International Charter:

Space and Major Disasters

Annual Report 2023

V2

Contents

1. Introduction

1.1 Purpose and scope of this document

This document describes the activities of the 'International Charter: Space and Major Disasters' (the Charter) that took place in 2023.

1.2 Structure of the report

This report is based on the following inputs:

- Working documents, notes and actions of the Charter's Executive Secretariat and Board
- Input from the Charter's Communications Group
- Input from each Charter member concerning EO resources and publications
- Project Managers' reports for each activation
- Data, statistics and reports from EM-DAT and other reports on disasters prepared by Insurance companies.

This report adheres to the following structure:

Chapter 1 – Introduction

Chapter 2 – The 'International Charter: Space and Major Disasters'; overview and lead agencies of the Charter in 2023

Chapter 3 – Charter operations: depicts internal business regarding operations, resource consumption and technical updates (in particular the development of COS-2).

Chapter 4 – Assessment of the Charter operations: provides an assessment of the overall impact of the Charter as a service in supporting disaster response, and details the operational system performance, including generation of products and services, user appraisal and communication.

Chapter 5 – External relations: discusses the integration of new members, the Universal Access process, and relationships with Cooperating Bodies.

Chapter 6 – Communication: reports on all communication activities undertaken throughout the reporting period.

Chapter 7 – Conclusions: outlines the significant achievements and outcomes throughout the reporting period.

1.3 Applicable documents

[AD1] Text of the Charter 'Space & Major Disasters' - http://www.disasterscharter.org
[AD2] Charter Implementation Plan, RSCSA-PL0098
[AD3] Project Manager Procedure, RSCSA-PR0419
[AD4] Emergency On-Call Officer Procedure, RSCSA-PR0418

1.4 List of figures

1.5 List of tables

1.6 List of acronyms

ABAE	Bolivarian Agency for Space Activities
AOI	Area of Interest
ADRC	Asian Disaster Reduction Centre
AU	Authorized User (of the Charter)
CB	Coordinating Body
CEMADEN	Centro Nacional de Monitoramento e Alertas de Desastres (Brazil)
CEMS	Copernicus Emergency Management Service
CENAD	Centro Nacional de Gerenciamento de Riscos e Desastres (Brazil)
CEPREDENAC	Coordination Centre for the Prevention of Natural Disasters in Central America
CEOS	Committee on Earth Observation Satellites
Charter	The ‘International Charter: Space and Major Disasters’
CNES	Centre National d’Etudes Spatiales (French space agency)
CNSA	China National Space Administration
CONAE	Comisión Nacional de Actividades Espaciales (Argentina)
CONIDA	National Commission for Aerospace Research and Development (Peru)

CONRED	Coordinadora Nacional para la Reducción de Desastres (Guatemala)
COS-2	Charter Operational System-2
CRED	Centre for Research on the Epidemiology of Disasters
CSA	Canadian Space Agency
DLR	Deutsches Zentrum für Luft und Raumfahrt (German Aerospace Centre)
DLR/ZKI	DLR Zentrum für Satellitengestützte Kriseninformation (Center for Satellite Based Crisis Information)
DRM	Disaster Risk Management
ECO	Emergency On-Call Officer (of the Charter)
EM-DAT	Emergency Events Database
EO	Earth Observation
ERS	Emergency Response Service
ESA	European Space Agency
ESRIN	ESA Centre for Earth Observation
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
GDACS	Global Disaster Alert and Coordination System
GEO	Group on Earth Observations
GIC	Geoinformatics Center – Asian Institute of Technology
HDDS	(USGS) Hazards Data Distribution System
HR	High Resolution
ICT	Information and Communication Technology
IFRC	International Federation of Red Cross and Red Crescent Societies
INDECI	Instituto Nacional de Defensa Civil (Peru)
INPE	National Institute for Space Research (Brazil)
ISRO	Indian Space Research Organization
JAXA	Japan Aerospace Exploration Agency
KARI	Korea Aerospace Research Institute
MBRSC	Mohammed Bin Rashid Space Centre
MPP	Mission Planning Personnel
MR	Medium Resolution
NADMO	National Disaster Management Organization (Ghana)
NASDRA	National Space Research and Development Agency (Nigeria)
NDRCC	National Disaster Reduction Centre of China
NOAA	National Oceanic and Atmospheric Administration
NRSC	National Remote Sensing Centre (India)

ODO	On-Duty Operator
PA	Partner Agency
PHIVOLCS	Philippine Institute of Volcanology and Seismology
PM	Project Manager (of the Charter)
RGB	Red-Green-Blue
ROSCOSMOS	Russian State Space Corporation
ROWCA	Regional Office West and Central Africa (UNOCHA)
SA	Sentinel Asia
SAR	Synthetic Aperture Radar
SARE	Semi-Annual Refresher Exercise
SERTIT	Service Régional de Traitement d'Image et de Télédétection (France)
UA	Universal Access
UAESA	United Arab Emirates Space Agency
UCL	Université Catholique de Louvain
UKSA	UK Space Agency
UNITAR/UNOSAT	United Nations Institute for Training and Research/ United Nations Operational Satellite Applications Programme
UNDAC	United Nations Disaster Assessment and Coordination
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNOOSA	United Nations Office for Outer Space Affairs
UNRCO	United Nations Resident Coordinator Office
UN-SPIDER	United Nations Platform for Space-based Information for Disaster Management and Emergency Response
URF	User Request Form
USGS	United States Geological Survey
VAR	Value-Added Reseller
VAP	Value-Added Provider
VHR	Very High Resolution

1.7 Authors of the report

The report has been prepared by CNES, DLR, ESA, EUMETSAT, and ROSCOSMOS based on contributions and reviews by all the Charter members.

2. The ‘International Charter: Space and Major Disasters’

2.1 Overview

The Charter is an international collaboration among space agencies and space operators – the Charter members. Initiated by the European Space Agency (ESA), the French Space Agency (CNES) and the Canadian Space Agency (CSA) in 2000, 14 other space agencies joined between 2000 and 2018, named below in chronological order:

- U.S. National Oceanic and Atmospheric Administration, NOAA
- Comisión Nacional de Actividades Espaciales, Argentina, CONAE
- Indian Space Research Organization, ISRO
- Japan Aerospace Exploration Agency, JAXA
- United States Geological Survey, USGS
- UK Space Agency, UKSA
- China National Space Administration, CNSA
- German Aerospace Centre, DLR
- Korea Aerospace Research Institute, KARI
- Instituto Nacional de Pesquisas Espaciais, Brazil, INPE
- European Organization for the Exploitation of Meteorological Satellites, EUMETSAT
- Russian State Space Corporation, ROSCOSMOS
- Bolivarian Agency for Space Activities, ABAE
- United Arab Emirates Space Agency, UAESA / Mohammed Bin Rashid Space Centre, MBRSC

The lead agency function rotates among all Charter members on a six-month basis. The lead agency has the overall responsibility of the implementation of the Charter to oversee and coordinate its operations, administration, communications and external relations. Additionally, at the start of each lead period, the new lead agency hosts the meetings of the Charter Board and Executive Secretariat.

The founding agreement of the Charter is intentionally limited in scope and thus is not intended to serve the entire disaster management cycle (mitigation, preparedness, alert, response and recovery, rehabilitation and reconstruction). Satellite-based information is provided at no cost to nationally mandated disaster management authorities and humanitarian aid organizations to specifically support the immediate response to major natural or man-made disasters. The Charter provides a mechanism for the rapid tasking of satellites for sudden emergencies, including but not limited to earthquakes, storms, landslides, volcanic eruptions, and flooding.

The ability of the Charter to support disaster response with space technology on a global level, when requested by users, is based on carefully defined policies and rules. Natural or man-made disasters that are slow onset events such as droughts are beyond the scope of the Charter; for these events, satellite-based monitoring can be provided with other EO capabilities and services that do not require rapid response. Furthermore, the Charter does not support humanitarian emergencies

beyond those related to natural or man-made hazards; for example: acts of war, refugee crises, etc. are not covered.

The Charter can be activated by a predefined list of appointed users, known as 'Authorized Users' (AUs). Before 2013, AUs were typically national disaster management authorities from countries of Charter member agencies. They were able to request Charter support for emergencies in their own country or in a country with which they cooperate for disaster relief. In an effort to expand the number of users who can benefit from the Charter, the Universal Access initiative was created and formally adopted in 2012 (see section 5.2).

The Charter has consistently demonstrated a strong commitment to expanding its number of users. Initiatives include collaboration with UNOOSA and UNITAR/UNOSAT, both of which are active in many disaster-prone countries and can submit requests to support in-country UN relief agencies. Another collaboration is with Sentinel Asia, a regional network for Earth Observation-based Emergency response that is active in 29 countries. Additionally, Sentinel Asia's partner, the Asian Disaster Reduction Centre can submit activation requests on behalf of Sentinel Asia users.

Based on the requester, four activation modes are in place since 2010:

- Mode 1: direct activation by an Authorized User (AU) for a disaster occurring in their country.
- Mode 2: activation by an Authorized User on behalf of a user from another country.
- Mode 3: activation by UNOOSA or UNITAR/UNOSAT for UN users.
- Mode 4: activation for national users from the Asia-Pacific region via Sentinel Asia's partner, the Asian Disaster Reduction Centre.

Since its inception in 2000 **the Charter has been triggered for 856 disasters in 139 countries. In 2023 alone, the Charter was activated 63 times for disasters taking place in 40 countries.**

The Charter provides access to a virtual constellation of satellites equipped with radar and optical sensors.

In 2023, active satellites included (see Table 1):

- Radar (high resolution and very high-resolution sensors): RADARSAT-2, RCM -1/2/3 TerraSAR-X, TanDEM-X, Sentinel-1A/B, ALOS-2, KOMPSAT-5, GF-3, ICEYE-X2, ICEYE-X4, ICEYE-X5, OHS-2A/B/C/D, Iceye-X7, SAOCOM-1A and SAOCOM-1B.
- Optical (high resolution and very high-resolution sensors): NewSat, Planetscope, Landsat 8/9, WorldView-1, WorldView-2, Worldview-3, GeoEye-1, VRSS-2 SPOT-6, SPOT-7, PLEIADES 1A /B, PNEO 3/4, PROBA-V, GF-1/2/4, FY-3D, FY-3C, FY-2H, FY-4A, CBERS-4, CBERS-4A, KOMPSAT-3, KOMPSAT-3A, Cartosat-2S, Resourcesat-2/2a, Kanopus-V, Kanopus-V-IK, Resurs-P, Dubaisat-2, Khalifasat, VISION-1, BKA, OHS-2A/B/C/D, JILIN-01, OVS-1A/B, OVS-2A, Beijing-2 and Sentinel-2A/B.
- Optical (medium and low-resolution sensors): POES, GOES, Suomi NPP, Metop series, Meteosat Second Generation (MSG) and Meteor-M.

The Pleiades Neo Satellite (PNEO 3/4) was added in 2023 and is fully integrated in COS-2.

Satellites that ceased operations were VRSS-1 in January 2023 and SPOT-7 in March 2023.

Specific agreements with other entities allow the Charter to access additional products (both high and very high resolution) from satellites such as GeoEye and WorldView.

In 2023, the list of third-party data contributors is the following : BlackSky, Iceye, Maxar, Planet, Satellogic, and Geosat (accepted as data contributor in November 2023).

Table 1. List of Charter 2023 operational satellites [optical (in light blue) and radar (in light grey)]

Agency	**Satellite (operational)**	**Agency**	**Satellite (operational)**
ABAE	VRSS-2	ISRO	Resourcesat-2 Resourcesat-2a Cartosat-2E
BLACKSKY	Blacksky Global Constellation		
CNES	PLEIADES 1A/1B SPOT-6, SPOT-7, PNEO 3/4		
CONAE	SAOCOM-1A, SAOCOM-1B	JAXA	ALOS-2
CSA	RADARSAT-2, RCM-1, RCM-2, RCM-3	KARI	KOMPSAT-3 KOMPSAT-3A
CNSA and Chinese data contributors (21AT, Zhuhai Orbita Aerospace, ChangGuang)	GF-1 , GF-2, GF-4 FY-3D, FY-3C, FY-2H, FY-4A JILIN-01 3/4/5/6/7/8 OVS-1A/B, OVS-2A Beijing-2 OHS-2A/B/C/D		KOMPSAT-5
		NAS	BKA
		NOAA	POES Suomi NPP
	GF-3		
DLR	TerraSAR-X / TanDEM-X	PLANET	Planetscope
ESA	Sentinel-1A/1B	SATELLOGIC	NewSat
	Sentinel-2A/1B	ROSCOSMOS	Kanopus-V , RESURS-P Kanopus-V-IK
EUMETSAT	Metop Series		Meteor-M
	Meteosat MSG	UAESA	Dubaisat-2, Khalifasat
INPE/CNSA	CBERS-4, CBERS-4A	UKSA	VISION-1
ICEYE	ICEYE-X2, ICEYE-X4, ICEYE-X5, ICEYE-X7	USGS	WorldView-1/2/3, GeoEye-1, Landsat 8 and 9

2.2 Lead agencies of the Charter in 2023

During this period, the lead agencies on a biannual rotational basis have been KARI (October 2022 – April 2023), UKSA (April 2023 – October 2023) and EUMETSAT/CSA (October 2023 – April 2024).

Figure 1. 49th Charter Board and Executive Secretariat members. This meeting was hosted by UKSA, from 25 to 28 April 2023.

Figure 2. 50th Charter Board and Executive Secretariat members. This meeting was hosted by EUMETSAT from 17 to 20 October 2023.

3. Charter operations

3.1 Charter activations

In 2023, the Charter was activated 63 times in 40 different countries. This is the highest number of activations ever seen in a single year since the inception of the Charter. The new average number of activations per year is 36 since 2000, and 43 since 2007 (when the Charter began consistently handling more activations). The range of activations per year since 2007 ranges from 32 in 2011 to 63 in 2023 (see Figure 3).

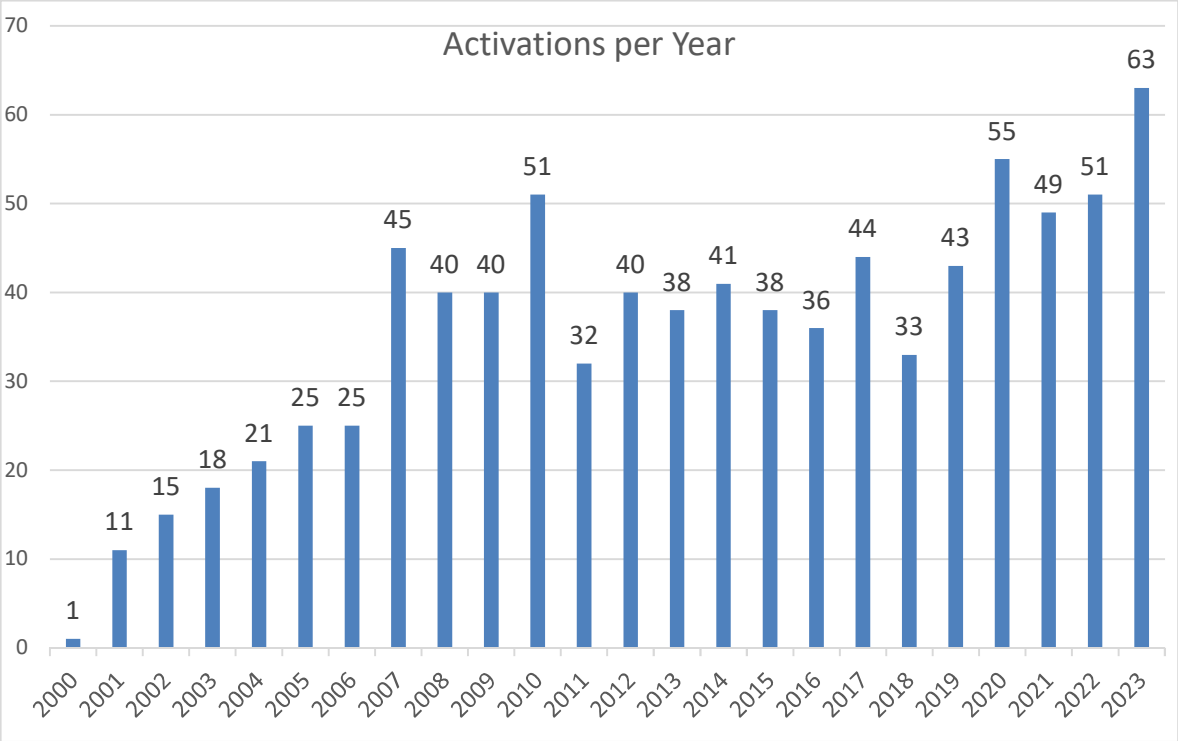


Figure 3. Number of Charter activations per year since 2000

This year, the Charter was triggered three times for man-made disasters:

- An oil spill in The Philippines, an explosion in Guinea, and a missing Chinese vessel in the Ross Sea.

By the end of 2023, the Charter had been triggered for 856 disasters in 139 countries since 2000. In 2023, 6 activations occurred in countries which had never had an activation before. Below are graphs showing the amount of times individual countries have activated the Charter (Figure 4, Figure 5 and Figure 6).

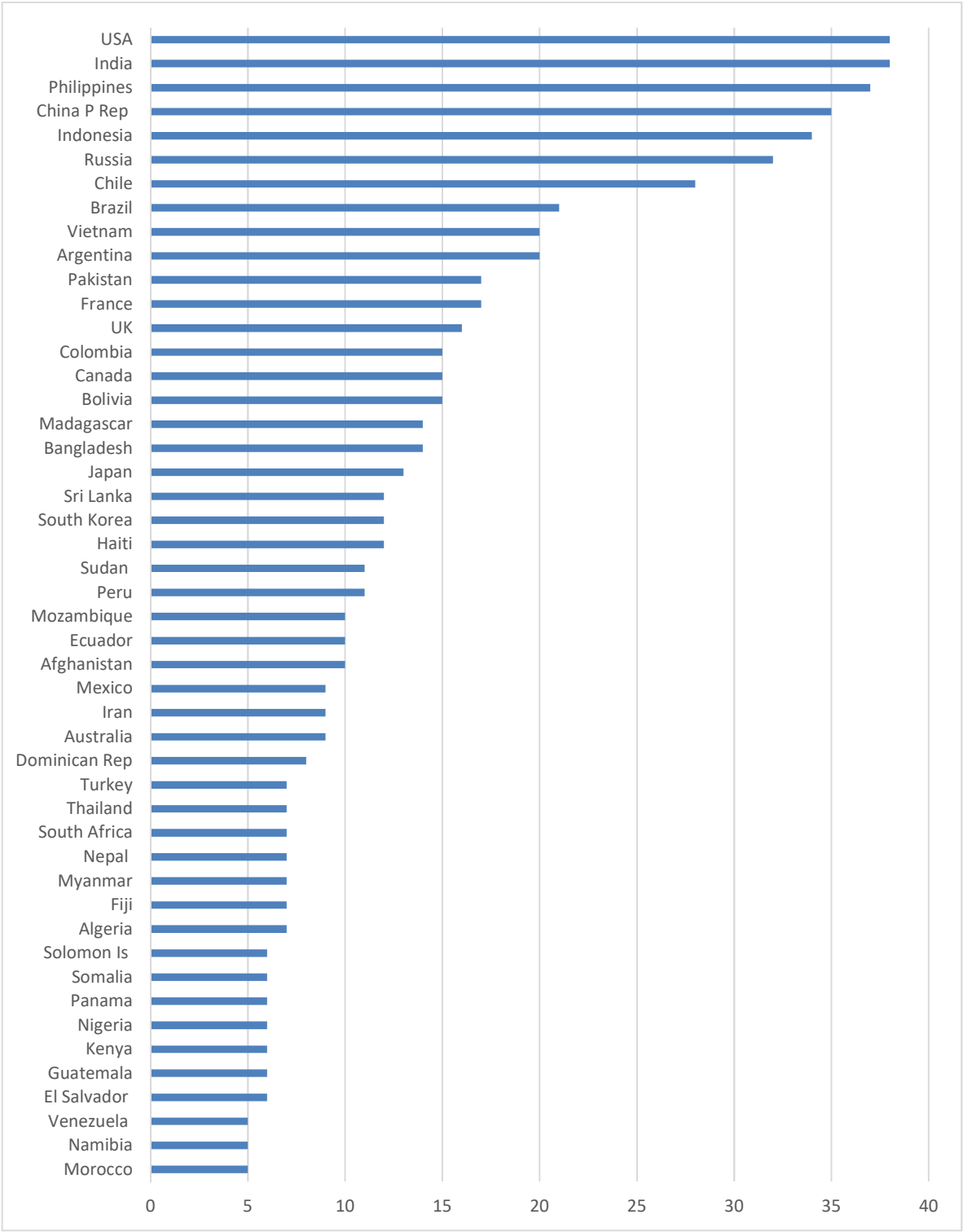


Figure 4. 2000-2021 breakdown of Charter activations by beneficiary country (countries with 5 or more disasters covered by the Charter)

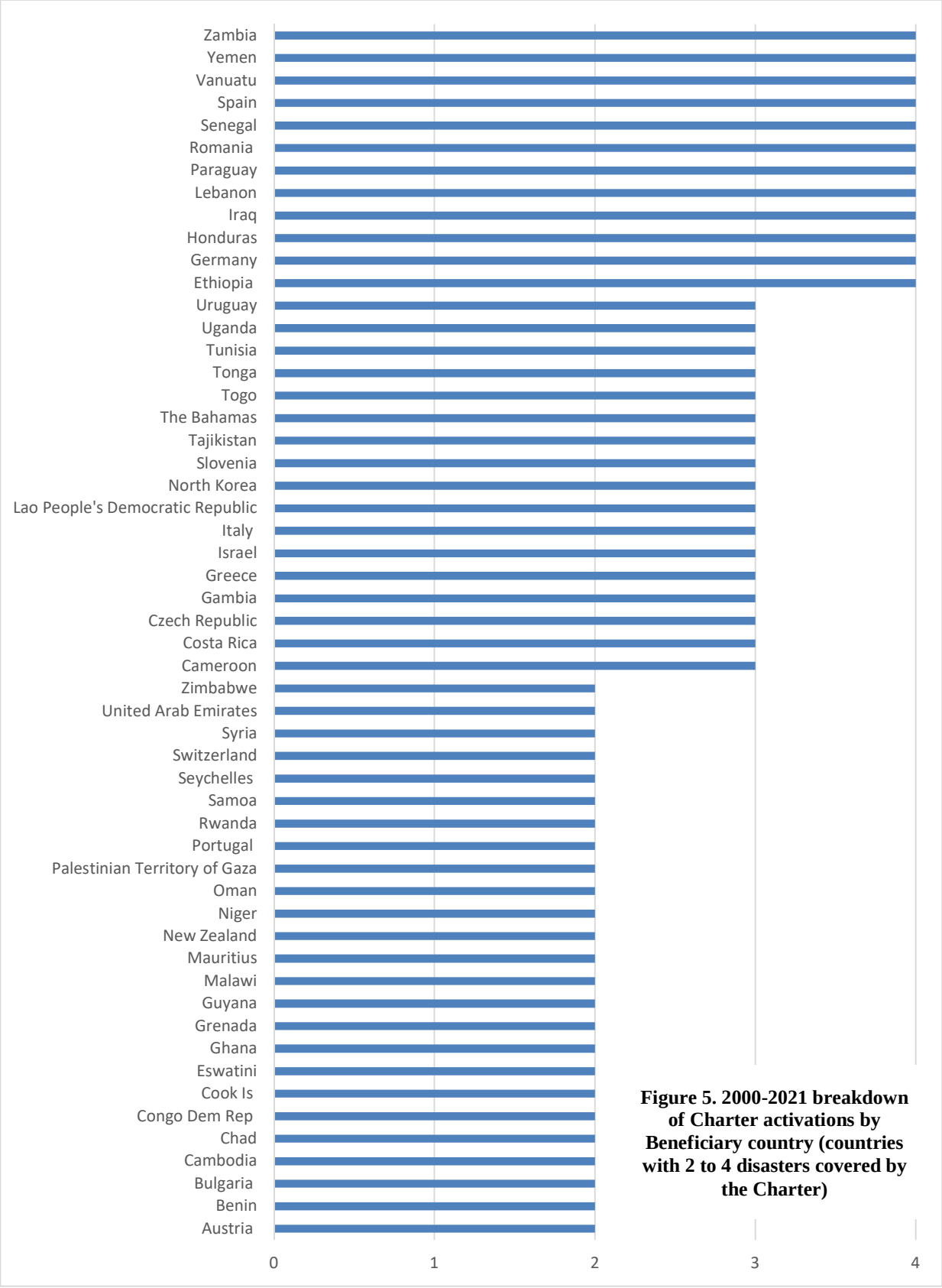


Figure 5. 2000-2021 breakdown of Charter activations by Beneficiary country (countries with 2 to 4 disasters covered by the Charter)

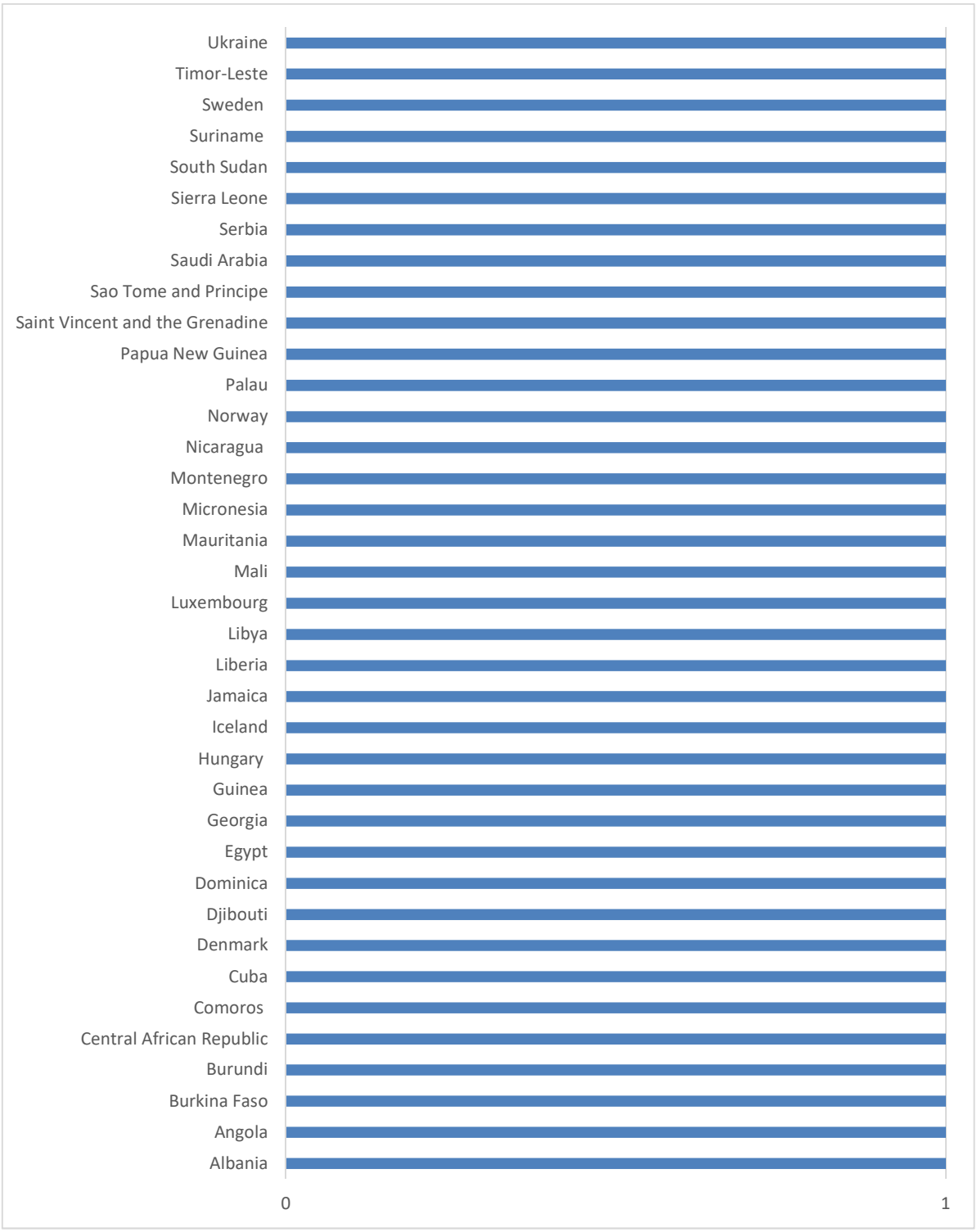


Figure 6. 2000-2021 breakdown of Charter activations by Beneficiary country (countries with one disaster covered by the Charter)

Since 2000, 139 countries and territories worldwide have benefited from the International Disasters Charter. 48 countries have had five or more activations, 54 countries have had between 2-4 activations, and 37 countries have had one activation.

The USA, India, Indonesia, Russia, Chile, the Philippines, Brazil, Vietnam, and Argentina are countries often affected by hazards for which the Charter has been activated frequently (≥20 times) to cover major disasters occurring over the past 23 years.

All the activations in 2023 are listed below in Table 2. The Call-ID is the unique number assigned by the Charter’s COS-2 software to any User Request Form (URF) received. The number of the activation (‘Activation ID’) differs from the Call-ID, as some Calls are not processed (rejection mechanism) and others are merged.

In total, 68 requests were received in 2023. In one case, two calls were merged into one activation, as this request had been made for the same disaster event:

- Call 940 was received as an escalation from Sentinel Asia for an anticipated tropical cyclone. Call 942 was received upon landfall of the storm, thus the calls were merged.

In four other cases, calls were either withdrawn or rejected:

- Call 943 for the missing Chinese fishing vessel was withdrawn as it was submitted originally with the wrong UTC time.
- Call 947 was requested for a non-natural flash flood caused by a dam break in the Russian Federation. It was decided that this activation falls outside the Charter scope.
- Call 953 for a windstorm in the Gambia was withdrawn after the AU informed the ES that the situation was no longer posing a disaster threat.
- Call 964 for earthquakes in Morocco was withdrawn as it was a duplication of call 965.

Table 2. List of 2023 Activations

Act. No	Type of disaster	Country	Charter Activation Date
794	Landslide	Colombia	2023-01-16
795	Storm and Flood	Madagascar	2023-01-24
796	Flood	Zambia	2023-01-30
797	Earthquakes	Türkiye	2023-02-06
798	Earthquakes	Syria	2023-02-06
799	Wildfire	Chile	2023-02-10
800	Flood	Eswatini	2023-02-11
801	Flood	Mozambique	2023-02-16
802	Earthquake	Philippines	2023-02-17
803	Flood and landslide	Brazil	2023-02-20
804	Storm and Flood	Madagascar	2023-02-21

Act. No	Type of disaster	Country	Charter Activation Date
805	Storm and Flood	Mozambique	2023-02-24
806	Storm and Flood	Solomon Islands	2023-02-27
807	Oil Spill	Philippines	2023-03-02
808	Storm	Vanuatu	2023-03-03
809	Landslide	Indonesia	2023-03-07
812	Storm and Flood	Madagascar	2023-03-10
810	Storm, Flood, and Landslide	Ecuador	2023-03-11
811	Storm, Flood, and Landslide	Peru	2023-03-13
813	Flood	Somalia / Ethiopia	2023-03-27
814	Flood	South Africa	2023-03-27
815	Flood	Brazil	2023-03-28
816	Flood	Rwanda	2023-05-04
817	Flood	DRC	2023-05-08
818	Storm	Myanmar	2023-05-11
819	Storm	Bangladesh	2023-05-11
820	Other (missing vessel)	China P Rep	2023-05-17
821	Flood	Somalia	2023-05-24
822	Flood	Ecuador	2023-06-05
823	Storm	India	2023-06-13
824	Flood	Ethiopia	2023-06-20
826	Flood	Chile	2023-06-28
827	Flood	India	2023-07-13
828	Flood	South Korea	2023-07-16
829	Landslide	South Korea	2023-07-20
830	Landslide	Colombia	2023-07-21
831	Wildfire	Algeria	2023-07-24
832	Wildfire	Tunisia	2023-07-24
825	Storm	China P Rep	2023-07-31
833	Landslide	Georgia	2023-08-04
834	Storm	South Korea	2023-08-08
835	Storm	Russia	2023-08-14

Act. No	Type of disaster	Country	Charter Activation Date
836	Landslide	Vietnam	2023-08-16
837	Storm and Flood	Brazil	2023-09-06
838	Earthquake	Morocco	2023-09-09
839	Flood	Libya	2023-09-12
840	Flood	South Africa	2023-09-27
841	Flood	United Kingdom	2023-10-06
842	Flood	India	2023-10-07
843	Earthquake	Afghanistan	2023-10-08
844	Flood	Ghana	2023-10-14
845	Storm	Vanuatu	2023-10-23
846	Storm	Solomon Islands	2023-10-23
847	Storm	Mexico	2023-10-25
848	Earthquake	Nepal	2023-11-04
849	Flood	Somalia	2023-11-10
850	Earthquake	Philippines	2023-11-18
851	Flood	Brazil	2023-11-18
852	Storm	Haiti	2023-11-19
853	Volcano	Indonesia	2023-12-05
854	Explosive event	Guinea	2023-12-18
855	Earthquake	China P Rep	2023-12-19
856	Storm and hurricane	Eswatini	2023-12-27

3.1.1 Monthly activations

During 2023, the monthly average of activations was 5.16, nearly a full activation higher than the average for 2022 (4.25) and significantly higher than the average since 2007 (3.65 activations per month for the period 2007-2022).

