

Emergency Observation Request Using Sentinel Asia

The 8th Joint Project Team Meeting
September 18, 2023

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1. Overview of Sentinel Asia

- ✓ Sentinel Asia is an initiative aiming 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 is expected to implement not only emergency observation but activities covering entire disaster management cycle including mitigation/preparedness and recovery phase after a disaster

Concept of Sentinel Asia Strategic Plan

“Challenges for Disaster Risk Reduction by a Collaboration between Space and Disaster Management Agencies”

MITIGATION

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

RECOVERY

- Mid/Long-term monitoring
- Recovery Status



PREPADNESS

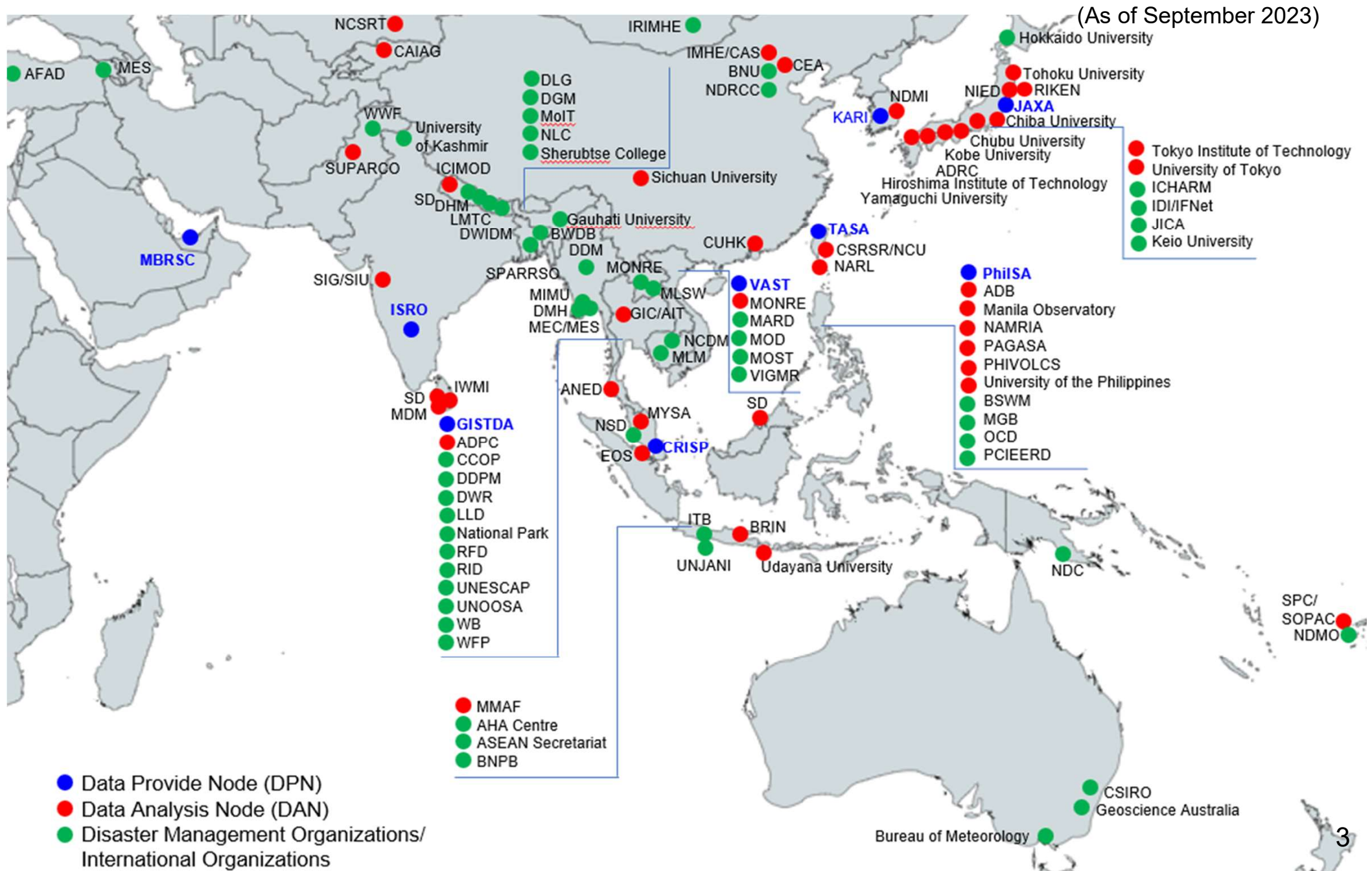
- Training
- Capacity Building
- Standard Operation Procedure (SOP)

RESPONSE

- Emergency Observation
- Data Analysis
- Damage Assessment

2. Members of Sentinel Asia

All **114** organizations have the privilege to Request for Emergency Observations

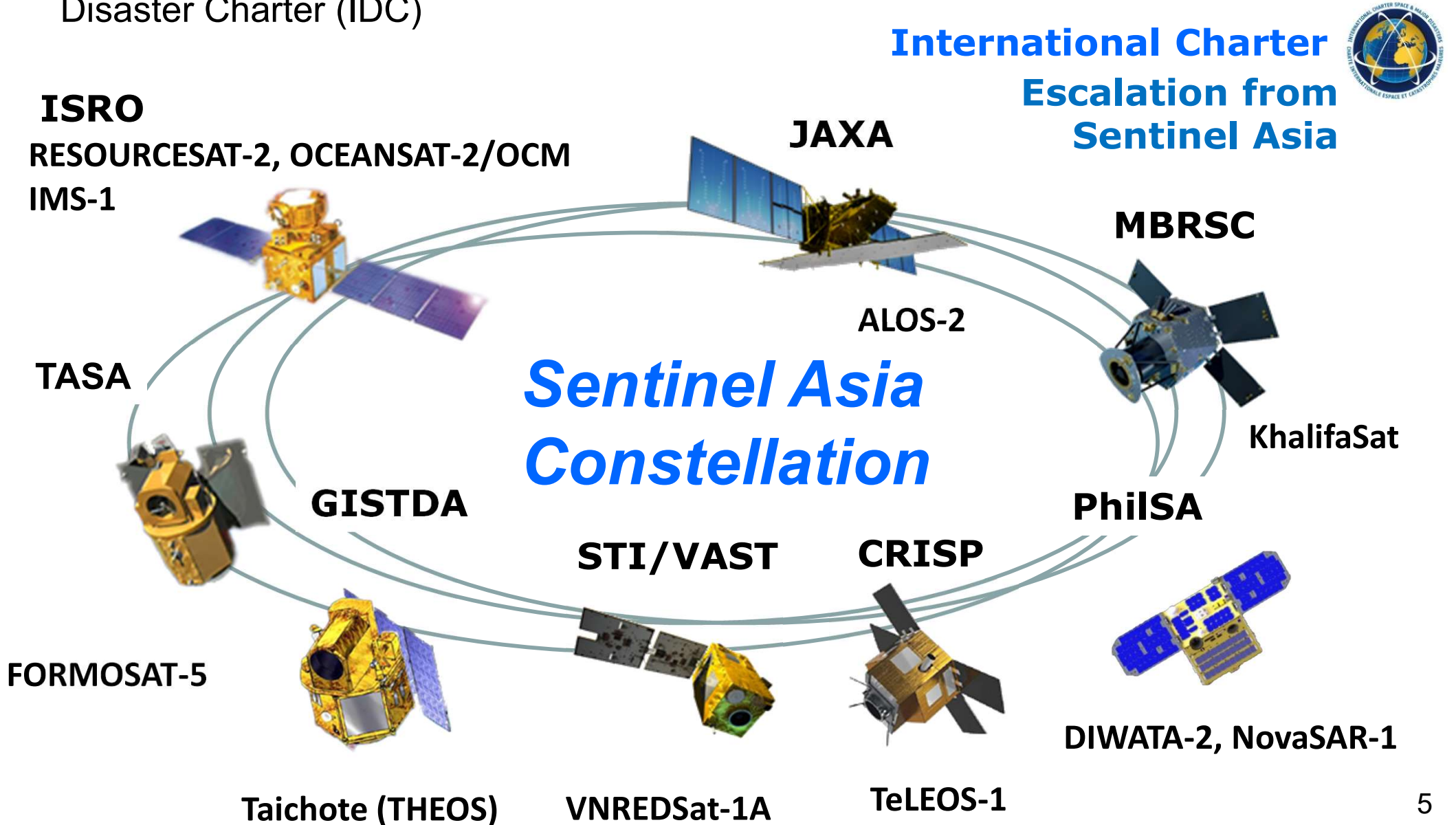


3. Emergency Observation Requests by Geographical Distribution



4.1 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)



4.2 Data Providers of International Charter



- ✓ There are 17 Space Agencies providing Satellite Images to International Disaster Charter upon Emergency Observation Requests.



