



INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS

SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

Disaster Response mapping using the International Charter Space & Major Disasters

United Nations Workshop on Space-based Technologies for Disaster Risk Reduction

9 December 2022

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Topics

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

- The International Charter – purpose and how it works
- How to activate the Charter - the Universal Access
- The Charter Mapper tool



Purpose

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

An international agreement among Satellite Operators to provide priority access to satellite data in the event of Major Disasters.

Founded by Space Agencies in 1999 following UNISPACE III.

Declared operational November 1, 2000.

- Disaster response
- Multi-satellite - Free Data - Priority & fast access
- Satellite Tasking and Archive data
- Data processing to pre-determined level



Charter Member Agencies

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE





Charter Satellites

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE



ABAE	VRSS-2
CNES	PLEIADES, SPOT 6/7
CNSA	CBERS-4, GF-1, GF-2, GF-3, GF-4, FY-3C, Beijing-2, JILIN-01, OVS-1, OVS-2, OHS-2
CONAE	SAOCOM-1A/1B
CSA	RADARSAT-2, RCM constellation
DLR	TerraSAR-X/TanDEM-X
DMC	UK-DMC2, ALSAT-1B, VISION-1
ESA	Sentinel-1A/1B, Sentinel-2A/2B
EUMETSAT	Meteosat-9/10/11, Metop-B/C
ICEYE	ICEYE-X constellation
ISRO	Cartosat-2, Resourcesat-2, Resourcesat-2A
INPE	CBERS-4, CBERS-4A, Amazonia-1
JAXA	ALOS-2, KIBO HDTV-EF
KARI	KOMPSAT-3, KOMPSAT-3A, KOMPSAT-5
NAS	BJA
NOAA	POES-18/19/20, SUOMI-NPP, GOES-13/16/17
PLANET	PlanetScope (~120 satellites)
ROSCOSMOS	RESURS-DK, METEOR-M, KANOPUS-V, KANOPUS-V-IK, RESURS-P
Satellogic	NewSat constellation
UAESA	DubaiSat-2, KhalifaSat
USGS	Landsat-8, Landsat-9, WorldView-1/2/3, Geoeye

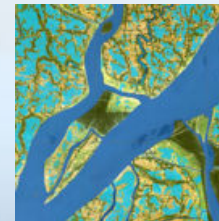
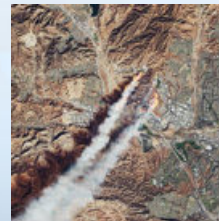
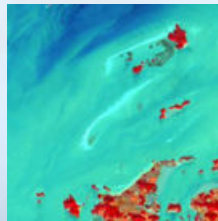
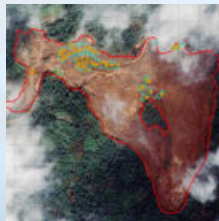


Typical Disaster Types

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

Natural events:

- Earthquakes
- Fires
- Floods
- Ice jams
- Landslides
- Snow Hazard
- Storms
- Tsunamis
- Volcanic eruptions



Man-made events:

- Oil spills
- Industrial accidents
- Search & rescue

The Charter cannot be activated for:

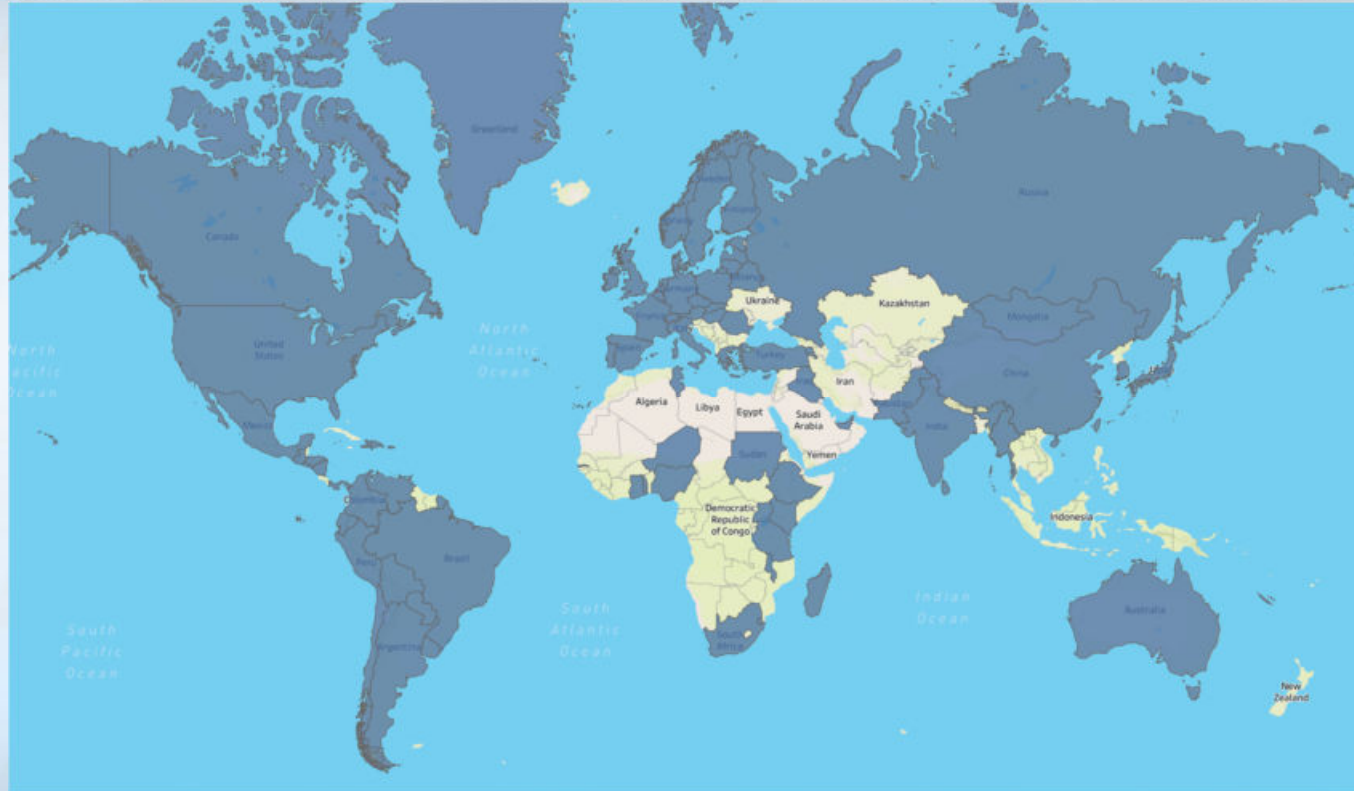
- War or armed conflicts
- Slow-onset disasters



Activating the Charter: Authorized Users

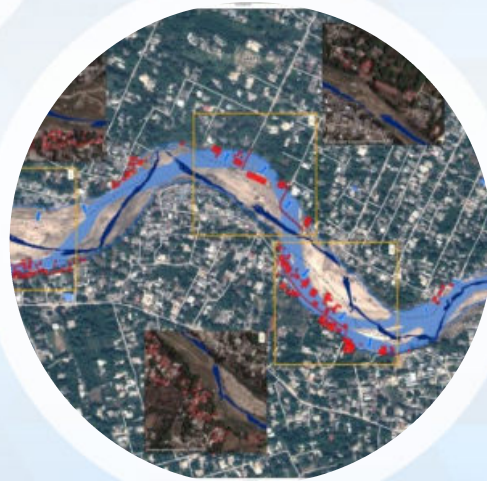
INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

The only bodies authorized to **directly** request the Charter to be activated are **Authorized Users** (typically, civil protection agencies, governmental relief organizations, or other authorities with a mandate related to disaster management) and the **Cooperating Bodies** (United Nations and Sentinel Asia).



Authorized Users

FROM SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE



- Must be a national disaster management authority or its delegated agency in that country
- Must have the capacity to download and use maps
- Must be able to submit and pursue an activation request in English



Mechanisms to Activate the Charter

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

- **Direct:** The bodies authorized to directly request the Charter to be activated for a disaster occurring in their country are the 'Authorized Users' (AUs). Typically civil protection agencies, governmental relief organizations, or other authorities with a mandate related to disaster management.
- **Via an Authorized User on behalf of a user from another country** without AU: Authorized Users can request support for a disaster in another country with which they cooperate for relief purposes.
- **Via the UN for UN users:** The Charter has an agreement with UN OOSA (Vienna) and UNITAR/UNOSAT (Geneva) to provide support to UN agencies. UN OOSA and UNITAR/UNOSAT may submit requests on behalf of users from the United Nations.
- **Asia Pacific users via Sentinel Asia:** Sentinel Asia is a regional collaboration for satellite based emergency response in Asia Pacific. The Asian Disaster Reduction Centre (*Since 2009*) can submit activation requests on behalf of Sentinel Asia's national users.



