At the bottom, there is a 'Geotagged Photos' section with a plus icon, containing a 'Photo 01*' entry with a thumbnail image, the filename 'IMG_9046.jpeg', and a size of '1.3MB'.

- To collect information on the ongoing **disasters** and their impact on important objects, properties, and infrastructures.
- Collected information will be useful for disaster response and post-disaster activities, including **validating the satellite-based disaster mapping products** from Sentinel Asia.
- Rapid data collection for quick disaster info and the option to collect data for more detailed damage assessment.

Disaster Survey Mobile App

Collected Info - Required

Main Data Collection

Required information	Description
Date/Time	Automatically shows the current date and time
Disaster Type	<ul style="list-style-type: none">• Flood,• Landslide,• Earthquake,• Cyclone,• Volcanic Eruption,• Forest Fire,• Other
Geotagged Photo	Possible to take up to 4 photos 
Survey Location	Click 'Find my location' icon  on the app.

Disaster Survey Mobile App

Collected Info - Optional

Additional information	Description										
Disaster Information	Depend on the selected disaster type, additional information about the specific disaster can be added.										
	<table><tr><td data-bbox="589 442 898 573">Flood</td><td data-bbox="898 442 1748 573"><table><tr><td data-bbox="917 453 1342 573">Flood Type</td><td data-bbox="1342 453 1748 573"></td></tr><tr><td data-bbox="917 496 1342 529">• Riverine Flood</td><td data-bbox="1342 496 1748 529">• Urban Flood</td></tr><tr><td data-bbox="917 540 1342 573">• Flash Flood</td><td data-bbox="1342 540 1748 573">• Coastal Flood</td></tr></table></td></tr></table>	Flood	<table><tr><td data-bbox="917 453 1342 573">Flood Type</td><td data-bbox="1342 453 1748 573"></td></tr><tr><td data-bbox="917 496 1342 529">• Riverine Flood</td><td data-bbox="1342 496 1748 529">• Urban Flood</td></tr><tr><td data-bbox="917 540 1342 573">• Flash Flood</td><td data-bbox="1342 540 1748 573">• Coastal Flood</td></tr></table>	Flood Type		• Riverine Flood	• Urban Flood	• Flash Flood	• Coastal Flood		
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Flood Type											
• Riverine Flood	• Urban Flood										
• Flash Flood	• Coastal Flood										
	<table><tr><td data-bbox="589 595 898 726">Landslide</td><td data-bbox="898 595 1748 726"><table><tr><td data-bbox="917 606 1342 726">Landslide Type</td><td data-bbox="1342 606 1748 726"></td></tr><tr><td data-bbox="917 649 1342 682">• Mudflows</td><td data-bbox="1342 649 1748 682">• Debris Flows</td></tr><tr><td data-bbox="917 693 1342 726">• Rock Falls</td><td data-bbox="1342 693 1748 726"></td></tr></table></td></tr></table>	Landslide	<table><tr><td data-bbox="917 606 1342 726">Landslide Type</td><td data-bbox="1342 606 1748 726"></td></tr><tr><td data-bbox="917 649 1342 682">• Mudflows</td><td data-bbox="1342 649 1748 682">• Debris Flows</td></tr><tr><td data-bbox="917 693 1342 726">• Rock Falls</td><td data-bbox="1342 693 1748 726"></td></tr></table>	Landslide Type		• Mudflows	• Debris Flows	• Rock Falls			
Landslide	<table><tr><td data-bbox="917 606 1342 726">Landslide Type</td><td data-bbox="1342 606 1748 726"></td></tr><tr><td data-bbox="917 649 1342 682">• Mudflows</td><td data-bbox="1342 649 1748 682">• Debris Flows</td></tr><tr><td data-bbox="917 693 1342 726">• Rock Falls</td><td data-bbox="1342 693 1748 726"></td></tr></table>	Landslide Type		• Mudflows	• Debris Flows	• Rock Falls					
Landslide Type											
• Mudflows	• Debris Flows										
• Rock Falls											
	<table><tr><td data-bbox="589 748 898 933">Earthquake</td><td data-bbox="898 748 1748 933"><table><tr><td data-bbox="917 758 1342 933">Secondary Hazard</td><td data-bbox="1342 758 1748 933"></td></tr><tr><td data-bbox="917 802 1342 835">• Tsunami</td><td data-bbox="1342 802 1748 835">• Landslides</td></tr><tr><td data-bbox="917 846 1342 879">• Liquefaction</td><td data-bbox="1342 846 1748 879">• Fires</td></tr><tr><td data-bbox="917 889 1342 933">• Flooding</td><td data-bbox="1342 889 1748 933"></td></tr></table></td></tr></table>	Earthquake	<table><tr><td data-bbox="917 758 1342 933">Secondary Hazard</td><td data-bbox="1342 758 1748 933"></td></tr><tr><td data-bbox="917 802 1342 835">• Tsunami</td><td data-bbox="1342 802 1748 835">• Landslides</td></tr><tr><td data-bbox="917 846 1342 879">• Liquefaction</td><td data-bbox="1342 846 1748 879">• Fires</td></tr><tr><td data-bbox="917 889 1342 933">• Flooding</td><td data-bbox="1342 889 1748 933"></td></tr></table>	Secondary Hazard		• Tsunami	• Landslides	• Liquefaction	• Fires	• Flooding	
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Secondary Hazard											
• Tsunami	• Landslides										
• Liquefaction	• Fires										
• Flooding											