Figure 7 shows the monthly distribution of activations throughout 2023. The number of activations is distributed throughout the year in a less uniform way than in previous years. Despite 2023 having the most activations of any previous year, the number of activations during January, April, August, and September were all less than the average since 2007. No activations occurred in April and the highest number was in February. No quarter of the year corresponds to a significant amount of the total number of activations; however, it should be mentioned that February and March accounted for 30% of the year’s activations. It is very rare in the Charter’s history that more than 5 activations occur in either February or March, both of which situations occurred in 2023.

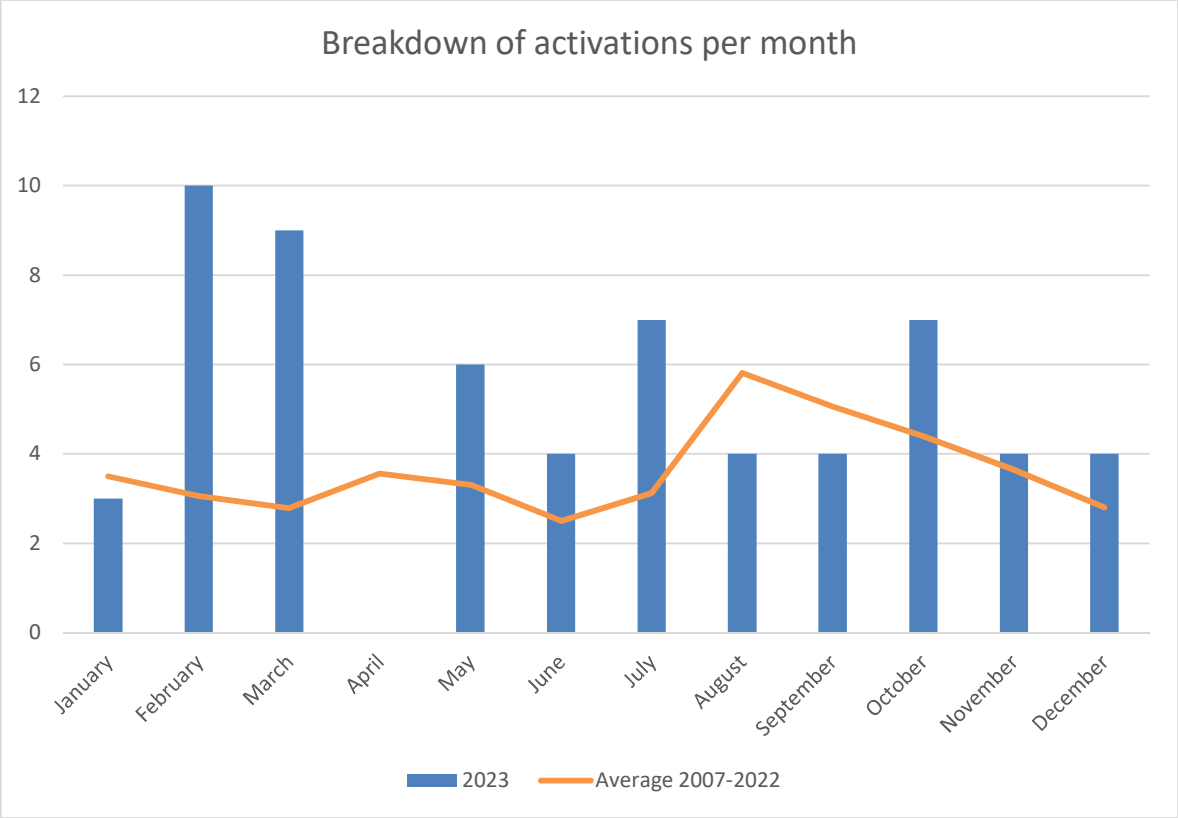


Figure 7. Distribution of the Charter activations by month in 2023 and the monthly average number of activations for 2007-2022

Peaks in activations at the end of summer (northern hemisphere) have occurred regularly since 2007 (Figure 7), however in 2023 this was not as pronounced. There were more activations than average in October, however less than average in both August and September. Natural disasters occurring during this period of the year are mainly attributed to meteorological events such as intense rains; ensuing floods; tropical storms; in Asia (5), Africa (2), and Latin America and the Caribbean (2). The spike in activations in February and March of 2023 were mainly due to non-seasonal events occurring in succession coincidentally, such as earthquakes and oil spills. Additionally, there was cyclone Freddy in the Indian Ocean in February 2023 which accounted for three separate activations.

This figure also shows the overall trend through the years, with the monthly average number of activations for the period 2007-2022. The trendline clearly shows the peak of activations at the end of summer (August and September). The 2023 diagram shows almost no agreements with the average during most months, as there were no activations in April (a typically active month) and fewer than expected in August and September.

3.1.2 Geographical distribution

In 2023, the activation breakdown per region was as follows: 22 activations in Asia (i.e., 35% of 2023 activations); 21 (33%) activations in Africa; 13 (22%) activations in Latin America and the Caribbean; 2 (3%) activations in Europe, 4 (6.5%) in Oceania, and none in North America (Figure 8 and Figure 9).

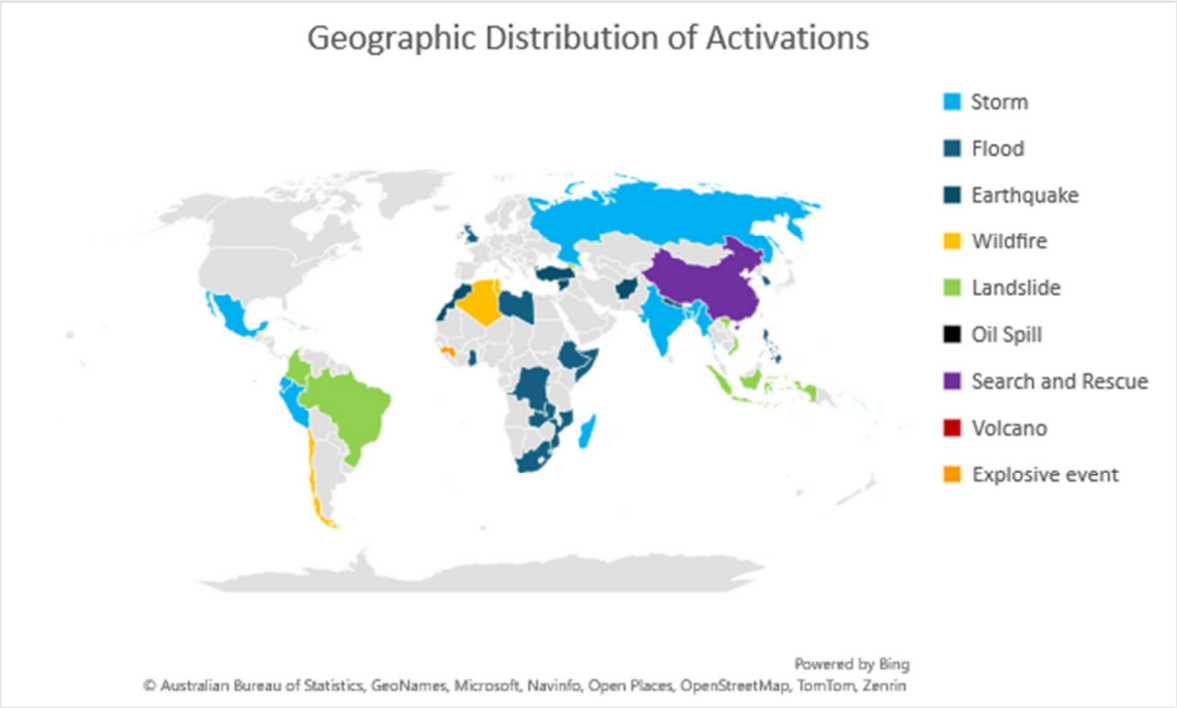


Figure 8. Location of the 2023 activations (by hazard type)

Note: Several different types of activations occurred in China, South Korea, and Brazil. See Table 2 above for the full list of activations.

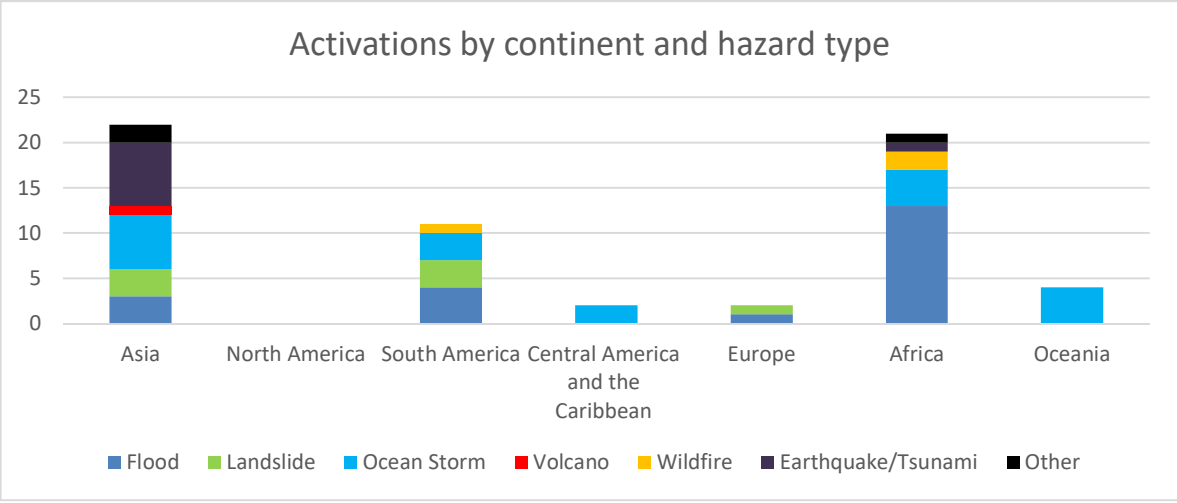


Figure 9. 2023 - Number of activations by continent/subcontinent and hazard type

The most frequent hazard types are floods (33%), and ocean storms (31%) with earthquakes (13%) and landslides (12%) being the 3rd and 4th most common hazards. Lastly wildfires and miscellaneous events (oil spills, explosions, search and rescue) represented 5% each, and volcanoes represented just 1.5% (Figure 10).

However, it should be noted that it is not always a straightforward process to classify Charter activations by disaster type. Activations are often multi-hazard events, such as floods or earthquakes causing landslides, or ocean storms potentially resulting in direct damages as wells as floods and landslides, etc. To simplify this classification, any activation made for a storm of any kind (cyclone, typhoon, tropical/extratropical storm, or windstorm) will be considered a storm. Any earthquake will be considered an earthquake even if landslides occur, and a flood which causes a landslide will be considered a landslide activation. This is done to ensure accurate representation of hazards in the statistics.

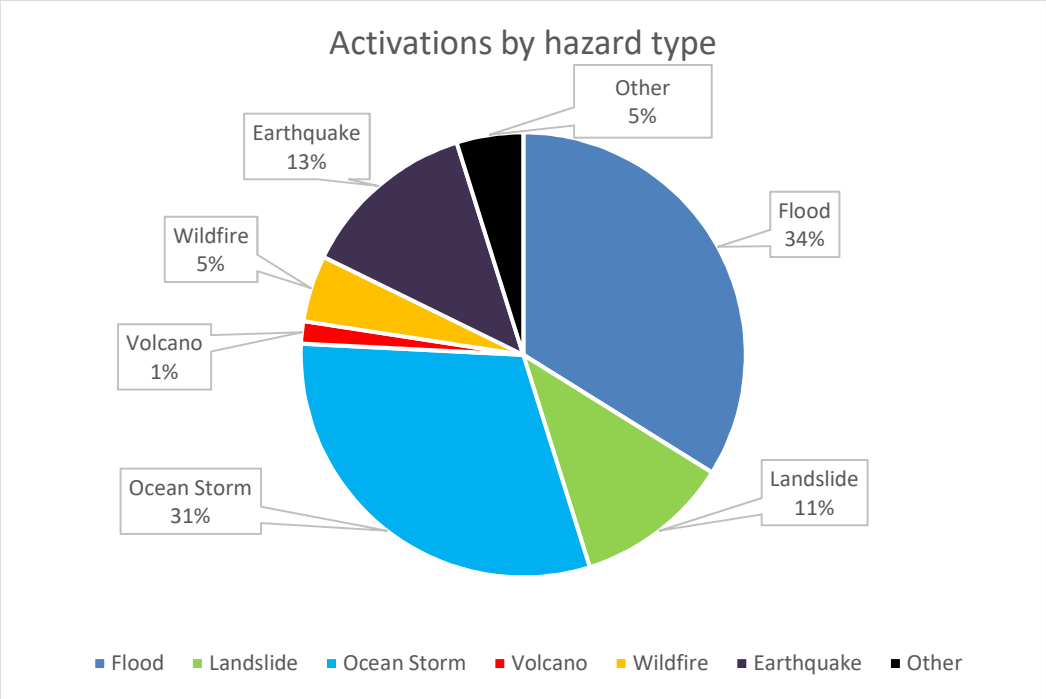


Figure 10. 2023 Number of activations by hazard type

As shown below (Figure 11), since 2000 the Charter has been frequently activated for weather-related disasters such as floods, ocean and wind storms, landslides triggered by heavy rainfall or floods, wildfires, ice/snow hazards – representing 79% of all Charter activations - while solid earth-related hazards (e.g. earthquakes, volcanic eruptions) represent 16% of all Charter activations.

Activations for oil spills, search and rescue of aircrafts and industrial accidents are marginal. See also the Figure 12 and Figure 13 showing the geographical distribution of Charter activations by weather-related hazards and solid earth-related hazards for the 2000-2023 period.

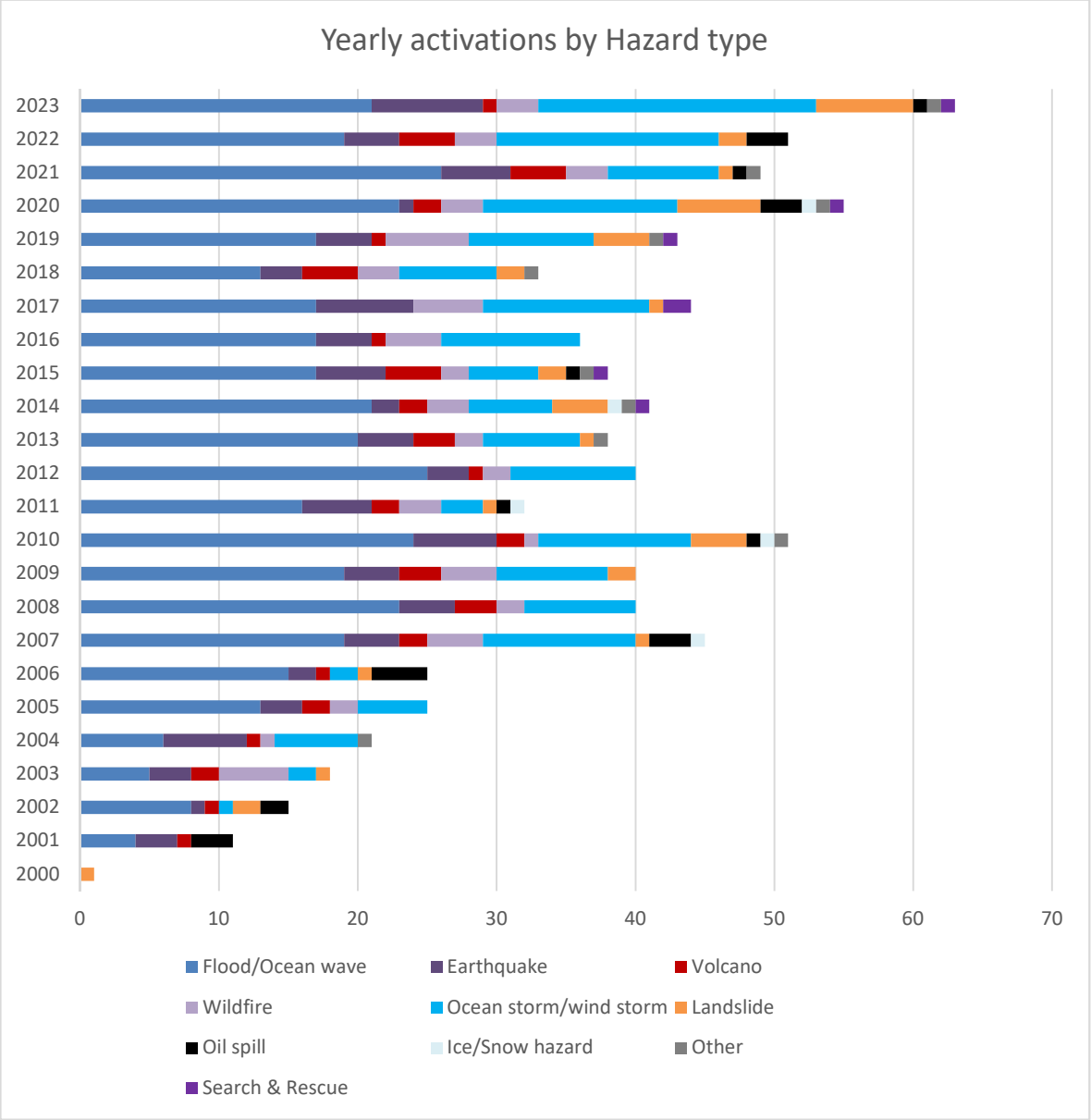


Figure 11. 2000-2023 Distribution of activations by hazard type

The following map (Figure 12) shows by country the number of Charter activations caused by hydro-meteorological related events (floods, ocean storms, windstorms, landslides caused by heavy rains, wildfires, snowfalls, and ice jams) for the period 2000-2023 (682 activations out of 857 activations in total = 79.5%).

In total, 126 countries have benefited from the Charter service for hydrometeorological disasters since 2000. USA, India, Argentina, China, Russia, France, Philippines, Bolivia, and Vietnam have used the service the most frequently.

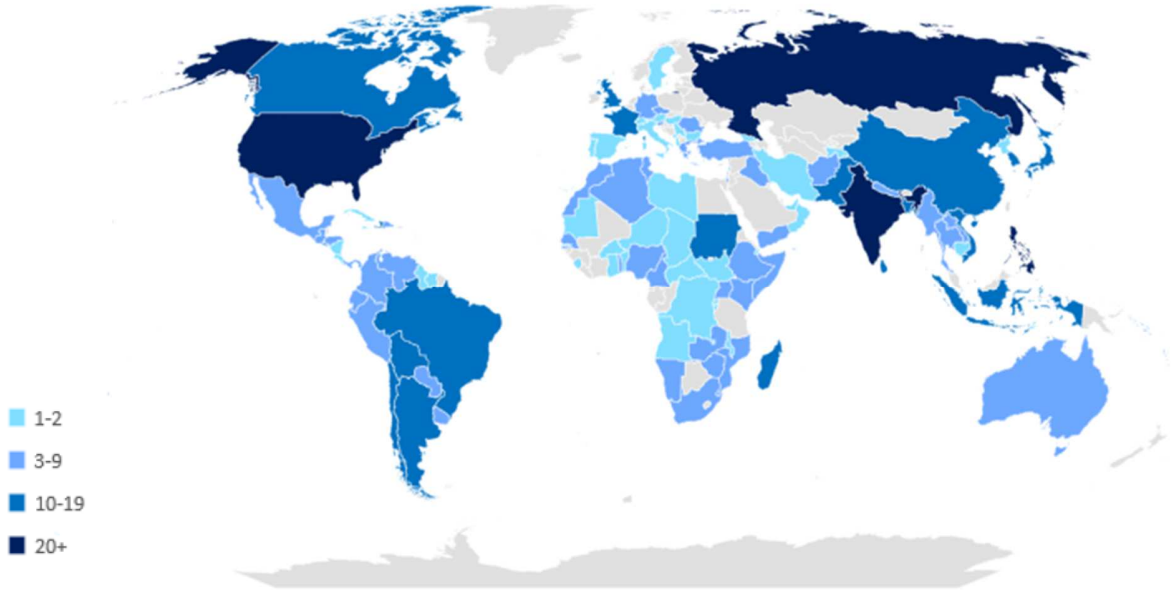


Figure 12. 2000-2023 Number and geographical distribution of Charter activations due to hydrometeorological events (floods, ocean storms, windstorms, landslides caused by heavy rains, wildfires, snowfall, and ice jam)

The following map (Figure 13) shows the number of Charter activations by country (128 activations out of 794 activations in total = 16.1%) caused by solid earth-related events for the period 2000-2023.

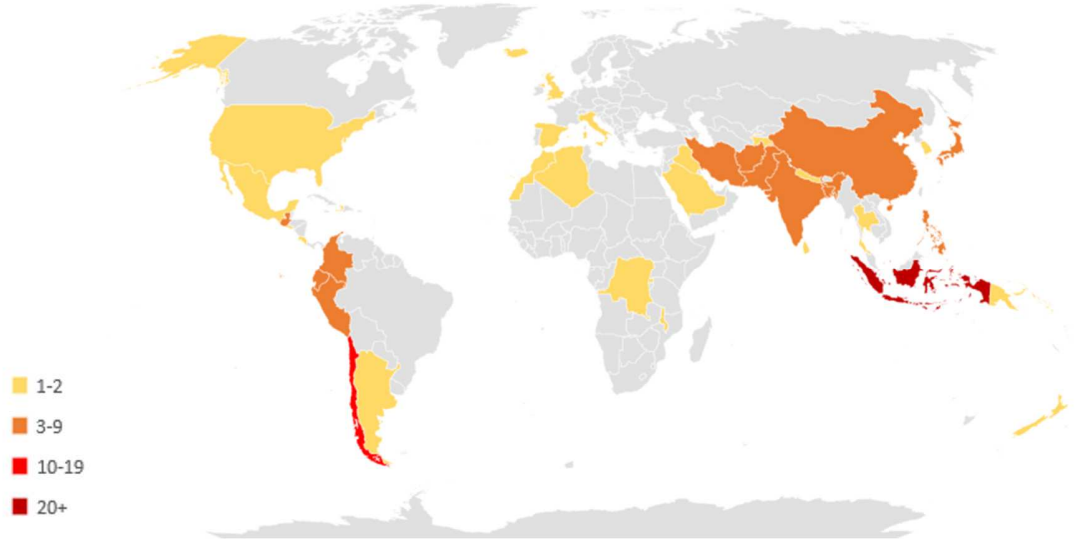


Figure 13. 2000-2023 Number and geographical distribution of Charter activations due to solid earth-related events (earthquakes, tsunamis, volcanic eruptions, landslides caused by earthquake)

In total, 41 countries have benefited from the Charter service for solid-earth events since 2000. Indonesia, Chile and China are countries for which the Charter was activated the most frequently (13-20 activations) and they are located along important active seismic faults.

AU UN Sentinel Asia

Figure 14 shows the geographic distribution of activations by access mode. Since 2010, there are 4 access modes that have been used :

- Mode 1: direct activation by an Authorized User (AU) for a disaster occurring in their country.
- Mode 2: activation by an Authorized User on behalf of a user from another country.
- Mode 3: activation by UNOOSA or UNITAR/UNOSAT for UN users.
- Mode 4: activation for national users from the Asia-Pacific region via Sentinel Asia's partner, the Asian Disaster Reduction Centre.

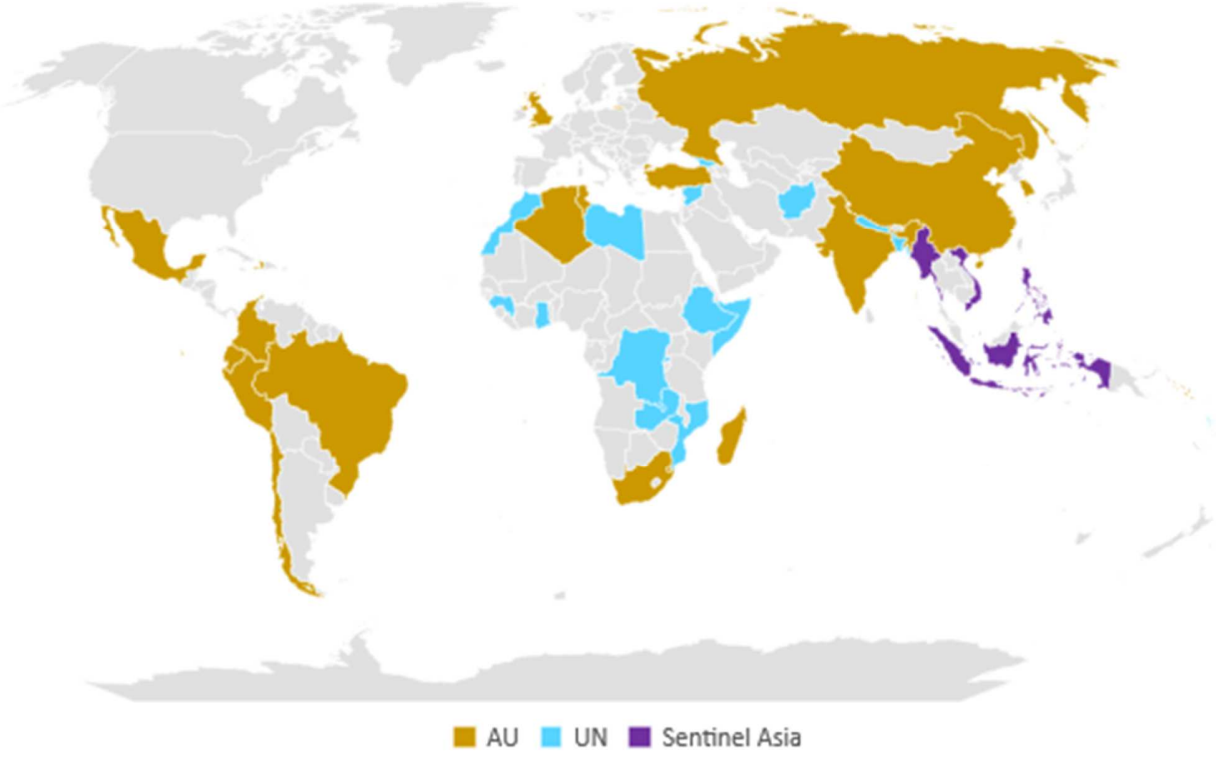


Figure 14. Location of the 2023 activations (by mode)

In 2023, Mode 1 was mainly used for disasters in “Continental” Asia, Europe, South America, and partially in Africa; Mode 2 was not used over the course of 2023, marking the first year in the Charter’s history where Mode 2 was not used; Mode 3 was used for disasters in Africa, the Middle East, and Asia. By definition, Mode 4 was used for disasters occurring in Southeast Asia, resulting in an escalation from Sentinel Asia (Figure 14). Solomon Islands, Eswatini, and Algeria activated the Charter independently in 2023 for the first time, thanks to their AU status achieved through the Charter’s Universal Access initiative.

In 2023, direct activation by an AU (Mode 1) was the main access mode (55% in total). Over the past three years, there have only been three activations using Mode 2.

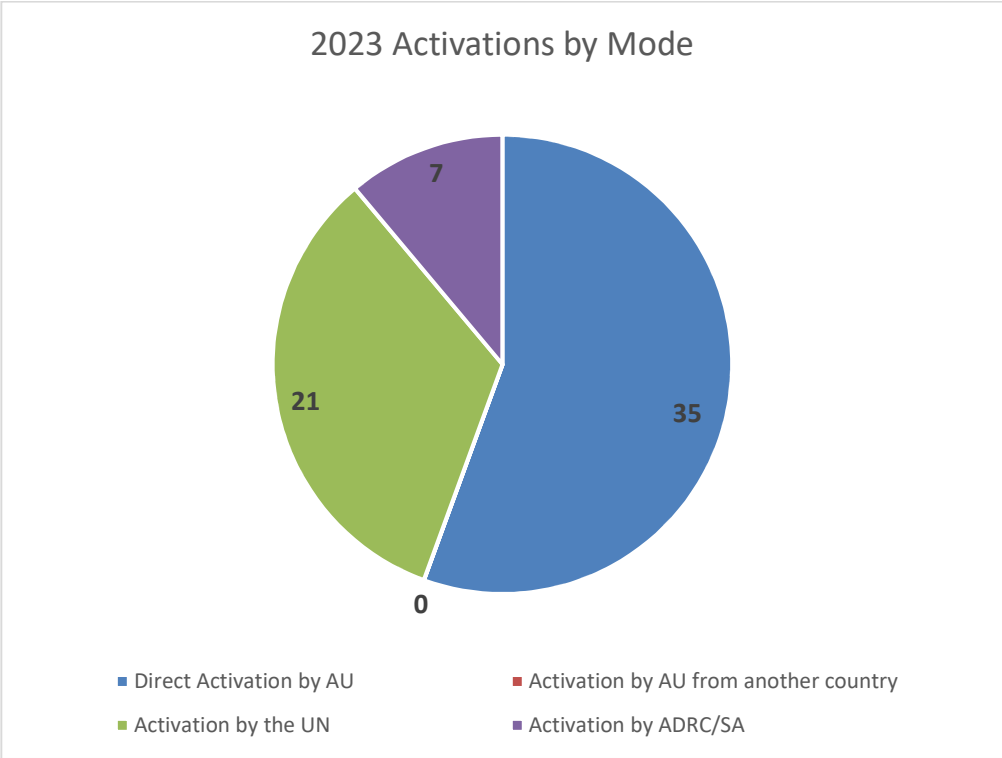
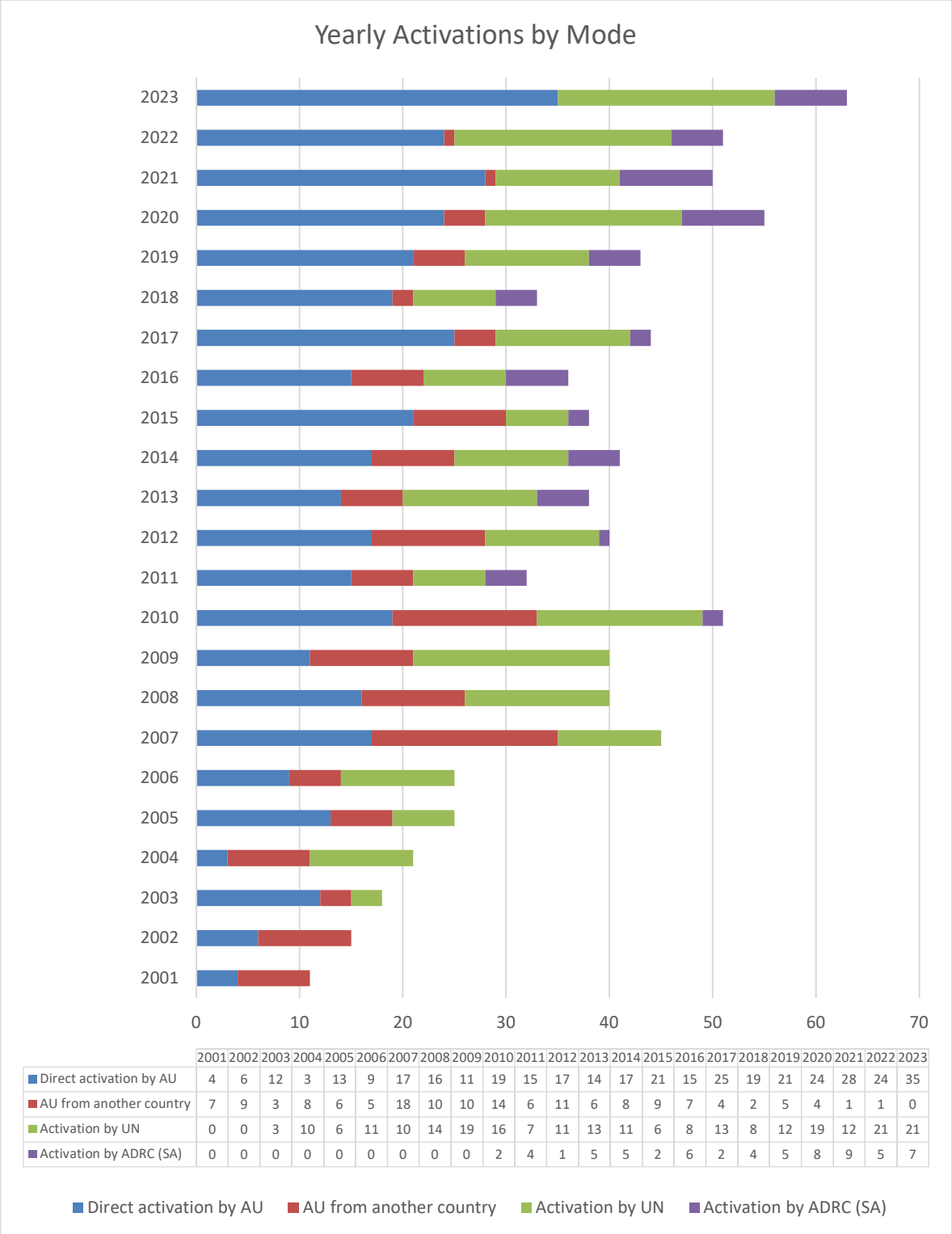


Figure 15. 2023 breakdown of Charter activations by mode

The diagram in Figure 16 compares the relative weight of the different access mechanisms adopted from 2001 to 2023, to request the Charter service. Since its inception, 45% of Charter activations have come from the direct activation by the AU of the country where the disaster has occurred. Countries without AUs have benefited from 55% of Charter activations (AUs from another country, UN, or Sentinel Asia).