Charter Operational Loop

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS

ASTER RESPONSE WORLDWIDE



Typical times:
 AU-ERF out: 2-3 hours
 PM appointed: <1 day
 First crisis image: <1day



Project Manager Selection

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

The Executive Secretariat designates the PM by taking into consideration the following criteria:

- Availability of a PM among Parties/Partner Agencies;
- Geographical region of the disaster occurrence;
- Disaster type;
- Sensor(s) used to cover the disaster (e.g. handle of SAR data for a flooding);
- Value-added processing proposal by a Party/PA or PM according to the AU request.

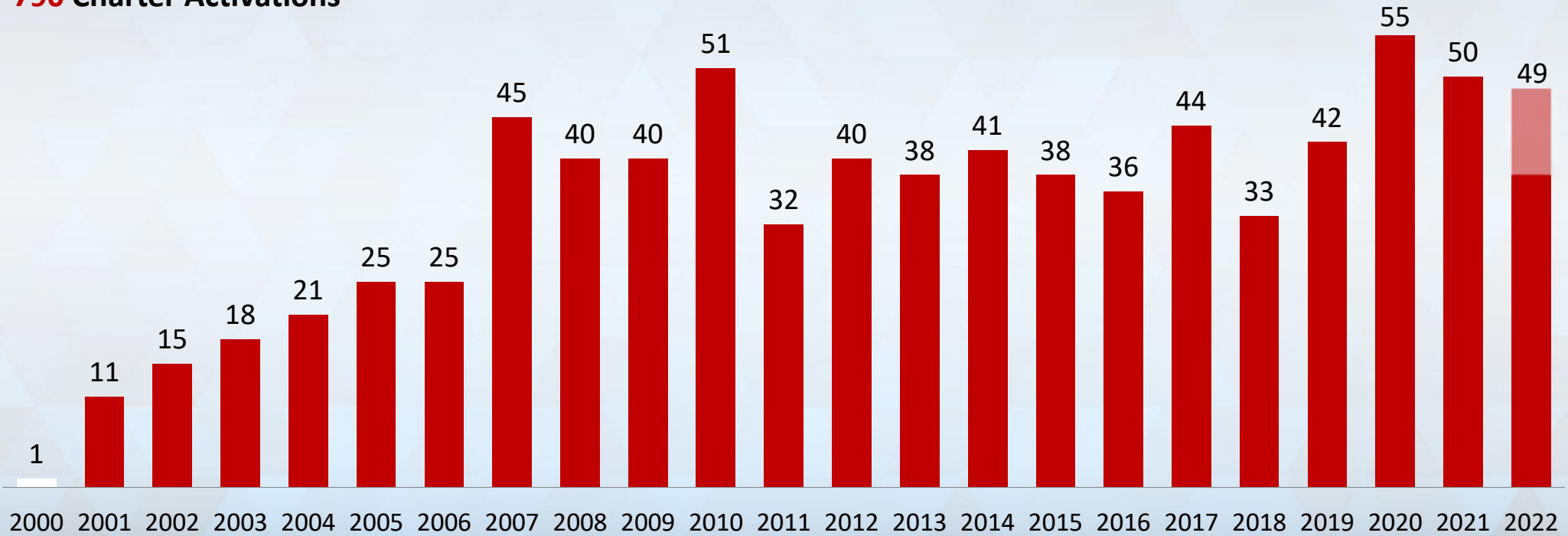


Number of Activations

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

November 2000 to 15 November 2022:

790 Charter Activations



As of November 24, 2022– 790 Charter Activations



Charter Activations (by type)

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Sub-totals	
Solid Earth	Earthquake		3	1	3	5	3	2	5	4	3	5	5	3	4	1	5	4	7	3	4		5	3	78	159
	Landslide	1	1	2	2			1			4	2	1		1	6	2		1	2	4	3	1	2	36	
	Volcano		1	1	2	2	1	1	1	2	3	3	2	2	1	3	2	4	1		4	1	2	4	3	
Technological	Oil spill		3	2				4	3			1	1		1	1	1					3	2	2	24	40
	Others					1						3				2	2		2	1	2	2	1		16	
Weather / Atmospheric	Fire				5	1	2		4	2	4	1	3	2	2	3	2	4	5	3	6	3	3	3	58	582
	Flood/Ocean wave*		3	8	4	9	13	16	22	24	19	26	17	25	24	20	17	16	17	13	17	29	26	20	379	
	Ice/Snow hazard								1			1	1			1						1			5	
	Storm/Hurricane**			1	2	3	6	1	8	7	7	10	2	9	3	5	5	11	12	7	8	12	8	16	140	
Total / year		1	11	15	18	21	25	25	45	40	40	51	32	40	38	41	38	36	44	33	42	55	50	49		
TOTAL																								790		

*Includes solid earth related phenomenon of a tsunami.

**Includes all wind type storms (hurricane, cyclone, typhoon and tornado).

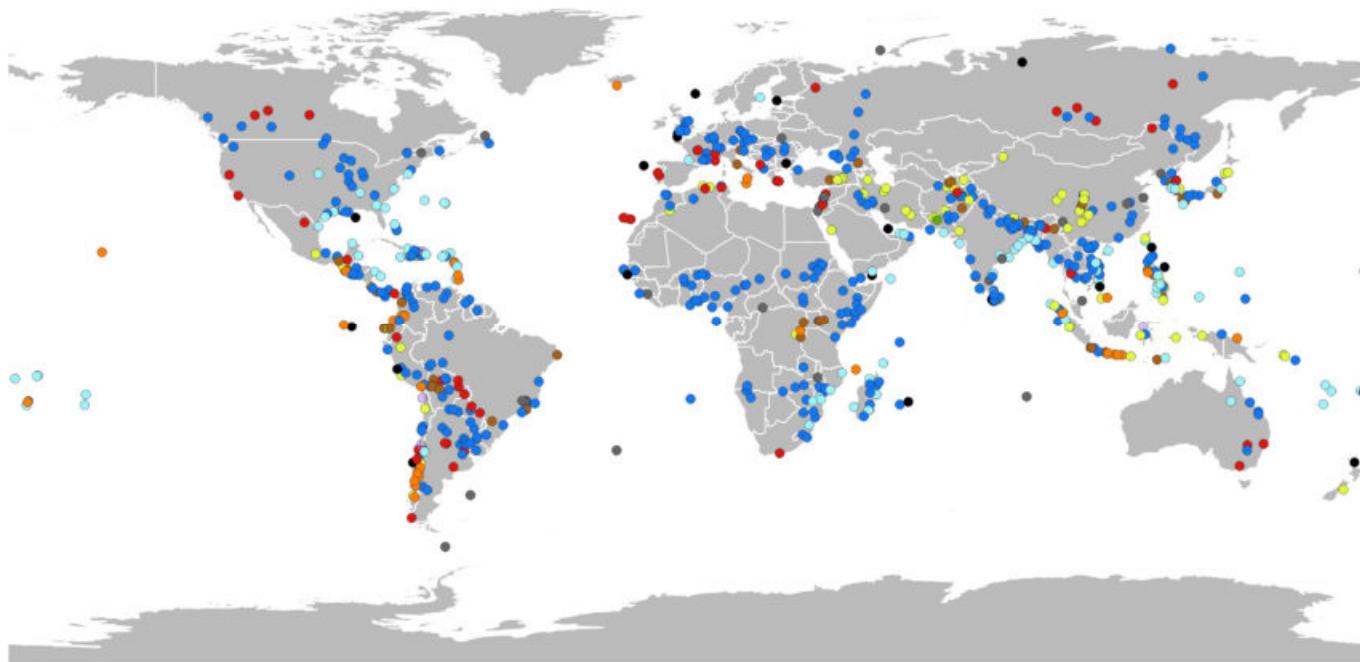
As of November 15, 2022– 790 Charter Activations



Charter Activations (by distribution)