Agencia Bolivariana para
Actividades Espaciales (ABAE)



Centre National d'Etudes Spatiales
(CNES)



European Organisation for the
Exploitation of Meteorological
Satellites (EUMETSAT)



European Space Agency (ESA)



Indian Space Research
Organisation (ISRO)



Japan Aerospace Exploration
Agency (JAXA)

4.2 Data Providers of International Charter



- ✓ There are 17 Space Agencies providing Satellite Images to International Disaster Charter upon Emergency Observation Requests.



National Institute for Space
Research (INPE)



National Oceanic and Atmospheric
Administration (NOAA)



The State Space Corporation
(ROSCOSMOS)



UK Space Agency and DMC
International Imaging (DMCii)



Canadian Space Agency (CSA)



UAE Space Agency (UAESA) and
Mohammed Bin Rashid Space
Centre (MBRSC)

4.2 Data Providers of International Charter



- ✓ There are 5 Private Sector Companies providing Satellite Images to International Disaster Charter upon Emergency Observation Requests.



BlackSky



ICEYE



Maxar Technologies



Planet



Satellogic

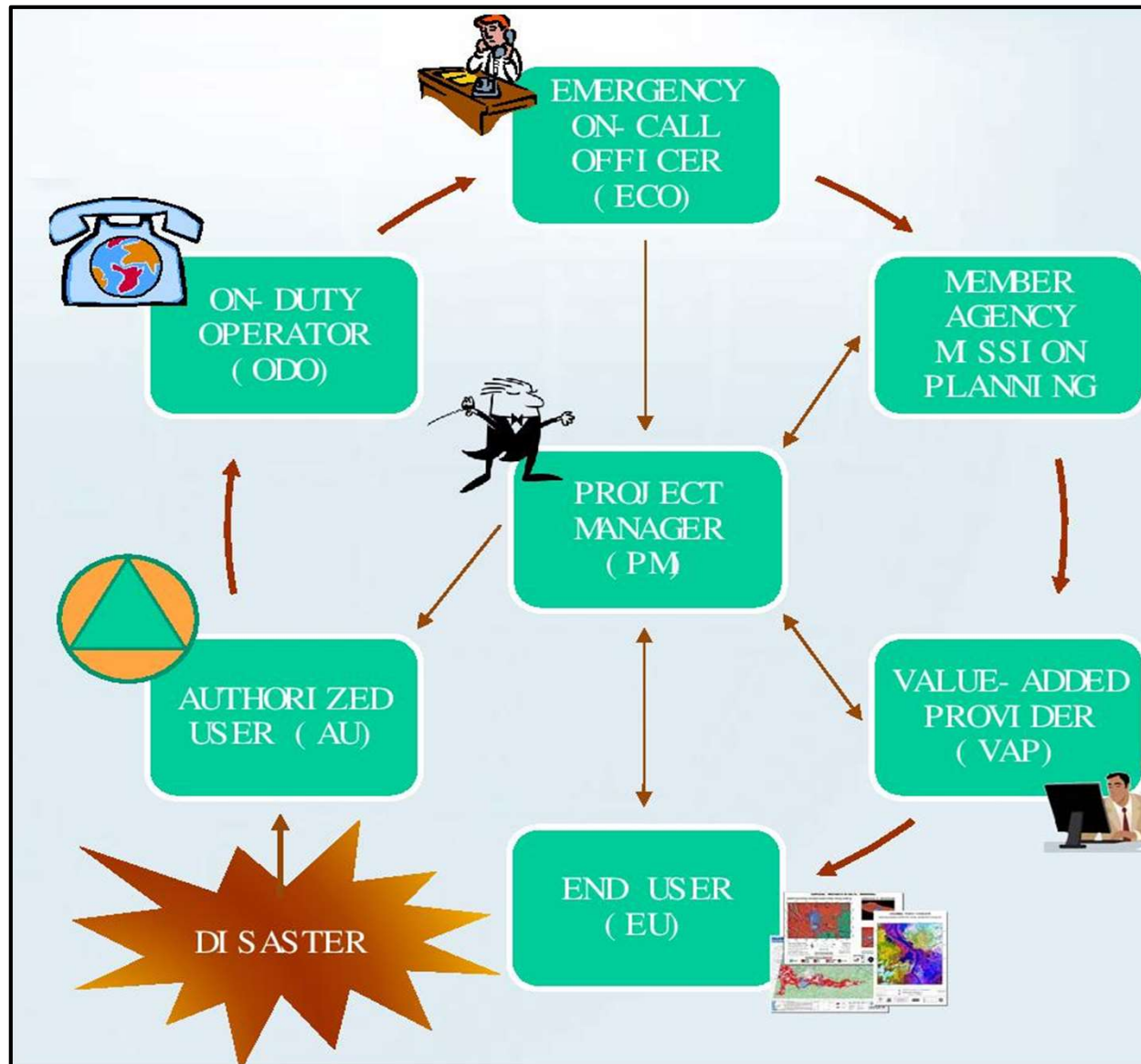


- ✓ IDC is useful when huge disaster strikes and DMO needs more data than SA may provide.
- ✓ The requester of SA EOR may escalate the request to IDC with simple steps.
- ✓ Once the escalation is activated by IDC, Project Manager(PM) must be assigned.
- ✓ PM will coordinate with the requester to provide VAPs from IDC.
- ✓ It is preferable to provide PM from the Local DMO or assisting organizations from the country or region of the disaster. (Since they have the knowledge of the geographical characteristics of the area of interest)
- ✓ Sentinel Asia may provide onsite 1 day PM Training.
- ✓ Sentinel Asia may provide PM if there is no one volunteers for the PM.

5. Escalation to International Disaster Charter



- ✓ The Role of PM
- ✓ Sole Interface between the Charter and the User





IMPORTANT POINT

The PM communicates with the IDC members, Value Adders, and End Users to ensure that the data have been:

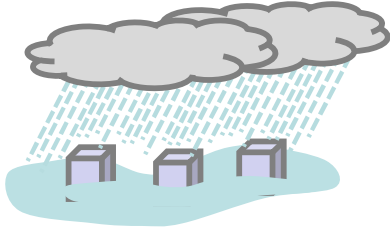
- **collected** (contact with partner agencies)
- **processed** (internally or contact with Value Added Companies)
- **delivered** (contact with Authorised Users / End users)

IDC requests how the Satellite images and VAPs are used to be reported in the PM Report.

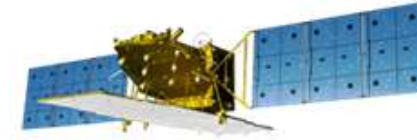
Please keep in mind that there are Extra Loads for tasking to IDC.

6. How to Request Emergency Observation

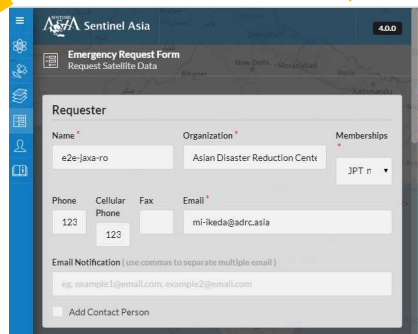
Disaster Occurrence



③ ADRC Approves EOR



① SA Members Request Emergency Observation using OPTEMIS



Emergency Request Form
Requester Satellite Data

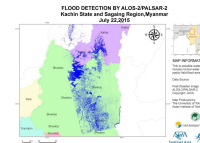
Requester

Name *	Organization *	Memberships
e2e@jaxa-ro	Asian Disaster Reduction Cent	JPT n
Phone	Cellular Phone	Fax
123	123	
Email *		
mi-ikeda@adrc.asia		
Email Notification (use commas to separate multiple email)		
eg. example1@email.com, example2@gmail.com		
<input type="checkbox"/> Add Contact Person		



④ Data Provider Nodes (DPN) provide Satellite Images

⑤ Data Analysis Nodes (DAN) analyze Satellite Images and provide Value Added Product (VAP)