The Charter continues to support users worldwide, including countries without direct access. At the same time, the number of AUs is increasing thanks to the Universal Access initiative, which changed the relative weight between the activation modes. By the end of 2023, mandated organisations of 43 countries prone to natural disasters have become AUs after a registration and training process under the Charter’s Universal Access initiative (see chapter 5.2).



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Direct activation by AU	4	6	12	3	13	9	17	16	11	19	15	17	14	17	21	15	25	19	21	24	28	24	35
AU from another country	7	9	3	8	6	5	18	10	10	14	6	11	6	8	9	7	4	2	5	4	1	1	0
Activation by UN	0	0	3	10	6	11	10	14	19	16	7	11	13	11	6	8	13	8	12	19	12	21	21
Activation by ADRC (SA)	0	0	0	0	0	0	0	0	0	2	4	1	5	5	2	6	2	4	5	8	9	5	7

Figure 16. 2001-2023 number of Charter activations per mode

3.2 Resource report

3.2.1 EO data delivered in 2023

- General information

In 2023, **a total of 26,764 images** were provided as shown in Table 3.

In 2023, a total of **16,883 optical and radar post-crisis** images for 63 activations (2022: 7,790 for 51 activations; 2021: 10,993 for 50 activations; 2020: 5,877 for 55 activations; 2019: 3,969 for 43 activations) were provided by the Charter members (Table 3, Figure 17 and Figure 18).

Regarding EO sensors (without U.S. commercial figures), a total of 7,998 optical images and 2,966 SAR programmed images were provided. Regarding **archive images (pre-event),** 2,598 optical images and 612 SAR images were also provided **(a total of 3,210).** Regarding **programmed images (post-event),** 5,400 optical images and 2,354 SAR images were also provided **(a total of 7,754).**

Note: ISRO satellites (Cartosat and Resourcesat) contribute to Sentinel-Asia and to the Charter activations but they do not pass by COS-2. As a consequence, they are not countered in the statistics.

Table 3. 2023 Statistics for Charter EO sensors (U.S. comm. sats. separate)

	Optical data	Radar data	U.S. data	Total
Archive (pre-event)	2598	612	6671	**9881**
Programmed (post-event)	5129	2354	9400	**16883**
Total	7998	2966	15800	**26764**

This is complemented **by 15,800 images (9,400 post-crisis and 6,671 pre-crisis images) of U.S. VHR** (GeoEye and WorldView1/2/3) **and HR** (Planet and Global) optical satellite images that were supplied (Table 4, Figure 17 and Figure 18) (2022: 5,412; 2021: 4,558; 2020: 2,980; 2019: 15,031; 2018: 18,293; 2017: 13,920). These figures were processed out of the general statistics table as the huge difference between the number of products provided prevented from accessing details. More details about U.S. statistics are provided below in the paragraph "U.S. VHR and HR data delivered".

Table 4. 2023 Statistics for U.S. Commercial satellites

	WorldView 1/2/3	Planet	Global	GeoEye	Total
Archive (pre-event)	4536	685	8	1442	**6671**
Programmed (post-event)	4204	4694	18	484	**9400**
Total	**8740**	**5379**	**26**	**1926**	**16071**

Figure 17 and Figure 18 show the total number of EO data from the Charter Earth Observation (EO) constellation and the U.S. optical data provided in 2023 by disaster type.

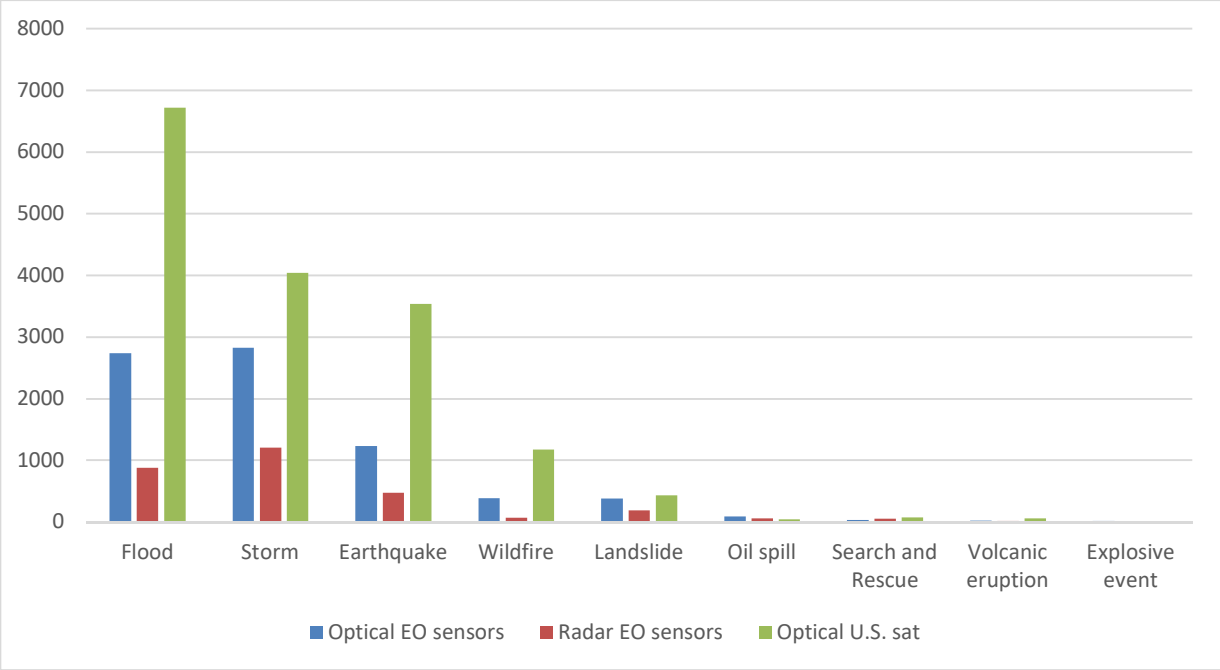


Figure 17. 2023 EO data of the Charter EO constellation (optical and radar) and U.S. optical data grouped by disaster type

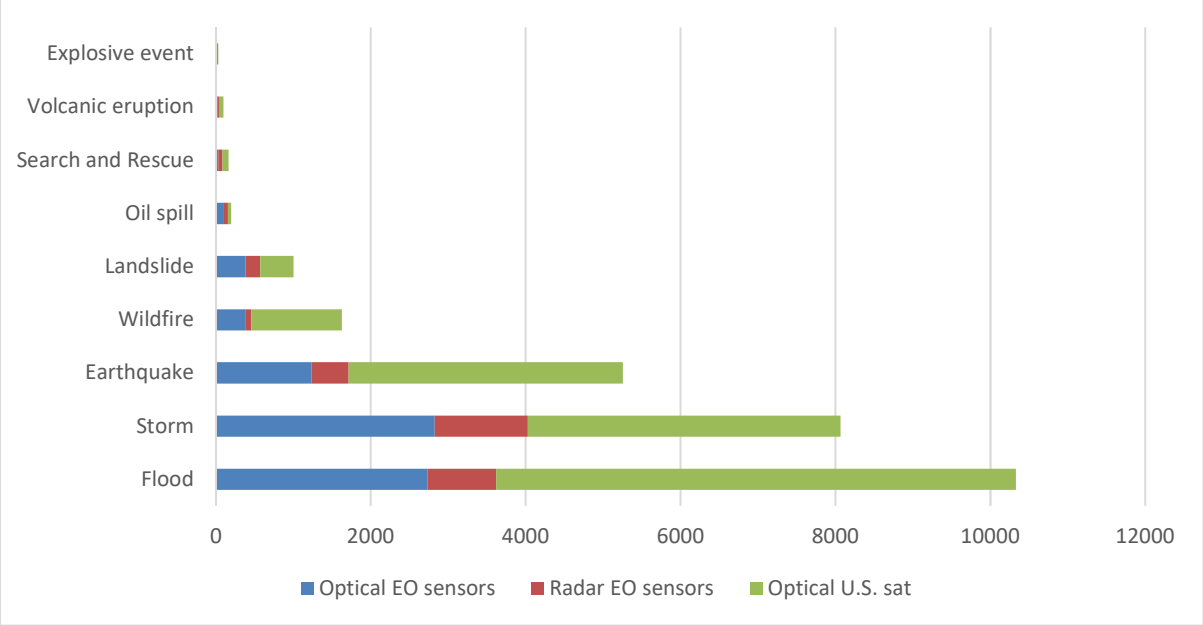


Figure 18. Another representation of 2023 EO data of the Charter EO constellation (optical and radar) and U.S. optical data grouped by disaster type

The amount of EO data delivered by the agencies each year is linked to the annual number of activations, the type of disasters, the sizes of the AOIs (Areas of Interest), the size of the image tiles, the duration and severity of certain disasters, and the change in the Charter constellation (decommissioning of satellites and new satellites entering the constellation). It should be noted that due to different characteristics of EO systems - such as spatial and temporal resolution, cloud screening procedures, etc. – the total number of images of the different satellites alone does not adequately express the relative importance and contribution of a system to the overall capacity provided by the Charter.

Table 5. Number total of images in 2023 (Optical EO sensors, radar EO sensors and U.S. optical sensors) provided per disaster type

	Optical EO sensors	Radar EO sensors	Optical U.S. sat	Total
Flood	2733	883	6714	**10330**
Storm	2825	1203	4037	**8065**
Earthquake	1235	479	3540	**5254**
Wildfire	385	69	1172	**1626**
Landslide	382	191	430	**1003**
Oil spill	93	60	43	**196**
Search and Rescue	33	53	74	**160**
Volcanic eruption	23	17	57	**97**
Explosive event	18	11	4	**33**

Table 6 aims to show if the distribution of Charter activations and the provision of Charter data are consistent per disaster type. In the end, it is highly dependent on the sensors. Floods are the major disasters covered by all sensors, followed by storms and earthquakes. This is in line with activations repartition but in different proportions.

Table 6. Percentage of 2023 Charter activations and Charter data (Optical EO sensors, U.S. optical sensors and radar EO sensors) provided per disaster type

	Charter activations	Optical EO sensors	Radar EO sensors	Optical U.S. sat
Flood	**38,6%**	35,4%	29,8%	41,8%
Storm	**30,1%**	36,6%	40,6%	25,1%
Earthquake	**19,6%**	16,0%	16,1%	22,0%
Wildfire	**6,1%**	5,0%	2,3%	7,3%
Landslide	**3,7%**	4,9%	6,4%	2,7%
Oil spill	**0,7%**	1,2%	2,0%	0,3%
Search and Rescue	**0,6%**	0,4%	1,8%	0,5%
Volcanic eruption	**0,4%**	0,3%	0,6%	0,4%
Explosive event	**0,1%**	0,2%	0,4%	0,0%

It is important to remember that all provided images are not systematically used, and therefore the image count is not related to the quantity of images used for generating value-adding products.

- Optical resources consumption (excluding U.S. VHR and HR data)

Table 7 and Figure 19 describe the optical data resources consumption for 2023. A total of 7,998 optical images were provided by the Charter members. Figure 20 shows 2022 optical sensors statistics for comparison.

2,598 archived optical images were provided by the Charter members, which is more than 2022 (2022: 969; 2021: 879; 2020: 1,042; 2019: 882 images).

5,129 programmed optical images were provided by the Charter members, which is stable compared to 2022 (2022: 3,471; 2021: 3,489; 2020: 3,547; 2019: 2,776 images).

Around 42,4% of the total number of optical images (archived and programmed) were provided by 3 satellites: Pleiades (16.7%), Landsat 7/8/9 (15.3%) and Sentinel-2 (10,4%),

Most of programmed optical images are provided by Pleiades (24,4%) and Landsat 7/8/9 (16,5%).

Most of the archive optical images are provided by OVS-2 (25,7%%) and Landsat 7/8/9 (12,8%).

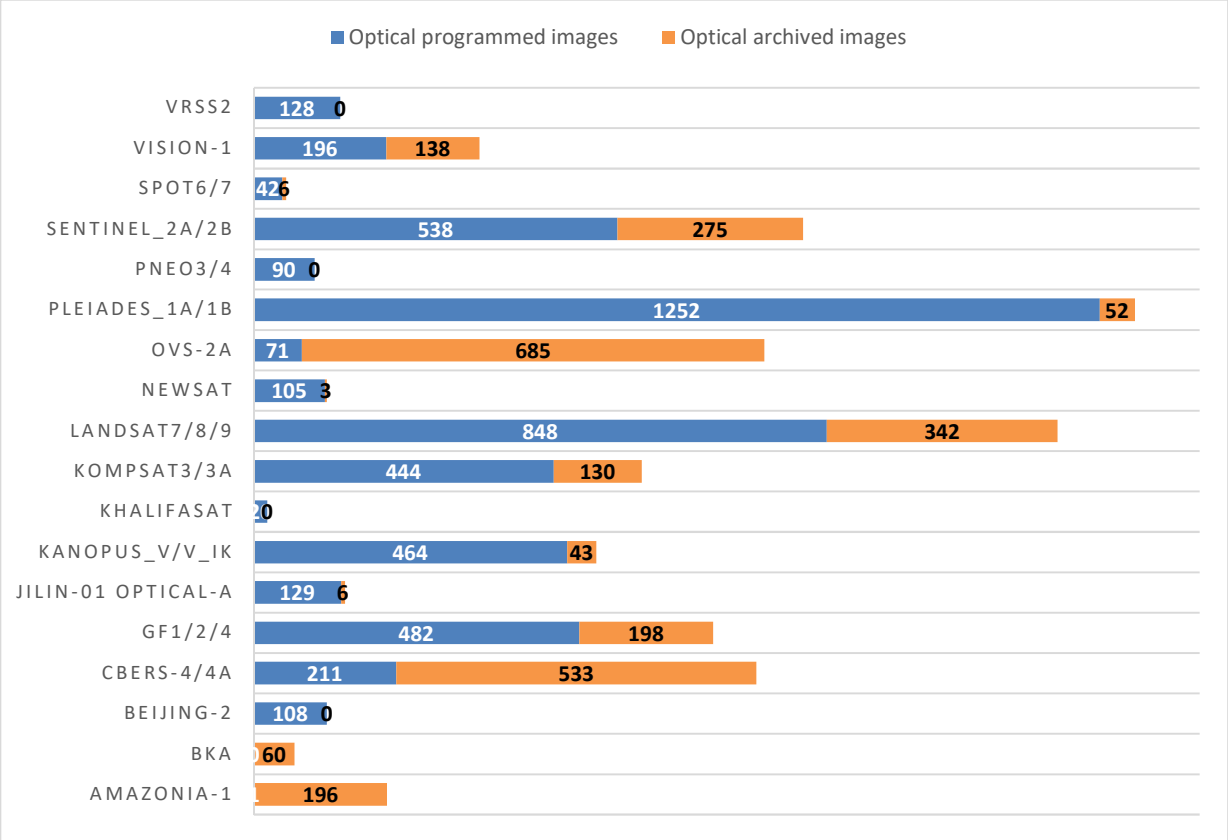


Figure 19. 2023 optical data delivered

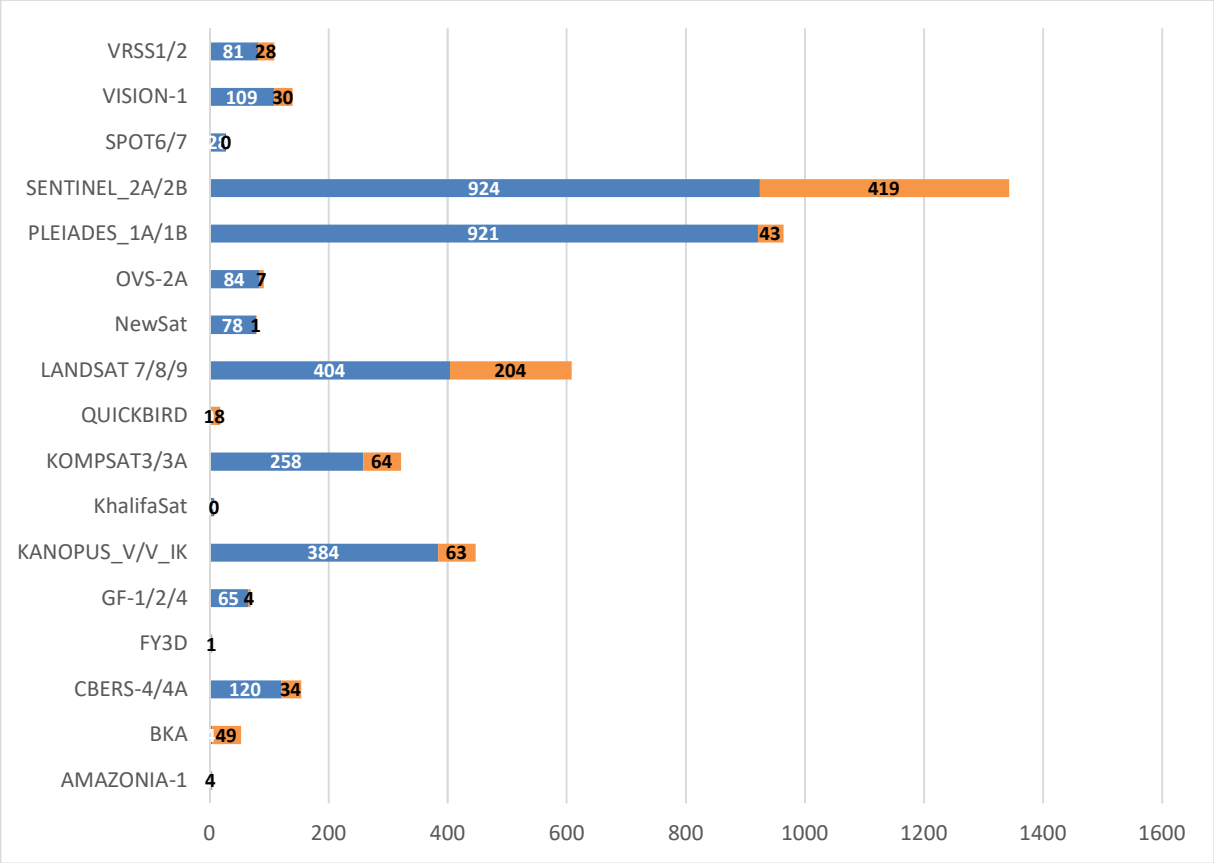


Figure 20. For comparison, 2022 optical data delivered

Table 7. 2023 Statistics for Optical sensors

	AMAZONIA-1	*BKA*	*Beijing-2*	*CBERS-4/4A*	*GF-1/2/4*	*JILIN-01*	*KANOPUS_V/V_I*	*KhalifaSat*	*KOMPSAT3/3A*	*LANDSAT 7/8/9*	*NewSat*	*OVS-2A*	*PLEIADES_1A/1*	*PNEO3/4*	*SENTINEL_2A/2*	*SPOT6/7*	*VISION-1*	*VRSS1/2*
Programmed images provided	1	0	108	211	482	129	464	20	444	848	105	71	1252	90	538	42	196	128
Number of activations with program	0	3	22	3	15	41	8	33	0	42	28	10	41	47	5	21	13	

	AMAZONIA-1	BKA	Beijing-2	CBERS-4/4A	GF-1/2/4	JILIN-01	KANOPUS_V/V_I	KhalifaSat	KOMPSAT3/3A	LANDSAT 7/8/9	NewSat	OVS-2A	PLEIADES_1A/1B	PNEO3/4	SENTINEL_2A/2B	SPOT6/7	VISION-1	VRSS1/2
med images																		
Total number of images provided	**197**	**60**	**108**	**744**	**680**	**135**	**507**	**20**	**574**	**1190**	**108**	**756**	**1304**	**90**	**813**	**48**	**334**	**128**

The provision of meteorological satellites (Metop, Meteosat, METEOR-M, SUOMI-NPP) has not been detailed, but imagery is made available to assist in the assessment of cloud cover and to support events, such as storm activations, which are considered useful for the value-adders.

- Radar data resources consumption

Figure 21 and Table 8 describe the radar data resources consumption for 2023.

The total number of newly acquired images (2,354) provided by the Charter members is a little bit higher compared to 2022 (1,984 in 2022; 2,067 in 2021; 2,330 in 2020). Figure 22 shows radar sensor 2022 statistics for comparison.

A total of 612 archived images were provided by the Charter members, which is more than last year (415 in 2022; 210 in 2021; 646 in 2020).

Around 45,7% of the total number of radar images (archived and programmed) were provided by 2 satellites: Sentinel-1A/1B (25,7%) and Kompsat-5 (20%).

Most of the programmed radar images are provided by Sentinel-1A/1B (22,5%), Kompsat-5 (19,7%) and RCM-1/2/3 (17,3 %). While most of archived radar images are provided by Sentinel-1A/1B (38,1%) and Kompsat-5 (21,1%).

In the case of a flood disasters, radar satellite imagery often brings the most benefit to emergency response, because radar systems are able to monitor the extent of flooded areas independent of weather conditions. Nevertheless, in 2023, only 30,1% of radar data (894 out of 2,966) were used to monitor 21 flood events (37% in 2022).

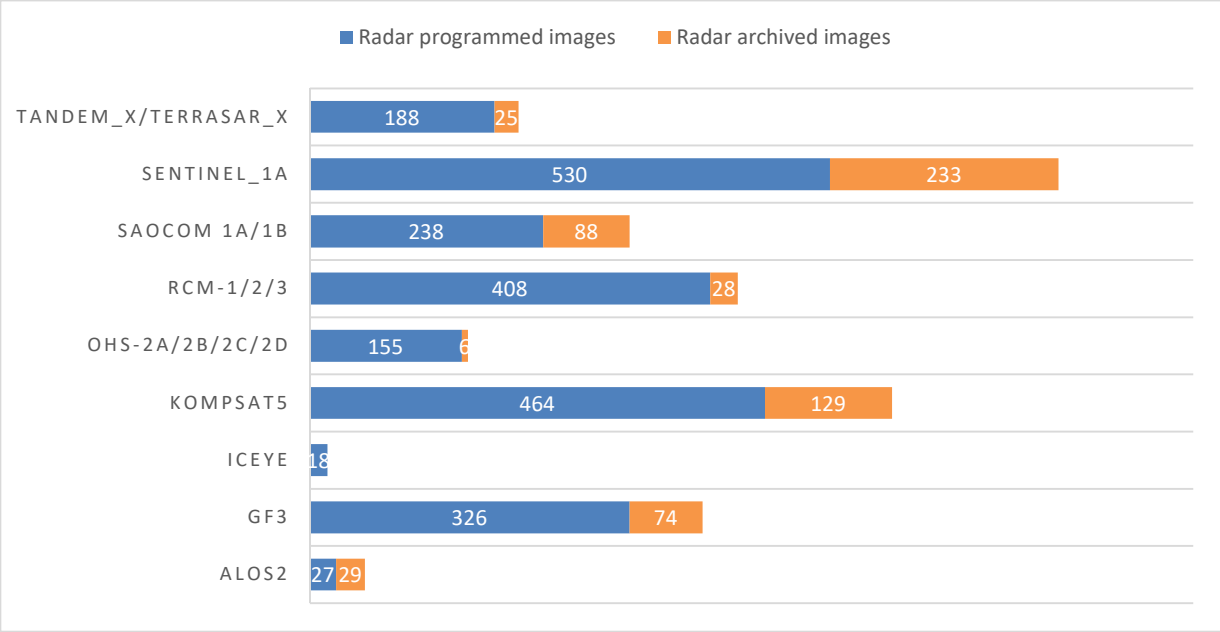


Figure 21. 2023 delivered data (number of archive images (pre-event) is in orange and number of programmed newly acquired images (post-event) is in blue) – Radar EO sensors

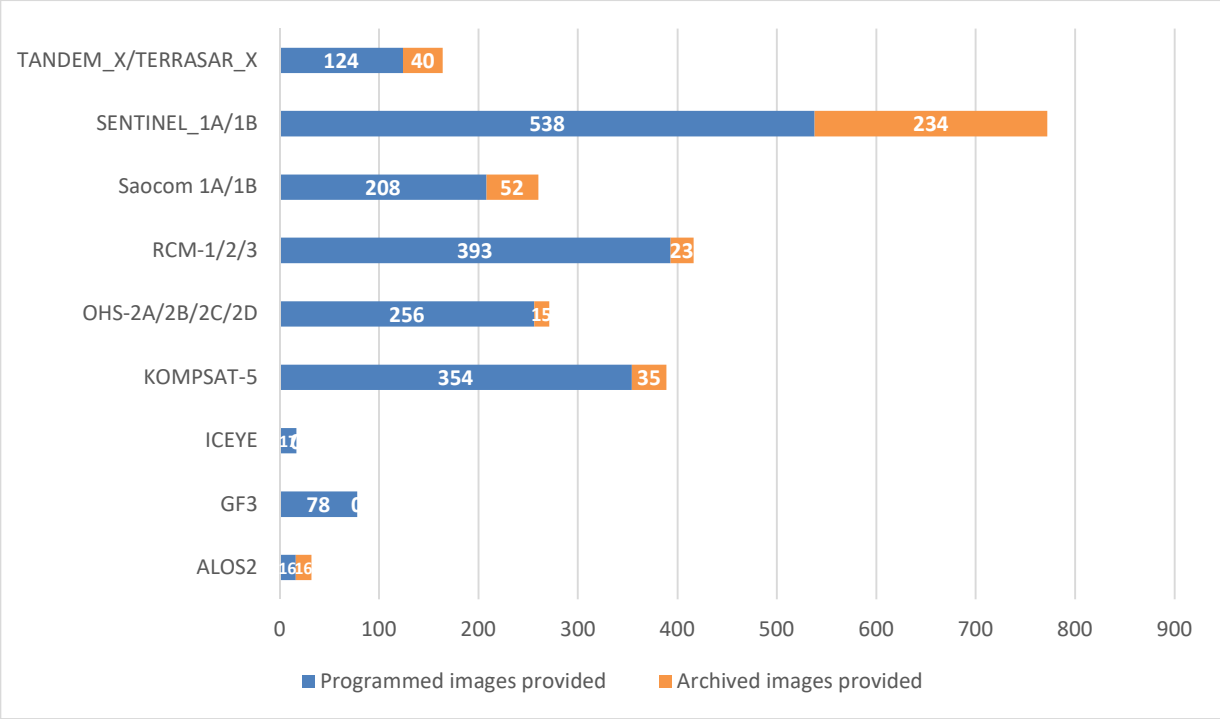


Figure 22. For comparison, 2022 delivered data (number of archive images (pre-event) is in orange and number of programmed newly acquired images (post-event) is in blue) - Radar EO sensors

Table 8. 2023 Statistics for Radar sensors

	ALOS2	GF3	ICEYE	KOMPSAT-5	OHS-2A/2B/2C/2D	RCM-1/2/3	Saocom 1A/1B	SENTINEL_1 A/1B	TANDEM_X/ TERRASAR_X
Programmed images provided	27	326	18	464	155	408	238	530	188
Archived images provided	29	74	0	129	6	28	88	233	25
Total number of images provided	**56**	**400**	**18**	**593**	**161**	**436**	**326**	**763**	**213**

- U.S. VHR and HR data delivered

Table 9. 2023 statistics concerning U.S. commercial optical satellites

	GEO_EYE_1	GLOBAL	PlanetScope	WORLDVIEW_1/2/3	Total
Archive images (pre-event) provided	1442	8	0	4536	5986
Programmed images (post-event) provided	484	18	4694	4204	9400
Total number of images provided	**1926**	**26**	**4694**	**8740**	**15386**

As already presented, U.S. VHR satellites provided 9,400 newly acquired images (GeoEye-1 – 484 images, WorldView-1, 2 and 3 – 4,204 images) and HR (Planet – 4,694 images and Global – 18 images) - optical satellites in 2023.

U.S. VHR provided 5,986 archived images (GeoEye-1 – 1,442 images, WorldView-1, 2 and 3 – 4,536 images) and HR (Global – 8 images) - optical satellites in 2023.

In total, **10,666 images of U.S. VHR optical satellites** (GeoEye-1, WorldView-1, 2 and 3) and **4,720 images** of U.S. HR optical satellites (Planet) were supplied in 2023 (Figure 24). For comparison, in 2022, the figures were: 4,631 images of U.S. VHR optical satellites (GeoEye-1, WorldView-1, 2 and 3) and 781 images of U.S. HR optical satellites (Planet).