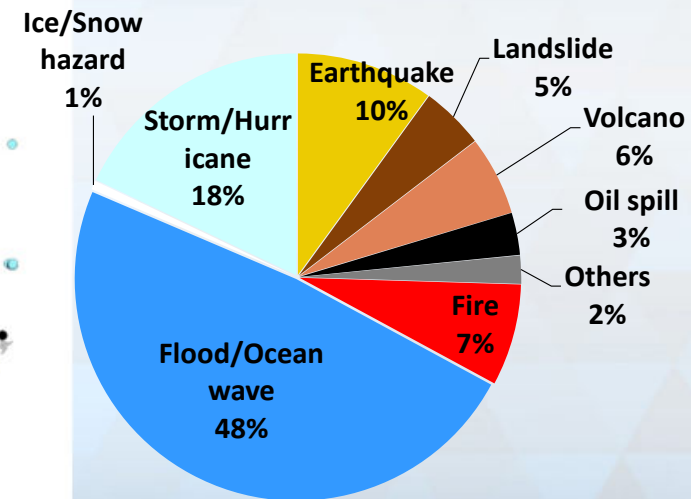
INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

Charter Major Disasters Activation from 2000-2022



Legend

- Cyclone
- Earthquake
- Fire
- Flood
- Landslide
- Ocean wave
- Oil spill
- Snow hazard
- Volcano
- Other



As of November 24, 2022– 790 Charter Activations



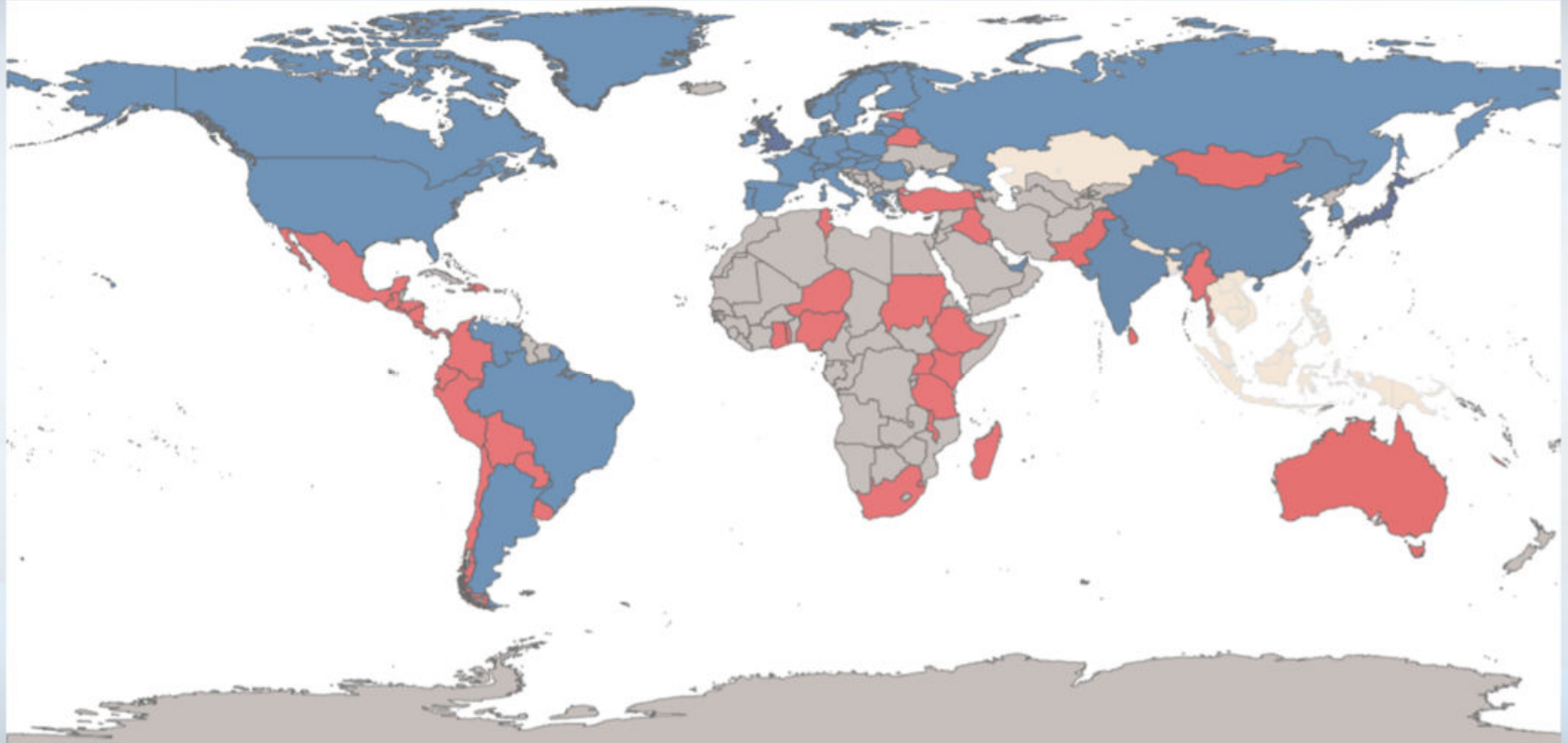
Universal Access

Launched in September 2012



Universal Access: Already 42 countries since 2012

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE



BLUE: Charter Member
RED: Universal Access



Become an Authorised User

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

A registration form* (in English, French and Spanish) is available for national authorities to express interest in becoming a Charter Authorized User.

1. The candidate fills in the questionnaire with all required information.
2. The questionnaire, with a cover letter from the organisation, must be sent to ExecutiveSecretariat@disasterscharter.org
3. The request is reviewed by the Charter members.

*The form may be downloaded together with the **Universal Access Information brochure** from the Charter website: disasterscharter.org/web/guest/activating-the-charter

Time is critical!!





Universal Access Brochure

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

THE REGISTRATION PROCESS - NEW USERS

- The process starts by completing a registration form available on the Charter website.
- After a successful registration, you will receive a confirmation email with your login details and a link to the Charter website.
- The registration form, together with a cover letter of the user organization, should be sent to the Charter Executive Director (charter@disasterscharter.org), which coordinates Charter activities.
- The request is processed by the Charter members who may ask for additional information or references.
- The final approval of a national user is subject to approval and written confirmation by either the Charter Secretariat or the user's side of the Charter.
- Users cannot use access to request a disaster recovery unless they have already been approved for Charter activities requests. This is necessary to ensure adherence to Charter rules and procedures at times when resources during emergencies are limited.
- To complete this process, this brochure contains a check access to facilitate the steps of a Charter activation. This process will enhance the ability of national authorities to access and use Charter assets for disaster response, in accordance with Charter operational procedures.

Charter members are also interested to receive more information to the user's country or the national authority, which can be useful data for emergency response. These organizations and business partners of who is in the business of an information technology, provide to support with the request of new user/organization the Charter.

A national user can also have a national emergency contact, which is a national authority, which can be useful data for emergency response. This is necessary to ensure adherence to Charter rules and procedures at times when resources during emergencies are limited.

THE INTERNATIONAL CHARTER 'SPACE AND MAJOR DISASTERS' Charter Universal Access

The Charter is a worldwide collaboration among space agencies to make satellite data available for the benefit of disaster management authorities during the response phase of an emergency.

Today, 17 agencies worldwide participate in the Charter:

- European Space Agency, ESA
- Centre national d'études spatiales, France, CNES
- Canadian Space Agency, CSA
- US National Oceanic and Atmospheric Administration, NOAA
- Comisión Nacional de Actividades Espaciales, Argentina, CONAE
- Indian Space Research Organisation, ISRO
- Japan Aerospace Exploration Agency, JAXA
- United States Geological Survey, USGS
- US Space Agency, NASA and Disaster Monitoring Constellation International Imaging Ltd., DMCI
- China National Space Administration, CNSA
- German Aerospace Establishment, DLR
- Korea Aerospace Research Institute, KARI
- Instituto Nacional de Pesquisas Espaciais, Brazil, INPE
- European Organisation for the Exploitation of Meteorological Satellites, EUMETSAT
- Vietnam Space Corporation, VNSC/CSHQC
- Belgian Agency for Space Activities, BSA
- United Arab Emirates Space Agency, ESA/UA and Mohammed Bin Rashid Space Centre, MBRS/C

WHAT IS THE INTERNATIONAL CHARTER?

The Charter is a worldwide collaboration among space agencies to make satellite data available for the benefit of disaster management authorities during the response phase of an emergency.