Disaster Survey Mobile App

Collected Info - Optional

Additional information	Description						
Disaster Information	Depend on the selected disaster type, additional information about the specific disaster can be added.						
	<table border="0"><tr><td data-bbox="598 447 888 485">Cyclone</td><td data-bbox="888 447 1333 485">Secondary Hazard</td><td data-bbox="1333 447 1738 485"></td></tr><tr><td></td><td data-bbox="888 485 1333 573"><ul style="list-style-type: none">• Storm Surges• Strong Wind</td><td data-bbox="1333 485 1738 573"><ul style="list-style-type: none">• Tornadoes• Flooding</td></tr></table>	Cyclone	Secondary Hazard			<ul style="list-style-type: none">• Storm Surges• Strong Wind	<ul style="list-style-type: none">• Tornadoes• Flooding
Cyclone	Secondary Hazard						
	<ul style="list-style-type: none">• Storm Surges• Strong Wind	<ul style="list-style-type: none">• Tornadoes• Flooding					
	<table border="0"><tr><td data-bbox="598 600 888 682">Volcanic Eruption</td><td data-bbox="888 600 1333 638">Secondary Hazard</td><td data-bbox="1333 600 1738 638"></td></tr><tr><td></td><td data-bbox="888 638 1333 780"><ul style="list-style-type: none">• Lava Flows• Lahars• Volcanic Gasses</td><td data-bbox="1333 638 1738 780"><ul style="list-style-type: none">• Volcanic Ashes• Fires• Pyroclastic Flow</td></tr></table>	Volcanic Eruption	Secondary Hazard			<ul style="list-style-type: none">• Lava Flows• Lahars• Volcanic Gasses	<ul style="list-style-type: none">• Volcanic Ashes• Fires• Pyroclastic Flow
Volcanic Eruption	Secondary Hazard						
	<ul style="list-style-type: none">• Lava Flows• Lahars• Volcanic Gasses	<ul style="list-style-type: none">• Volcanic Ashes• Fires• Pyroclastic Flow					
	Forest Fire						