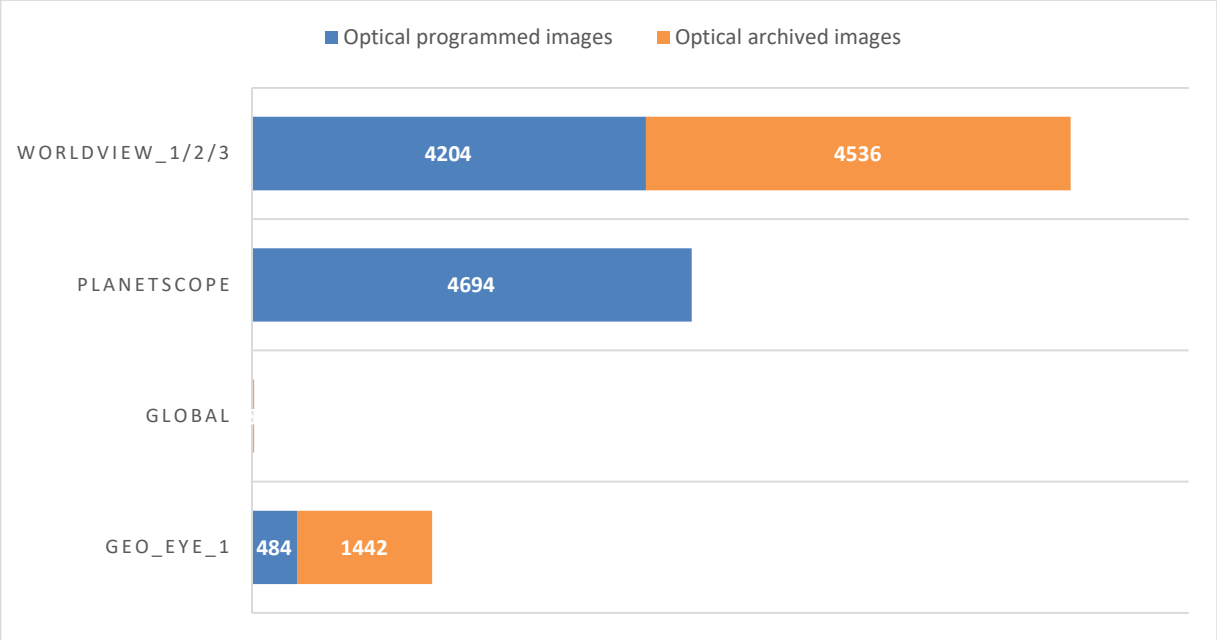


Figure 23. 2023 Data Consumption – U.S. Commercial optical satellites (number of archive images (pre-event) are in orange and the number of programmed images (post-event) is in blue)

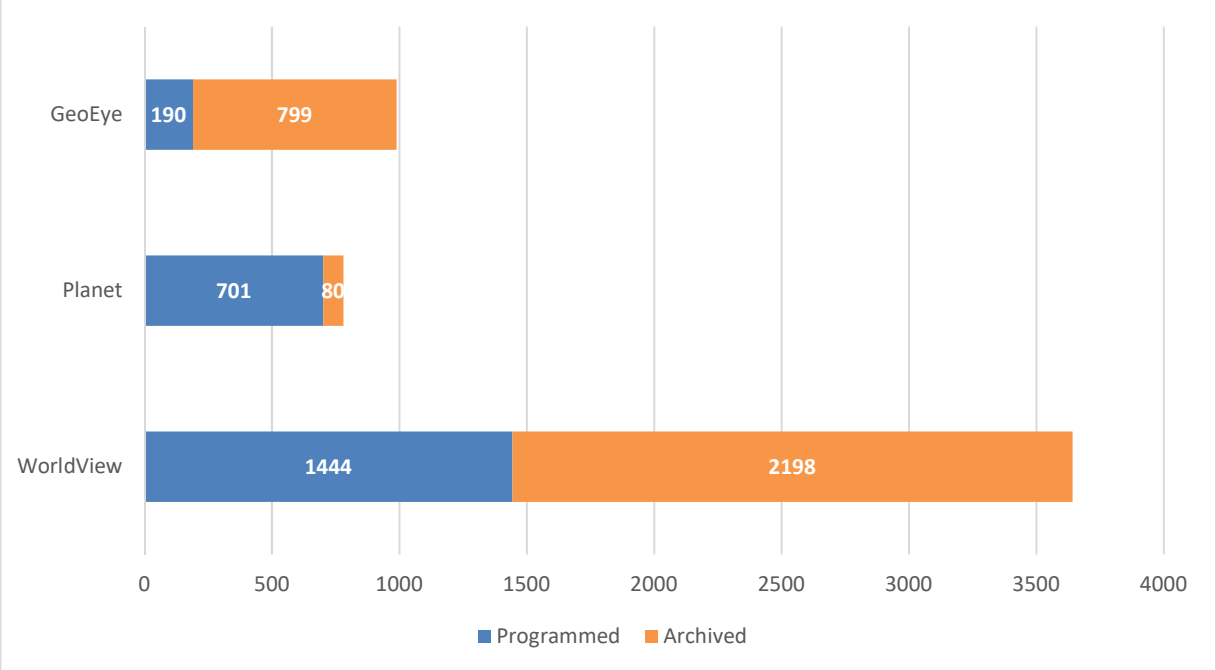


Figure 24. 2022 U.S. Data Consumption for comparison

- Overview of data consumption per activation

Figure 25 and Figure 26 respectively depict the number of programmed (post-event) and archived (pre-crisis) data for EO Charter sensors (except U.S. VHR and HR data) by activation.

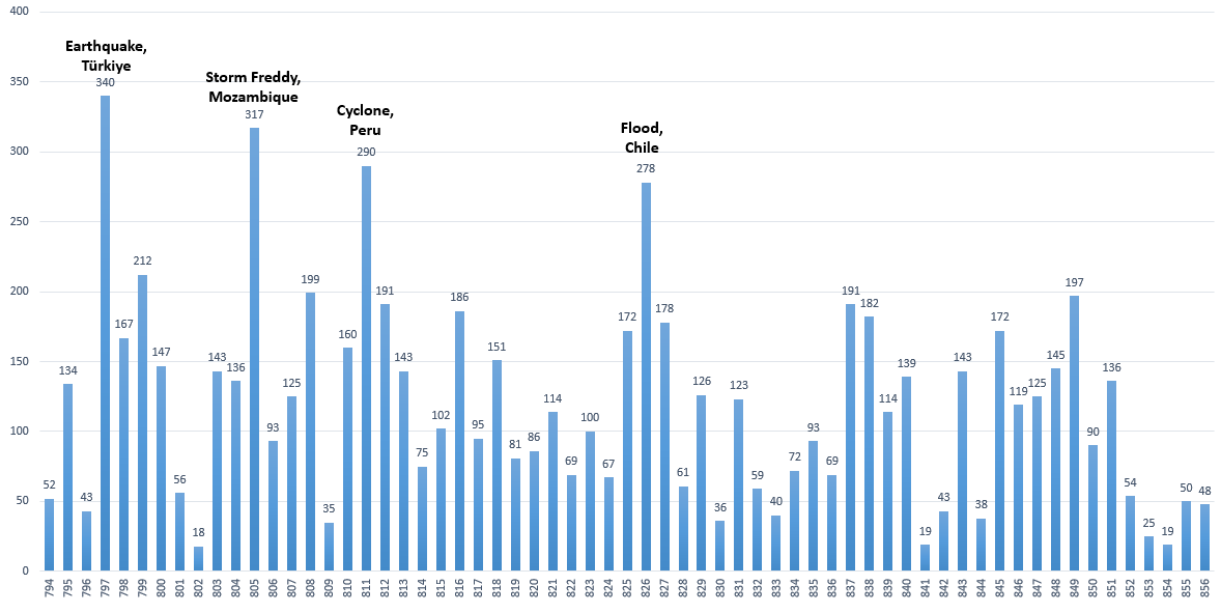


Figure 25. Number of delivered programmed images (radar and optical) by activation in 2023

The average number of programmed images provided by activation in 2023 is 119 (compared to 108 in 2022, 107 in 2021, 102 in 2020, 92 in 2019).

The activations with the highest number of programmed data provided (Optical & radar sensors) are:

- **Act 797,** Earthquake, in TÜRKIYE, 340 images
- **Act 805**, Storm Freddy in MOZAMBIQUE, 317 images
- **Act 811,** Cyclone in PERU, 290 images
- **Act 826**, Flood in CHILE, 278 images

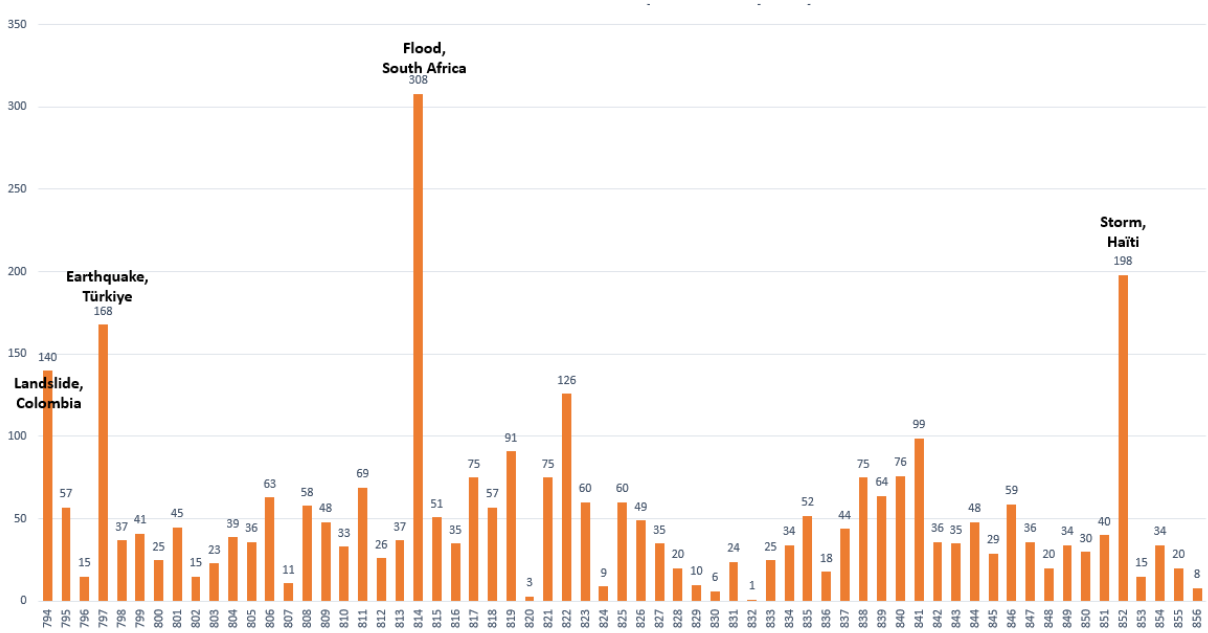


Figure 26. Number of delivered archived images (radar and optical) by activation in 2023

The average number of archived images provided by activation in 2023 is 51 (27 in 2022, 22 in 2021, 31 in 2020, 28 in 2019). The activations with the highest numbers of archived data which were provided (Optical & radar sensors) are:

- **Act 794,** Landslide in COLOMBIA, 140 images
- **Act 797,** Earthquake, in TÜRKIYE, 168 images
- **Act 814,** Flood in SOUTH AFRICA, 308 images
- **Act 752,** Storm in HAITI, 198 images

Figure 27 and Figure 28 respectively depict the number of optical and radar data for EO Charter sensors (except U.S. VHR and HR data) by activation, and Figure 29 shows the number of U.S. VHR and HR programmed images by activation.

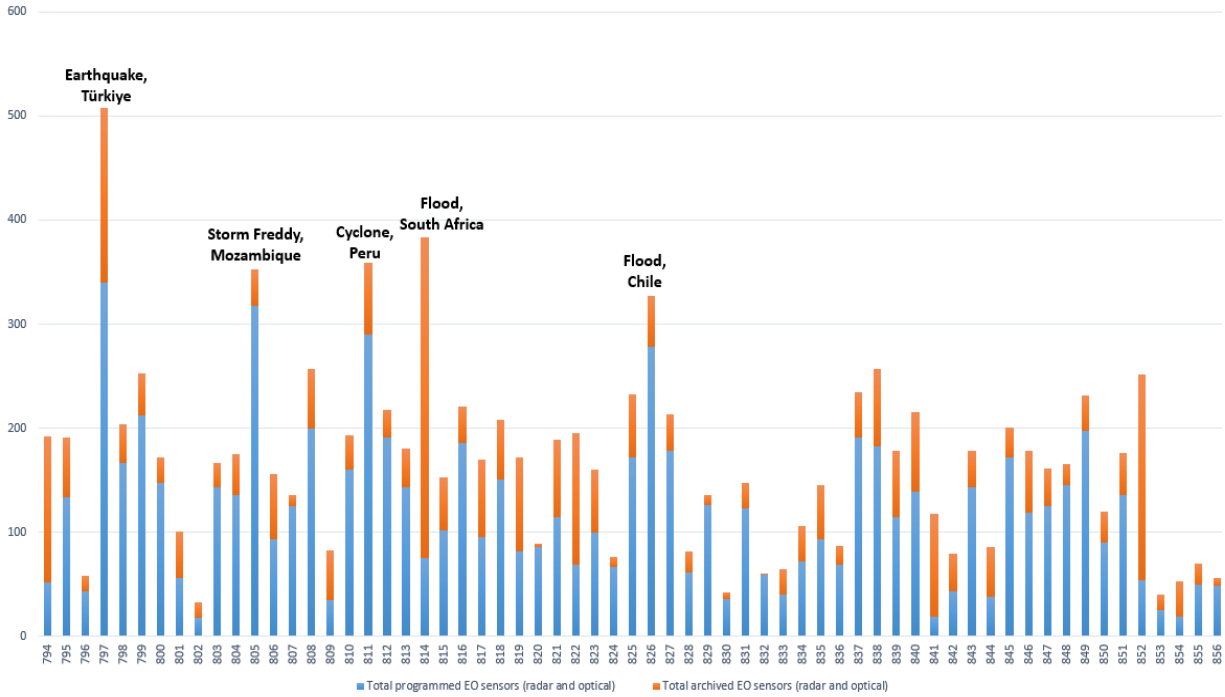


Figure 27. Number of delivered optical images (archived and programmed) per activation in 2023

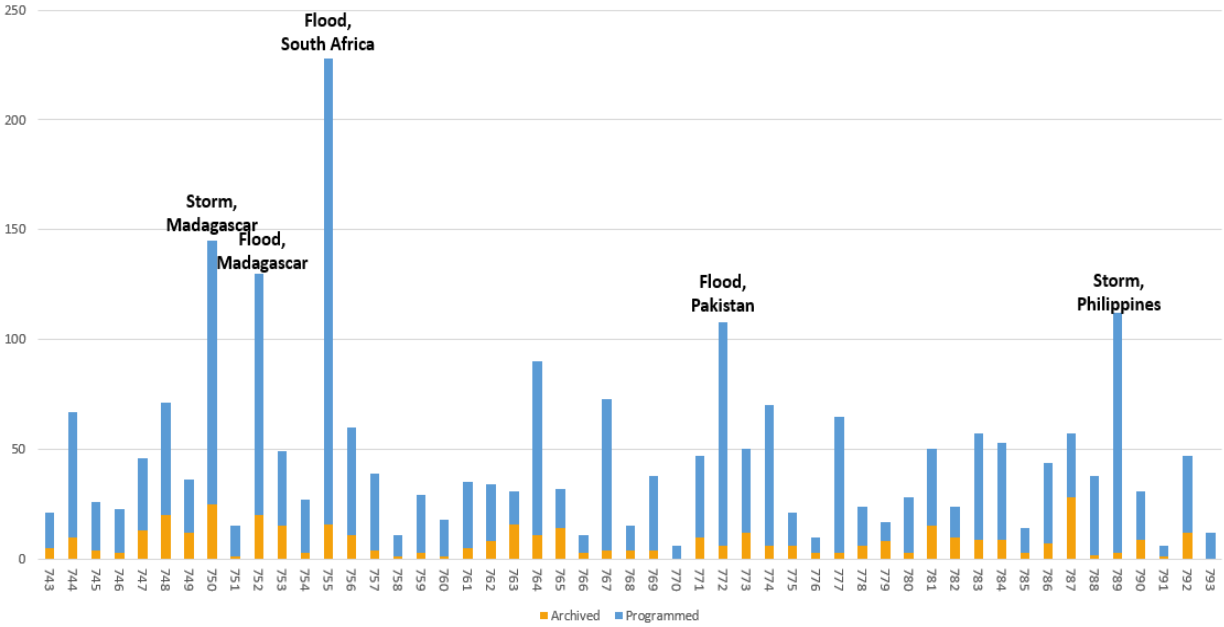


Figure 28. Number of delivered radar images (archived and programmed) per activation in 2022

In total, 59 out of the 63 activations have benefited from U.S. VHR and HR data. The four cases with the highest number of U.S. VHR and HR data provided are:

- **Act 797,** Earthquake, in TÜRKIYE, 977 images
- **Act 748**, Tropical cyclone in SOLOMON ISLANDS, 1071 images
- **Act 839,** Flood (large area) in LYBIA, 926 images
- **Act 840,** Flood (large area) in SOUTH AFRICA, 873 images

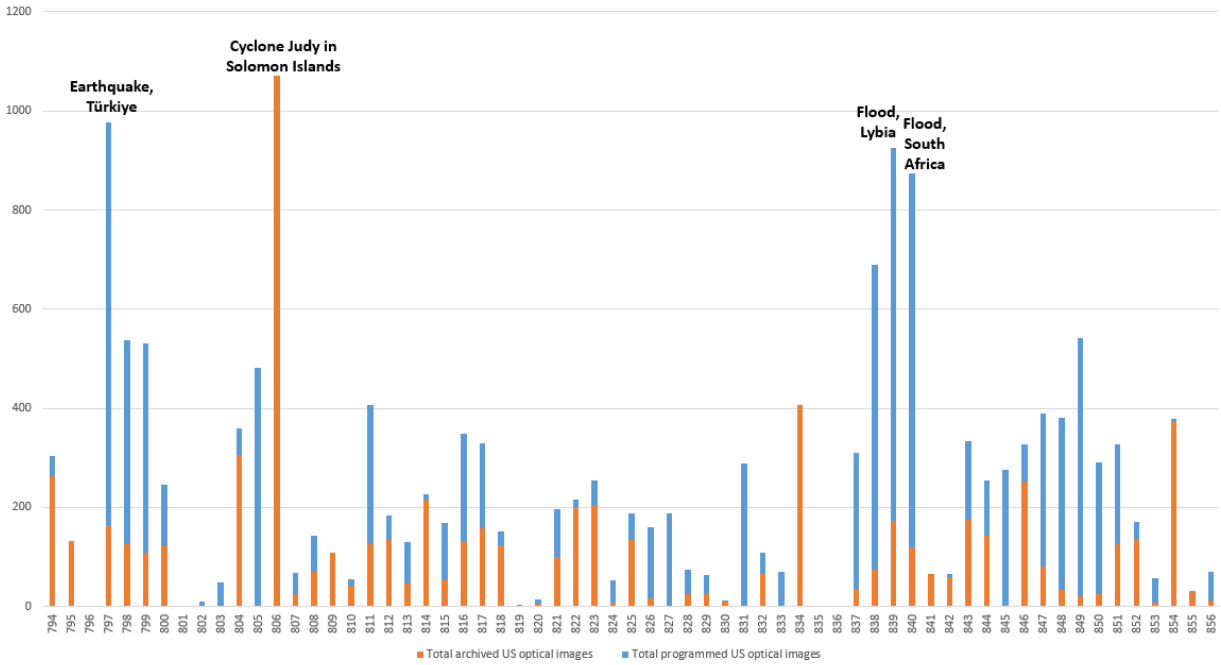


Figure 29. Number of delivered archived / programmed images per activation in 2023 for U.S. VHR & HR commercial satellites.

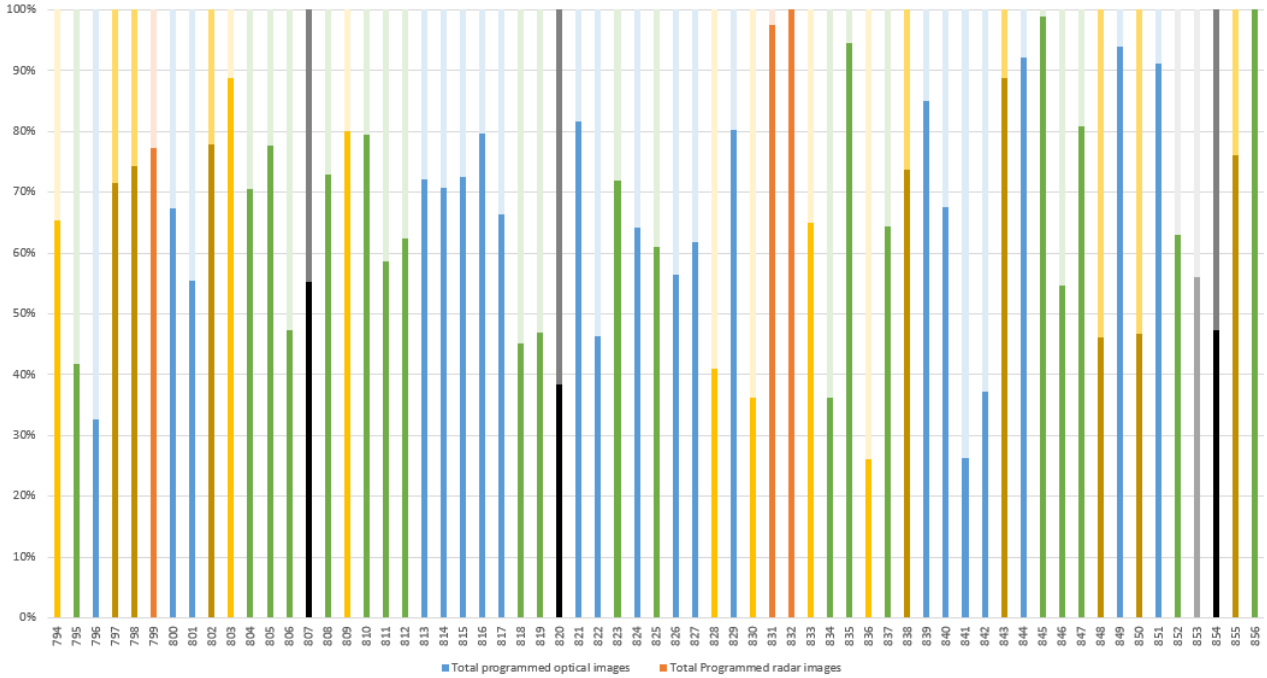


Figure 30. Repartition (in percentage) between optical and radar programmed images for 2023 per activation and disaster type

The legend of the Figure 30 is available below. It describes the radar/optical repartition of newly acquired images by activation. This shows that radar and optical images are provided for all types of events, but more optical data than radar data are provided for earthquakes, landslides, wildfires and to some extent ocean storms events. Radar images are mainly provided for the flood events compared to optical data.

Disaster type	Optical	Radar
Flood		
Wildfires		
Oil Spill, explosive event, others		
Storm		
Earthquake		
Landslide		
Volcanic eruption		

3.2.2 Human resource contribution (ECO and PM) in 2023

3.2.2.1 ECO resources

The Emergency On-Call Officer (ECO) services were provided on a weekly rotational basis by 9 Charter members agencies: CNES, CNSA, CONAE, CSA, DLR, UKSA, ESA, ISRO/NRSC, and ROSCOSMOS as shown in Figure 31.

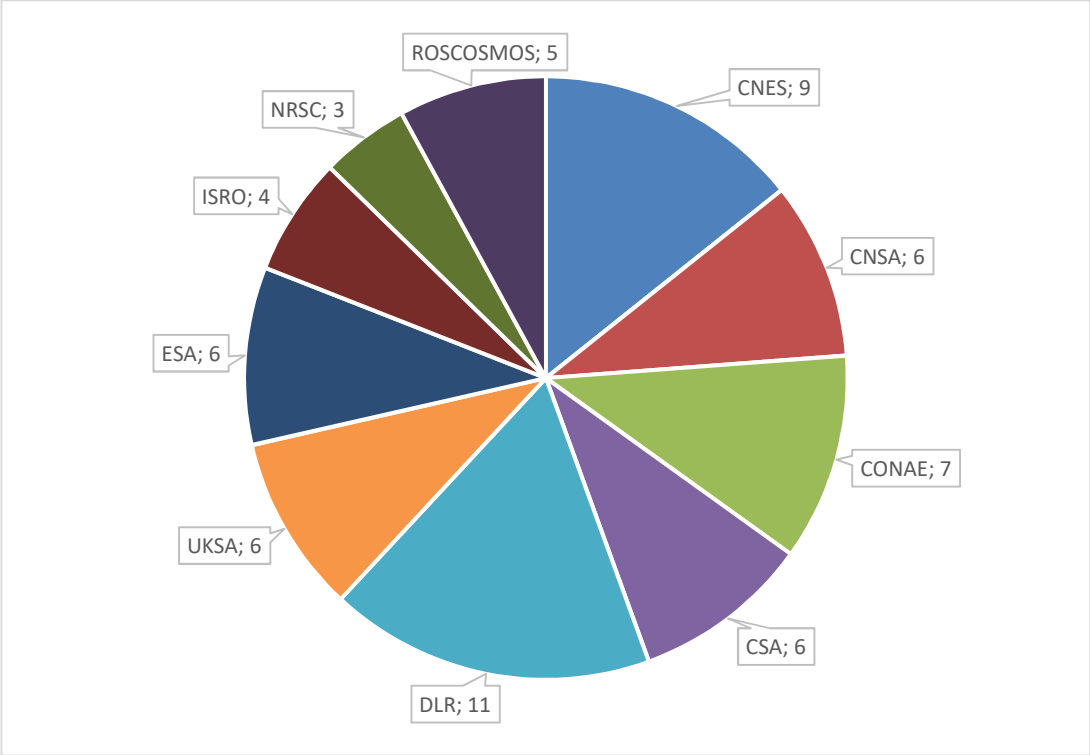


Figure 31. Distribution of Charter Parties responsible for the ECO services in 2023

The random nature of calls usually results in an uneven workload distribution for the members. This year, however, the workload was more evenly dispersed than usual, with four agencies providing 6 ECOs, one agency providing seven ECOs, and one agency providing five ECOs. For memory, in 2022, DLR, CSA and CONAE, CNSA, and ESA handled 6 or 7 calls each, (46%).

3.2.2.1 Distribution of Charter members responsible for the PM services delivered in 2023

For each activation, a Project Manager (PM) is required. In 2023, Charter members nominated 63 PMs. As shown in Figure 32, KARI and UKSA, as agencies that acted as Charter lead during 2023, were responsible for 14 and 12 PM nominations respectively. In total, these two agencies covered 41% of activations. Ten other Charter member agencies also took responsibility for PMs nominations in 2023.

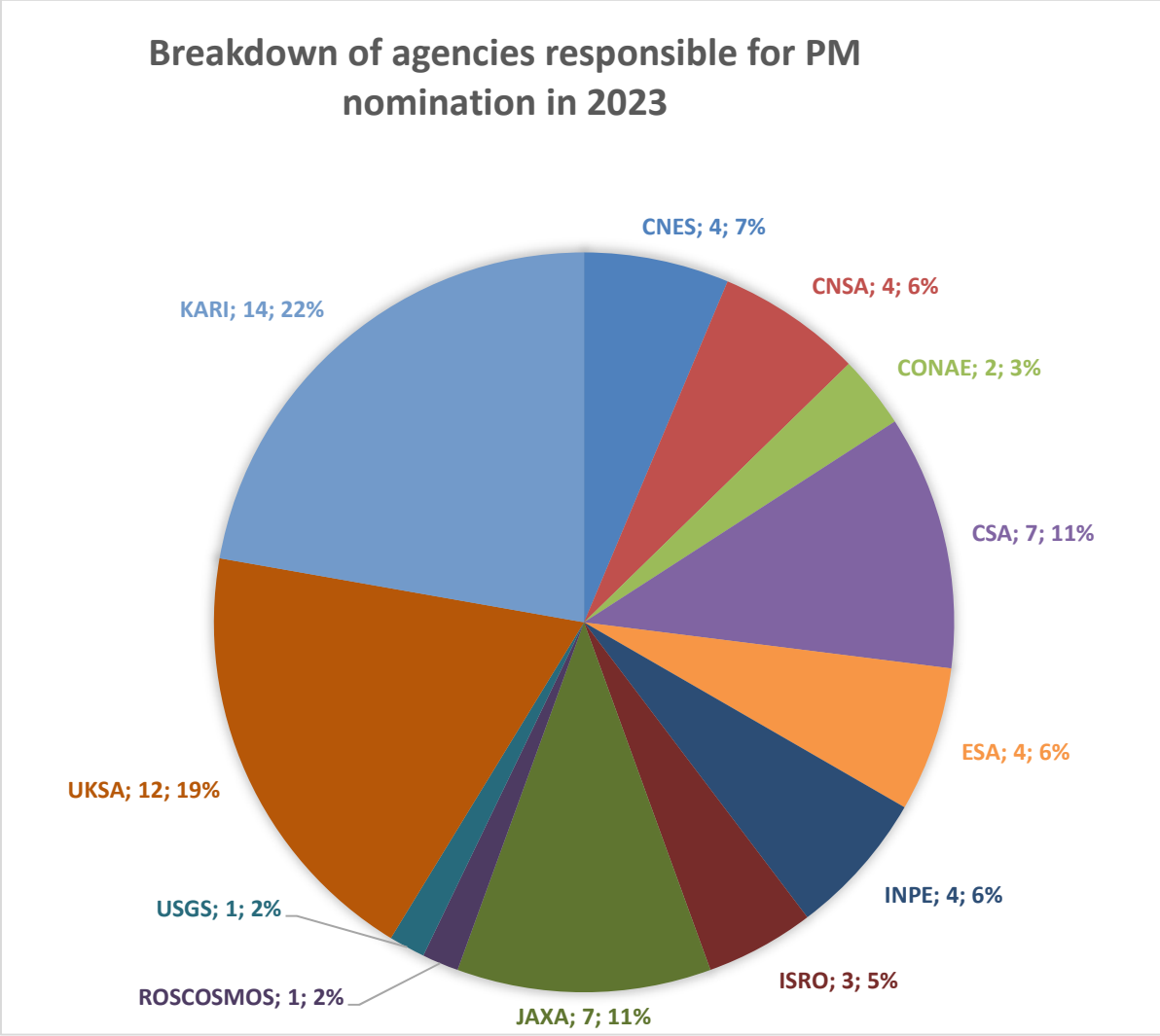


Figure 32. Distribution of Charter Parties responsible for the PM services in 2023

3.2.2.2 Distribution of organizations providing PM resources in 2023

PMs may be sourced from a Charter member agency or an external entity. Figure 33 shows the breakdown of all organizations that have contributed to Charter activations by assuming the PM role in 2023. In the case of external organizations, it is required that a Charter member nominates them and takes the responsibility for the service they provide. During this reporting period, 27 different organizations contributed their PM services to Charter activations.

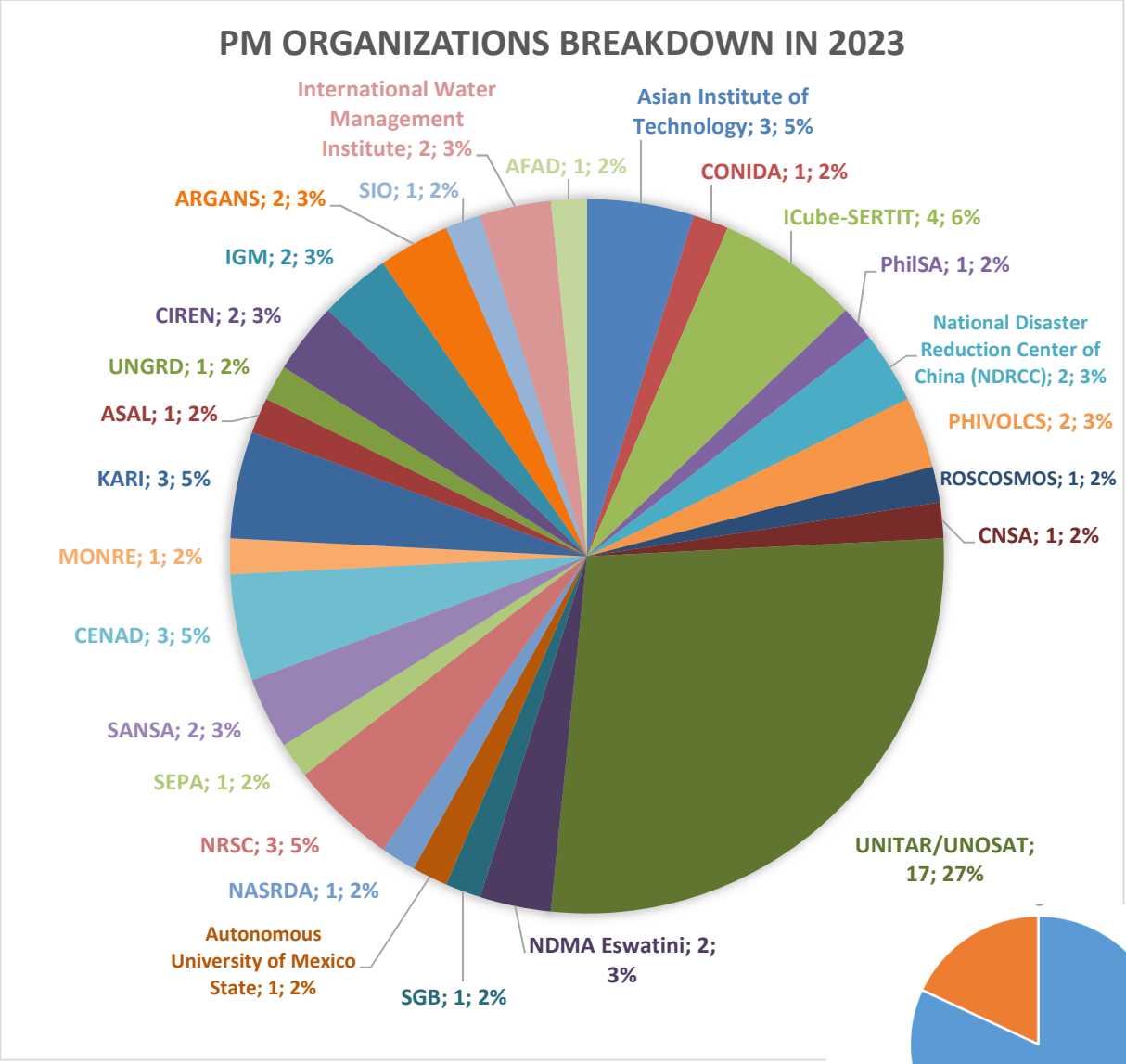


Figure 33. PM Organization breakdown in 2023

3.3 Charter Training

3.3.1 Authorized User Training

The Authorized User training aims to train future and current AUs in order to ensure they are familiar with how and when to activate the Charter.