The Charter is unique in being the only global agreement around the world to benefit from their expertise and facilities through a single access point that operates 24 hours a day. It has a track record of over 20 years, having successfully responded since November 2005. The Charter has brought space assets into play for many natural and technological disasters including tsunamis, hurricanes, earthquakes, tsunamis, forest fires, volcanic eruptions, oil spills, and oil spills. Since its inception, the Charter has been able to respond to over 100 major disasters in more than 120 countries, including 2004 Asian tsunami, the 2009 satellite launch in Australia, the 2010 earthquake in Haiti, the 2011 super typhoon in the Philippines, the 2012 earthquake in Japan, the 2012 hurricane Irene and Maria in the Caribbean and in 2015 the earthquake and tsunami in Indonesia and the 2015 Nepal Earthquake.

WHO USES THE CHARTER?

The Charter can be accessed by a coordinated set of government users, known as National User Groups (NUGs). It is also open to request Charter support for emergency relief work, such as in a country which has not been included in the 2012 NUGs. National disaster management authorities have a number of Charter member agencies. However, the Charter members do not have access to the Charter assets to respond. Therefore, the principle of National User Groups was adopted. Since then, the Charter has been working with national users, such as INDRACAP (INDONESIA), and the Group on Earth Observations (GEO) in Asia, presented in the Charter and the Universal Access Initiative. This initiative allows national disaster management authorities from any member to become Charter Users - not members. In addition, the Charter responds with technical support, requested through the Charter-based emergency response in 24 countries. Further help within the Charter-based response center can be provided through a request on behalf of national user groups.

2012 ONWARDS: UNIVERSAL ACCESS

Building on a decade of success in making satellite data available to designated users for disaster responses, the Charter has opened its doors even wider since 2012. By adopting the principle of Universal Access, the Charter is further strengthening its contribution to disaster management worldwide.

WHAT DOES THE CHARTER PROVIDE?

Although the Charter's mandate is limited to requesting satellite data during and after an event, the Charter members may also provide other requesting and damage assessment. The Charter has identified the satellite assets and their status to be used to obtain the most useful data. For instance, optical images are well suited for damage mapping. Synthetic Aperture Radar (SAR) is a type of remote sensing, which can penetrate clouds and is particularly suited to sea level rise, such as floods of salt and tsunamis. In order to:

- It is also possible to request archival data with newly acquired data to compare damage assessment products which offer better view of how the before and after situations have been affected. This information can be used to plan for the response process for areas that are difficult to access, having to identify areas where aid is most needed.

For each Charter activation, a Project Manager (PM) is designated by the Charter members to coordinate the provision of satellite disaster information. The PM requests communications with the user to ensure appropriate support and access.

When a disaster strikes, disaster relief is crucial. Through the Charter, acquisition of satellite data now disaster areas can be prioritized, making sure that the necessary information is rapidly disseminated to the team responsible for emergency response.

WHAT IS UNIVERSAL ACCESS?

Charter members, members of the user's Charter user group, have access to the Charter's satellite data. The Charter's emergency response team will be able to search requests to the Charter for emergency response. With the Charter's 24-hour operations, it provides the permanent access to satellite data requests to the International Charter. It is a global satellite data source. Emergency response in the search response of a major disaster. Priority provision will have to be followed, but the affected users will have to be a Charter member.

A registration process is available to national authorities, to access member in requesting information on the Charter to provide assistance. In addition, the Charter in case of major disaster will be updated and better with the new data.

WHAT CONDITIONS APPLY?

The following criteria must be met for an entity requesting to become a user:

- The entity must be a national disaster management authority or its designated agency in that country.
- The entity must have the capacity to download and utilize data.
- The entity must be able to defend and protect its satellite data requests in English.

The entity or its designated agency should have a national mandate to coordinate emergency response measures in the requesting country. The mandate provided by the Charter could be either national disaster management or national disaster management team or other emergency management team. The basic information to be provided during an activation request includes: date and time of disaster occurrence, affected area and geographic coordinates (if available), type of disaster, and details of the contact person for the communication with the Charter.

Basic conditions have been established to ensure that all user organizations authorized to trigger the Charter are able to make effective use of the Charter's resources.

disasterscharter.org/documents/10180/897997/Universal-Access-English.pdf



UNOSAT support to the International Space Charter



UNOSAT HUMANITARIAN RAPID MAPPING SERVICE

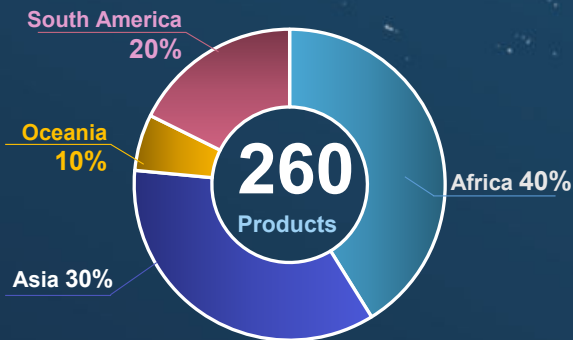
UNOSAT provides **satellite image analysis** during humanitarian emergencies for natural disasters and conflict-situations.

24/7 operational service: team of experienced analysts based in Geneva and Bangkok ensure timely delivery of satellite imagery derived analysis to support UN agencies, UN member states Humanitarian actors

Sudden-onset disasters activations [Jan - Dec 2022]

56* Activations
27 Charter Calls
34* Countries
18 Countries Charter calls

(*)Total



12 Charter Activations supported by UNOSAT in Asia (2022)

7 countries

Indonesia Earthquake

(November 2022) | Charter Activation Call 911 / UNOSAT (PM/VA)

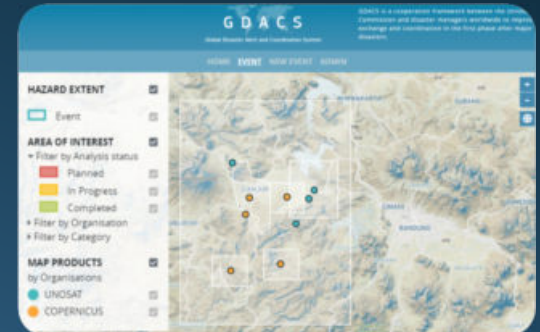


Preliminary report over Philippines By UNOSAT with earthquake Intensity scale from EC-JRC

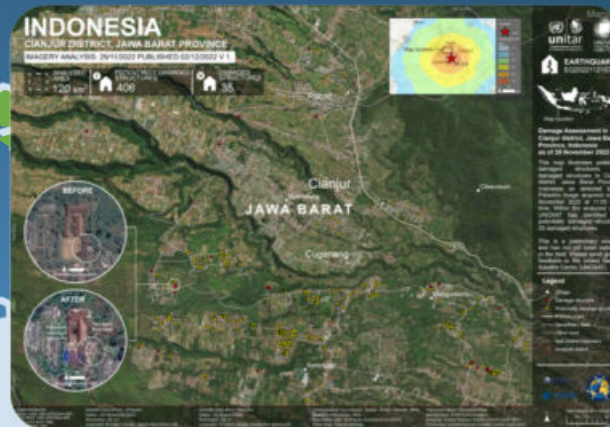


5.7 Magnitude, 21 Nov. 2022

UNOSAT received a request to support IFRC emergency response activities in the Philippines



The analysis extents in Philippines examined by UNOSAT and Copernicus EMS to determine infrastructure damage caused by Earthquake on 21 Nov. 2022



Damage assessment in Cianjur district, Jawa Barat Province, Indonesia



Villagers retrieve items from damaged houses on Nov. 22, 2022 following the 5.6-magnitude earthquake that killed at least 162 people in Cianjur, Indonesia.