Disaster Survey Mobile App

Collected Info - Optional

Additional information	Description				
Damage Information	Damage to assets such as building, road, bridge, and agriculture.				
	<table border="1"><tr><td data-bbox="579 369 888 751">Building</td><td data-bbox="888 369 1742 751"><ul style="list-style-type: none">• Building Type: Residential, Commercial, Industrial, School, Hospital, Government, Religious, Cultural Buildings• Construction Material: Concrete, Masonry, Wood, Bricks• Number of Floor• Damage Level: Slightly Damage, Heavily Damage, Completely Damage/Collapse</td></tr><tr><td data-bbox="579 751 888 1083">Road</td><td data-bbox="888 751 1742 1083"><ul style="list-style-type: none">• Road Type: Main Road, Secondary Road, Local Road• Construction Material: Concrete, Asphalt, Gravel, Earthen/Dirt• Impassable Road: Yes, No• Damage Level: Slightly Damage, Heavily Damage, Completely Damage/Collapse</td></tr></table>	Building	<ul style="list-style-type: none">• Building Type: Residential, Commercial, Industrial, School, Hospital, Government, Religious, Cultural Buildings• Construction Material: Concrete, Masonry, Wood, Bricks• Number of Floor• Damage Level: Slightly Damage, Heavily Damage, Completely Damage/Collapse	Road	<ul style="list-style-type: none">• Road Type: Main Road, Secondary Road, Local Road• Construction Material: Concrete, Asphalt, Gravel, Earthen/Dirt• Impassable Road: Yes, No• Damage Level: Slightly Damage, Heavily Damage, Completely Damage/Collapse
Building	<ul style="list-style-type: none">• Building Type: Residential, Commercial, Industrial, School, Hospital, Government, Religious, Cultural Buildings• Construction Material: Concrete, Masonry, Wood, Bricks• Number of Floor• Damage Level: Slightly Damage, Heavily Damage, Completely Damage/Collapse				
Road	<ul style="list-style-type: none">• Road Type: Main Road, Secondary Road, Local Road• Construction Material: Concrete, Asphalt, Gravel, Earthen/Dirt• Impassable Road: Yes, No• Damage Level: Slightly Damage, Heavily Damage, Completely Damage/Collapse				

Disaster Survey Mobile App

Collected Info - Optional

Additional information	Description				
Damage Information	Damage to assets such as building, road, bridge, and agriculture.				
	<table border="1"><tr><td data-bbox="587 373 896 701">Bridge</td><td data-bbox="896 373 1742 701"><ul style="list-style-type: none">• Bridge Type: Main Road Bridge, Secondary Road Bridge, Local Road Bridge• Construction Material: Concrete, Steel, Timber• Impassable Bridge: Yes, No• Damage Level: Slightly Damage, Heavily Damage, Completely Damage/Collapse</td></tr><tr><td data-bbox="587 701 896 903">Agriculture</td><td data-bbox="896 701 1742 903"><ul style="list-style-type: none">• Crop Type: Rice, Wheat, Millet, Pulses, Cotton, Sugarcane, Tea• Damage Level: Slightly Damage, Heavily Damage, Completely Damage/Collapse</td></tr></table>	Bridge	<ul style="list-style-type: none">• Bridge Type: Main Road Bridge, Secondary Road Bridge, Local Road Bridge• Construction Material: Concrete, Steel, Timber• Impassable Bridge: Yes, No• Damage Level: Slightly Damage, Heavily Damage, Completely Damage/Collapse	Agriculture	<ul style="list-style-type: none">• Crop Type: Rice, Wheat, Millet, Pulses, Cotton, Sugarcane, Tea• Damage Level: Slightly Damage, Heavily Damage, Completely Damage/Collapse
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“Thailand flood (2021 October)

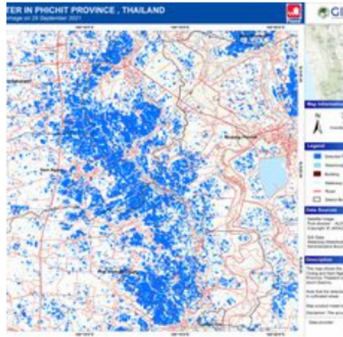
According to the Thailand Department of Disaster Prevention and Mitigation, 32 of the country's 76 provinces have been affected by flooding during a monsoon season that has brought heavy rains for nearly a month.