No AU trainings for newcomers were conducted in 2023 (as no applications were concluded during the reported period) but 4 on-line sessions were conducted by ESA in Aug 2023.

3.3.2 Emergency on-Call Officer Training

The Emergency On-Call Officer (ECO) function is of utmost importance for the Charter operations, because the ECO is the person who orders the appropriate data from the Charter members within a few hours after an activation request is received.

- No ECO training held in 2023.

3.3.3 SARE exercises

Because some ECO staff might not face "real activations" frequently, two so-called "Semi-Annual Refresher Exercises" shall be performed every year with all ECOs.

In 2023, there was only one exercise:

- SARE 27: held in July-September 2023, led by ESA and USGS about a flood (large area) and landslide in China.

3.3.4 Project Manager Training

The PM training is aimed at strengthening the network of Charter PMs by providing refresher sessions for current PMs and training sessions for new PMs. Several PM training sessions were conducted in 2023.

- In January 2023 (on 24), a PM training was organized by JAXA.
- In February 2023 (on 14 and 22), a PM training was organized online by ESA.
- In July 2023, a PM training was organized by JAXA.
- In July 2023, an in-person PM training (including Charter Mapper) was organised by UNOOSA-UN-SPIDER/DLR/ESA in Bonn.
- In October 2023, an PM training was provided in Darmstadt (about 10 attendees).

3.3.5 Value Adder Training

A value adder training is aimed at training potential Value Adder Providers:

- In June 2023, a VA training was organized by ESA at UNITAR HQ (in Geneva)

3.3.6 Joint training

- No joint training in 2023.

3.4 Charter Mapper training

Several trainings were organized by ESA to present their Charter Mapper tool:

- In July 23, a UN-SPIDER / DLR / International Charter / ZFL International Workshop "UN-SPIDER/DLR/International Charter/ZFL International Workshop: Use of the Charter Mapper during Activations" (in-Person event, fifteen PMs and VA).
- In October 23, an on-line Charter Mapper Training was organized for NASRDA (Several PMs and VAs).
- In November 23, an UN-SPIDER / ASAL / ZFL Workshop "Space-based Solutions for Forest Fires was held in Algeria" (in-Person event, Charter mapper presented on-line).

3.5 Sentinel Asia training

As for PM trainings for Sentinel Asia members, they are usually carried out once per year in Sentinel Asia member countries.

- In January 2023, a Sentinel Asia PM training was organized in the Philippines by ESA and JAXA (in-person event, Charter mapper presented on-line).
- In July 2023, a Sentinel Asia PM training was organized in Indonesia by ESA and JAXA (in-person event, Charter mapper presented on-line).
- In November 2023, a Sentinel Asia PM training was organized in the Philippines by ESA and JAXA (online event).

3.6 The Charter Operational System (COS-2)

ESA has developed, operates, and continues to improve the web-based Charter Operations System second generation "COS-2", linked to the Charter Geobrowser, to manage Charter operations in one web-based platform and facilitate the work of the different Charter operational staff (AUs, CBs, ODO, ECOs, PMs and VAs). Several Charter member agencies support the COS-2 development as part of the "COS-2 Evolution Team".

COS-2 is operational since the beginning of March 2015. All Charter members have their EO metadata fetching executed on COS-2, allowing automated and on-line cataloguing of Charter acquisitions. The data available in COS-2 are automatically sent to the Charter Mapper if covering at least one of the areas of interest.

More than 9,300 satellite data mages were handled by COS-2 in 2023 (plus all Sentinel-2 data, which are automatically fetched by COS-2).

The COS-2 development contract is in the second 3-year phase. The enlargement of the helpdesk (1300 tickets received in one year) and hosting movement to Amazon services were 2 very successfully actions, allowing an availability of the service of more than 99%.

Two new COS-2 versions have been released adding, amongst all changes, the possibility to nominate a Deputy PM (very useful in case of management of very large disasters or when the nominated PM is unexperienced), a new ordering method for the PMs and a better integration with the Charter Mapper. A new definition of the input areas had been introduced (focus areas for the evaluation of the damages and Estimated disaster areas for the detection of the disaster). Support to BKA, GeoSat, CAS500 satellites data has been added during the year.

During the year we received from Amazon the information that the database used by COS-2 is no longer supported and this forced the update of the main software over which all COS-2 is implemented. This SW update has a heavy impact on COS-2: the update work started in December and will be completed by Summer 2024.

Larger effort was used to interface the ESA Processing Environment, the Charter Mapper, with COS-2. COS-2 acts as identity management for the Processing Environments, as a security measure. The data uploaded in COS-2 (physically or via link) are passed to the Charter Mapper that imports, calibrate them and displays in full resolution (see next section). Also, the information about the EULA is transferred in order to grant access to the data.

During 2023, no issues blocking the regular flow of the activations for more than 2 hours had been detected in COS-2.

Table 10. End to end data flow for year 2023

Satellite	Success Rate for valid products	Main Failure reasons
ALOS-2	76%	Issue with the handing of the products CRS by the calibration SW. Fixed
AMAZONIA-1	100%	Satellite supported starting from mid-December 2023
BEIJING-2	-	Satellite not supported
BKA	-	The acquisition URL points to an owncloud page requiring human interaction
CBERS-4	100%	Satellite supported in the Charter Mapper starting from mid-December 2023
CBERS-4A	100%	Satellite supported in the Charter Mapper starting from mid-December 2023
GAOFEN-1	82%	Issue with duplicated entry in the zip archive. Ingestion SW evolution planned in 2024
GAOFEN-2	97%	Change in metadata files name and missing property proj:epsg. Ingestion SW updated.
GAOFEN-3	94%	
GAOFEN-4	-	Satellite not supported in the Charter Mapper
GEOEYE-1	92%	
GLOBAL BLACKSKY	100%	Products received without the metadata JSON file. SW evolution planned in 2024
ICEYE	100%	
JILIN-01 OPTICAL-A	-	Satellite not supported in the Charter Mapper
KANOPUS-V	94%	Products received in unsupported compression (.7z). Blanks in product folders names.
KANOPUS-V-IK	88%	Products received in unsupported compression (.7z). Blanks in product folders names.

Satellite	Success Rate for valid products	Main Failure reasons
KHALIFASAT	-	Satellite not supported in the Charter Mapper
KOMPSAT-3	99%	
KOMPSAT-3A	100%	
KOMPSAT-5	88%	Some products received in Mode EW not supported
LANDSAT-7	-	Satellite not supported in the Charter Mapper/ withdrawn
LANDSAT-8	98%	
LANDSAT-9	98%	
NEWSAT	99%	Malformed product footprints in some of the received notifications
OHS-2A	-	Satellite not supported in the Charter Mapper
OHS-2C	-	Satellite not supported in the Charter Mapper
OVS-2A	-	Satellite not supported in the Charter Mapper
PLANETSCOPE	99%	
PLEIADES-1A	90%	Issue in the calibration SW. Fixed
PLEIADES-1B	90%	Issue in the calibration SW. Fixed
PLEIADES_NEO-3	100%	
PLEIADES_NEO-4	93%	
RCM-1	100%	
RCM-2	100%	
RCM-3	99%	
SAOCOM-1A	91%	Issue in the calibration SW. Fixed
SAOCOM-1B	91%	Issue in the calibration SW. Fixed
SENTINEL-1A	98%	
SENTINEL-2A	96%	
SENTINEL-2B	94%	
SPOT-6	85%	Issue in the calibration SW. Fixed
SPOT-7	75%	Issue in the calibration SW. Fixed
TANDEM-X	100%	
TERRASAR-X	100%	
VISION-1	100%	New data/metadata format. SW for support is planned in 2024
VRSS-2	100%	
WORLDVIEW-1	95%	
WORLDVIEW-2	99%	
WORLDVIEW-3	98%	

3.7 The Charter Processing Environment

While COS-2 is focused on the operational steps of the Charter activation workflow, it does not have a workflow specifically addressing the generation of geospatial data products.

In the frame of the Strategic Plan 2017-2027 discussions led by the Board identified the need to develop an interface/platform for easy data access and tools and methods for PM/VA and users. Two Charter members (ESA and ISRO) decided to respond to this request and started the development of on-line Processing Environments, to support full-resolution visualization, data screening and basic data manipulation (data comparison, band combinations, etc.). Looking at the longer term, the Board is pursuing a reflection on the benefit of expanding on-line platform capabilities with a Value Adding capability for rapid end-to-end information extraction.

The processing Environment shall be seen as an extension of the COS-2 system, dedicated primarily to PM and VAs.

The ISRO Processing Environment is still under development with promising functionalities.

The ESA Processing Environment, now called the **ESA Charter Mapper**, approved by the Board in July 2021, was operationally released in September 2021. The release of the platform, initially foreseen by end July 2021 was delayed due to the unforeseen handling of data user licences (EULAs), in order to ensure that only users accepting a EULA will be able to handle and download the EO data of the involved agency. This granted availability of VHR data from CNES, DLR and USGS in the ESA Charter Mapper.

The ESA Charter Mapper has been fed with all the data of Charter activations since August 2021. In 2023, data was ingested and calibrated in the Mapper from Charter members: ABAE, CONAE, CNES, CNSA, CSA, DLR, ESA, INPE, JAXA, KARI, ROSCOSMOS, UKSA and USGS, and third-party data contributors ICEYE, Satellogic, Planet, and BlackSky.

Figures presented below provide views of some Charter Mapper capabilities in manipulating and analyzing Charter data.

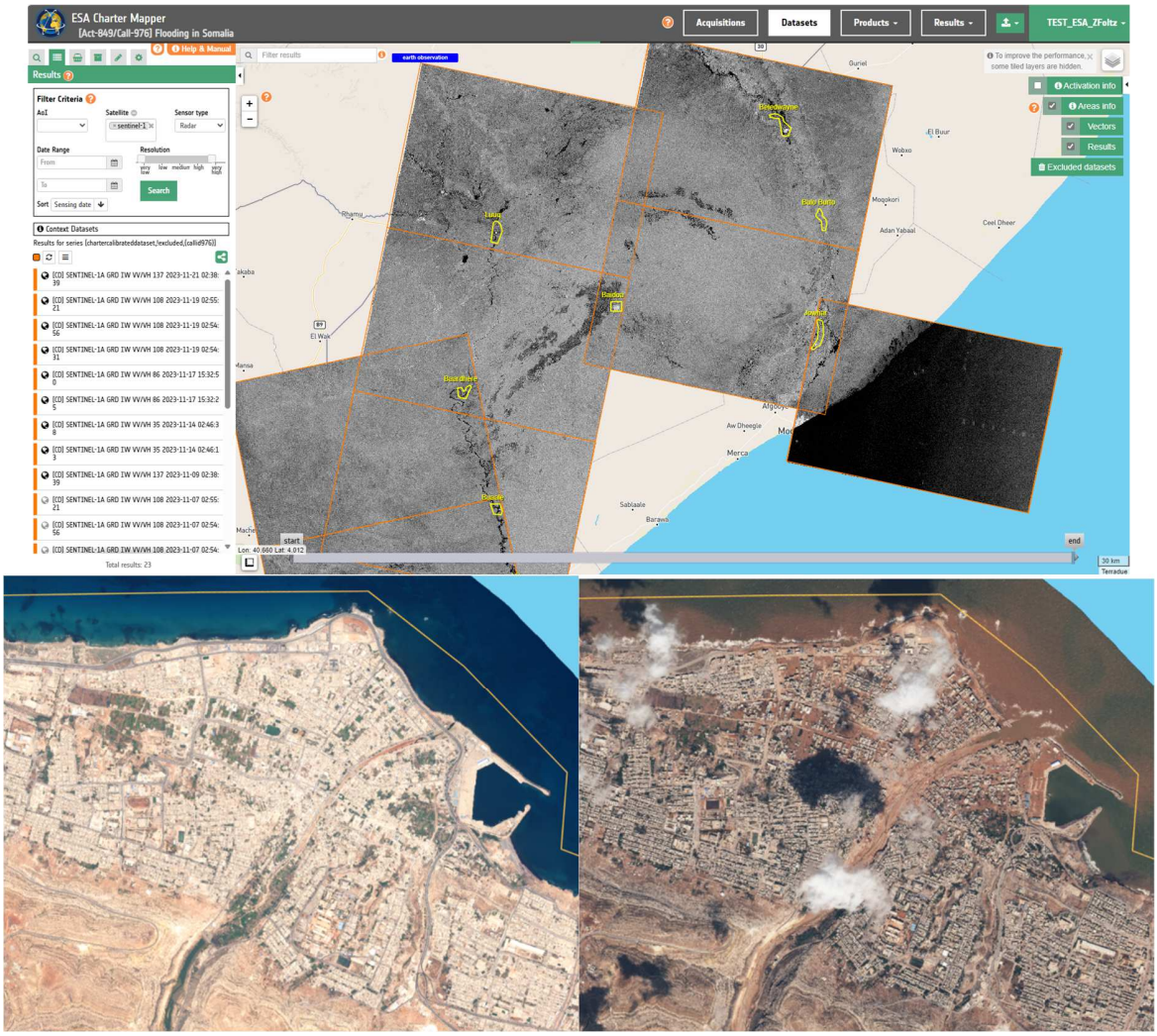


Figure 34. Sentinel-1 data over Somalia for flooding in October 2023 (Top), Pre- and post-event Pleiades imagery over Derna, Libya for the September 2023 flood (Bottom)

Imagery received from COS-2 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. This will allow PM/VAs not familiar with some data formats to see the data without specific SW to handle them.

The PM/VA can browse imagery online, select the EO data of interest, analyse and process them online with EO services and toolboxes to generate geo-information products.

The ESA Charter Mapper presents Activation Workspaces for each Activation. The workspace allows the PM/VA to:

- **Browse** full-resolution satellite data as raster on the map (for some data, the PM/VA shall accept the EULA – the system automatically redirects them)
- **Search and filter** among the available data

- **Upload** external satellite data outside COS-2 from local workstation or free EO Data catalogues;
- Submit **processing jobs** using satellite imagery processors; view the results as part of the Activation Analysis and download the results.
- **Store & share** satellite data and Value-Added Products with other partners involved (e.g., a PM or VA provider with credentials for the same activation)

The PM/VA can access a specific widget that allows users to visualize & combine the assets (bands and overviews) derived by the ESA Charter Mapper from the satellite data product:

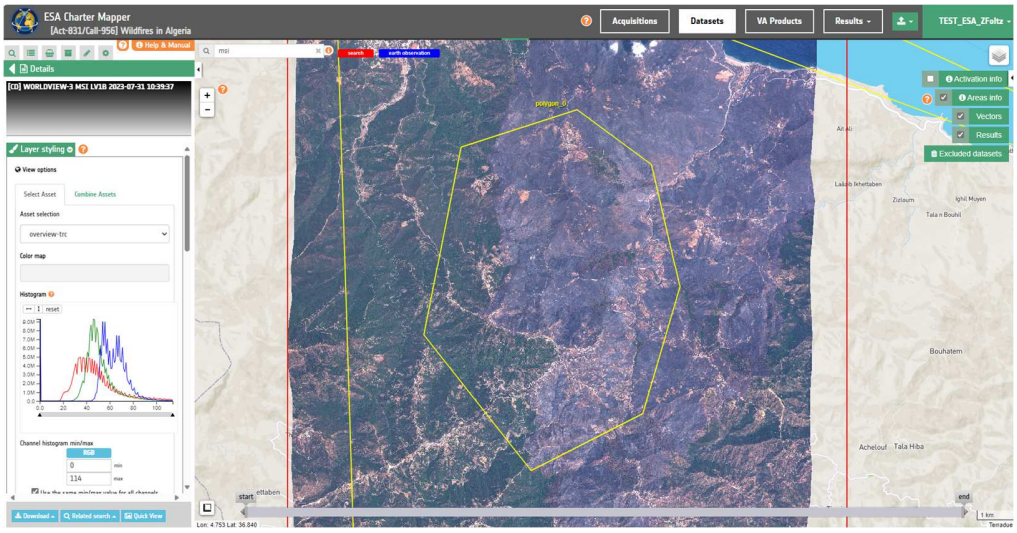


Figure 35. Full Resolution True Color RGB composite using Select asset of Layer Styling in the left panel of the ESA Charter Mapper workspace. Wildfires in Algeria, July 2023 (image credits: DigitalGlobe).

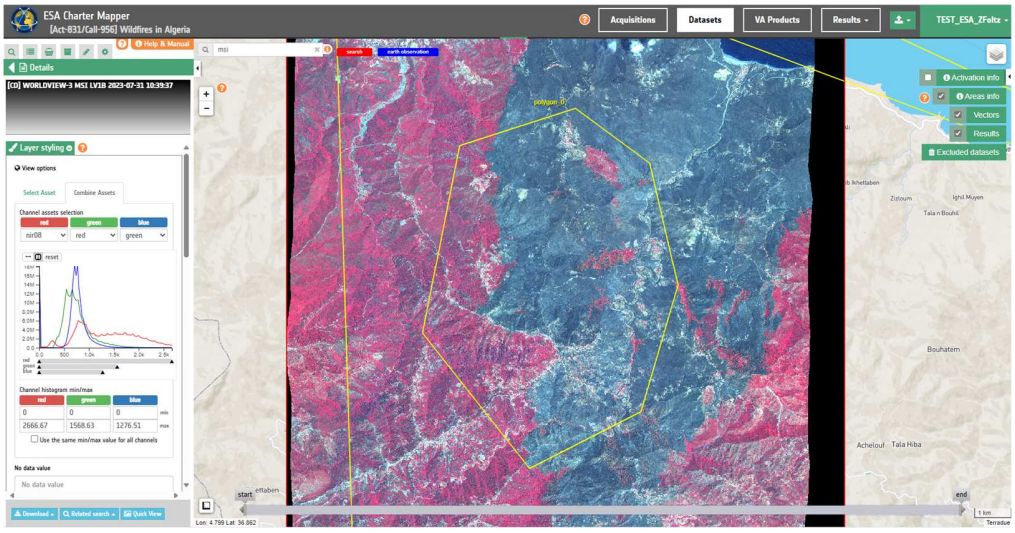


Figure 36. Full Resolution Color Infrared (vegetation) RGB composite on the fly using Combine Assets in Layer Styling in the left panel of the ESA Charter Mapper workspace. Wildfires in Algeria, July 2023 (image credit: DigitalGlobe).

Among the features, it is possible to compare visually two images quickly through a slider:

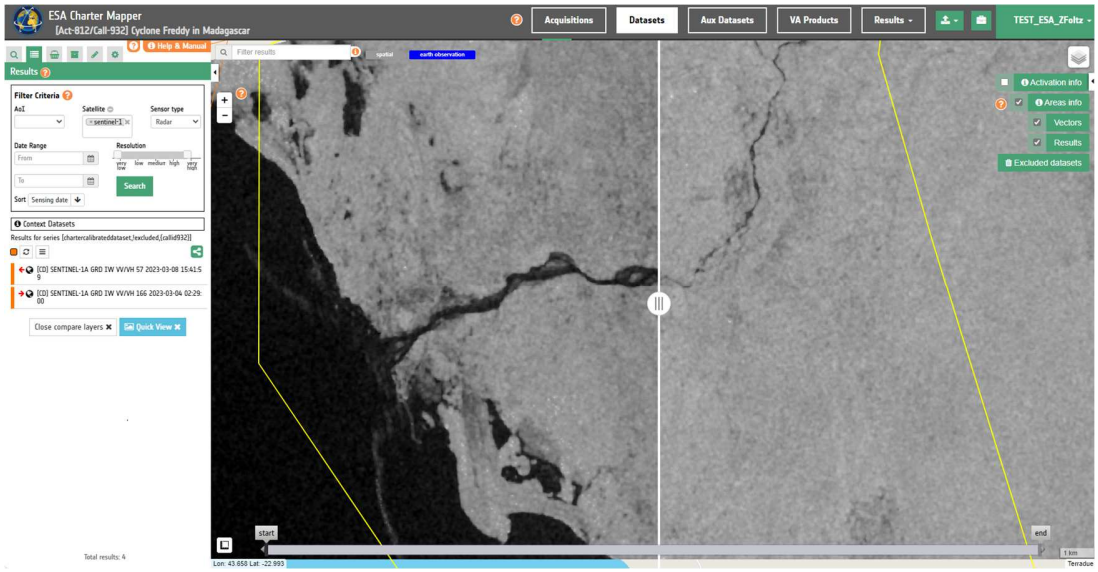


Figure 37. Compare Layers Slider function for flooding in Madagascar in March 2023.

It is also possible to view the value added products which have been uploaded to COS-2 for a specific activation. The footprint of the VAP will appear in the map interface and a quicklook of the VAP will appear in the bottom right of the screen. This allows to view which areas have already been evaluated and which require treatment.

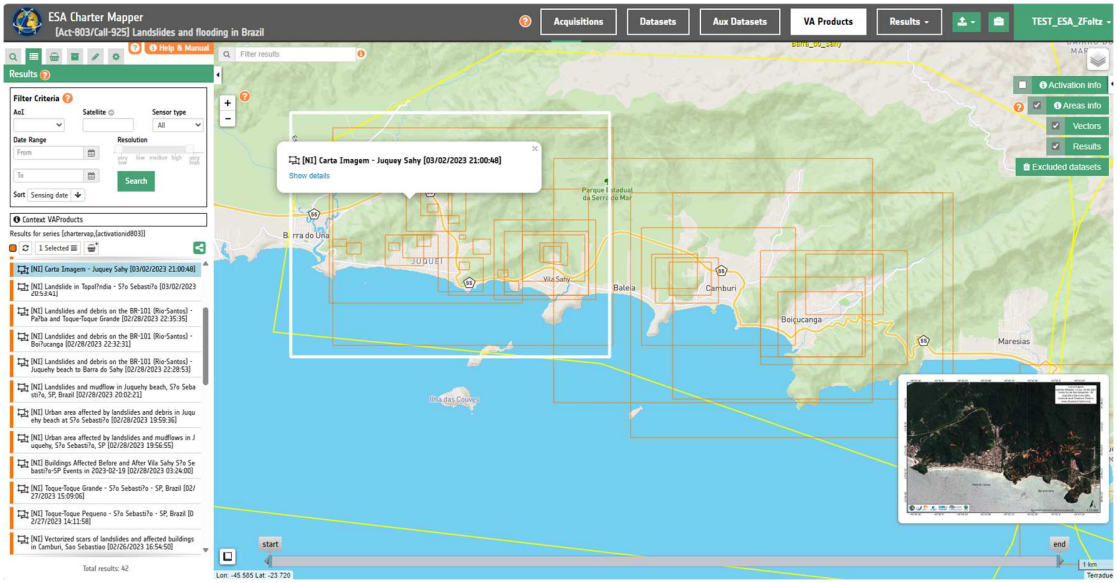


Figure 38. Interface of the ESA Charter Mapper with the “VA Products” tab selected. The list of VAPs is seen on the right and footprints are seen on the map. A quicklook of the selected VAP can be seen in the bottom right corner of the screen. Workspace of Act-803 Landslides in Brazil.

The processing services integrated into the Charter Mapper will be gradually released as they are fully validated, improving the usefulness of the platform. At the end of 2023 the following services were available:

Table 11. ESA Charter Mapper processing services in December 2023

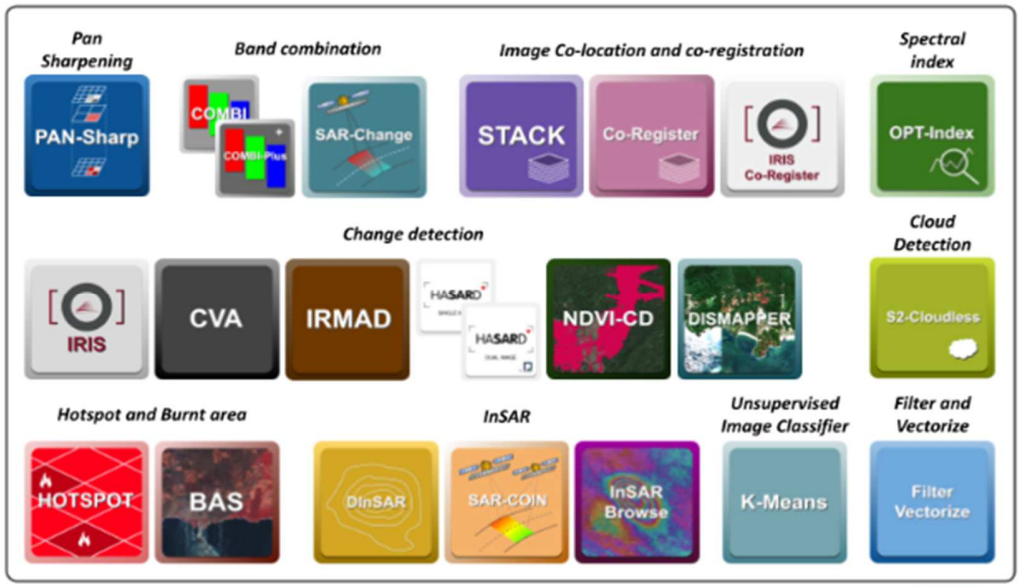


Table 12. ESA Charter Mapper processing services in December 2023

- **COMBI**: Multi-sensor band composite
- **COMBI-Plus**: Advanced multi-spectral band composite
- **OPT-Index**: Optical spectral index
- **Stack**: Co-located Stacking (requires that the images are already georeferenced)
- **SAR-Change**: SAR Amplitude Change (Creates an RGB composite showing changes of backscatter values using a pair of SAR images)
- **Hotspot:** Hotspot Detection
- **BAS**: Burned Area Severity
- **IRIS**: Change detection analysis
- **IRIS Co-Register**: Co-registered stacking
- **HASARD**: Flood extent mapping
- **PAN-SHARP**: Optical Pan sharpened image processing
- **DInSAR**: Displacement Mapping
- **InSAR Browse**: Displacement Mapping (DLR)
- **Co-Register**: Co-registered stacking
- **SAR-COIN**: Coherence and Intensity composite
- **S2-Cloudless**: Sentinel-2 cloud masking
- **K-Means:** Unsupervised Image Classifier
- **Filter Vectorize:** Filtering and Vectorization of binary rasters
- **CVA:** Change vector analysis

- **IRMAD:** Change detection
- **NDVI-CD:** Change detection of Normalized Difference Vegetation index

At the end of 2023, the ESA Charter Mapper was able to support the following Charter satellites:

- ALOS-2
- ALSAT-1B
- Amazonia-1
- BKA
- CARTOSAT-2
- CBERS-4/4a
- GeoEye-1
- GF-1, 2, 3
- ICEYE-X constellation
- KANOPUS-V, V-IK
- KOMPSAT-3, 3A
- KOMPSAT-5
- LANDSAT-8, 9
- PlanetScope constellation
- Pleiades-1A, 1B
- Pleiades NEO
- RCM
- RESOURCESAT-2, 2A
- SAOCOM-1A, 1B
- SENTINEL-1A, 1B
- SENTINEL-2A, 2B
- SPOT-6 & 7
- TanDEM-X
- TerraSAR-X
- UK-DMC-2
- Vision-1
- VRSS-1, 2
- WORLDVIEW-1, 2, 3

Starting in December of 2021, the ESA Charter Mapper has been enriched by a reporting system allowing an analysis of the data received and processed. Over the course of 2023, the Charter Mapper received 21,728 satellite data notifications from COS-2. Of these, 21,382 (98%) were successfully imported (most of the non-imported data were related to quicklooks and metadata only, meaning no products were found or the links were broken). Of these, 19,209 (89%) were successfully calibrated and available to PMs and VAs.

The failure information is very important because, except for data types not yet handled, it is due to issues with the data (lack of metadata, data corruption, unrecognised formats), meaning that the PM/VA will not be able to read them.

4. Assessment of the Charter operations

This chapter provides a synopsis of the overall assessment, including recommendations to be taken into consideration for improving Charter operations.

Statistics on the 2023 activations were compared with EM-DAT data to evaluate the overall impact of the Charter as a service to support disaster response – EM-DAT: The Emergency Events Database - Université Catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium.

The reports issued by the Project Managers of Charter activations and the various performance metrics recorded by COS-2 are the main sources of information for assessing the performance and quality of service provided by the Charter during 2023.

4.1 Overall impact

In 2023, the three most catastrophic events were the earthquakes in Türkiye and Syria that killed 56,683 people and affected 18 million (combined), flooding in Libya caused by storm Daniel that killed 12,352 people and affected 1.6 million, and flooding in the Democratic Republic of the Congo that killed 2,970 people and affected 50,000 people. All three of these events were covered by Charter activations, with the earthquakes in Türkiye and Syria being separate activations. The EM-DAT database (managed by the Centre for Research on the Epidemiology of Disasters (CRED) (http://emdat.be/disaster_list/)) inventoried 563 natural events in 2023 that killed a total of 91,614 people. These figures do not include droughts and extreme temperature events, since these events are not covered by the charter, while they do include earthquakes, tsunamis, floods, landslides, storms, volcanic eruptions, and wildfires.

The Charter covered 41 of the 563 total events in 2023 (7.3%). If we consider the 50 most severe disasters in the EM-DAT database (92% of fatalities), the Charter covered 23 of them, accounting for 79,085 fatalities (86% of total). In comparison, in 2022, the Charter covered 35 of the 354 events registered in the EM-DAT database (9.9%). These 35 events accounted for 7,052 fatalities (60%). It can be seen from the previous 2 years of data that the Charter accounts for a much higher percentage of overall fatalities than overall events, meaning that the charter is often activated for the most severe events only. 2023 further demonstrated this trend.

Figure 39 shows that 15 of the 50 most severe events recorded by the EM-DAT in 2022 were covered by Charter activations. In 2023, the number of Charter activations (63) was slightly higher than in 2022 (51), however both years fall in the high range of annual activations in recent years, as the number of Charter activations has fluctuated between 32 and 63 per year since 2007. Such fluctuations can be explained in part by several factors such as: the variability in the total number of natural disasters occurring during a given year, the occurrence of disasters covering more than one country (e.g., hurricanes), and by the existence of national and regional EO-based emergency response services (e.g., Copernicus EMS, Sentinel Asia). Figure 40 shows that since 2007, the curve of the Charter activations follows, more or less, the trend of events recorded by EM-DAT.