Number of products released by UNOSAT during the calls

2

Flood impact assessment maps

1

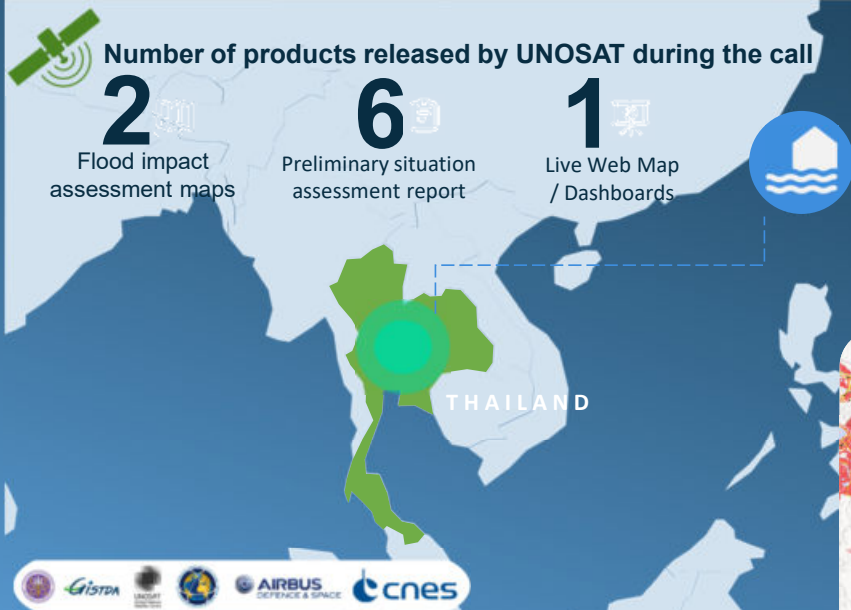
Preliminary situation assessment report

1

Live Web Map / Dashboards

Thailand Floods

(Aug. – Nov. 2022) | Charter Activation Call 903-UNOSAT (PM/VA)

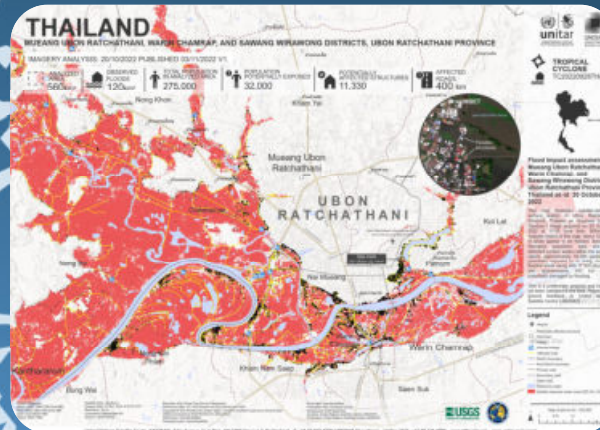


12 Aug. 2022

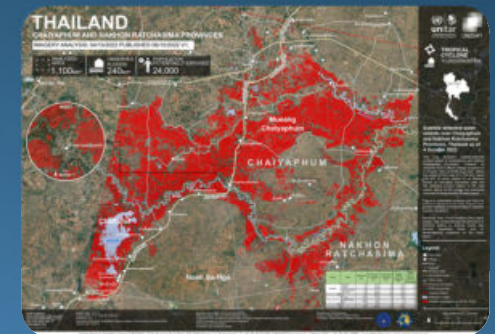
UNOSAT received a request for satellite imagery analysis support from UNRCO in Thailand and Friends in need (of "PA") Volunteers Foundation, Thai Red Cross over Thailand



UNOSAT presented the Emergency Mapping service to the Friends in Need (of "PA") Volunteers Foundation on May 2022



Flood impact assessment map in Ubon Ratchathani province By UNOSAT using data provided by the Charter



Flood impact assessment map in Chaiyaphum province By UNOSAT using data from the Charter



GISTDA's product using a very high-resolution satellite image

UNOSAT AI based Flood Detection Dashboard (*FloodAI*): Monsoon Season Monitoring, Thailand (2022)



12 Aug. 2022

UNOSAT received a request for satellite imagery analysis support from UNRCO Thailand and Friends in need (of "PA") Volunteers Foundation, Thai Red Cross over Thailand



Thailand flood monitoring dashboard

FLOOD IMPACT ANALYSIS

FLOOD REPORTS



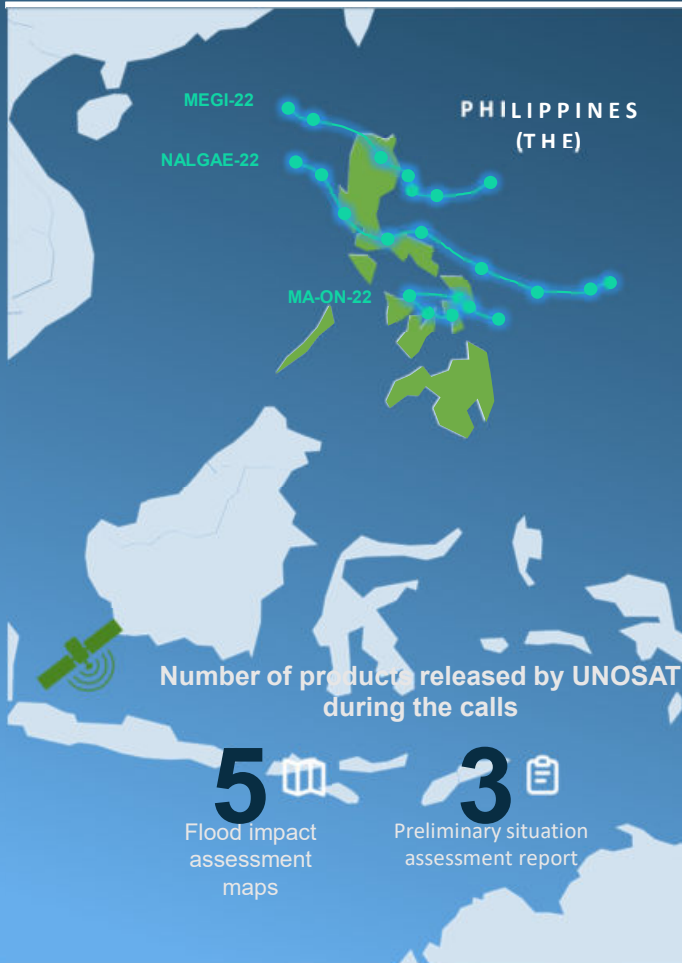
UN ASSIGN



DATA & STATISTICS



Philippines Ocean Storm, Floods, and Landslides (Apr. - Aug. - Oct. 2022) - UNOSAT (PM/VA)



28 Oct. 2022
Tropical Storm Nalgae – UNOSAT (VA)
UNOSAT received a request for satellite imagery analysis support from UNOCHA over Philippines



23 Aug. 2022
Tropical Storm Ma-On – UNOSAT (VA)
UNOSAT received a request for satellite imagery analysis support from UNOCHA over Philippines

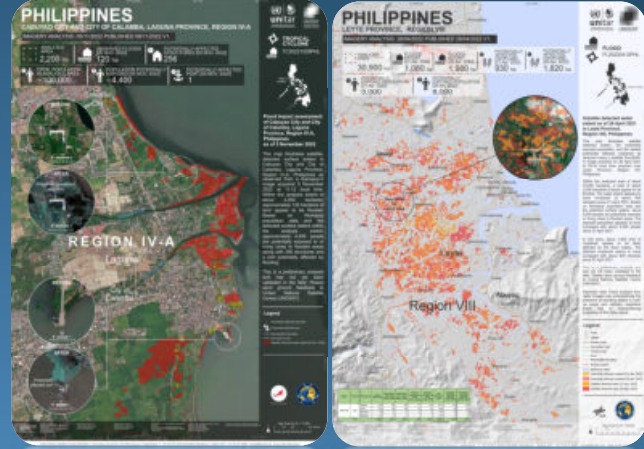


12 Apr. 2022
Tropical Storm Megi – UNOSAT (PM/VA)
UNOSAT was nominated as the Project Manager (PM) of the Charter call to facilitate the analysis

Flood impact assessment map in Philippines By UNOSAT using data from the Charter



Activations are triggered charter by UNOOSA/UN-SPIDER on behalf of Philippine Space Agency on behalf of the Philippine National Disaster Risk Reduction



Way forward



- **UNSOAT will continue to timely respond to the different humanitarian requests by delivery quality satellite imagery analysis**
- **During major disaster events one of the most reliable mechanism for imagery acquisition is the International Space Charter;**
- **UNOSAT is committed to continue supporting the charter's activities including awareness raising training activities;**
- **UNOSAT has recently established a collaboration partnership with the Thailand Geo-Informatics and Space Technology Development Agency (GISTDA) and is very keen to strengthen collaborations with other satellite groups and initiatives in Asia (e.g. Sentinel Asia)**



Charter Summary Facts

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

- Space technologies can deliver key information that brings benefit to the definition, planning, implementation, monitoring & assessment of disaster relief operations.
- The Charter is focused on the immediate response phase and services of national disaster management centres and the International Humanitarian community (e.g. United Nations).
- It is growing: 790 disasters covered since 2000 in 126 countries worldwide.
- Building on a decade of success in making satellite data available to users for disaster response, the Charter is now opening its doors even wider with Universal Access.
- Universal Access benefits national users in countries beyond those of the Charter members, who were previously unable to make direct requests to the Charter during emergency situations.
- Currently, there are **42 new AUs** were accepted thanks to the UA process in the following countries: Armenia, Australia, Belarus, Bolivia, Cameroon, Cayman Islands, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Ethiopia, El Salvador, Eswatini, Gambia, Ghana, Guatemala, Haiti, Honduras, Iraq, Kenya, Madagascar, Malawi, Myanmar, Mexico, Mongolia, New Caledonia, Nicaragua, Niger, Pakistan, Panama, Paraguay, Peru, South Africa, Sri Lanka, Sudan, Tanzania, Trinidad & Tobago, Togo, Tunisia, Uganda, and Uruguay and the list is growing.



INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS

SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

Charter Tools



Charter Operational System: COS-2 Project Manager view

INTERNATIONAL CHARTER SPACE & MAJOR DISASTERS SATELLITE DATA TO SUPPORT DISASTER RESPONSE WORLDWIDE

Current call status and the next expected action

ECO Dossier general ERF, URF

Possible Actions as PM

Data Requested (ERF) sent (either by ECO or you)

Received Acquisition & Archive Plans

AAP timeline and details clicking on "See full list"

Value Added Products uploaded

The screenshot shows the PM Dashboard for a call titled "Activation 741 (Call-052) - Storm & Hurricane (Rural area), Storm & Hurricane (Urban areas & Infrastructure), Flood (large area) in PHILIPPINES". It includes sections for Call Status, Action List, Satellite Imagery Requests, and Affected Areas. A red circle highlights the "See full list" link in the Satellite Imagery Requests table.

Agency	Req ID	File Name	Req Date	Req No
ESA	SAR001-2017-01	SAR001-2017-01-01	2017-01-01 00:00	001-001
ESA	SAR002-2017-01	SAR002-2017-01-01	2017-01-01 00:00	001-002
ESA	SAR003-2017-01	SAR003-2017-01-01	2017-01-01 00:00	001-003
ESA	SAR004-2017-01	SAR004-2017-01-01	2017-01-01 00:00	001-004
ESA	SAR005-2017-01	SAR005-2017-01-01	2017-01-01 00:00	001-005
ESA	SAR006-2017-01	SAR006-2017-01-01	2017-01-01 00:00	001-006
ESA	SAR007-2017-01	SAR007-2017-01-01	2017-01-01 00:00	001-007
ESA	SAR008-2017-01	SAR008-2017-01-01	2017-01-01 00:00	001-008
ESA	SAR009-2017-01	SAR009-2017-01-01	2017-01-01 00:00	001-009
ESA	SAR010-2017-01	SAR010-2017-01-01	2017-01-01 00:00	001-010
ESA	SAR011-2017-01	SAR011-2017-01-01	2017-01-01 00:00	001-011
ESA	SAR012-2017-01	SAR012-2017-01-01	2017-01-01 00:00	001-012
ESA	SAR013-2017-01	SAR013-2017-01-01	2017-01-01 00:00	001-013
ESA	SAR014-2017-01	SAR014-2017-01-01	2017-01-01 00:00	001-014
ESA	SAR015-2017-01	SAR015-2017-01-01	2017-01-01 00:00	001-015
ESA	SAR016-2017-01	SAR016-2017-01-01	2017-01-01 00:00	001-016
ESA	SAR017-2017-01	SAR017-2017-01-01	2017-01-01 00:00	001-017
ESA	SAR018-2017-01	SAR018-2017-01-01	2017-01-01 00:00	001-018
ESA	SAR019-2017-01	SAR019-2017-01-01	2017-01-01 00:00	001-019
ESA	SAR020-2017-01	SAR020-2017-01-01	2017-01-01 00:00	001-020

Local time at AU location

Contact details of the people involved in the call

Display of affected areas (extension in different colour)

Access to "satellite imagery dashboard"
Areas list with priorities and modification

Drop zone to add additional files

Link to meteo real time imagery

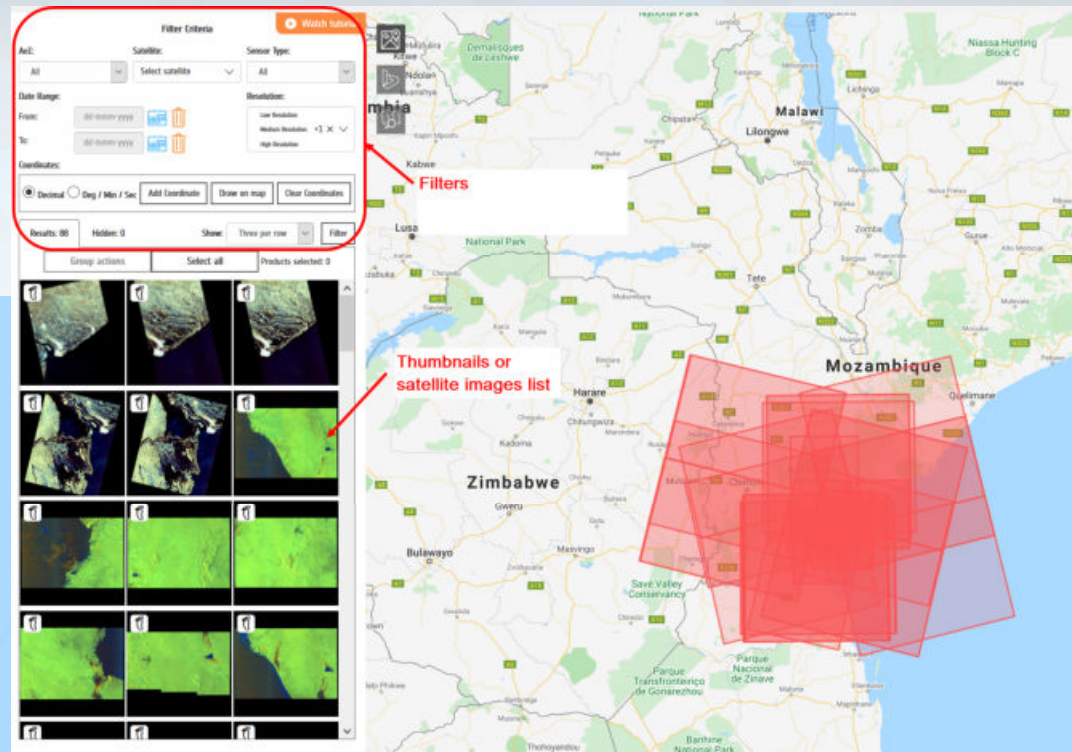
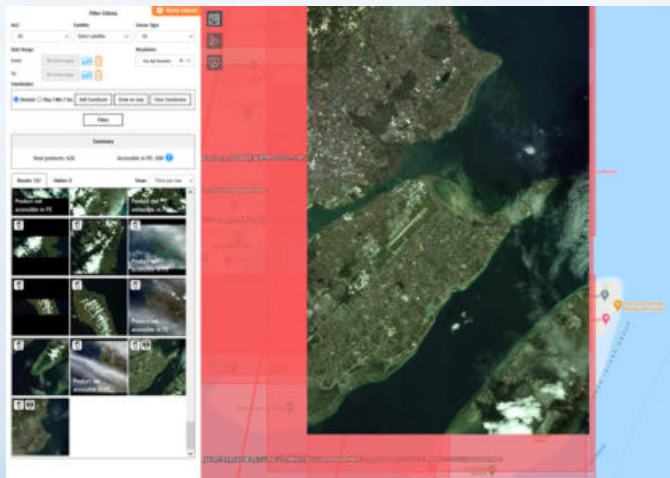
Metadata, quicklooks & products received grouped by satellite



Charter Operational System: COS-2 Satellite data view (quick looks)

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- A dedicated dashboard allows a quick filtering of the data and a preview of the satellite images.
- Is possible to superimpose the quicklook on the map
- Bulk download feature is also available





The ESA Charter Mapper: handling Data

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- To support the Charter PM and the VA in the context of activations, the COS-2 system has been augmented with a **processing environment to access EO data on-line** and perform visual analysis and basic EO processing
- Implemented by ESA
- Access Through COS-2
- The User Manual:

<https://docs.disasterscharter.org>

The screenshot displays the ESA Charter Mapper web application. At the top, a blue banner features the ESA Charter Mapper logo and a welcome message: "Welcome to the Charter Processing Environment implemented under the responsibility of the European Space Agency. It is built and integrated in COS-2 to support operations with on-line services to access and visualize EO data." Below the banner, a section titled "Latest activations" shows four cards for recent events: flooding in Myanmar (Oct 19th 2021), eruption of Mount Semeru in Indonesia (Oct 19th 2021), flooding in Sri Lanka (Nov 18th 2021), and flooding in Thailand (Sep 28th 2021). A large map of Southeast Asia is shown with a satellite image overlay of a flooded area in Thailand. The interface includes search filters, a list of results, and navigation tabs for Applications, Datasets, VA Products, and My Results.