Damage of the Disaster

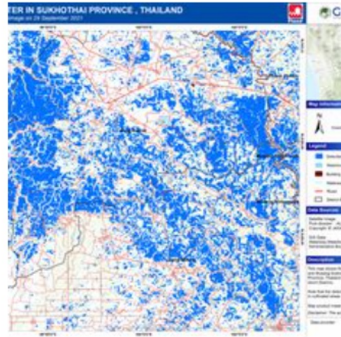
- Between September 27 and October 19, 2021, more than 13,600 square kilometers of the country were inundated and an estimated 1.3 million people were affected by the flooding, according to the Thailand Flood Monitoring Dashboard (GISTDA).
- Thailand's Disaster Prevention and Mitigation Department (DDPM) reported flooding has affected 58,977 households across 27 provinces.
- In the north, [Sukhothai province](#) is the worst hit area with 7,392 households affected, mostly in Sri Samrong, Khirimas and Muang districts, according to DDPM.
- In the central region, severe flooding struck in [Lopburi Province](#) where 37,451 households have been affected.
- In early October, historical sites in [Phra Nakhon Si Ayutthaya Province](#), home to many temples and ruins, were flooded by the Chao Phraya River.

Disaster Maps and Products

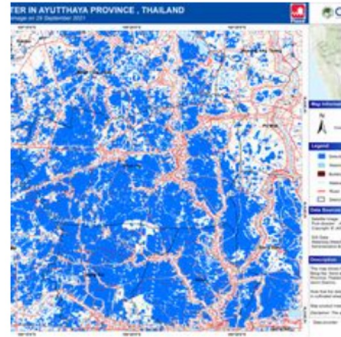
AIT



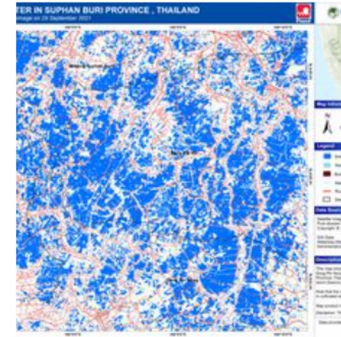
2021-10-01
DETECTED WATER IN
PHICHIT PROVINCE,
THAILAND As observed by
ALOS-2 image on 29 September
2021



2021-10-01
DETECTED WATER IN
SUKHOTHAI PROVINCE,
THAILAND As observed by
ALOS-2 image on 29 September
2021



2021-10-01
DETECTED WATER IN
AYUTTHAYA PROVINCE,
THAILAND As observed by
ALOS-2 image on 29 September
2021



2021-10-01
DETECTED WATER IN
SUPHAN BURI PROVINCE,
THAILAND As observed by
ALOS-2 image on 29 September
2021

ALOS-2 PALSAR-2 Data provided through Sentinel Asia Initiative was used to detect flood in Phichit, Sukhothai, Ayutthaya and, Supanburi Provinces.



Disaster Survey
Mobile Application

GIC Disaster Survey
Asian Institute of Technology

The mobile app is developed to collect information on current disasters and its impact to important objects, properties, and infrastructures. The collected information will be useful for disaster response and post-disaster activities, including for the satellite-based disaster mapping Sentinel Asia.

Please complete the following survey regarding disaster occurring in your area.

Date/Time*

🕒 10 Nov BE 2564 06:54

Disaster Information ▾

Disaster Type
What disaster is occurring in your area?

Flood ▾

Flood Type
What is the type of flood that occurred?

Riverine Flood ▾

Data Collection



Aerial Survey Using Drones

<https://arcg.is/1HWGWX0>



FLOOD MONITORING | AYUTTHAYA | SUPHANBURI
OCTOBER 2021

Ground view of some of the affected areas



Aerial View of some of the affected areas



Ground Data Viewer

Thailand Flood 2021

Only for demonstration purposes [f](#) [t](#) [e](#) 