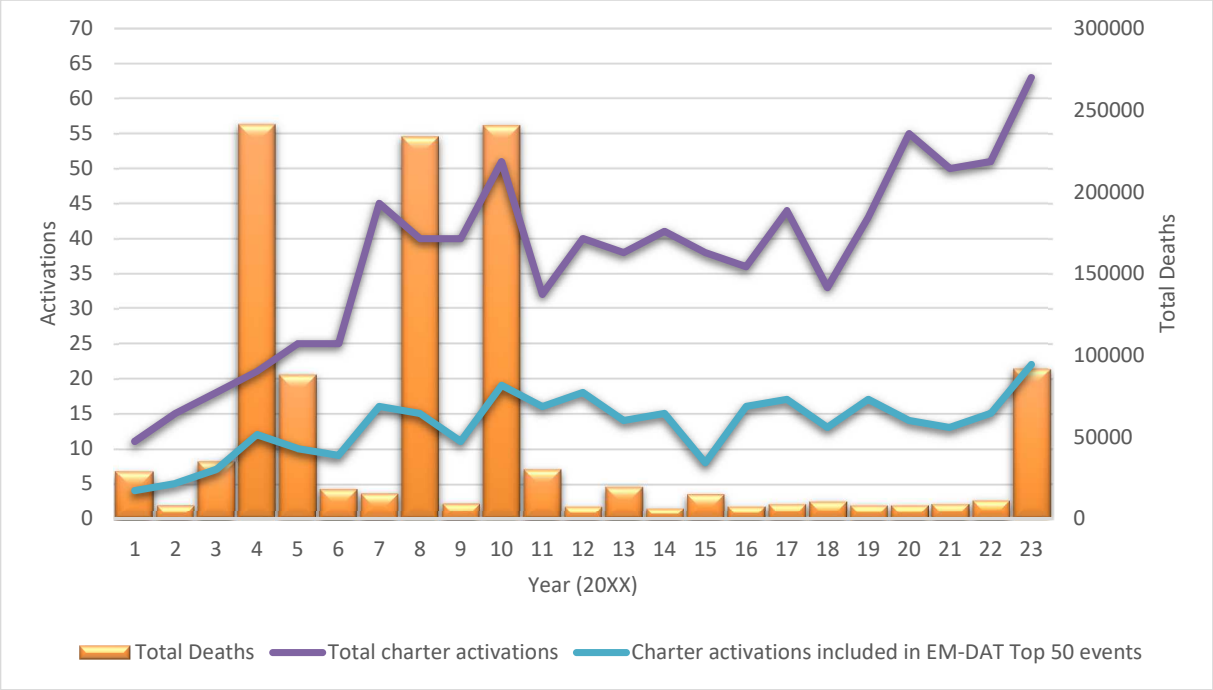


Figure 39. Number of Charter activations from 2001-2023, linked with the number of fatalities from all recorded natural disasters. Represented in blue are the number of Charter events per year that are included within the 50 most severe disasters (by fatalities)

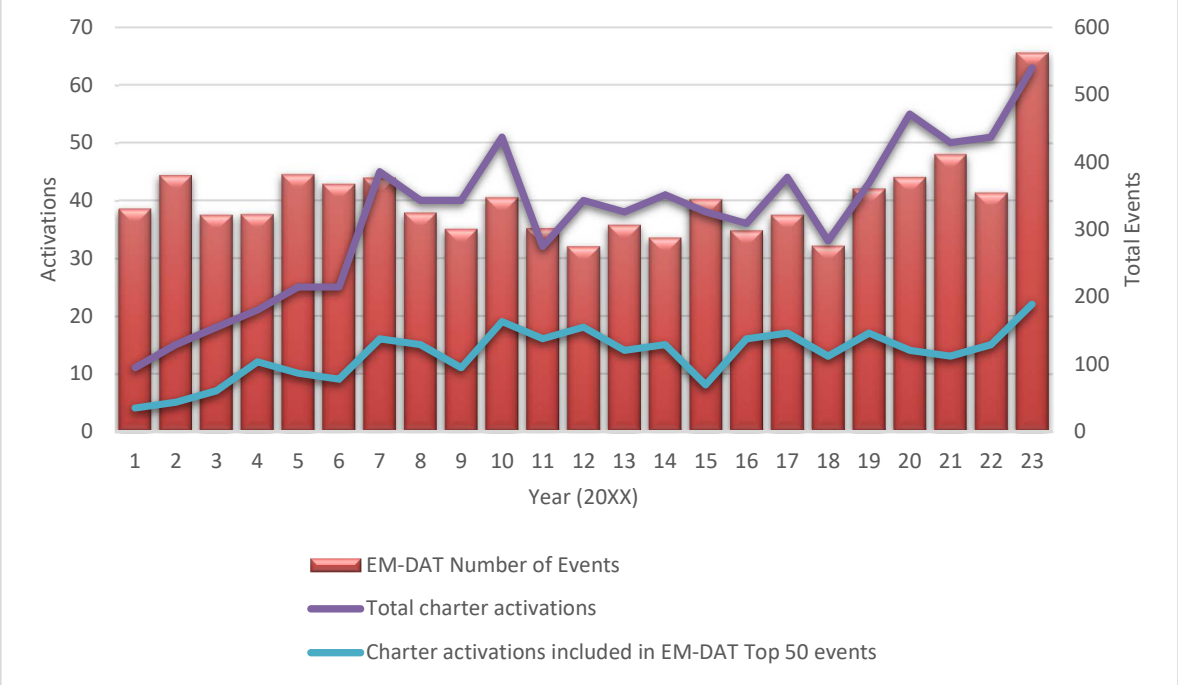


Figure 40. Number of Charter activations from 2001-2023, linked with the total number of natural disasters recorded by the EM-DAT

In 2023, the Charter covered the top 6 most severe disasters by fatalities (see Table 13). Over the last fourteen years (2009-2023), the Charter was triggered for the 18 most severe natural disasters by fatalities, as reported by EM-DAT (see Table 13 and Table 14).

Table 13. The ten most severe natural disasters by number of fatalities in 2023 (events covered by Charter activations are indicated in bold). (Source: EM-DAT: The Emergency Events Database - Université Catholique de Louvain (UCL) - CRED, D. Guha-Sap

Top 10 Natural Disasters: 2023 Text in bold indicates that the Charter was activated			
Country	***Disaster***	***Date***	***Fatalities***
Türkiye	**Earthquake**	**6-Feb**	**50,783**
Libya	**Storm**	**10-Sept**	**12,352**
Syrian Arab Republic	**Earthquake**	**6-Feb**	**5,900**
Democratic Republic of the Congo	Flood	2-May	2,970
Morocco	**Earthquake**	**8-Sept**	**2,946**
Afghanistan	**Earthquake**	**7-Oct**	**2,445**
India	**Flood**	**25-June**	**1,529**
Malawi	Storm	11-March	1,209
Nigeria	Flood	5-Sept	275
Yemen	Flood	1-May	248

Table 14. Eighteen most severe disasters by number of fatalities (2009-2023) (events covered by Charter)

18 Most Severe Natural Disasters: 2009-2023 *The Charter was activated for all of the top 18 events since 2009* Text in Red indicates occurrence in 2023				
Date	***Country***	***Type***	***Fatalities***	***Affected people***
12/1/2010	**Haiti**	**Earthquake**	**222,570**	**3,700,000**
06/02/2023	**Türkiye**	**Earthquake**	**50,783**	**9,100,000**
11/3/2011	**Japan**	**Earthquake and tsunami**	**19,848**	**368,820**
10/09/2023	**Libya**	**Storm**	**12,352**	**1,600,000**
25/4/2015	**Nepal**	**Earthquake**	**8,831**	**5,639,722**
8/11/2013	**Philippines**	**Tropical cyclone**	**7,354**	**16,106,807**
12-27/06/2013	**India**	**Flood**	**6,054**	**504,473**

18 Most Severe Natural Disasters: 2009-2023 *The Charter was activated for all of the top 18 events since 2009* Text in Red indicates occurrence in 2023				
Date	***Country***	***Type***	***Fatalities***	***Affected people***
06/02/2023	**Syria**	**Earthquake**	**5,900**	**8,800,000**
28/09/2018	**Indonesia**	**Earthquake**	**4,929**	**769,109**
02/05/2023	**Democratic Republic of the Congo**	**Flood**	**2,970**	**50,000**
14/04/2010	**China P Rep**	**Earthquake**	**2,968**	**112,000**
08/09/2023	**Morocco**	**Earthquake**	**2,946**	**840,000**
14/08/2021	**Haiti**	**Earthquake**	**2,575**	**702,763**
07/10/2023	**Afghanistan**	**Earthquake**	**2,445**	**560,000**
17/05/2022	**India**	**Flood**	**2,035**	**1,300,000**
28/07/2010	**Pakistan**	**Flash flood**	**1,985**	**2,0359,496**
15/06/2020	**India**	**Flood**	**1,922**	**1,300,000**

Table 15. Fifty most severe disasters by number of fatalities in 2023 (Source: EM-DAT: The Emergency Events Database - Université Catholique de Louvain (UCL) - CRED, D. Guha-Sapir - www.emdat.be, Brussels, Belgium, filtered according to the type of disasters

Top 50 Natural Disasters: 2023 **Text in bold indicates that the Charter was activated**				
Date	***Country***	***Type***	***Fatalities***	***Affected people***
6-Feb	**Earthquake**	**Türkiye**	**50,783**	**9,100,000**
10-Sept	**Storm**	**Libya**	**12,352**	**1,600,000**
6-Feb	**Earthquake**	**Syrian Arab Republic**	**5,900**	**8,800,000**
2-May	**Flood**	**Democratic Republic of the Congo**	**2,970**	**50,000**
8-Sept	**Earthquake**	**Morocco**	**2,946**	**840,000**
7-Oct	**Earthquake**	**Afghanistan**	**2,445**	**560,000**
25-June	Flood	India	1,529	10,250,000
11-March	Storm	Malawi	1,209	2,267,458
5-Oct	Flood	Nigeria	275	30,000
May	Flood	Yemen	248	308,000
25-June	Flood	Pakistan	217	28,855
24-Feb	**Storm**	**Mozambique**	**183**	**N/A**

Top 50 Natural Disasters: 2023 Text in bold indicates that the Charter was activated				
15-Oct	Flood	Kenya	183	N/A
5-Oct	**Glacial lake outburst flood**	**India**	**178**	**88,400**
11-Nov	**Earthquake**	**Nepal**	**154**	**300,000**
19-Dec	**Earthquake**	**China**	**151**	**N/A**
14-May	**Storm**	**Myanmar**	**148**	**N/A**
1-May	**Flood**	**Rwanda**	**131**	**51,905**
9-Aug	Wildfire	United States of America	128	7,695
September	**Flood**	**Somalia**	**118**	**2,480,000**
22-Jul	**Storm**	**Mexico**	**104**	**988,000**
25-March	**Flood**	**Ethiopia**	**91**	**240,000**
2-Dec	Mass movement (wet)	United Republic of Tanzania	89	6,202
22-Nov	Mass movement (wet)	Guatemala	86	123,325
2-June	Flood	Haiti	78	
May	Flood	Guatemala	78	4,400,000
22-July	Flood	Afghanistan	77	3,000
26-March	Mass movement (wet)	Ecuador	75	8,400
1-Jan	Flood	Peru	71	410,000
19-Feb	**Flood**	**Brazil**	**67**	**4,000**
26-June	**Flood**	**India**	**62**	**N/A**
October	Flood	Ethiopia	60	N/A
9-July	**Flood**	**Republic of Korea**	**58**	**10,500**
27-July	**Storm**	**China**	**56**	**880,000**
6-March	**Mass movement (wet)**	**Indonesia**	**55**	**1,200**
April	Flood	Angola	54	44,000
19-Jan	**Storm**	**Madagascar**	**53**	**90,870**
1-Jan	Flood	Philippines	52	2,143,347
August	Flood	China	51	600,000
1-Sept	**Storm**	**Brazil**	**46**	**341,000**
July	Flood	Niger	41	169,598
26-Dec	Flood	Democratic Republic of the Congo	40	N/A
13-Aug	Mass movement (wet)	Myanmar	39	N/A
5-Feb	Mass movement (wet)	Peru	38	6,300
15-Oct	Flood	United Republic of Tanzania	38	2,896,500

Top 50 Natural Disasters: 2023 **Text in bold indicates that the Charter was activated**				
25-March	Flood	Kenya	36	139,135
15-June	Flood	Nepal	36	1,500
23-July	**Wildfire**	**Algeria**	**34**	**30,000**
18-Nov	Flood	Dominican Republic	34	22,236

The Charter covered 23 of the 50 most severe natural disasters in terms of fatalities recorded by EM-DAT in 2023, excluding droughts and extreme temperature events.

For these 23 disasters, activation requests were made by:

- Charter Authorised Users (AUs) for disasters in their home countries: One activation for earthquakes in China, one for a storm in China, one for earthquakes in Türkiye, two for floods in Brazil, two for floods in India, one for flooding in South Korea, one for a storm in Madagascar, and one for a storm in Mexico.
- Activations from Charter Cooperating Bodies: Activations requested by UNITAR/UNOSAT were the storm in Mozambique, storm in Libya, earthquake in Afghanistan, earthquakes in Syria, flood in Ethiopia, flood in Somalia, flood in Rwanda, flood in the DRC, earthquake in Morocco, and the wildfires in Algeria. Requested by Sentinel Asia (ADRC) was the landslide in Indonesia and the storm in Myanmar.

The Charter continues to make progress with its Universal Access (UA) initiative by granting charter access to new countries globally each year (refer to chapter 5.2).

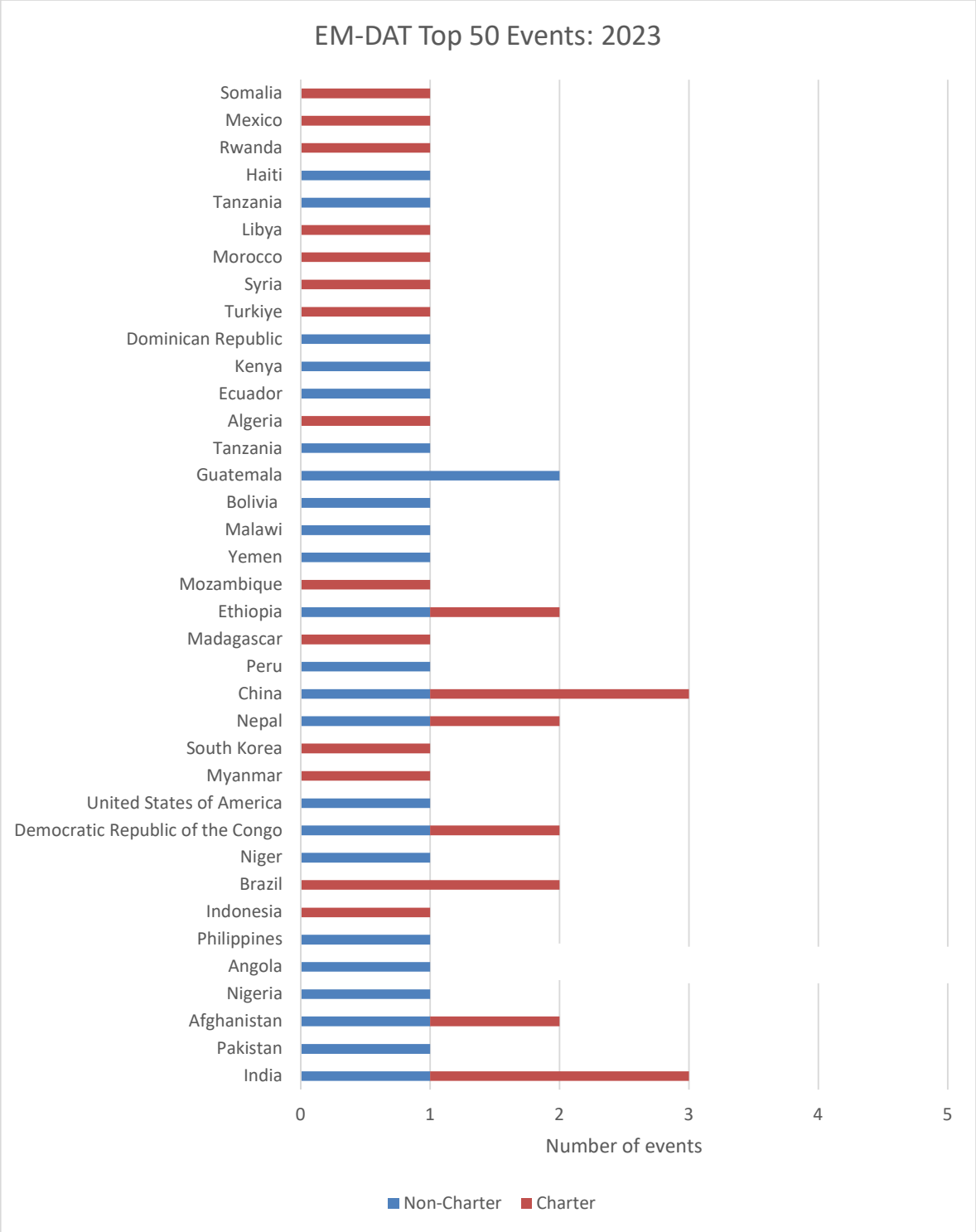


Figure 41. 2023 breakdown by country of the 50 most severe natural disasters (by fatalities) recorded by EM-DAT. Disasters covered by the Charter are shown in red (23 out of 50 disasters).

4.1 System performances assessment

Up to 2016, system performance statistics were gathered and calculated manually. Also, all metrics were calculated with an accuracy of days instead of hours, which sometimes generated huge error margins.

The COS-2 operational system, implemented in March 2015, helps to improve the speed and visibility to all Charter members of some operations and exchanges amongst the different operational staff involved during the activation. Since September 2017, COS-2 systematically monitors the Charter workflow and most of Charter performance parameters will be generated automatically.

Since 2018, Charter operations have an automated monitoring system and all system performances can be calculated with a higher accuracy (hours and minutes). The automated monitoring system is operational with more than thirty statistic parameters being generated automatically.

4.1.1 Delivery of the first image

The two plots below (Figure 42 and Figure 43) show the performance in the delivery of the first image (split by pre-crisis and crisis figures).

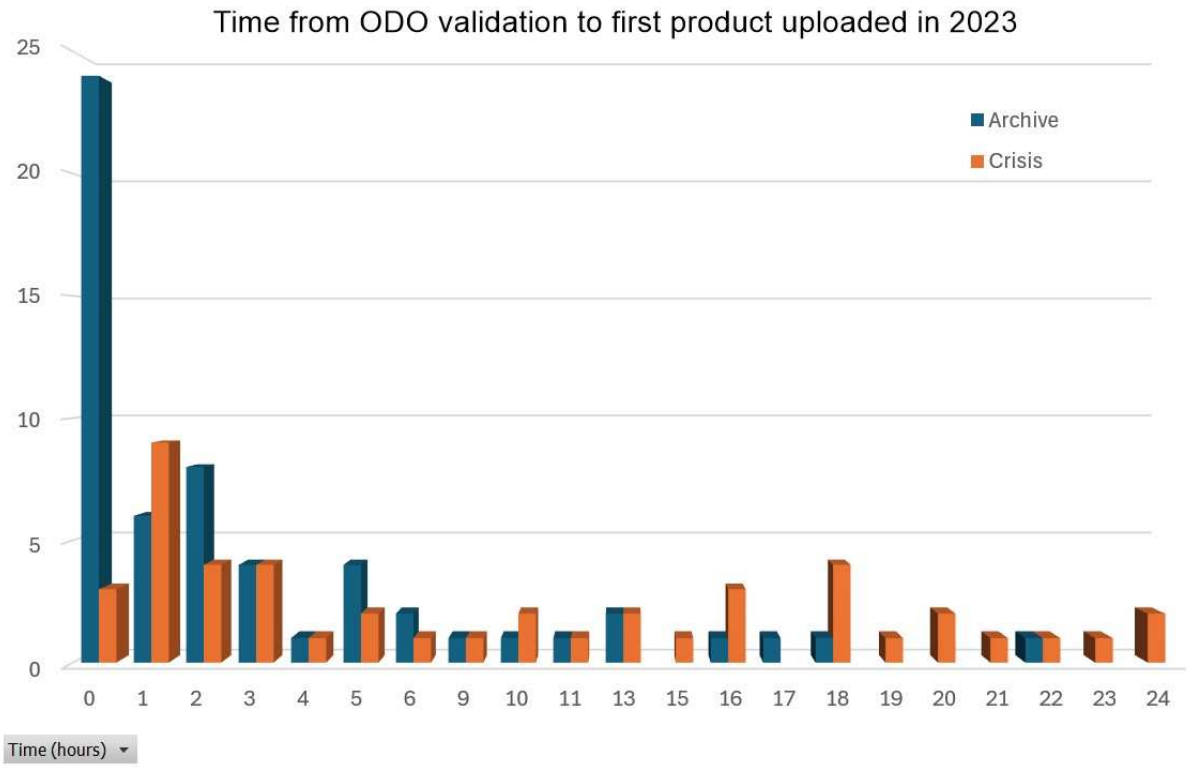


Figure 42. 2023 Delivery time of first image

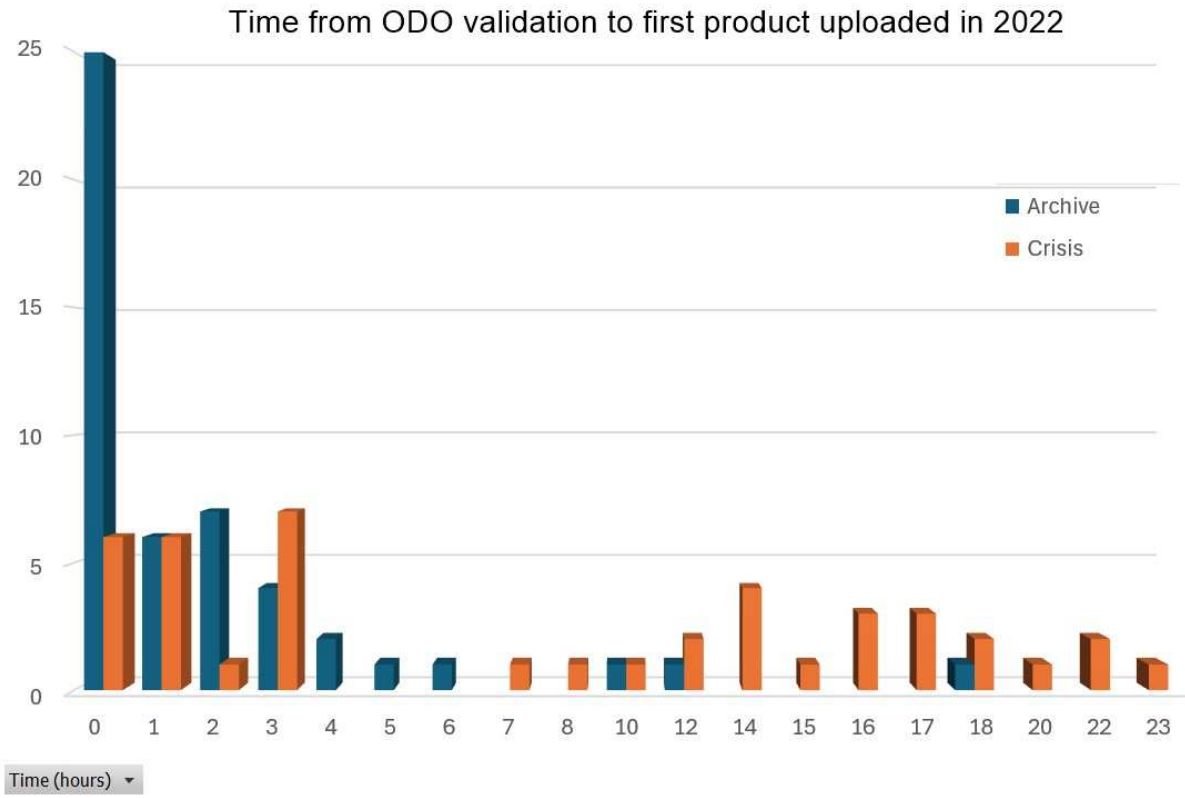


Figure 43. 2022 Delivery time of first image

The delivery time of the first image has greatly improved, as it has been delivered within 2 hours in 90% of cases, most of the time even within 1 hour (see comparison with 2022). Regarding the crisis image, we can note a similar behaviour compared to 2022.

4.1.2 First image provided vs used

The provision of the first image used in a VAP shows different behaviours between new data and archived ones. Archived data is spread between few hours to more than 72 hours, which means that very few VAPs had been produced using archive data only.

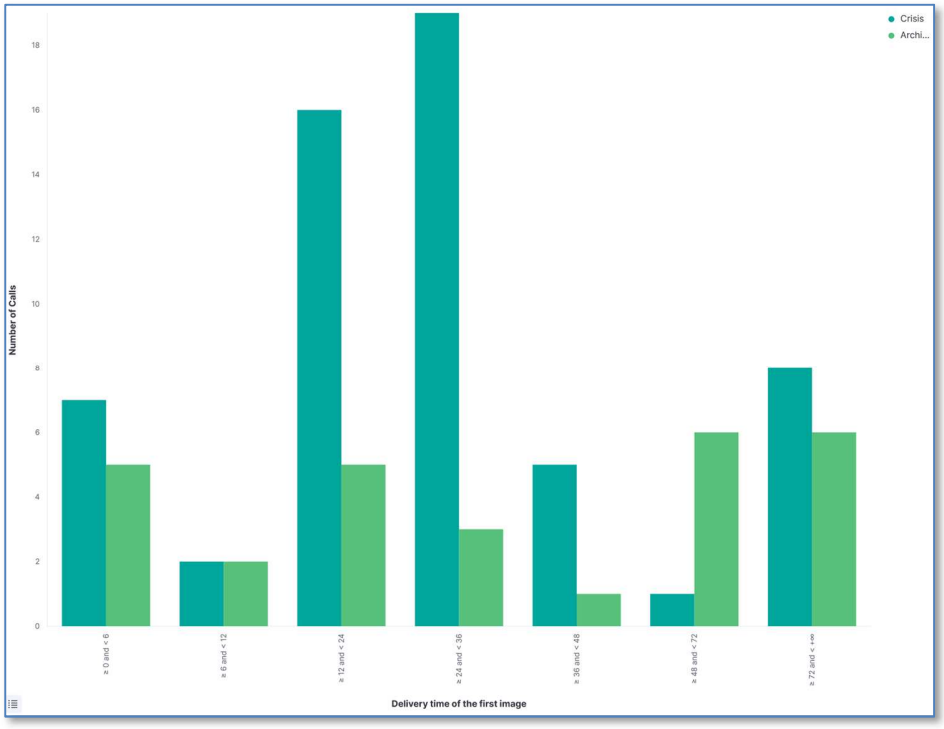


Figure 44. 2023 Delivery time of first image used image

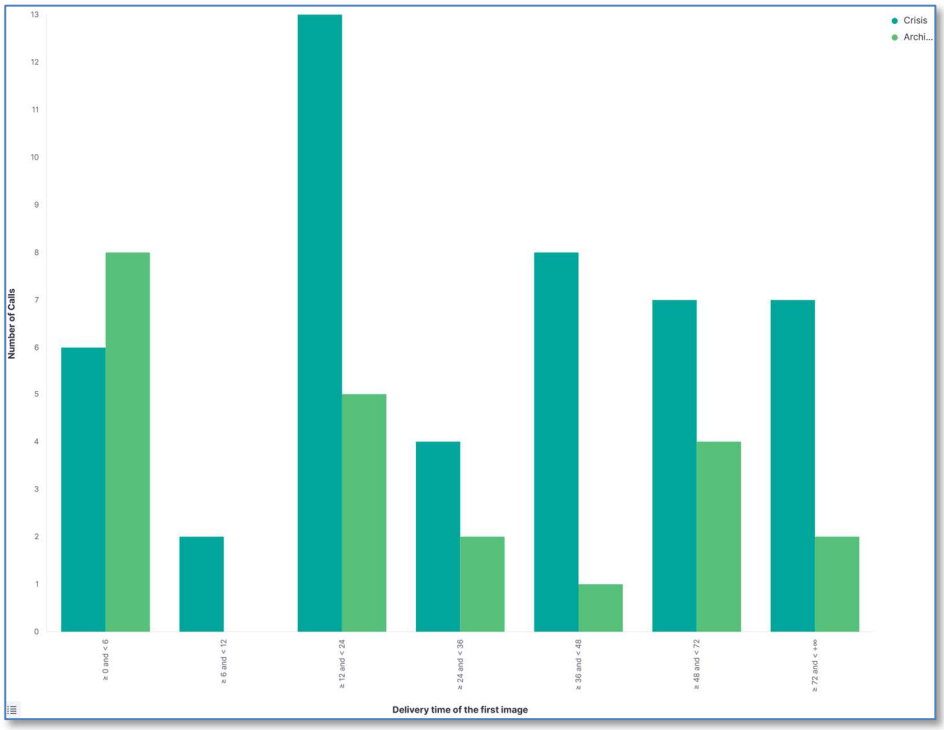


Figure 45. 2022 Delivery time of first image used image

Regarding the crisis image, there is a peak between 12 and 36 hours. In 2022, the peak was between 12 and 24, but with more images are delivered after 36 hours.

The first image provided is always Sentinel-2, but this is due to the fact that COS-2 is automatically fetching the data from Copernicus.

It is very interesting to note that the distribution between 1st image provided and the 1st image used is very different.

The first 4 images used are always Sentinel-2, Pleiades, Sentinel-1 and RCM, but with a different order with respect to 2022. Interesting to note that Pleiades and RCM, while never provided as the first image, are often used for the first value added product.

Please note that only items with a real product provided (uploaded in COS-2 or by a link) are considered in these plots.

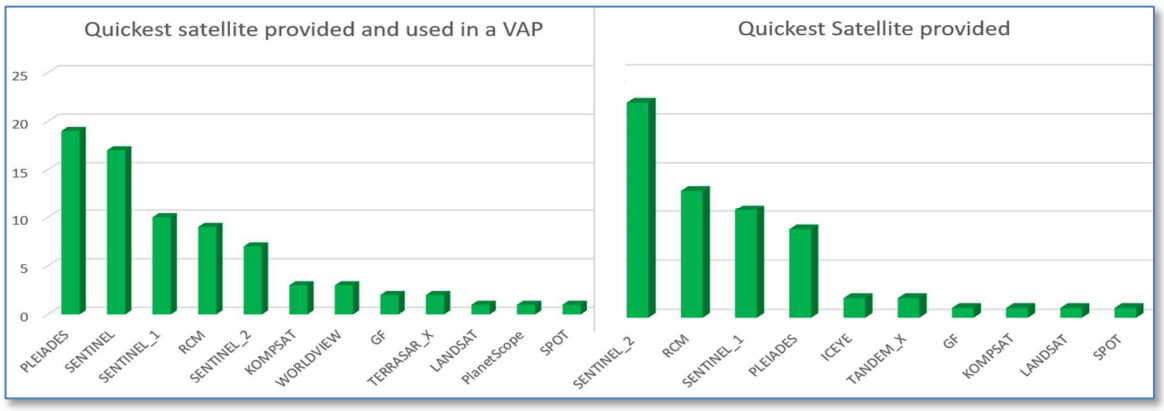


Figure 46. 2023 First image provided vs. used

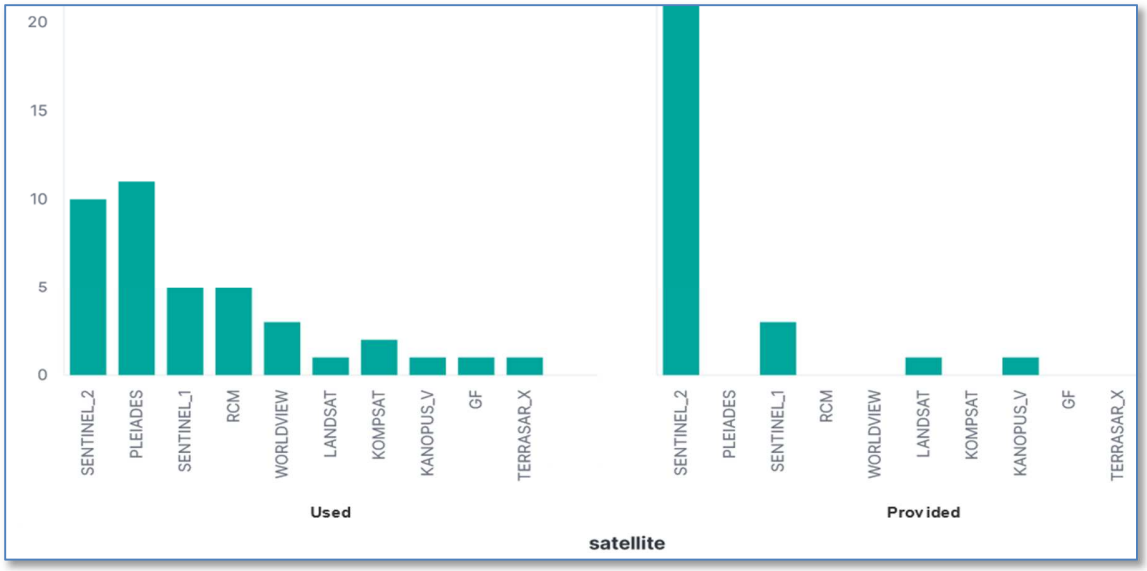


Figure 47. 2022 First image provided vs. used

In 2023, Optical satellites were the favourites with 35 first images used vs. 28 for the radar satellites (comparing to 2022, the gap between the two is much smaller in 2023).