EVERS AIRBUS TERRA^{DU}E TAITUS[®] SOFTWARE DATASPACE LIST



Concept of the Charter Mapper:

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- Embedded into COS-2 to facilitate **access & use of the EO data** collection of an activation
 - Imagery received is ingested and **transformed automatically** in full resolution, irrespective of the original format, so as the user logs in, all available EO data can be viewed online
 - The PM / VA can browse imagery online, select the EO data of interest, analyze and process them online with **EO services and toolboxes** to generate geo-information products.





Activation workspace

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The **Activation Workspaces** offer dedicated applications for each specific Charter Activation.

The workspace allows the PM/VA to:

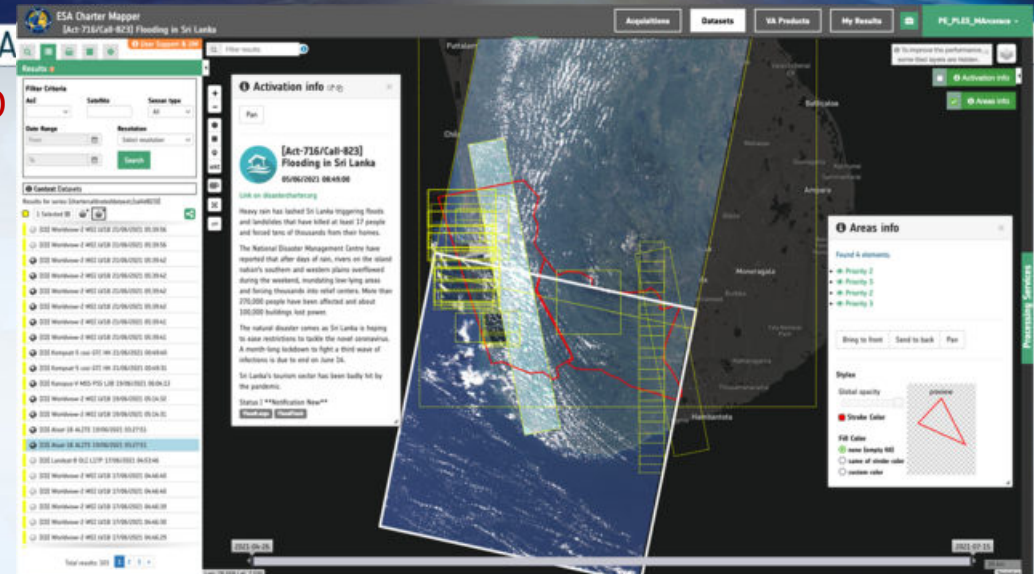
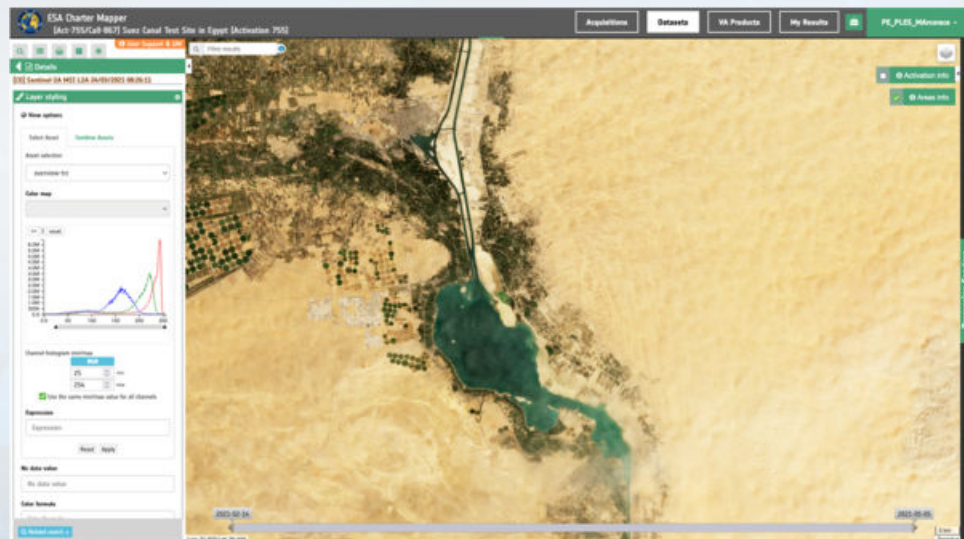
- **Browse** full resolution EO data as rasters on the map
- **Search** manually for EO data in the data collections (typically, ingested acquisitions from COS-2);
- **Upload** external EO data outside COS-2 from local workstation or free EO Data catalogues;
- Submit **processing jobs** using EO processors; view the results as part of the Activation Analysis; download results.
- **Store & share** EO data and VA products with other partners involved (authorized to access the activation)



EO data visualization

INTERNATIONAL CHARTER SPACE & MAJOR DISA

- The PM/VA is able to **visualize all the pre-processed EO data of a Charter activation** as full resolution browse imagery through the **Datasets** menu



- Double-clicking on the image, the PM/VA can access a specific widget that allows to **visualize & combine the assets (bands and overviews)** derived by the Charter Mapper from the EO data product

- More info at: <https://docs.disasterscharter.org/concepts/visualization/>



Functions and services layout

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Data contexts menu

Search & Filters

Data

The screenshot shows the ESA Charter Mapper web application interface. The main navigation bar at the top includes 'Acquisitions', 'Datasets', 'VA Products', 'My Results', and a user profile 'TEST_ESA_PLES'. The central area is a 'Geobrowser' displaying a satellite image of a volcanic eruption with orange bounding boxes. A 'Navigation and search toolbar' is overlaid on the left side of the map. On the far left, a 'Results' panel contains 'Filter Criteria' (AoI, Satellite, Sensor type, Date Range, Resolution) and a 'Context Datasets' list. On the far right, a 'Processing Services' panel lists various services like COMBI-Plus, BAS, IRIS, STACK, SAR-COIN, DiSAR, HASARD, HOTSPOT, COMBI, PAN-Sharp, OPT-Index, and SAR-Change. A 'Time bar' at the bottom indicates a date range from 2021-10-28 to 2022-01-16.



Supported EO missions

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Currently supported EO missions

- ALOS-2
- ALSAT-1B
- ICEYE-X constellation
- KOMPSAT-3, 3A
- LANDSAT-8, 9
- Pleiades-1A, 1B
- Sentinel-1A, 1B
- Sentinel-2A, 2B
- UK-DMC-2
- SPOT-6 & 7
- RCM-1, 2, 3
- KANOPUS-V, V-IK
- SAOCOM-1A, 1B
- TDX-1
- TSX-1
- KOMPSAT-5
- Vision-1
- VRSS-1, 2
- GF-1, 2, 3
- RESOURCESAT-2, 2A
- CARTOSAT-2
- WORLDVIEW-1, 2, 3
- PlanetScope constellation
- GeoEye-1

Planned

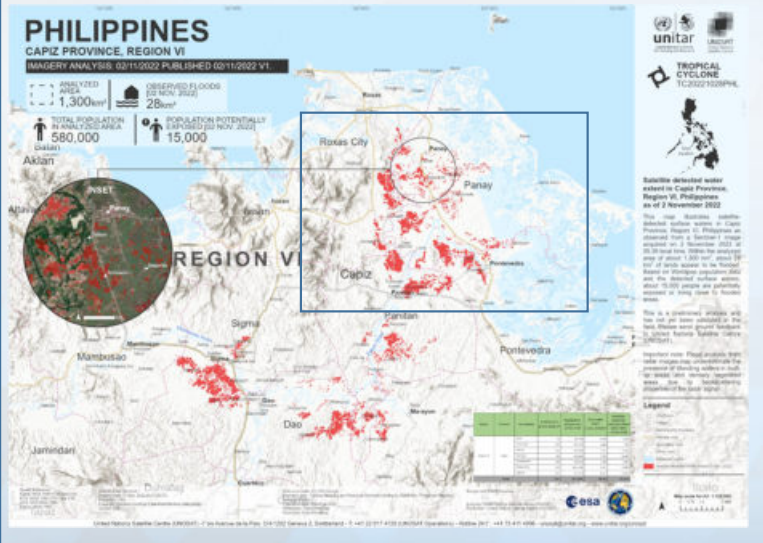
- Amazonia-1
- METEOR_M
- RESURS_P
- CBERS-4, 4A
- DubaiSat-2
- KhalifaSat
- GF-4
- DEIMOS-1