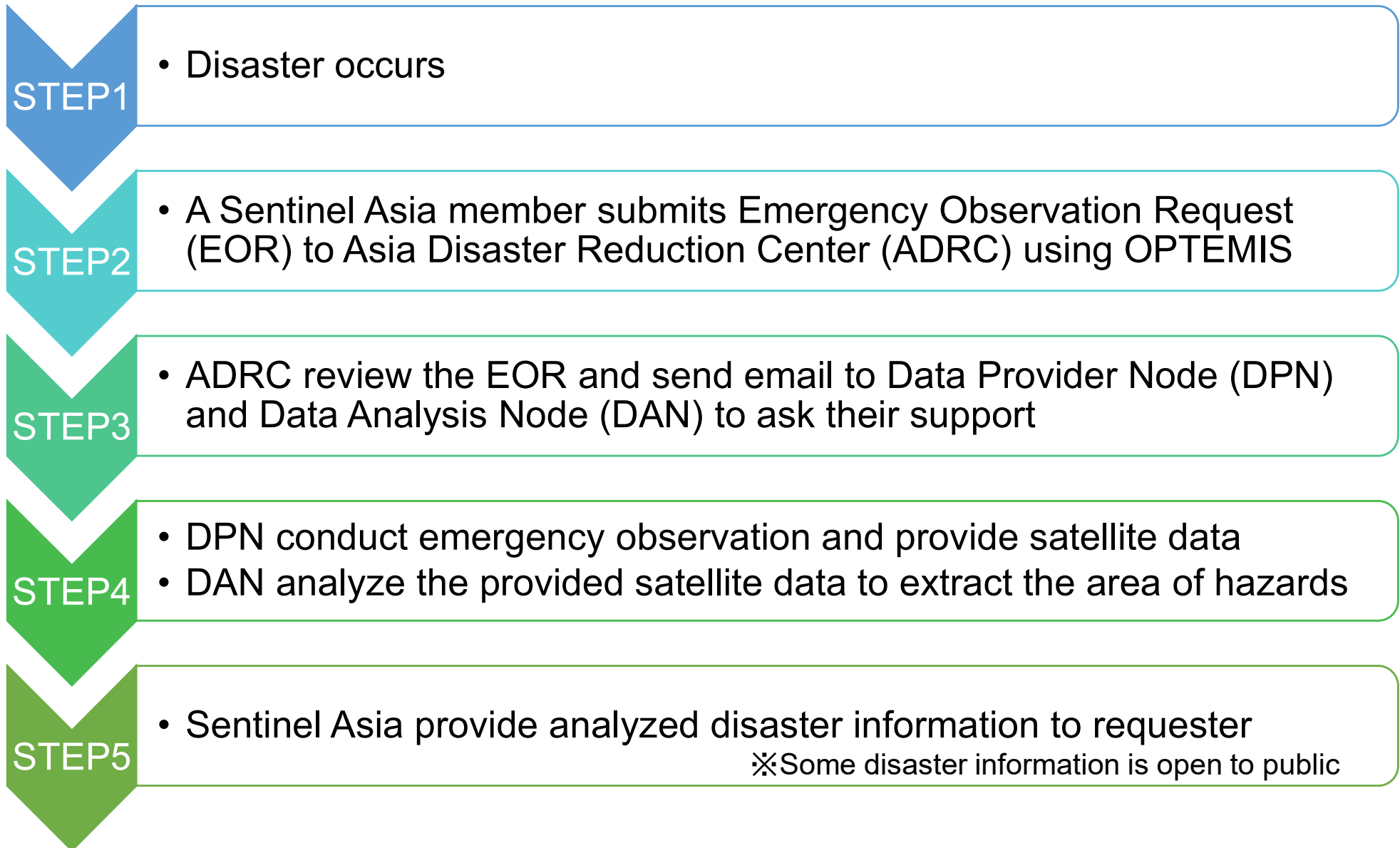
② SA Members may request Escalation to International Disaster Charter for more Satellite Images



International Disaster Charter

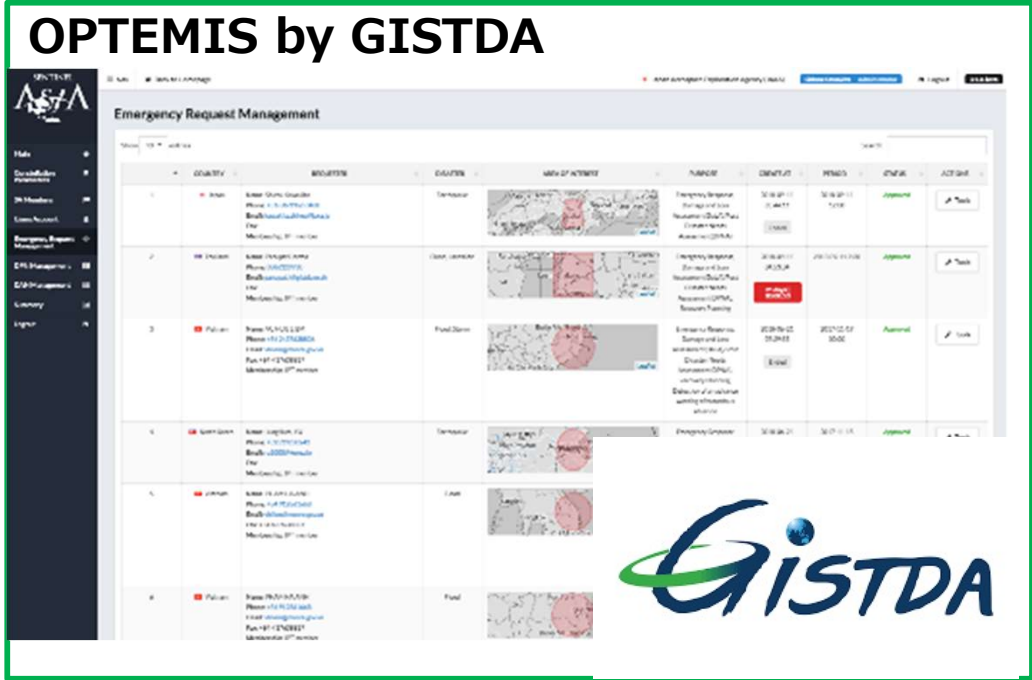
⑥ SA Members Retrieve VAP

6. Emergency Observation Flow



7. Tools Developed for SA Emergency Observation Requests

OPTEMIS by GISTDA



Sentinel Asia Cloud Storage (SFTP in Taipei and Mumbai)

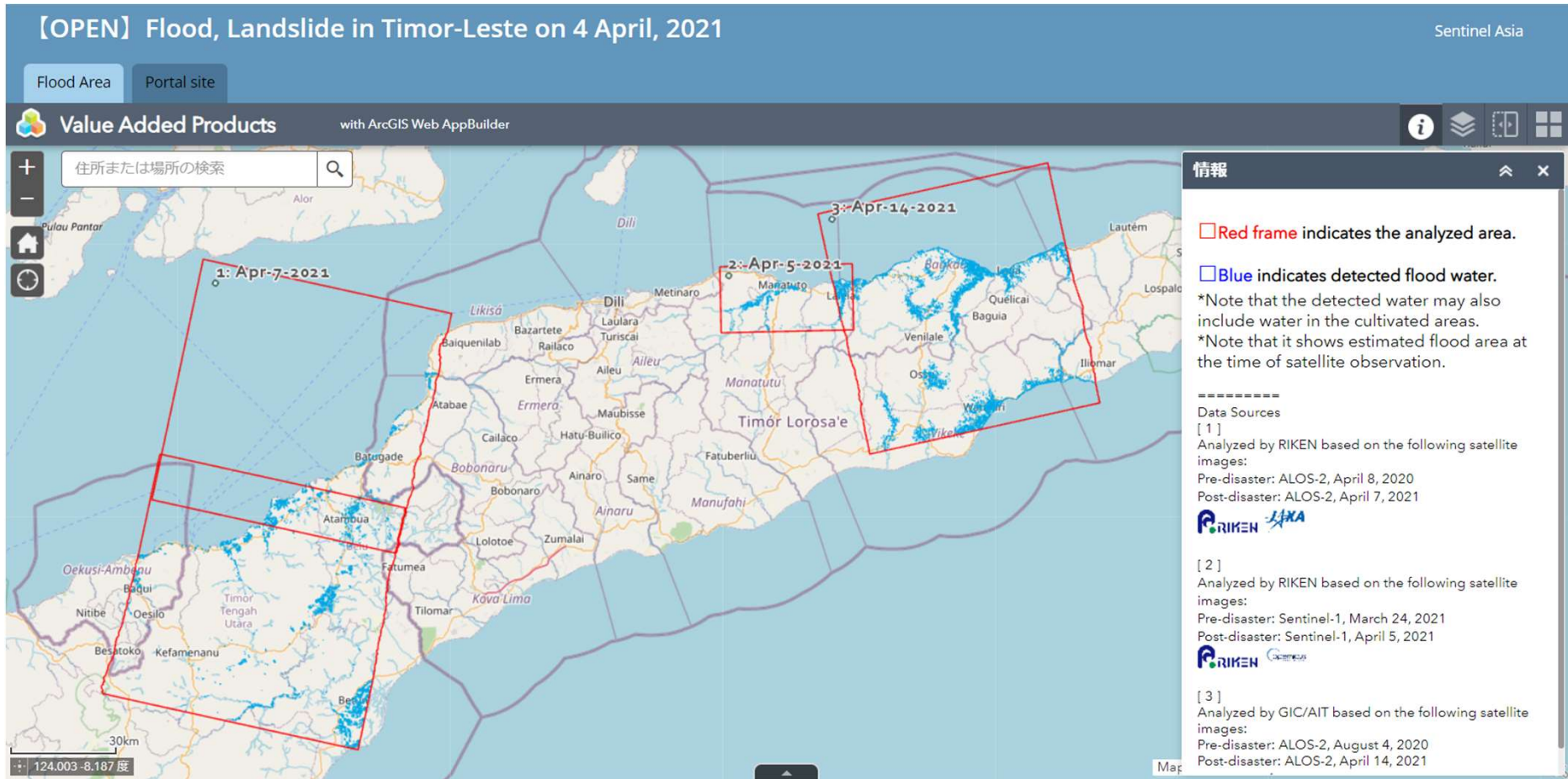


OPTEMIS, developed by GISTDA, is a **web application with User Friendly Interface, managing data** regarding EORs (such as User requests of Emergency Observation, Area of Interests, Observation Plan, Observation data, Value Added Products).