4.1.3 Call performance

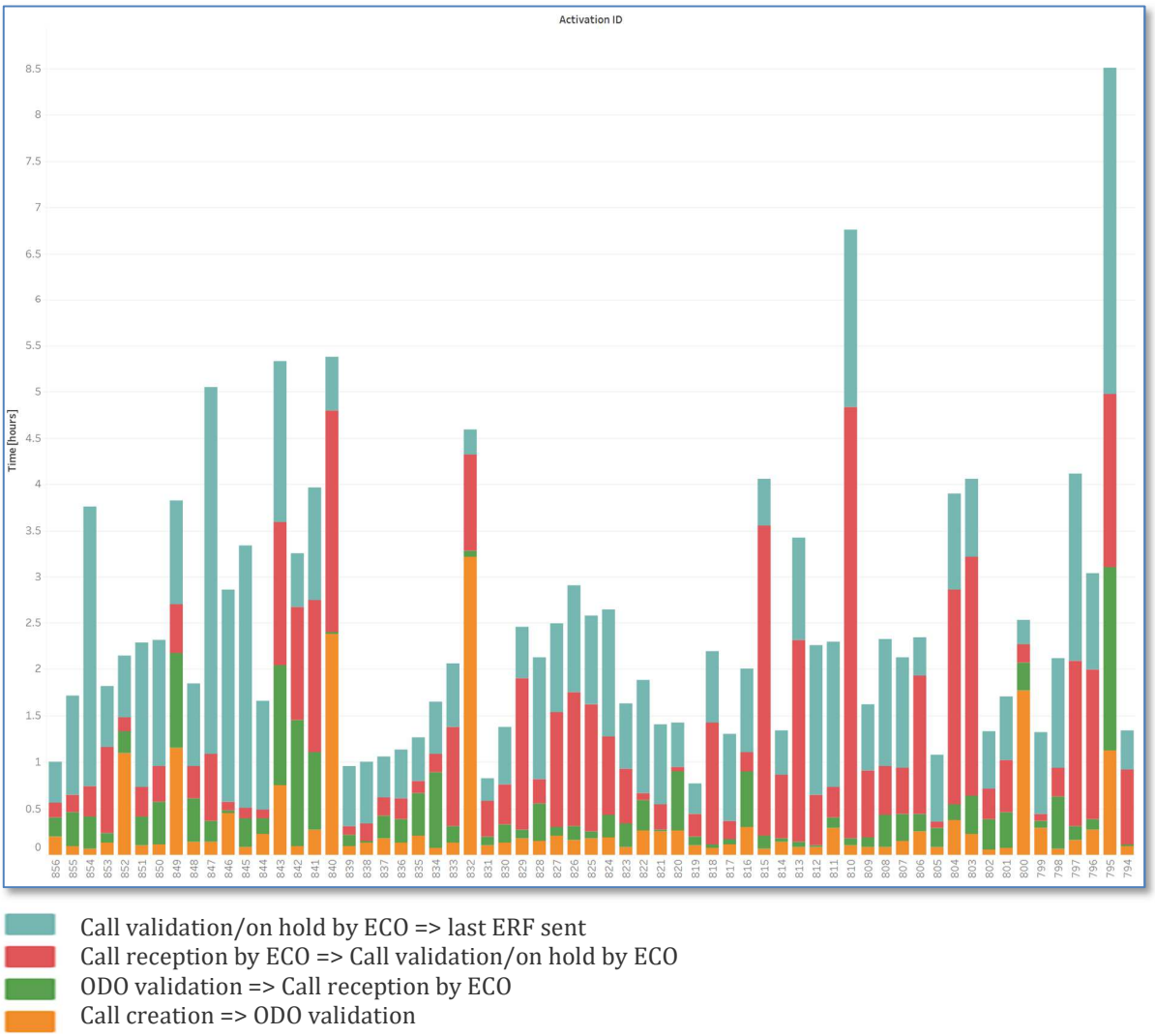


Figure 48. Call performance: time needed for sending all ERFs from call reception

On average, the call is handled within 2 hours from its activation. In 2023, we observed 2 cases where this time was largely exceeded. In the first case (Activation-795 -Storm & Hurricane (Urban areas & Infrastructure), Flash Flood, Landslide in MADAGASCAR) there was a late answer of the ECO and then some issues in contacting the AU. In the second case (Activation-810 - Flood, Landslide in ECUADOR) the AU defined a very large area and there were some issues to contact the AU. However, in both cases the activation proceeded normally after these delays.

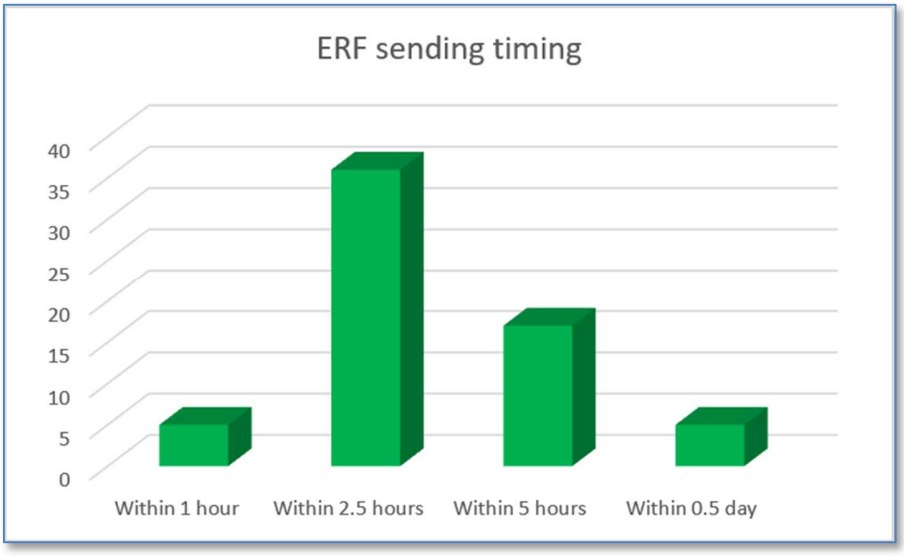


Figure 49. 2023 ECO performance: time needed for sending all ERFs, starting from call reception

The ECO completed their work within half a day for all the 2023 activations (except the 2 cases previously mentioned), normally within 2.5 hours (see Figure 49). The situation improved vs 2022 where more activations were handled in the interval 2.5 - 5 hours. In the worst case, the ECO acknowledges the call reception after 4 hours, best in 5 minutes from ODO sending.

4.1.4. PM/VA performance

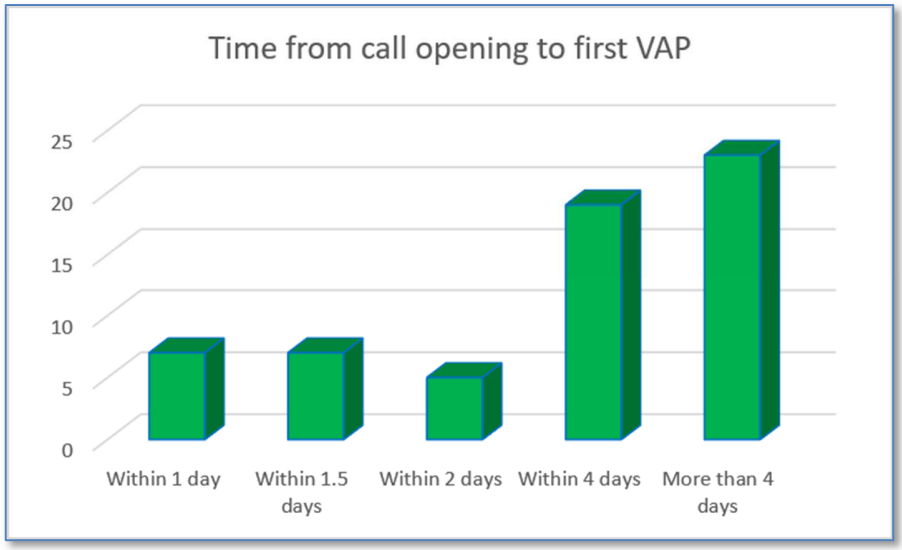


Figure 50. Value-Added Product delivery 2023

In Figure 50, we can see that the first Value-Added Product was provided within 1 day for 7 activations, however the most recurrent case is from 2 to more than 4 days. These values are taken from the PM Reports, where the PM states when the VAP has been sent to the End User. It is very similar to 2022; there is room for improvement in product delivery time.

4.1.5. Assessment of products & services

The members of the Charter make a constant effort to ensure that all relevant staff (ODO, ECOs, the member agencies’ order desks, the PMs and the Executive Secretariat members) are well trained, and that Charter operations are running smoothly in every circumstance:

The different Charter scenarios describing the most appropriate response for the different disaster types such as flooding, ocean storms, earthquakes, volcanic eruptions, etc. and the definition of new scenarios (e.g., explosive events) are regularly reviewed by the Charter’s Executive Secretariat, taking into account every modification in the Charter satellite constellation, as well as recommendations by the ECOs and PMs. The objective is to offer optimal background procedures and to make the work of the ECOs and the PMs as efficient and easy as possible. In 2023 we implement the focus/estimated areas difference to better task the satellites, with consequent update of the scenarios, and the results are under analysis.

In addition to the systematic review of the PM training material, an online PM refresher training course is available to keep PMs up to date on the new members, additional satellites, and updated Charter processes.

A new Charter role was introduced in 2023, the Charter PM Deputy. The PM deputy is designed to solve two different issues:

- The first being a situation where the primary PM is unavailable for a period of time or is very busy and is in need of support with the activation.
- The second scenario involves training, if the primary PM is a new PM, an experienced PM can be added as the PM deputy in order to support and facilitate the learning process of the new PM. The PM deputy can perform all the same tasks as the primary PM, with the exception of submitting the PM report and closing the activation.

Although the Charter’s mandate is limited to supplying satellite data quickly and at no cost, Charter members invest a significant amount of effort and resources in providing crisis mapping and damage assessment for the vast majority of Charter activations.

5. Collaborations and External relations

5.1 New members accession

The Charter is a group of 17 members since 2018. No new members have been integrated since 2018.

5.2 Universal Access

In order to improve Charter access globally, the Charter launched its Universal Access (UA) initiative in 2012. UA allows any national disaster management authority to become a Charter Authorized User (AU) and to submit requests to the Charter for support in the case of a major emergency. Some basic conditions must be met to become a Charter AU, and a procedure has to be followed which includes a training session. The UA process is designed to allow the charter to achieve greater impact in the management of disasters worldwide and is being implemented gradually. See https://disasterscharter.org/web/guest/how-to-register-as-a-user for more information.

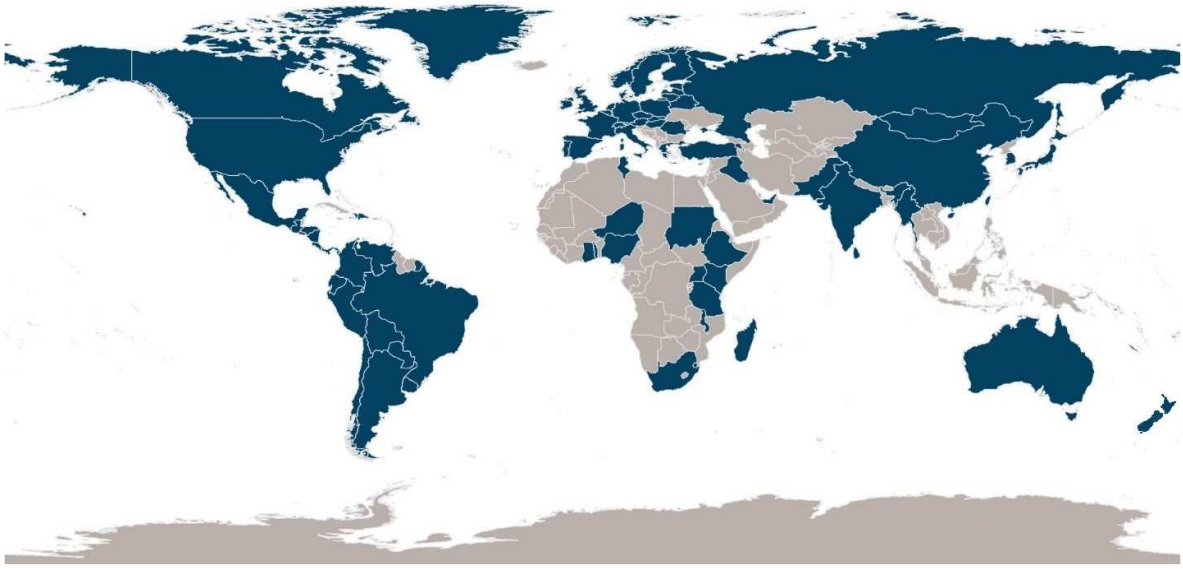


Figure 51. Map showing all countries (in dark blue) with direct access to the Charter as of February 2024

Today, there are 94 Authorized Users in 85 different countries. Universal Access is progressing, with the result of more and more national disaster management agencies being granted AU status:

- Australia in 2013,
- Malawi and Pakistan in 2014,
- Bolivia, Chile, Colombia, and the Dominican Republic in 2015,
- Belarus, El Salvador, Guatemala, Iraq, and Uruguay in 2016,

- Ecuador, Myanmar, New Caledonia, and Sri Lanka in 2017,
- Madagascar, Paraguay, Peru, and Sudan in 2018,
- Eswatini, Ghana, and Tunisia in 2019,
- Cayman Islands, Costa Rica, Ethiopia, Haiti, Tanzania, Togo, Trinidad & Tobago in 2020,
- Uganda, Armenia, Cameroon, Gambia, Mexico, Mongolia in 2021,
- South Africa, Panama, Honduras, Niger, Nicaragua, Kenya and Solomon Island in 2022,
- No authorized users in 2023.

The Charter continues its efforts for promoting the Universal Access policy. Moreover, the Charter frequently offers refresher trainings for Authorized Users with the main focus on activating the Charter via the web-based operational system of the Charter (COS-2).

5.3 Cooperating Bodies

5.3.1 Cooperation with UNOOSA

Active cooperation with UNOOSA has been continuing for many years, mainly through its program UN-SPIDER. UNOOSA raised awareness about the Charter at several conferences or events addressing disaster managers and Earth observation experts, worldwide as well as within the UN-SPIDER communication channels, the UN-SPIDER(Knowledge Portal(https://www.un-spider.org/)).

In particular, the Charter’s Universal Access (UA) initiative has been promoted. Disaster management authorities from several countries have been engaged to contact the Charter. Others are in the process that includes a training that helps understand which sorts of emergencies are covered by the Charter, how an activation is triggered, and what information is crucial for the Charter to be able to support its users in the case of a major emergency caused by a disaster.

In 2023 together with the International Charter and other partners, UN-SPIDER organized the following events:

- Institutional strengthening mission to South Africa, 8–12 May 2023, aimed at bolstering the capacity of local institutions to effectively utilize the Charter for disaster monitoring and response, fostering long-term resilience-building efforts.
- July 2023 - UN-SPIDER/DLR/International Charter/ZFL International Workshop: Use of the Charter Mapper during Activations. The workshop was held in the UN Campus in Bonn, Germany, from 18 to 20 July 2023, and brought together fifteen PMs & VAs from Algeria, Belarus, Colombia, Eswatini, Ethiopia, Germany, Madagascar, Nigeria, Sri Lanka, and South Africa, as well as the Doctors without Borders NGO. This workshop aimed at enhancing the project management skills of disaster management authorities and Earth observation experts, facilitating more effective utilization of the Charter during emergency response efforts.
- November 2023 - UN-SPIDER/ECLAC/International Charter Training Course for Latin America. The training course brought together 15 professionals with skills in project

management in case of activations of the International Charter from Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Paraguay and Peru.

- November 2023 - UN-SPIDER/ASAL/ZFL Workshop: Space-based Solutions for Forest Fires in Algeria. This workshop was organized in Algiers, Algeria, on 21 and 22 November 2023, and contributed to the efforts implemented by ASAL to facilitate the use of space technologies and other solutions developed by the space community to confront the challenges posed by forest fires. ESA provided training of the ESA Charter Mapper.

The cooperation between Charter and UNOOSA was highlighted and detailed in statements and presentations during several international events and conferences. Every opportunity was used by UNOOSA staff to raise awareness of the opportunities offered by the Charter and particular the Universal Access initiative.

Three Charter activations were triggered by UNOOSA on behalf of national disaster management authorities under the “Universal Access Trial” agreement (see below) between the Charter and UNOOSA:

- In January 2023, an activation was triggered by UNOOSA/UN-SPIDER on behalf of the Disaster Management and Mitigation Unit of the Office of the Vice President of Zambia due to the severe flooding in Southern, Central and Lusaka provinces;
- In February 2023, an activation was triggered by UNOOSA/UN-SPIDER on behalf of the National Institute of Disaster Management of Mozambique due to very large flood triggered by heavy rainfall in the Maputo province;
- In October 2023, an activation was triggered by UNOOSA/UN-SPIDER on behalf of the National Disaster Management Organization of Ghana due to widespread flooding in the south-eastern region of the country. The crisis was triggered by the overflowing of the Akosombo dam.

In these cases, UNOOSA also assisted the Charter in finding a Project Manager with the help of the network of Regional Support Offices of UNOOSA’s UN-SPIDER program.

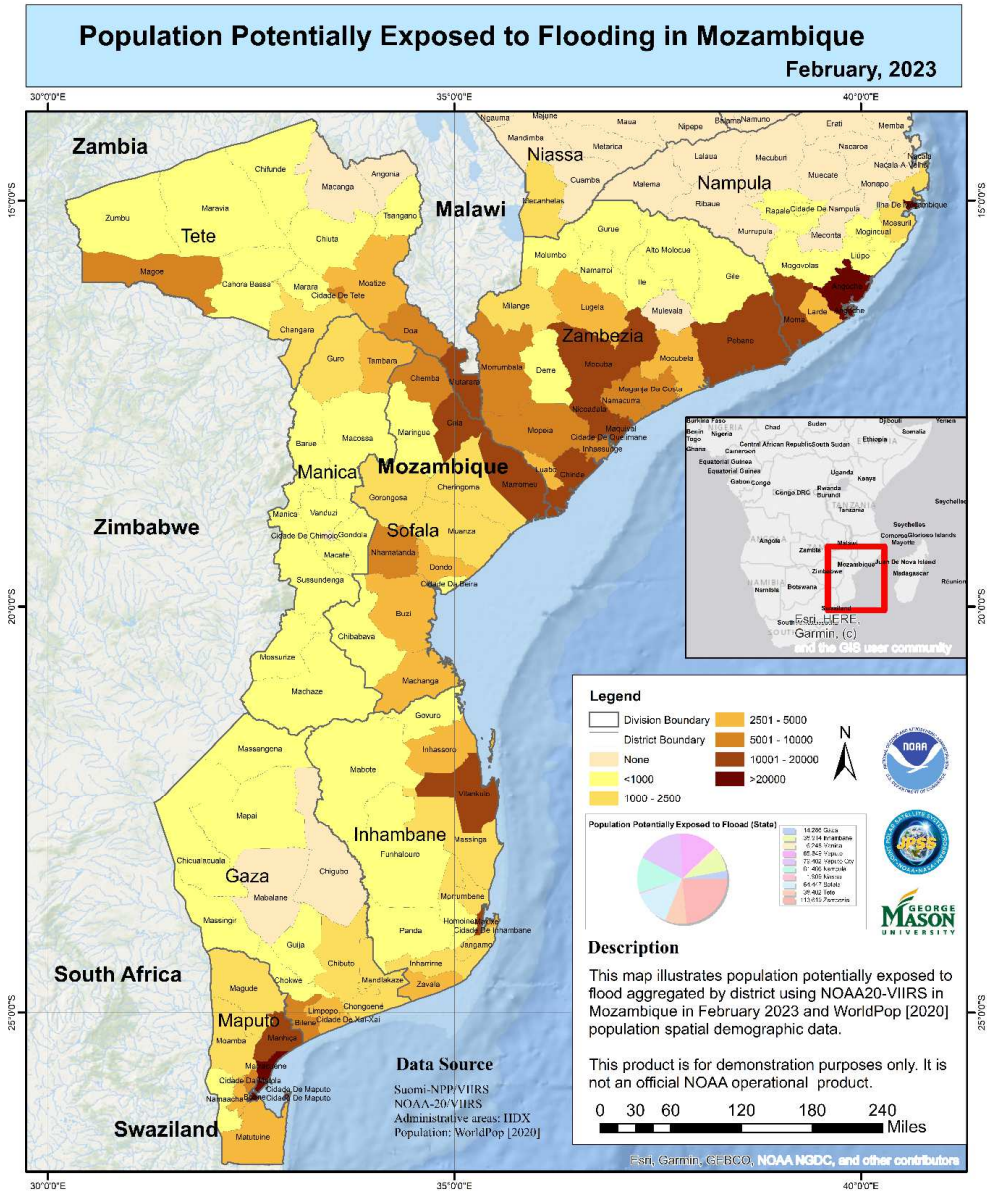


Figure 52. Example of a map produced by George Mason University, USA.: Flooded areas (red) in Mozambique due to heavy rainfall in January 2023.

In early 2018, a “Universal Access Trial” mechanism was agreed between the Charter and UNOOSA, allowing UNOOSA to elevate requests for activation of the Charter on behalf of disaster management authorities in countries that are not yet Charter Authorized Users (AUs), and using these activations as an opportunity to encourage these authorities to become Charter AUs following the emergency.

5.3.2 Cooperation with UNITAR/UNOSAT

Active cooperation with UNITAR/UNOSAT has been in place for many years. UNOSAT has continued to raise awareness about the Charter among its user community and other relevant stakeholders. The operational rapid mapping service is one of UNOSAT’s key activities and creates added value to information for actors in the field and at headquarters. Since late 2019, UNOSAT has experienced an increase in the number of requests to trigger the Charter.

Nineteen Charter activations were triggered by UNITAR/UNOSAT in 2023 which comprises a significant portion of the overall Charter activations:

- Earthquake in Syrian Arab Republic Feb. 2023. UNITAR on behalf of International Federation of Red Cross and Red Crescent Societies.
- Tropical Storm Freddy in Mozambique Feb. 2023. UNITAR on behalf of United Nations Office for the Coordination of Humanitarian Affairs (OCHA) ¦ Regional Office for Southern & Eastern Africa
- Tropical Cyclone Kevin in Vanuatu March. 2023. UNITAR on behalf of United Nations Office for the Coordination of Humanitarian Affairs (OCHA) | Regional Office for Asia and the Pacific
- Flooding in Somalia and Ethiopia March 2023. UNITAR on behalf of Food and Agriculture Organization of the United Nations (FAO)
- Flooding in Rwanda May 2023. UNITAR on behalf of United Nations Office for the Coordination of Humanitarian Affairs (OCHA) / Regional Office for Southern & Eastern Africa
- Flash Flooding in The Democratic Republic of the Congo May 2023. UNITAR on behalf of UNOCHA.
- Tropical Cyclone Mocha in Bangladesh May 2023. UNITAR on behalf of United Nations Office for the Coordination of Humanitarian Affairs (OCHA), Regional Office for Asia and the Pacific.
- Flood in Somalia May 2023. UNITAR on behalf of Food and Agriculture Organization of the United Nations (FAO)
- Flooding in Ethiopia June 2023. UNITAR on behalf of UNICEF.
- Landslide in Georgia August 2023. UNITAR on behalf of United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA)
- Earthquake in Morocco September 2023. UNITAR on behalf of International Federation of Red Cross and Red Crescent Societies (IFRC).
- Flooding in Libya September 2023. UNITAR on behalf of United Nations Office for the Coordination of Humanitarian Affairs (OCHA) / Joint Environment Unit.
- Earthquake in Afghanistan October 2023. UNITAR on behalf of United Nations Office for the Coordination of Humanitarian Affairs (OCHA).
- Tropical Cyclone Lola in Vanuatu October 2023. UNITAR on behalf of United Nations Office for the Coordination of Humanitarian Affairs (OCHA) | Regional Office for Asia and the Pacific.

- Tropical Cyclone Lola in the Solomon Islands October 2023. UNITAR on behalf of United Nations Development Programme.
- Earthquake in Nepal November 2023. UNITAR on behalf of United Nations Office for the Coordination of Humanitarian Affairs (OCHA), Regional Office for Asia and the Pacific, Bangkok.
- Flooding in Somalia November 2023. UNITAR on behalf of FAO Somalia Water and Land Information Management (SWALIM).
- Explosion in Guinea December 2023. UNITAR on behalf of United Nations Office for the Coordination of Humanitarian Affairs (OCHA) Regional Office for West and Central Africa (ROWCA).

UNOSAT staff members supported the Charter by providing value-added products based on the satellite images made available by the Charter for all the activations listed above.

Figure 53. A map of the affected population and buildings around the Guinean Petroleum Company (SGP) site in Conakry, Guinea. Produced by UNITAR/UNOSAT in December 2023.

5.3.3 Cooperation with Sentinel Asia

The Asian Disaster Reduction Center (ADRC) has the status of Charter Cooperating Body, allowing it to be able to trigger the Charter in support of requests from national members of Sentinel Asia (SA) and ADRC. By the end of 2023, SA was comprised of 97 organizations from 29 countries and regions and 17 international organizations.

JAXA provides the Charter with monthly activation status reports as well as two biannual reviews presenting SA’s emergency response and promotional/awareness activities. ADRC expressed their intent to continue contributing as a hub facility bridging space agencies and disaster management organizations. In 2023, 27 activations were handled by SA. Among these, the escalation mechanism to the Charter was used in response to 7 events:

- Earthquake in the Philippines in February 2023
- Oil spill in the Philippines in February 2023
- Landslide in Indonesia in March 2023
- Cyclone MOCHA in Myanmar in May 2023
- Landslide in Vietnam in August 2023
- Earthquake in the Philippines in November 2023
- Volcanic eruption in Indonesia in December 2023

Several SA member countries (Armenia, Australia, China, India, Japan, Korea, Mongolia, Myanmar, Pakistan, United Arab Emirates) have become Charter Authorized Users and can activate the Charter directly. Sentinel Asia’s escalation mechanism remains beneficial for those countries because the satellite resources offered by Sentinel Asia and the Charter differ, and the Sentinel Asia community provide PM and VA in case of Sentinel Asia’s escalation.

JAXA, the ES responsible for SA, continued to promote the Charter, explaining the escalation mechanism to activate the Charter and the Charter’s Universal Access policy on several occasions. In addition, JAXA has contributed to increasing Project Manager (PM) resources and to maintaining PM skills, especially for the purpose of making escalations from SA to the Charter effective and beneficial to the SA member countries and regions where disasters occur. Another goal of these efforts is to have trained PMs in SA member countries with a Charter Authorized User for coordinated responses within the country in case of a Charter activation.

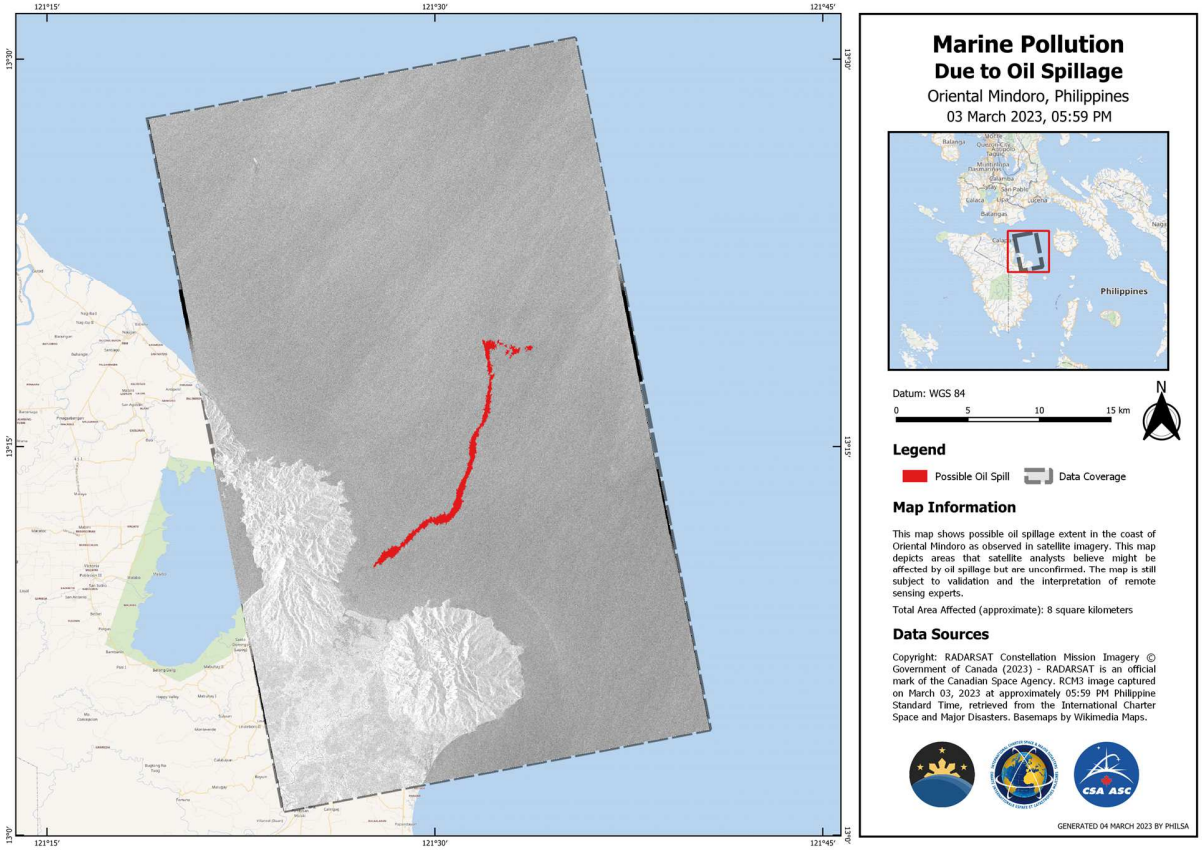


Figure 54. Oil spilled in Oriental Mindoro, Philippines. Produced by PHILSA in March 2023.

5.4 Cooperation with other programs and initiatives

5.4.1 Cooperation with the Copernicus Emergency Management Service of the European Union

The Charter and the Copernicus Emergency Management Service (CEMS) are complementary with a slightly different scope: the Charter is strictly focused on the response phase during a major emergency caused by a natural or technical disaster, while the CEMS is intended to provide support for the response and recovery phases of the emergency management cycle within and outside Europe. However, significant overlap exists between the Charter and the CEMS Rapid Mapping Service. Therefore, collaboration is mutually beneficial and has taken place on numerous occasions in the past.

In April 2018, the Charter and the CEMS finalized and agreed on procedures for collaboration, not only to avoid duplications, where possible, but also to leverage synergies. Since then, the Charter

could substantially benefit from the mapping capacity of the CEMS on a case-by-case basis, and the CEMS could, especially in cases of large-scale disasters, benefit from satellite data provided by the Charter. Collaboration can be triggered based on these procedures by either the CEMS or the Charter, with the goal to collaborate efficiently.