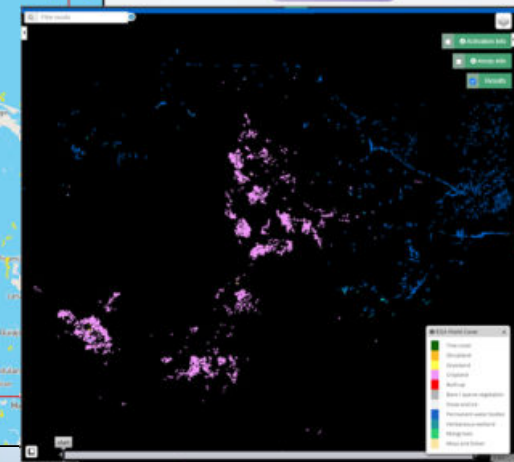
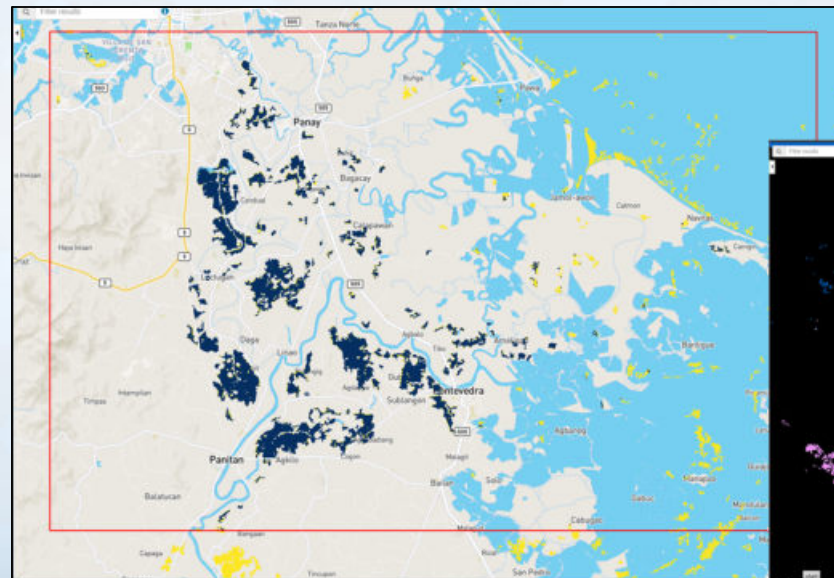
Flood damage assessment over cropland

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Water extend map (produced by UNITAR/UNOSAT) with Sentinel-1 (02/11/2022). Map published in the context of the [\[Act-789/Call-909\] Tropical Storm Nalgae in the Philippines](#)



HASARD flood mask (yellow) and flooded cropland (dark blue) in the Capiz Province, Philippines (Sentinel-1 image, 01/11/2022). On the right, the [flood extent map over cropland](#) (pink, ESA World Cover) generated in the ESA Charter Mapper.

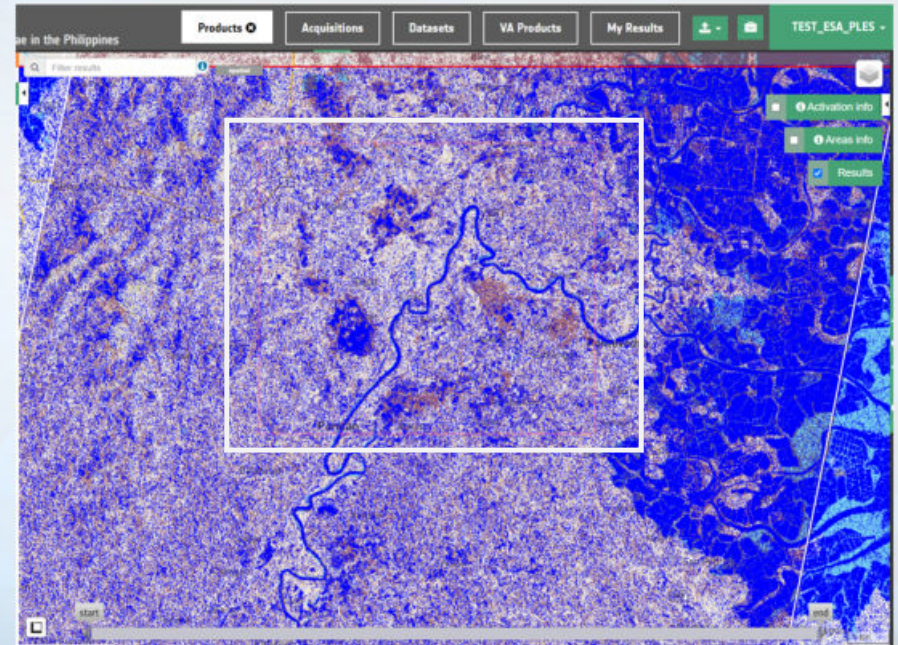
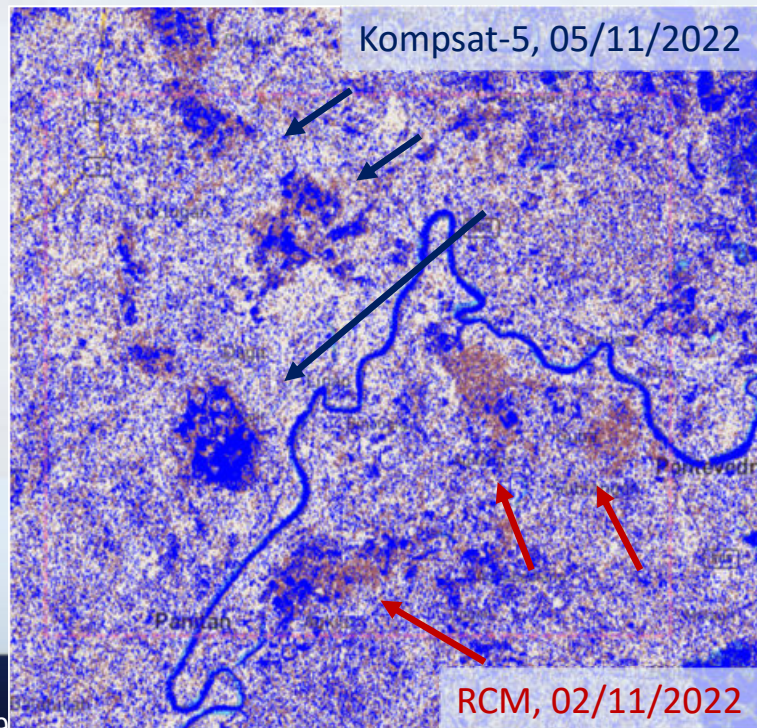




Decrease flood map in multi-frequency SAR data

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Flood extent decrease visualisation in the Capiz Province, Philippines, generated in the ESA Charter Mapper by comparing an RCM (02/11/2022, [brown flooded areas](#)) and a Kompsat-5 acquisition (05/11/2022, [blue flooded areas](#)), [\[Act-789/Call-909\] Tropical Storm Nalgae in the Philippines](#)





We need your help !

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The Charter can help you in the management of an emergency but:

- Timeliness is essential => we need **Authorized Users** in the affected countries for a fast Charter activation and for constant information during the management of the event
- Remote sensing experts => we preferably rely on **experts** of the same country (easier communication with the agency responsible for the response, knowledge of the territory)

Please come to the special session TODAY at 14:00 :
Demonstration of the Cloud Processing Environment of the Charter



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helpdesk@disasterscharter.org





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www.disasterscharter.org

Emergency enquiries from users requiring direct access to Charter resources should be addressed to:

ExecutiveSecretariat@disasterscharter.org

General requests for information should be addressed to

helpdesk@disasterscharter.org

Roberto.Biasutti@esa.int