SFTP, provided by TASA and JAXA, is a **Cloud storage SSH File Transfer Protocol (SFTP)** site storing Satellite Observation Data and analyzed Value Added Products provided **for DPN and DAN**

7. Tools Developed for SA Emergency Observation Requests

Web based Geographic Information System (WebGIS)



Observed data and Value Added Products are displayed on easy to use visualization tool (**WebGIS**), to help Emergency Observation **Requesters** gather geographical information of the disaster areas.

7. Tools Developed for SA Emergency Observation Requests

Mobile application developed by AIT

- Web link: <https://arcg.is/1HWGWX0>
- QR Code:



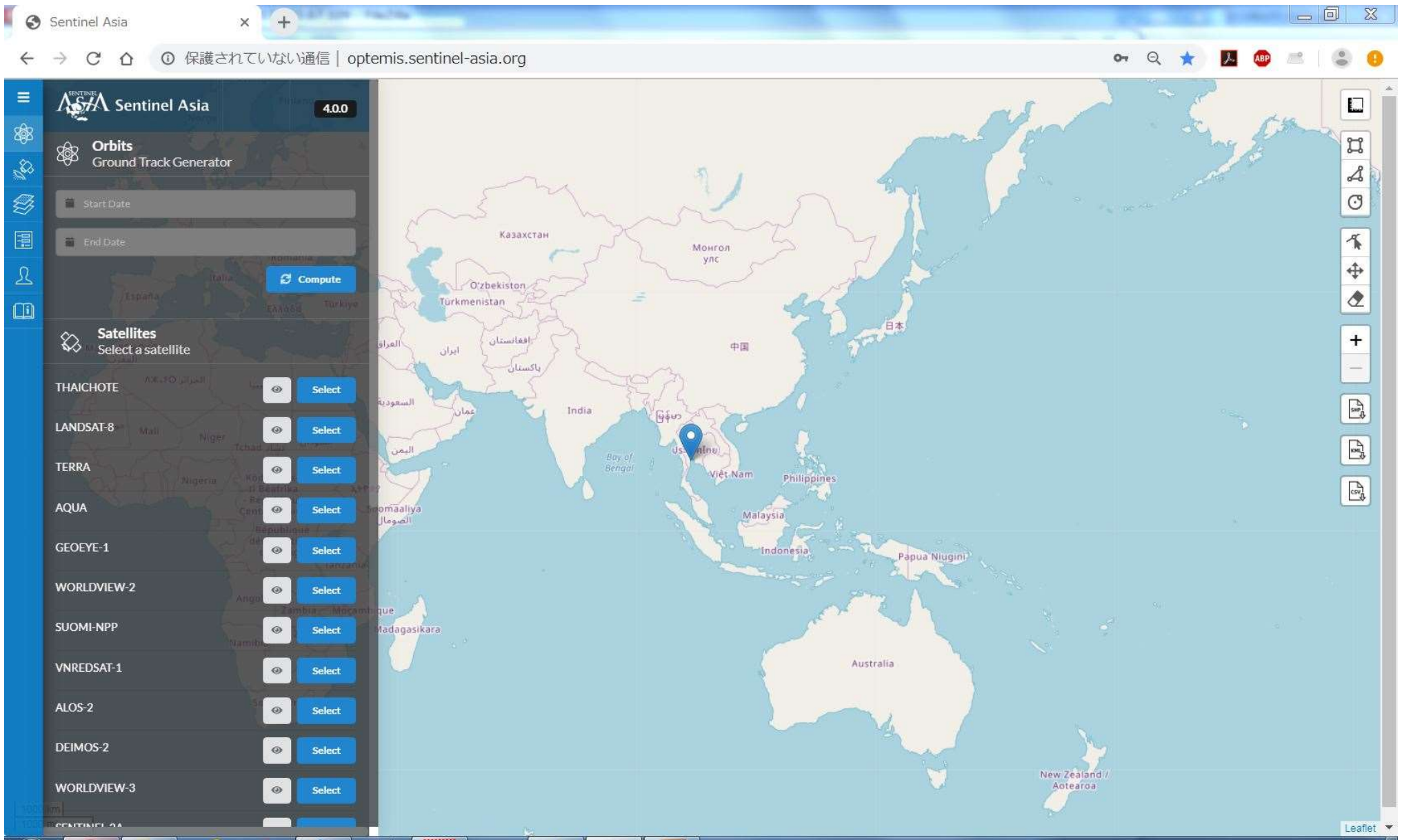
Mobile Application is developed by Asia Institute of Technology (AIT) to **collect on-site information of disaster area** (such as photographs taken on-site)



8. How to Use OPTEMIS

Top page

<https://optemis.sentinel-asia.org/>

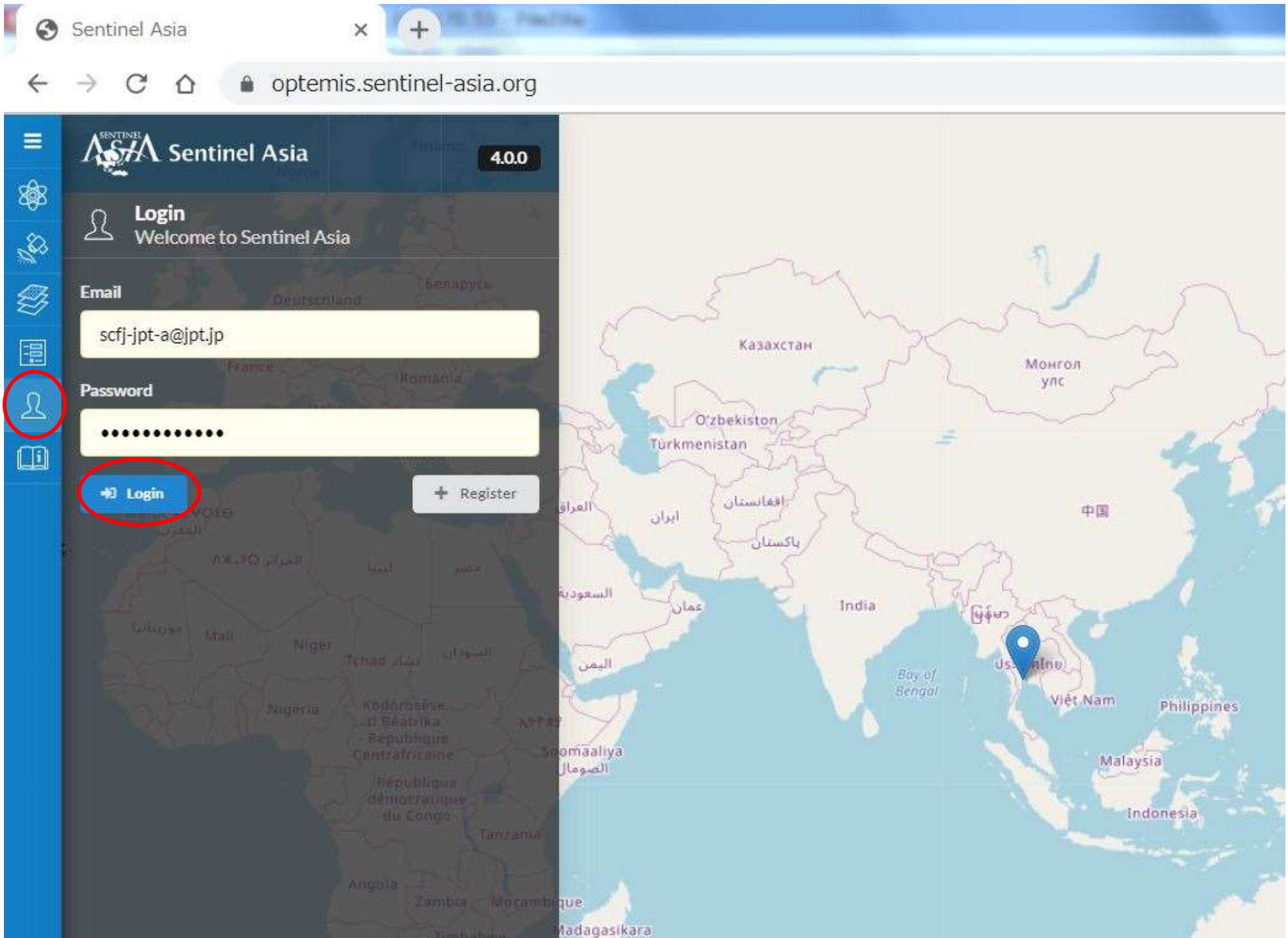


The screenshot shows the OPTEMIS web application interface. The browser address bar displays the URL <https://optemis.sentinel-asia.org/>. The application interface is divided into a left sidebar and a main map area. The sidebar contains the following sections:

- Sentinel Asia 4.0.0**
- Orbits**
Ground Track Generator
Start Date: [input field]
End Date: [input field]
Compute
- Satellites**
Select a satellite
- THAICHOTE [eye icon] **Select**
- LANDSAT-8 [eye icon] **Select**
- TERRA [eye icon] **Select**
- AQUA [eye icon] **Select**
- GEOEYE-1 [eye icon] **Select**
- WORLDVIEW-2 [eye icon] **Select**
- SUOMI-NPP [eye icon] **Select**
- VNREDSAT-1 [eye icon] **Select**
- ALOS-2 [eye icon] **Select**
- DEIMOS-2 [eye icon] **Select**
- WORLDVIEW-3 [eye icon] **Select**

The main map area displays a satellite ground track over a map of Asia and the surrounding regions. The map includes labels for various countries and regions, such as Kazakhstan, Mongolia, China, India, Vietnam, Philippines, Malaysia, Indonesia, Papua New Guinea, Australia, and New Zealand/Aotearoa. A blue location pin is placed on the map over the region of Vietnam. The map interface includes standard navigation controls like zoom in (+), zoom out (-), and a search icon.

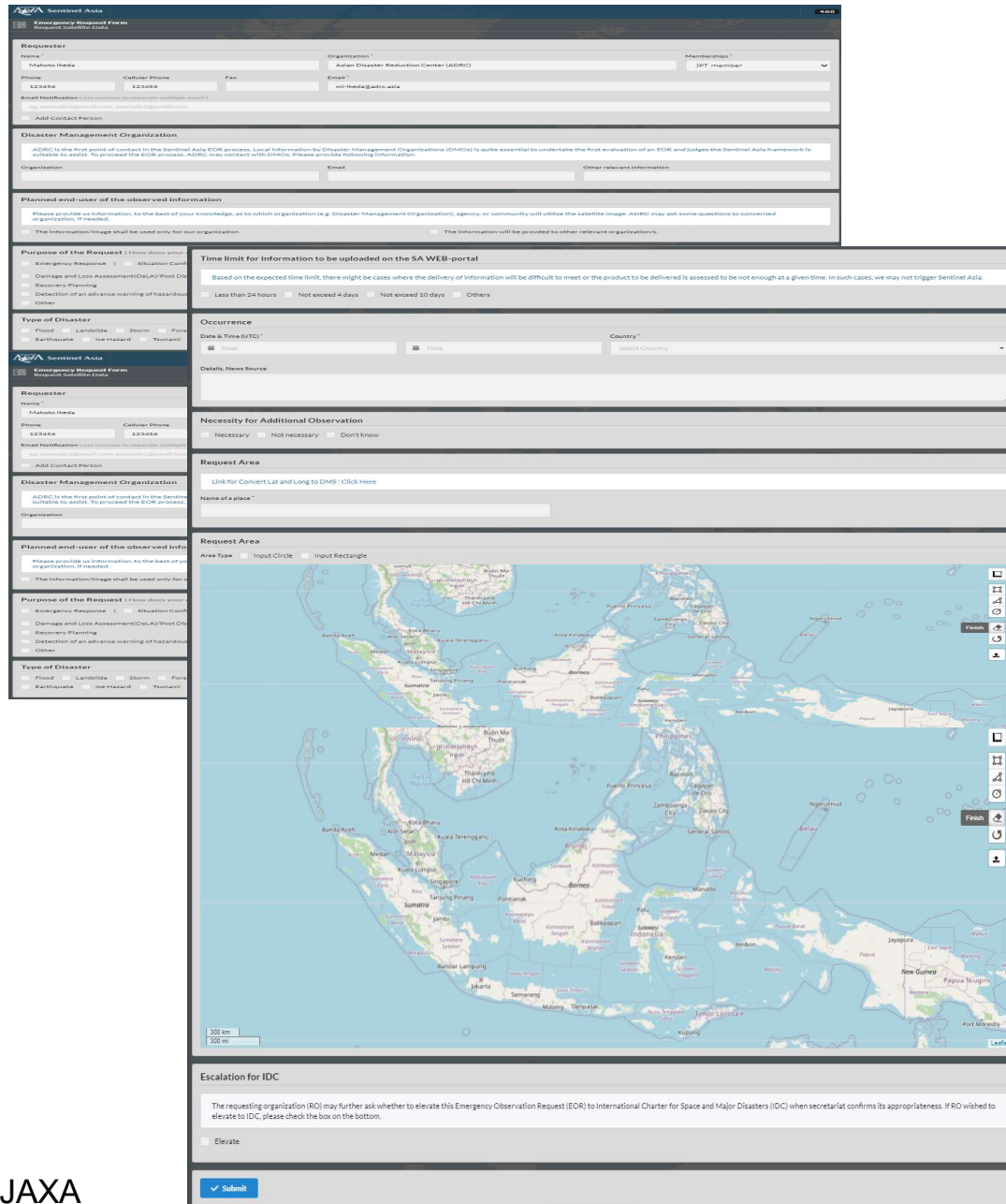
8.1 Login to OPTEMIS



8.2 Request Emergency Observation


Information needed to request Emergency Observation

- Requestor
- Disaster Management Organization
- Planned end-user of the observed information
- Purpose of the Request
- Type of Disaster
- Analysis requirement for damages
- Request for Data Analysis Node
- Time limit for information to be uploaded on the SA WEB-portal
- Occurrence
- Necessity for Additional Observation
- Request Area (Place of Name)
- Request Area (Extent)
- Escalation for IDC



The screenshot shows the Sentinel Asia Emergency Request Form, which is a web-based interface for submitting requests. The form is divided into several sections:

- Requester:** Fields for Name, Address, Phone, Cellular Phone, Fax, Email, and Organization (e.g., Asian Disaster Reduction Center (ADRC)).
- Disaster Management Organization:** Fields for Organization and Email.
- Planned end-user of the observed information:** A text area for providing information to the best of your knowledge.
- Purpose of the Request:** Radio buttons for Emergency Response, Situation Count, Damage and Loss Assessment (DLA)/Post Dis, Recovery Planning, and Detection of an advance warning of hazardous.
- Type of Disaster:** Radio buttons for Flood, Landslide, Storm, Fire, Earthquake, Ice hazard, and Tsunami.
- Time limit for information to be uploaded on the SA WEB-portal:** Radio buttons for Less than 24 hours, Not exceed 4 days, Not exceed 10 days, and Others.
- Occurrence:** Fields for Date and Time (UTC), and Country.
- Necessity for Additional Observation:** Radio buttons for Necessary, Not necessary, and Don't know.
- Request Area:** A text area for the Name of a place, with a link for Convert Lat and Long to DMS.
- Request Area (Extent):** A map of Southeast Asia and Oceania with a text area for the Area Type (Input Circle or Input Rectangle).
- Escalation for IDC:** A checkbox for Elevate, with a note that the requesting organization (RO) may further ask whether to elevate this Emergency Observation Request (EOR) to International Charter for Space and Major Disasters (ICD) when secretariat confirms its appropriateness.


Sentinel Asia
4.0.0

Emergency Request Form
Request Satellite Data

Requester

Name *	Organization *	Memberships *
<input type="text" value="scfj-jpt-a"/>	<input type="text" value="Infrastructure Development Institute (I"/>	<input type="text" value="JPT mer"/>

Phone	Cellular Phone	Fax	Email *
<input type="text" value="1234!"/>	<input type="text" value="1234!"/>	<input type="text"/>	<input type="text" value="scfj-jpt-a@jpt.jp"/>

Email Notification (use commas to separate multiple email)


Add Contact Person

Disaster Management Organization

ADRC is the first point of contact in the Sentinel Asia EOR process. Local information by Disaster Management Organizations (DMOs) is quite essential to undertake the first evaluation of an EOR and judges the Sentinel Asia framework is suitable to assist. To proceed the EOR process, ADRC may contact with DMOs. Please provide following information.

Organization	Email	Other relevant information
<input type="text"/>	<input type="text"/>	<input type="text"/>

Planned end-user of the observed information



8.2.1 Fill in the EOR Form 2/5

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📄

📑

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Planned end-user of the observed information

Please provide us information, to the best of your knowledge, as to which organization (e.g. Disaster Management Organization), agency, or community will utilize the satellite image. ADRC may ask some questions to concerned organization, if needed.

The information/image shall be used only for our organization The information will be provided to other relevant organization/s.

Please state your role in the organization during disaster response (fill in below)

Purpose of the Request (How does your organization intend to use the satellite data?)