Home Flood Extent Disaster Survey Point

Ayutthaya Flood Survey

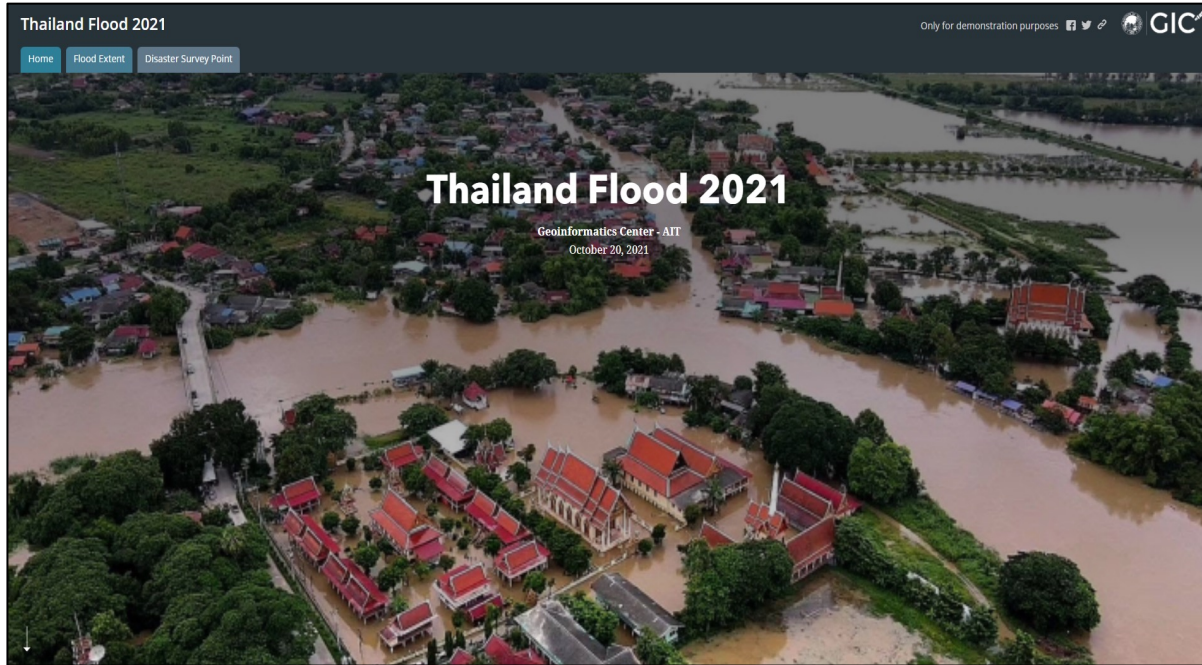
SA Disaster Survey



Earthstar Geographics Powered by Esri

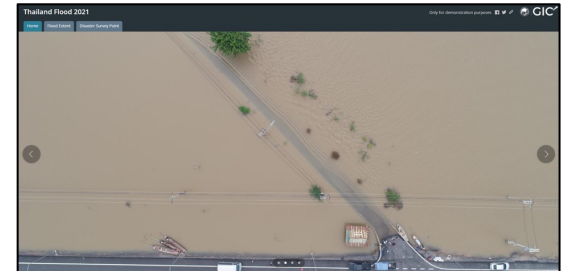
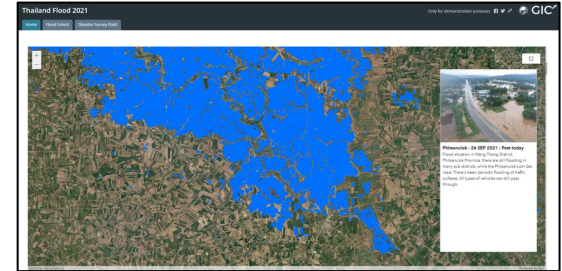


Web Portal



Thailand Flood: <https://gicait.maps.arcgis.com/apps/MapSeries/index.html?appid=bad36c78e5de4b4bb9a058f974912895>

Disaster Response Portal: <https://portal.geoinfo.ait.ac.th/portal/apps/sites/#!/gic-ait-disaster-response-portal>



THANK YOU

Geoinformatics Center, Asian Institute of Technology