Emergency Response (Situation Confirmation Rescue Activity Evacuation Activity Other)

Damage and Loss Assessment(DaLA)/Post Disaster Needs Assessment(DPNA)

Recovery Planning

Detection of an advance warning of hazardous situation

Other

Type of Disaster

Flood Landslide Storm Forest Fire Volcano

Earthquake Ice Hazard Tsunami Other

8.2.1 Fill in the EOR Form 3/5

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Analysis requirement for damages

Building Damage Infra. Damage Lahar Other

Request for Data Analysis Node (DAN)

Ourselves DANs in own country P-DAN Other No request

Time limit for information to be uploaded on the SA WEB-portal

Based on the expected time limit, there might be cases where the delivery of information will be difficult to meet or the product to be delivered is assessed to be not enough at a given time. In such cases, we may not trigger Sentinel Asia.

Less than 24 hours Not exceed 4 days Not exceed 10 days Others

Occurrence

Date & Time (UTC) * Country *

Details, News Source

Flood in Japan

Necessity for Additional Observation

Necessary Not necessary Don't know

8.2.1 Fill in the EOR Form 4/5

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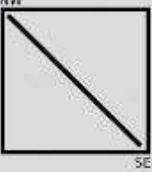
Request Area

[Link for Convert Lat and Long to DMS : Click Here](#)

Name of a place *
Tsukuba

Request Area

Area Type Input Circle Input Rectangle



Latitude Northwest (DMS)
36 ° 10 ' 0 " N

Longitude Northwest (DMS)
140 ° 0 ' 0 " E

Latitude Southeast (DMS)
36 ° 0 ' 0 " N

Longitude Southeast (DMS)
140 ° 10 ' 0 " E

+ Add to map

8.1.2 Fill in the EOR Form 5/5

← → ↻ 🏠 🔒 optemis.sentinel-asia.org

Escalation for IDC

The requesting organization (RO) may further ask whether to elevate this Emergency Observation Request (EOR) to International Charter for Space and Major Disasters (IDC) when secretariat confirms its appropriateness. If RO wished to elevate to IDC, please check the box on the bottom.

Elevate

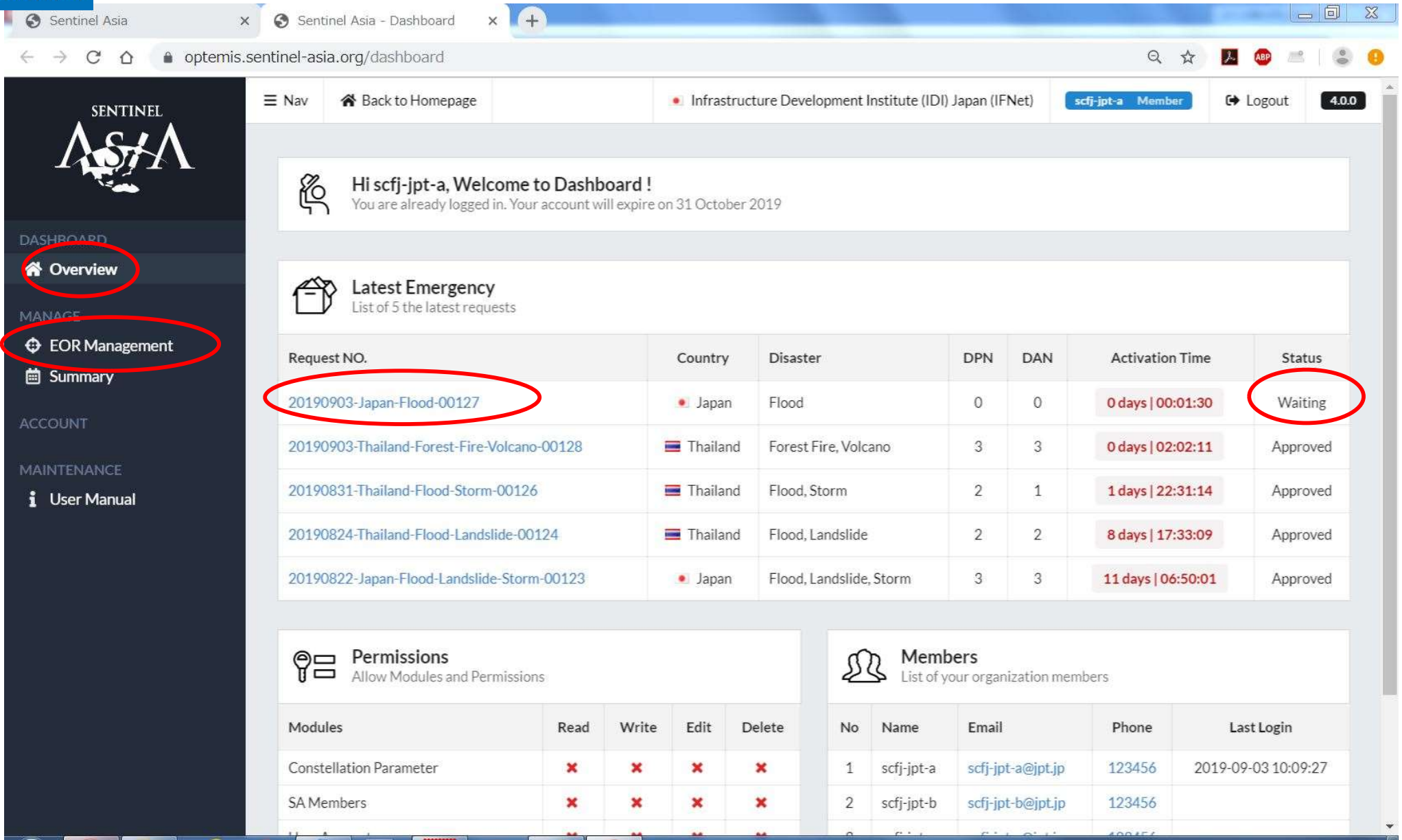
Submit

Press "Submit" button

8.3 Transition to Dashboard

The screenshot shows the Sentinel Asia web application interface. At the top, the browser address bar displays `optemis.sentinel-asia.org`. The application header includes the Sentinel Asia logo, the text "Sentinel Asia", and a version indicator "4.0.0". Below the header, the user profile section is visible, showing the account name "scfj-jpt-a" and the country "Japan". The user's name and affiliation, "Infrastructure Development Institute (IDI) Japan (IFNet)", are also displayed. A navigation menu on the left side of the page contains several icons, with the user profile icon circled in red. Below the profile information, two buttons are visible: "Dashboard" and "Logout", both of which are circled in red. The background of the interface features a map of Asia with various countries labeled in Arabic and English, including Kazakhstan, Turkmenistan, Uzbekistan, Afghanistan, Pakistan, Iran, Oman, India, and the Bay of Bengal.

8.3 Dashboard Overview



The screenshot shows the Sentinel Asia dashboard for user 'scfj-jpt-a'. The left sidebar contains navigation options: Overview, EOR Management, Summary, Account, and User Manual. The main content area features a 'Latest Emergency' section with a table of requests. The first row in the table is circled in red, showing a request for Japan with a 'Waiting' status, also circled in red.

Request NO.	Country	Disaster	DPN	DAN	Activation Time	Status
20190903-Japan-Flood-00127	Japan	Flood	0	0	0 days 00:01:30	Waiting
20190903-Thailand-Forest-Fire-Volcano-00128	Thailand	Forest Fire, Volcano	3	3	0 days 02:02:11	Approved
20190831-Thailand-Flood-Storm-00126	Thailand	Flood, Storm	2	1	1 days 22:31:14	Approved
20190824-Thailand-Flood-Landslide-00124	Thailand	Flood, Landslide	2	2	8 days 17:33:09	Approved
20190822-Japan-Flood-Landslide-Storm-00123	Japan	Flood, Landslide, Storm	3	3	11 days 06:50:01	Approved

Confirm EOR status on the Latest Emergency list
 When the EOR is activated, the status changes from Waiting to Approved

8.4 Request Information and Tracking

SENTINEL ASIA

Dashboard: Overview, EOR Management, Summary, User Manual

REQUEST INFORMATION AND TRACKING 0 days | 00:03:03 Back

EOR Number: 20190903-Japan-Flood-00127

Map showing a highlighted area in Japan (Tsukuba area).

ADRC Comment: No Message

Tracking

Return to previous

Organization (Km²) | Acknowledge | Planned | Processed | Uploaded | Remark | Shapefile | Data

Please add organization for requests.

SENTINEL ASIA EMERGENCY OBSERVATION REQUEST (EOR) FORM (1/1)

Requester (your name and organization)

Your name	scfj-jpt-a
Your organization	Infrastructure Development Institute (IDI) Japan (IFNet)
Membership:	<input checked="" type="checkbox"/> JPT member <input type="checkbox"/> ADRC member
Your phone	123456
Your cellular	123456
Your fax	
Your E-mail	scfj-jpt-a@jpt.jp
Other E-mail(s) for notification	

Contact Person

Fill in below in case different from the Requester

Name	
Organization	
Phone	
Cellular phone	
E-mail	
Other E-mail(s) for notification	

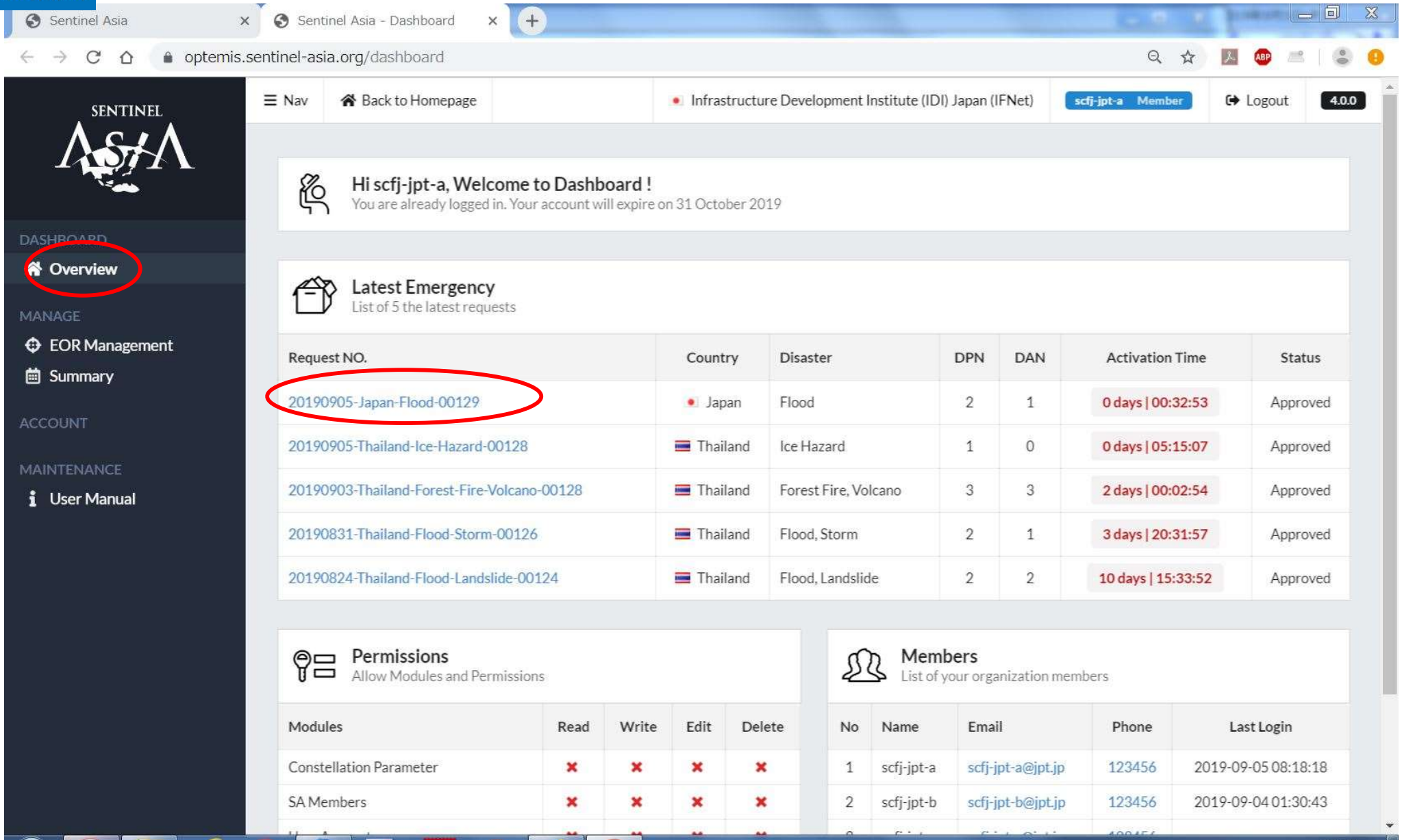
Disaster Management Organization

Comments

scfj-jpt-b a minute ago
Help
Reply

Add Comment

8.6 Get Analysis Product by Requester (JPT member)



Hi scfj-jpt-a, Welcome to Dashboard !
You are already logged in. Your account will expire on 31 October 2019

Latest Emergency
List of 5 the latest requests

Request NO.	Country	Disaster	DPN	DAN	Activation Time	Status
20190905-Japan-Flood-00129	Japan	Flood	2	1	0 days 00:32:53	Approved
20190905-Thailand-Ice-Hazard-00128	Thailand	Ice Hazard	1	0	0 days 05:15:07	Approved
20190903-Thailand-Forest-Fire-Volcano-00128	Thailand	Forest Fire, Volcano	3	3	2 days 00:02:54	Approved
20190831-Thailand-Flood-Storm-00126	Thailand	Flood, Storm	2	1	3 days 20:31:57	Approved
20190824-Thailand-Flood-Landslide-00124	Thailand	Flood, Landslide	2	2	10 days 15:33:52	Approved

Permissions
Allow Modules and Permissions

Modules	Read	Write	Edit	Delete
Constellation Parameter	✗	✗	✗	✗
SA Members	✗	✗	✗	✗

Members
List of your organization members

No	Name	Email	Phone	Last Login
1	scfj-jpt-a	scfj-jpt-a@jpt.jp	123456	2019-09-05 08:18:18
2	scfj-jpt-b	scfj-jpt-b@jpt.jp	123456	2019-09-04 01:30:43

Choose EOR from the Request No. list

8.6 Request Information and Tracking

The screenshot shows a web browser window with the URL `optemis.sentinel-asia.org/dashboard/emergency_requests/5d70bd57e4a91250d63ea508`. The page title is "REQUEST INFORMATION AND TRACKING" with a timer showing "0 days | 00:33:54". Below the title, the EOR Number is "20190905-Japan-Flood-00129". A map of Japan is displayed, with a red shaded area indicating the flood region in the Kanto plain. The map includes a scale bar (20 km / 10 mi) and a "Leaflet" logo. The dashboard has a dark sidebar on the left with navigation options: "DASHBOARD" (Overview), "MANAGE" (EOR Management, Summary), "ACCOUNT", and "MAINTENANCE" (User Manual). The top navigation bar includes "Nav", "Back to Homepage", "Infrastructure Development Institute (IDI) Japan (IFNet)", "scfj-jpt-a Member", "Logout", and "4.0.0". Below the map, there is an "ADRC Comment" section with a "No Message" placeholder and a "Tracking" section with "Data Provider Node" and "Data Analysis Node" labels.

Scroll down to next page

8.6 Request Information and Tracking

The screenshot shows the Sentinel Asia dashboard with the following elements:

- Tracking Header:** Includes a menu icon, the word "Tracking", and two buttons: "Data Provider Node" and "Data Analysis Node". The "Data Analysis Node" button is circled in red.
- Table:** A table with columns for Organization, Ack, Status, and Data. The first row shows "Asian Institute of Technology (AIT)" with checkmarks in the Ack, Status, and Data columns. A red circle highlights a trash icon in the rightmost column of this row.
- Form:** A "SENTINEL ASIA EMERGENCY OBSERVATION REQUEST (EOR) FORM (1/1)". It contains fields for: Requester (your name and organization), Your name (scfj-jpt-a), Your organization (Infrastructure Development Institute (IDI) Japan (IFNet)), Membership (JPT member checked, ADRC member unchecked), Your phone (123456), Your cellular (123456), Your fax, Your E-mail (scfj-jpt-a@jpt.jp), and Other E-mail(s) for notification. Below this is a "Contact Person" section with the instruction "Fill in below in case different from the Requester".
- Comments:** A section with a text input area and an "Add Comment" button.
- Storage Modal:** A modal window titled "Storage" showing "Shapefile & Datafile". It contains a table with the following data:

File Name	Size (MB)	Disk	Date	Tools
100MB_PDF1.pdf	93.394127	Asian Institute of Technology (AIT)	2019-09-05 08:54:26	Download icon (circled in red)

Switch to DAN and press Data icon

Download the target data with the Tools icon

9. How to Apply for OPTEMIS Account

9.1 Information regarding OPTEMIS Account

Only the Data Provider Nodes(**DPN**), Data Analysis Nodes (**DAN**), and Joint Project Team (**JPT**) Members **will be granted the access to OPTEMIS.**

Secretariat understand that there are promotions, transfers, technical leave, etc. and operators in our organization change in time.

However, we cannot keep track of human affairs of each member organization. Therefore, we ask the Point of Contact (PoC) of each organization to maintain list of active operators.

9.1 Information regarding OPTEMIS Account

There are **two steps** needed to acquire new account.

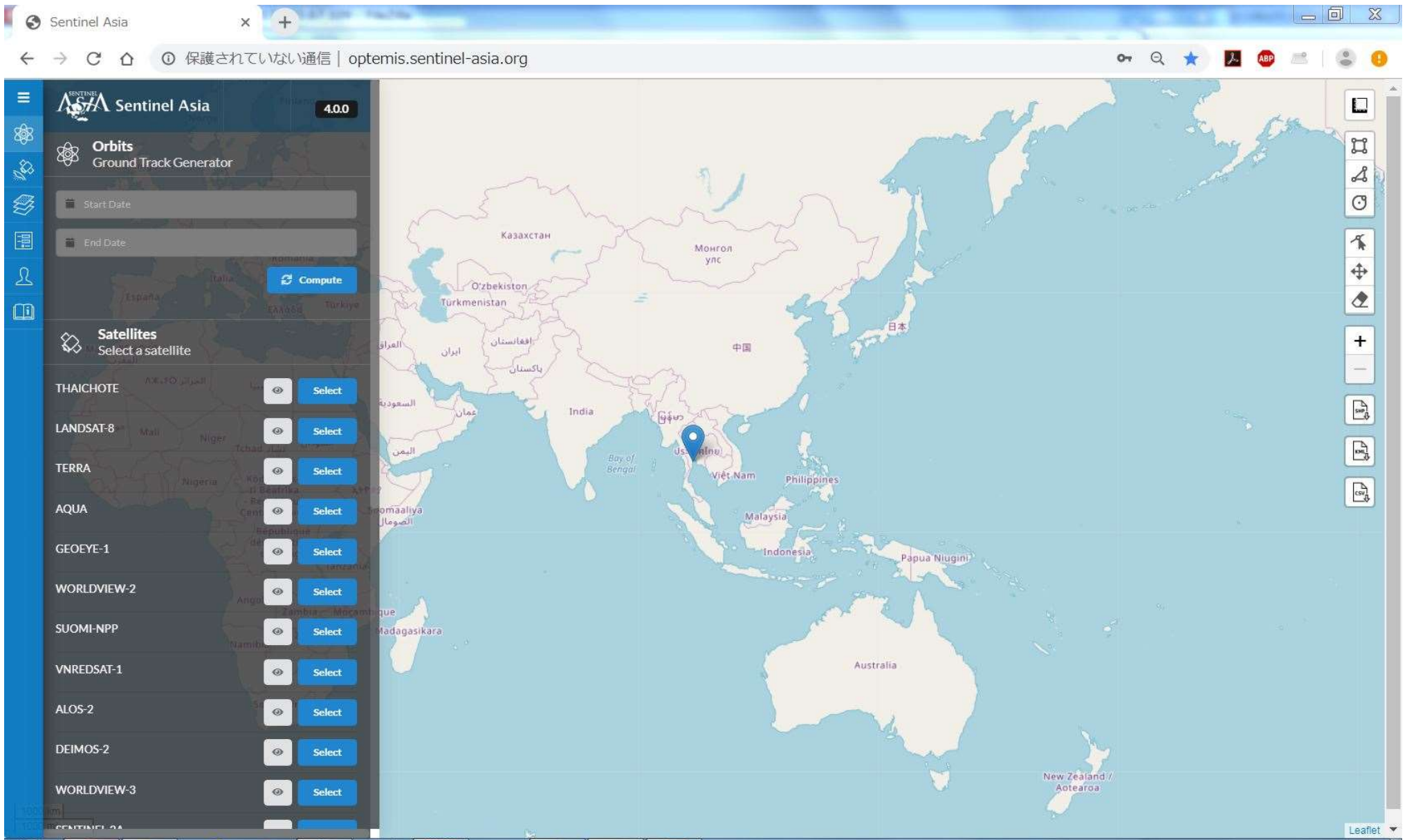
- 1) Potential user will register new account in OPTEMIS.
- 2) Please ask PoC to send application form to activate the newly registered account.
(Secretariat will send the URL of application form to PoC)

This is to avoid unauthorized user to gain access to satellite imagery and valuable data provided by DPN and DAN's voluntary resources.

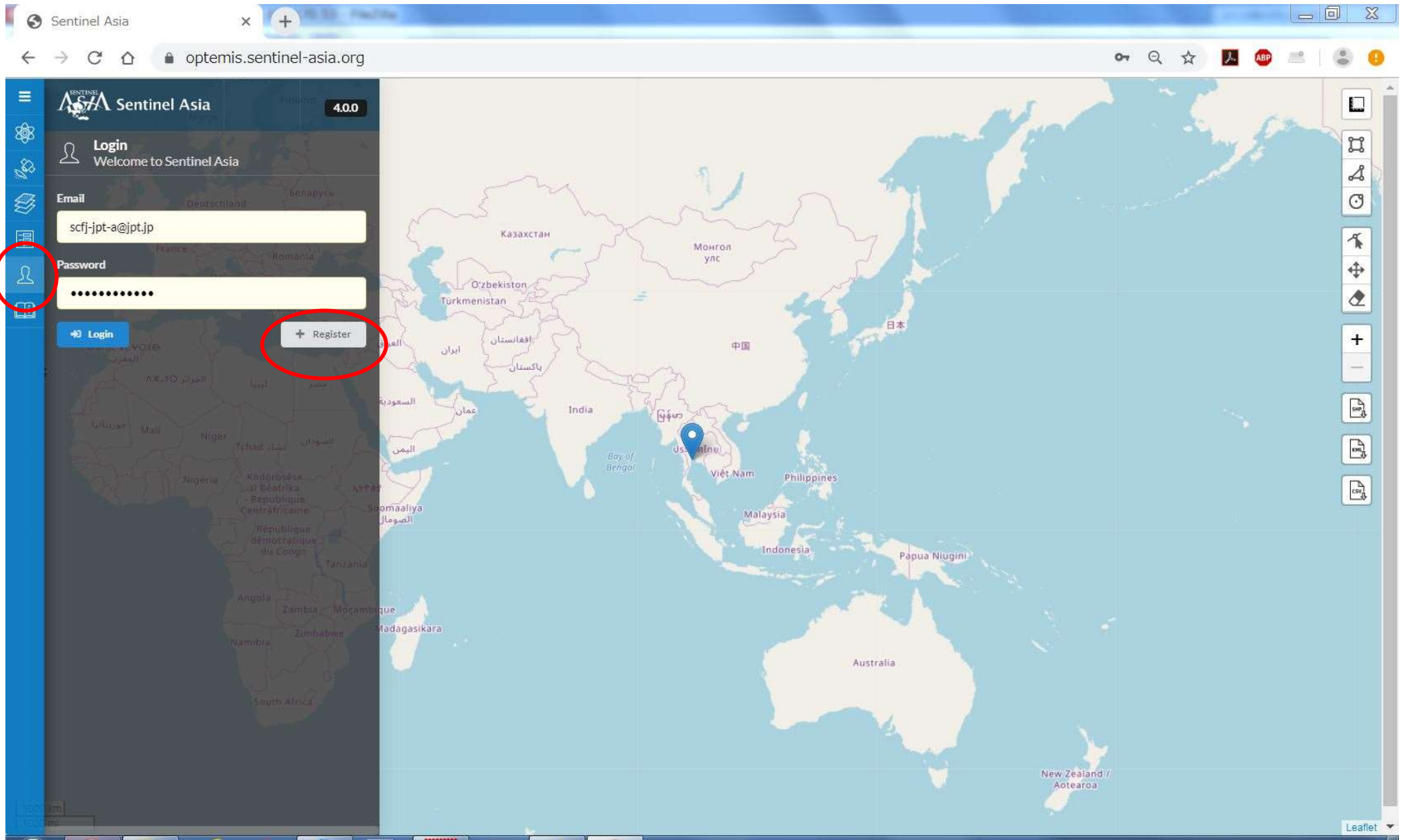
All the accounts expires March 31 of every year. Secretariat will ask PoC, if the registered accounts are qualified for renewal.

9.2 Access OPTEMIS Top page

<https://optemis.sentinel-asia.org/>



9.3 Push Register Button



9.4 Fill in the Form

Register
Fill in required fields.

Name
Name

Email
Email

Password must contain:

- More than 8 characters
- 1 Uppercase
- 1 Numeric
- 1 Special character

Password

Confirm Password

Phone
Phone

Country
Select Country

Organization
Select Organization

Register **Back to login**

Enter all the boxes.

Press Register

9.5 Ask PoC to send application form to activate new account from PoC

Secretariat will send URL of application form to PoC of your organization.

Please ask PoC to send application form for activation.

Secretariat will send a notice to the new user, when the account is activated.

Please send e-mail to z-sentinel.asiaml.jaxa.jp if you need information about PoC of your organization

9.6 Important Reminder:

all the accounts expires March 31 of every year.

Secretariat will ask PoC, if the registered accounts are qualified for renewal.

When a user access OPTEMIS when the disaster happens, sometimes account is expired.

This happens when PoC fails to reply the renewal inquiry from the Secretariat.

Please ask PoC to reply renewal inquiry.

Thank you!

**The Secretariat hope that EOR will
help your Disaster Risk Reduction
Activities.**