The new procedures were used for a few successful collaboration cases in the past years. In 2023, the Charter cooperated with CEMS during 1 activation with maps produced by the CEMS.

CEMS was granted access to the data of ongoing Charter activations in the following cases:

- Earthquake in AFGHANISTAN in October 2023

In 2023, the CEMS Rapid Mapping Service was activated 67 times. Over the same time period, there was 4 Charter activations over Europe. It can be concluded that demands in Europe are very successfully covered by the CEMS.

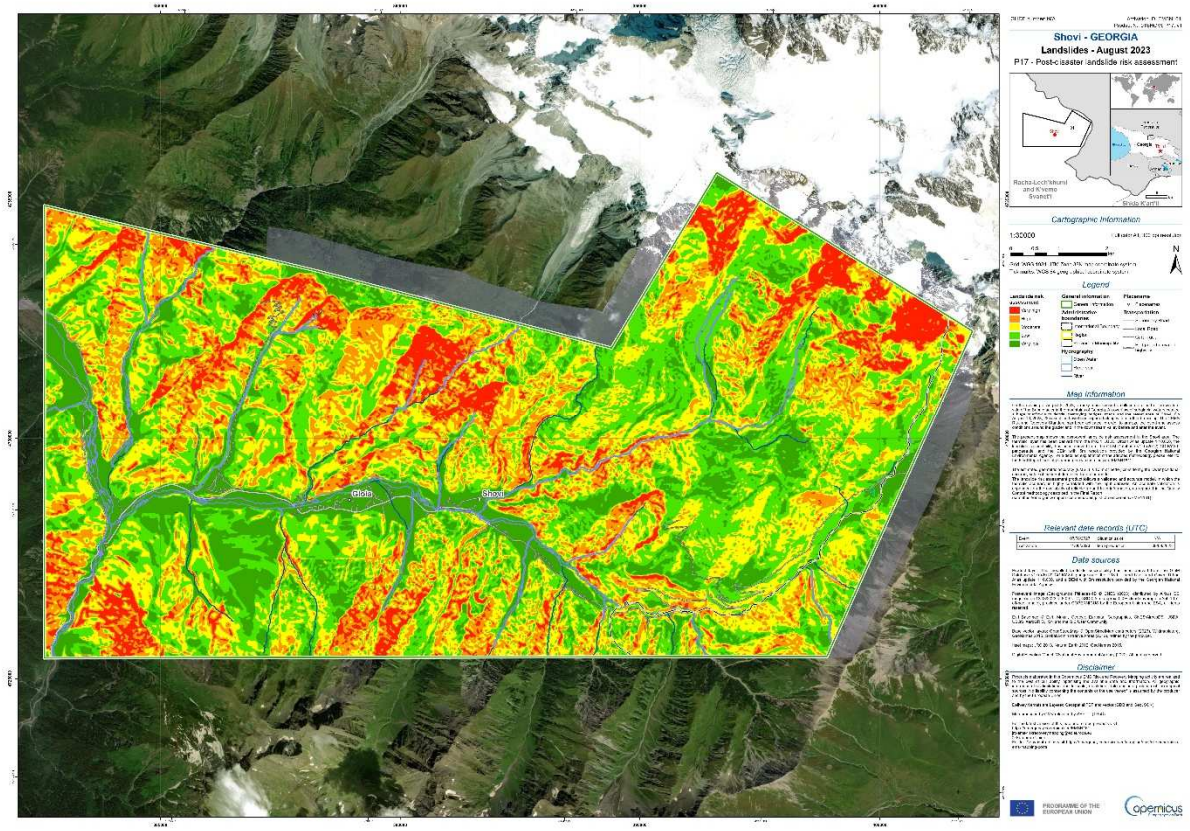


Figure 55. Example of a map produced by CEMS showing a Post-disaster landslide risk assessment in Shovi, Georgia in August 2023.

5.4.2 Collaboration with CEOS Working Group on Disasters

The Committee on Earth Observation Satellites (CEOS) Working Group on Disasters aims at increasing and strengthening satellite Earth observation contributions to the various Disaster Risk Management (DRM) phases in different domains, such as earthquakes, volcanoes, and landslides (http://ceos.org/ourwork/workinggroups/disasters/). A number of thematic demonstrators intend to showcase the following:

- the added value and uniqueness of increased CEOS coordination in these thematic areas;
- the benefits of closer ties to users (decision makers, disaster management stakeholders, and politicians) and ease of access to data;
- the potential for the increased roles of space-based Earth observation under the Sendai Framework for Disaster Risk Reduction 2015-2030 of the United Nations.

In addition to demonstrator projects focusing on certain natural hazards, there is also a “Recovery Observatory” demonstrator focusing on the southwest of Haiti that was devastated by Hurricane *Matthew* in October 2016. The project demonstrated the potential and increased the contribution of satellite-based information to the recovery phase in the years after extreme catastrophic events.

Following an agreement established in 2015, once the peak of a Charter activation is passed, and access to Charter data is required from one of the CEOS demonstrators, Charter agencies may share the data collections acquired during an activation taking into account the respective data licenses. A procedure for requesting such collaboration was established. It was used several times since then by the CEOS group in order to be able to access data acquired by the Charter, e.g., for the area focused by the Haiti Recovery Observatory. More recently, observer access to COS-2 has been granted to lead scientists involved in the above-mentioned demonstrators, so they can more easily follow the status of activations of the Charter.

In 2022, the Charter Board approved the ‘International Charter: Space and Major Disasters’ and CEOS Working Group Disasters Data and Product Exchange Procedures. This document addresses both the procedure for CEOS WGDisasters Projects to access Charter data as well as the procedure for WGDisasters projects to offer CEOS Partner products for Charter Emergency Response to specific Charter activations.

6. Communication

6.1 Website

The Charter website is available in English and some pages are available in Spanish, French, Chinese, Russian and Portuguese, other languages versions are also expected. The website design is being continuously improved to facilitate the user navigation and information search.

https://www.disasterscharter.org/web/guest/home

The Charter website allows direct access to COS-2 for authorized Charter members’ personnel and provides information on how the Charter can be activated by Authorized Users through the Universal Access initiative.

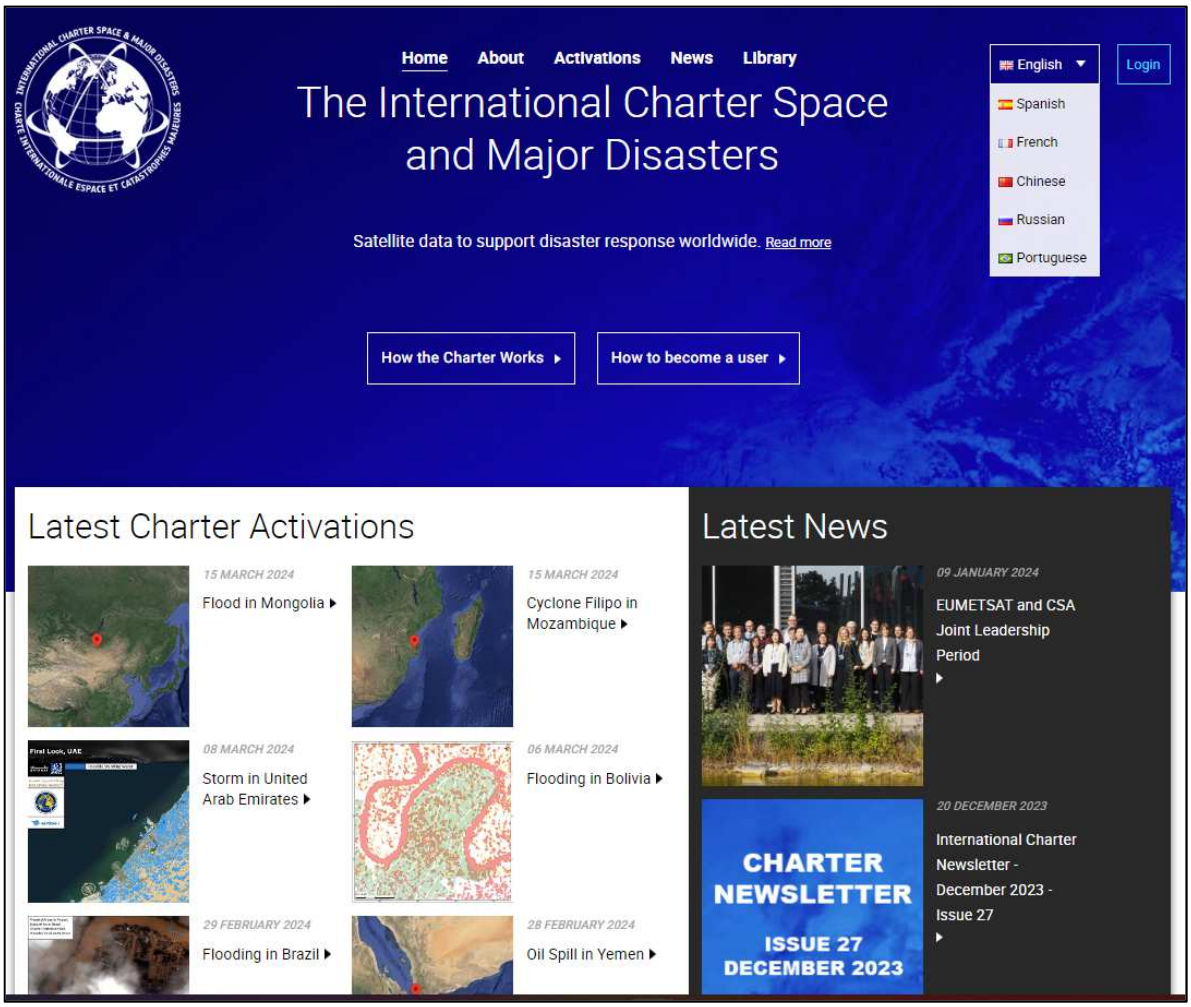


Figure 56. Charter website homepage

During 2023 there were 211,476 visits to the website. There were 1,637,742 page views, of which 324,931 were unique. The average visit duration was 6 minutes and 50 seconds. There was a total of 44,467 downloads on the website, of which 39,455 were unique. Most of these downloads were for value added products, however, the most downloaded files on the website in 2023 were for the Charter brochure and the infographic, which both received 324 unique downloads. The most downloaded products were for the earthquakes in Türkiye and floods in Libya.

Table 16. Charter website main pages views (January-December 2023)

Page	Page Views	Unique Page Views	Avg. Time on Page	Bounce Rate	Exit Rate
https://disasterscharter.org/web/guest/home	64 338	44 742	39 018	37 257	55 seconds
https://disasterscharter.org/web/guest/disaster-types/-/article/fires	13 869	11 732	11 486	11 117	55 seconds
https://disasterscharter.org/web/guest/charter-activations	18 152	10 685	4299	9134	53 seconds
https://disasterscharter.org/web/guest/about-the-charter	6520	4653	1085	4285	1 minute 29 seconds
https://disasterscharter.org/web/guest/disaster-types/-/article/landslides	3415	2968	2803	2853	47 seconds
https://disasterscharter.org/web/guest/how-the-charter-works	3758	2995	689	2805	1 minute 20 seconds
https://disasterscharter.org/web/guest/library	3070	1979	378	1821	1 minute 44 seconds
https://disasterscharter.org/web/guest/how-to-register-as-a-user	2412	1923	414	1813	1 minute 7 seconds
https://disasterscharter.org/web/guest/disaster-types/-/article/cyclones	2013	1718	1477	1653	58 seconds
https://disasterscharter.org/web/guest/disaster-types/-/article/ice	1629	1443	1373	1405	40 seconds
https://disasterscharter.org/web/guest/disaster-types/-/article/floods	1375	1206	927	1168	1 minute
https://disasterscharter.org/web/guest/disaster-types/-/article/oil-spills	1384	1201	1080	1143	56 seconds
https://disasterscharter.org/web/guest/news	1564	1166	76	1114	43 seconds
https://disasterscharter.org/web/guest/disaster-types/-/article/volcanoes	1115	964	849	930	1 minute 1 second
https://disasterscharter.org/web/guest/disaster-types/-/article/earthquakes	1059	903	644	883	58 seconds
https://disasterscharter.org/web/guest/disaster-types/-/article/ocean-wave	1033	905	851	876	40 seconds
https://disasterscharter.org/web/guest/text-of-the-charter	788	659	283	575	1 minute 52 seconds

Page	Page Views	Unique Page Views	Avg. Time on Page	Bounce Rate	Exit Rate
https://disasterscharter.org/web/guest/history	426	369	62	350	1 minute 55 seconds
https://disasterscharter.org/web/guest/disaster-types/-/article/other	335	294	94	287	46 seconds
https://disasterscharter.org/web/guest/contact-us	251	222	35	218	56 seconds
https://disasterscharter.org/web/guest/universal-access	243	193	22	182	1 minute 35 seconds
https://disasterscharter.org/web/guest/newsletter	187	162	52	158	1 minute 25 seconds
https://disasterscharter.org/web/guest/20th-anniversary	94	82	22	82	41 seconds

Figure 57. Charter website visits (January-December 2023)

As shown in Figure 57, there was a quiet start on the website to 2023, but then in February the earthquakes in Türkiye and Syria occurred resulting in a large increase in traffic to its highest monthly total in 2023. These activations were the most and third most visited activations in 2023.

Though there are other times of year where traffic decreased, it consistently remains at a higher level than in January, and higher than traffic seen in 2022 (with the exception of the volcano in Tonga in January 2022).

While peaks in traffic typically occur on the website when a new activation is published, the next peak in traffic in 2023 was in May, shortly before the activation for the flood in South Africa. There was an influx in visitors to the Cyclone Freddy in Mozambique activation from March and a number of South African activations. This could be an indication of people from the area trying to find information about the May floods at a time before the Charter was activated.

The next peak in traffic occurred in September when the activation for the flood in Libya was published. This activation, as well as the earthquake in Morocco and cyclone in Brazil were in the top 20 activations visited in 2023. And though the activations individually received far less traffic

than the earthquake in Türkiye, September 12 received the highest level of traffic the website saw on a single day in 2023.

Traffic remained at high levels in October and November but not for individual activations. This level of traffic was the result of the various activations published during these months, such as the earthquake in Afghanistan, flood in Somalia, and landslide in Mexico.

Table 17. Number of Charter activations pages views (January-December 2023)

Page	Page Views	Unique Page Views	Entrances	Unique Visitors	Avg. Time on Page	Bounce Rate
https://disasterscharter.org/web/guest/activations/-/article/earthquake-in-turkey-activation-797-	9590	7051	4319	6400	2 minutes 36 seconds	58%
https://disasterscharter.org/web/guest/activations/-/article/oil-spill-in-philippines-activation-807-	5245	4362	3718	3770	1 minute 45 seconds	62%
https://disasterscharter.org/web/guest/activations/-/article/earthquake-in-syrian-arab-republic-activation-798-	4717	3315	1748	3051	2 minutes 17 seconds	57%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-chile-activation-826-	8797	2495	1845	2425	11 minutes 22 seconds	63%
https://disasterscharter.org/web/guest/activations/-/article/storm-hurricane-rural-in-india-activation-823-	2436	2129	1674	2030	1 minute 7 seconds	83%
https://disasterscharter.org/web/guest/activations/-/article/landslide-in-brazil-activation-803-	3557	2056	1175	1887	3 minutes 35 seconds	65%
https://disasterscharter.org/web/guest/activations/-/article/flood-flash-in-ecuador-activation-822-	7517	1818	1193	1765	12 minutes 1 second	61%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-brazil-activation-815-	3255	1761	756	1658	3 minutes 48 seconds	58%
https://disasterscharter.org/web/guest/activations/-/article/fire-in-chile-activation-799-	2141	1803	1149	1639	1 minute 59 seconds	68%
https://disasterscharter.org/web/guest/activations/-/article/earthquake-in-morocco-activation-838-	2105	1664	774	1435	2 minutes 17 seconds	55%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-libya-activation-839-	1843	1565	845	1402	1 minute 43 seconds	59%

Page	Page Views	Unique Page Views	Entrances	Unique Visitors	Avg. Time on Page	Bounce Rate
https://disasterscharter.org/web/guest/activations/-/article/flood-flash-in-brazil-activation-837-	1820	1474	870	1310	2 minutes 36 seconds	58%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-peru-activation-811-	3062	1445	577	1297	4 minutes 26 seconds	60%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-zambia-activation-796-	2733	1365	652	1276	4 minutes 6 seconds	66%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-somalia-activation-849-	1416	1248	998	1228	2 minutes 56 seconds	89%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-somalia-activation-813-	2548	1224	541	1165	3 minutes 57 seconds	61%
https://disasterscharter.org/web/guest/activations/-/article/fire-in-algeria-activation-831-	1424	1166	637	1075	1 minute 41 seconds	61%
https://disasterscharter.org/web/guest/activations/-/article/landslide-in-mexico-activation-847-	1439	1188	620	1057	1 minute 56 seconds	63%
https://disasterscharter.org/web/guest/activations/-/article/storm-hurricane-rural-in-myanmar-activation-818-	1760	1151	639	1041	6 minutes 20 seconds	65%
https://disasterscharter.org/web/guest/activations/-/article/earthquake-in-afghanistan-activation-843-	1256	1081	502	995	2 minutes 17 seconds	58%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-ecuador-activation-810-	2403	1048	547	983	4 minutes 4 seconds	69%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-india-activation-827-	1338	975	544	918	3 minutes 13 seconds	68%
https://disasterscharter.org/web/guest/activations/-/article/flood-flash-in-korea-republic-of-activation-828-	1156	934	486	851	1 minute 38 seconds	61%
https://disasterscharter.org/web/guest/activations/-/article/flood-flash-in-south-africa-activation-814-	1002	877	421	840	1 minute 25 seconds	70%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-ghana-activation-844-	1061	912	450	835	2 minutes 5 seconds	64%

Page	Page Views	Unique Page Views	Entrances	Unique Visitors	Avg. Time on Page	Bounce Rate
https://disasterscharter.org/web/guest/activations/-/article/storm-hurricane-urban-in-vanuatu-activation-808-	1213	793	420	748	6 minutes 35 seconds	65%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-brazil-activation-851-	1003	810	405	740	2 minutes 20 seconds	59%
https://disasterscharter.org/web/guest/activations/-/article/storm-hurricane-urban-in-bangladesh-activation-819-	880	763	319	710	1 minute 39 seconds	60%
https://disasterscharter.org/web/guest/activations/-/article/flood-flash-in-india-activation-842-	739	649	247	614	2 minutes 8 seconds	59%
https://disasterscharter.org/web/guest/activations/-/article/storm-hurricane-urban-in-madagascar-activation-795-	814	666	301	606	2 minutes 13 seconds	57%
https://disasterscharter.org/web/guest/activations/-/article/flood-flash-in-eswatini-activation-800-	745	646	311	595	1 minute 25 seconds	68%
https://disasterscharter.org/web/guest/activations/-/article/storm-hurricane-rural-in-solomon-islands-activation-806-	755	645	401	590	1 minute 39 seconds	76%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-mozambique-activation-805-	926	623	306	586	1 minute 48 seconds	53%
https://disasterscharter.org/web/guest/activations/-/article/landslide-in-indonesia-activation-809-	986	619	302	581	6 minutes 6 seconds	62%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-mozambique-activation-801-	723	610	241	572	1 minute 41 seconds	61%
https://disasterscharter.org/web/guest/activations/-/article/flood-flash-in-congo-the-democratic-republic-of-the-activation-817-	704	605	301	561	2 minutes 3 seconds	61%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-south-africa-activation-840-	691	594	285	558	1 minute 48 seconds	61%
https://disasterscharter.org/web/guest/activations/-/article/landslide-in-madagascar-activation-804-	681	596	267	551	1 minute 27 seconds	67%
https://disasterscharter.org/web/guest/activations/-/article/earthquake-in-philippines-activation-802-	577	556	334	548	39 seconds	96%

Page	Page Views	Unique Page Views	Entrances	Unique Visitors	Avg. Time on Page	Bounce Rate
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-united-kingdom-activation-841-	629	560	198	537	1 minute 41 seconds	64%
https://disasterscharter.org/web/guest/activations/-/article/volcano-in-indonesia-activation-853-	1417	545	274	509	8 minutes 47 seconds	57%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-madagascar-activation-812-	667	538	152	502	1 minute 54 seconds	50%
https://disasterscharter.org/web/guest/activations/-/article/storm-hurricane-urban-in-vanuatu-activation-845-	892	507	203	473	3 minutes 26 seconds	57%
https://disasterscharter.org/web/guest/activations/-/article/landslide-in-haiti-activation-852-	603	504	159	470	2 minutes 9 seconds	50%
https://disasterscharter.org/web/guest/activations/-/article/storm-hurricane-urban-in-solomon-islands-activation-846-	836	478	146	449	3 minutes 56 seconds	62%
https://disasterscharter.org/web/guest/activations/-/article/landslide-in-colombia-activation-794-	593	500	202	448	1 minute 29 seconds	67%
https://disasterscharter.org/web/guest/activations/-/article/fishing-vessel-sinking-in-china-activation-820-	579	417	111	385	1 minute 57 seconds	71%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-somalia-activation-821-	732	404	119	383	5 minutes 48 seconds	65%
https://disasterscharter.org/web/guest/activations/-/article/landslide-in-viet-nam-activation-836-	459	381	121	369	58 seconds	77%
https://disasterscharter.org/web/guest/activations/-/article/flood-flash-in-rwanda-activation-816-	509	405	151	355	1 minute 37 seconds	62%
https://disasterscharter.org/web/guest/activations/-/article/fire-in-tunisia-activation-832-	445	381	86	354	1 minute 57 seconds	51%
https://disasterscharter.org/web/guest/activations/-/article/earthquake-in-nepal-activation-848-	420	361	97	344	2 minutes 31 seconds	77%
https://disasterscharter.org/web/guest/activations/-/article/landslide-in-georgia-activation-833-	414	362	126	328	1 minute 21 seconds	75%

Page	Page Views	Unique Page Views	Entrances	Unique Visitors	Avg. Time on Page	Bounce Rate
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-china-activation-825-	427	336	76	312	1 minute 28 seconds	68%
https://disasterscharter.org/web/guest/activations/-/article/storm-hurricane-urban-in-russian-federation-activation-835-	356	305	62	285	1 minute 46 seconds	69%
https://disasterscharter.org/web/guest/activations/-/article/flood-flash-in-korea-republic-of-activation-829-	396	308	82	268	2 minutes 6 seconds	66%
https://disasterscharter.org/web/guest/activations/-/article/flood-large-in-ethiopia-activation-824-	328	285	51	266	1 minute 17 seconds	59%
https://disasterscharter.org/web/guest/activations/-/article/typhoon-in-korea-republic-of-activation-834-	296	253	28	239	1 minute 34 seconds	46%
https://disasterscharter.org/web/guest/activations/-/article/earthquake-in-philippines-activation-850-	1085	236	58	228	10 minutes 34 seconds	47%
https://disasterscharter.org/web/guest/activations/-/article/oil-spill-in-guinea-activation-854-	285	236	133	209	1 minute 32 seconds	66%
https://disasterscharter.org/web/guest/activations/-/article/landslide-in-colombia-activation-830-	246	211	26	201	1 minute 36 seconds	62%
https://disasterscharter.org/web/guest/activations/-/article/earthquake-in-china-activation-855-	239	140	51	129	1 minute 41 seconds	65%
https://disasterscharter.org/web/guest/activations/-/article/storm-hurricane-rural-in-eswatini-activation-856-	75	63	36	62	1 minute 19 seconds	81%

Table 18. Top 10 countries that visited the website (January-December 2023)

Country	Visits
United States	102 663
United Kingdom	22 606
China	10 683
France	10 103
Japan	8 304

Country	Visits
Spain	8 246
Russia	5 196
India	4 792
Brazil	4 572
South Korea	3 154

Traffic to the general pages on the website is in line with what the website usually receives, with some of the disaster types pages receiving higher levels of traffic, but otherwise the main activations page and the About page are the most visited. It is also notable that the 20th anniversary page still continues to receive traffic, even though at much lower levels than the rest of the pages.

In Table 19 about the news pages views, the UK Space Agency lead and milestone for the 800th activation were the most visited in 2023. Though the December 2023 newsletter received low levels of traffic, this is likely due to the timing of its publication on 20 December, as the last few weeks of December typically see a decrease in traffic on the website. For comparison, the December 2022 newsletter received much more traffic, which we published in January 2023 for this reason. This demonstrates the importance of timing of publications.

Table 19. Number of Charter News pages views (January-December 2023)

Page	Page Views	Unique Page Views	Entrances	Unique Visitors	Avg. Time on Page	Bounce Rate
https://disasterscharter.org/web/guest/-/the-uk-space-agency-leadership-period	286	234	208	226	31 seconds	85%
https://disasterscharter.org/web/guest/-/800-activations-for-the-international-charter	253	203	61	192	1 minute 4 seconds	54%
https://disasterscharter.org/web/guest/-/international-charter-newsletter-december-2022-issue-25	130	119	47	116	1 minute 13 seconds	47%
https://disasterscharter.org/web/guest/-/international-charter-newsletter-may-2023-issue-26	87	78	11	76	1 minute 32 seconds	73%
https://disasterscharter.org/web/guest/-/22nd-annual-report-of-the-charter	58	47	4	46	1 minute 29 seconds	75%
https://disasterscharter.org/web/guest/-/international-charter-newsletter-december-2023-issue-27	18	12	5	12	38 seconds	80%

On social media, 2023 was a tumultuous year for X, which changed its name from Twitter and resulted in many people leaving the platform for other services. This also affected the Charter account, with periods where the number of Followers to the account decreased. However, despite this the overall number of Followers during the year increased, and at the end of the year there were 11,452 Followers, an increase of 1,637 since 2022.

A notable event on X was the earthquake in Türkiye. Posts related to the activation and products were among the most re-tweeted and liked in 2023. Posts for the related activation for Syria also received attention. These posts caused a significant increase in Followers for the account over a few days.

The most re-tweeted post in 2023 was for the first value added product for floods in Libya in September, which is in line with the peak in traffic the website received the day that activation was published.

Other examples of popular posts in 2023 were the earthquake in Morocco and floods in Brazil.

The disasters Charter X statistics are available in Appendix A at the end of the document.

6.2 Charter Newsletters

Charter Newsletters #26 and #27 were issued in May 2023 and December 2023. The newsletters represent an additional means of informing users, stakeholders, and the public on recent Charter activations, news, events and related activities.

The 26th issue is available on the link below and reported on the following matters:

https://disasterscharter.org/web/guest/-/international-charter-newsletter-may-2023-issue-26

- Korea Aerospace Research Institute (KARI) lead the Charter for the last six months
- WildFireSat: Enhancing Canada's ability to monitor and manage wildfires
- ESA Charter Mapper training event, following by activation 777: Flood in Nigeria
- Wide field images and flooding areas by WFI sensor on board CBERS-4, CBERS-4A, and AMAZONIA-1 satellites
- JAXA and PHIVOLCS organised a Project Manager training in the Philippines
- Earthquake in Türkiye

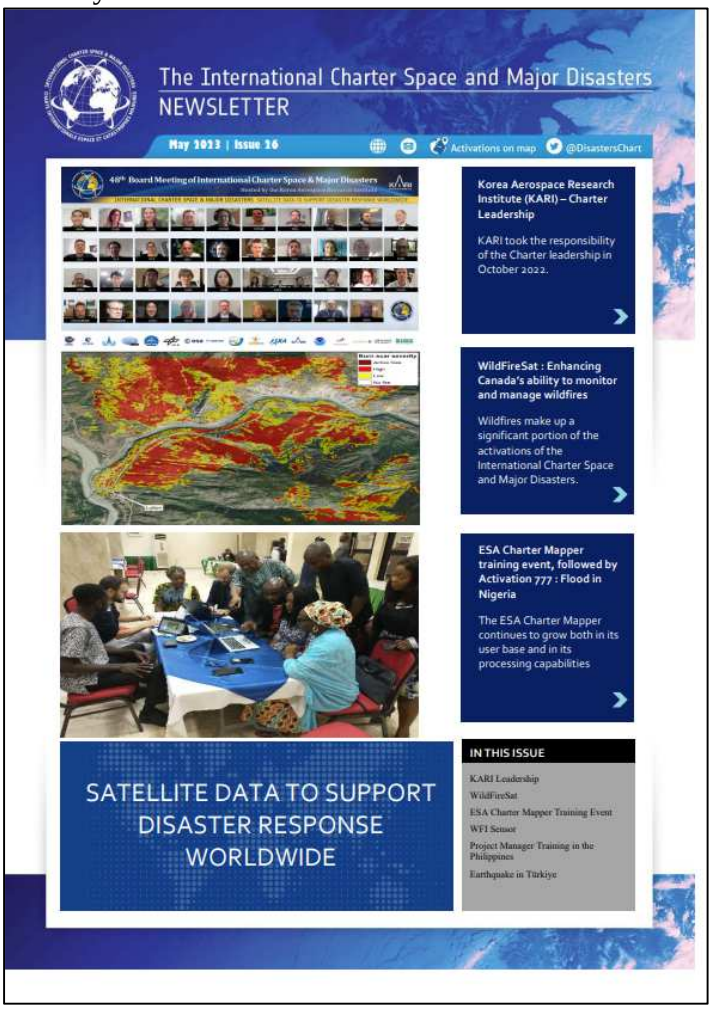


Figure 58. Charter Newsletter issue 26

The 27th issue is available on the link below and reported on the following matters:
https://disasterscharter.org/web/guest/-/international-charter-newsletter-december-2023-issue-27

- The UK Space Agency leadership of the Charter from April to October 2023
- Médecins Sans Frontières - Satellite data: A Vital Tool to Respond to Humanitarian Emergencies
- EnMAP Satellite: Enhancing Response to Somalia's Map 2023 Flood Event
- Charter Mapper Technical Meeting and Workshop by ESA and LIST at UNITAR in Geneva
- Project Manager Training in Indonesia in July - JAXA and BRIN
- The Natural Hazards Partnership - A Story of Collaboration
- Project Manager and Charter Mapper Training at UN-SPIDER/DLR/International Charter/ZFL International Workshop, Bonn in July

Figure 59. Charter Newsletter issue 27

The dissemination of the newsletters is organised through the Charter website and by e-mail. Each agency deals with its own distribution list.

6.3 Conferences and presentations

The following table provides details on the 2023 events or conferences where the Charter was represented. On such occasions, presentations were given covering the Charter's role in the acquisitions and production of satellite imagery for disaster response together with the Universal Access initiative.

Table 12. List of 2023 conferences/workshops/presentations with Charter presence

Event	Venue	Date	Speakers
«Earth Observation, Risks and the International Charter", with Linda Tomanisi (CNES) and Roberto Biasutti (ESA)	Paris Space Show, Paris le Bourget	June 23, 2023	CNES
Conference «l'Espace et les catastrophes majeures». Organized by AACE (Association des Amis de la Cité de l'Espace)	Toulouse (Cité de l'Espace)	September 9, 2023	
https://france3-regions.francetvinfo.fr/occitanie/programmes/france-3_occitanie_jt-19-20-midi-pyrenees.	TV interview	September 13, 2023	
SERTIT : la fabrique de la cartographie rapide (youtube.com)	Video about rapid mapping (introducing ICube-SERTIT)	September 14, 2023	
«Raconte-moi l'Espace, EPISODE #5 : EST-CE QU'ON PEUT VOIR DES VOLCANS EN FEU DEPUIS L'ESPACE ? » https://cnes.fr/fr/podcast-raconte-moi-lespace-saison-2	Podcast	October 6, 2023	
Mention of the Charter during SpaceBound 2023	Ottawa	October 18-19, 2023	CSA
Mention of the Charter during COP28	Dubai	November 30 – December 13, 2023	
THE GLOBAL SPACE CONFERENCE ON CLIMATE CHANGE 2023 **https://www.iafastro.org/events/global-series-conferences/gloc-2023/**	Oslo	May 23-25, 2023	DLR
UN-SPIDER/DLR/International Charter/ZFL International Workshop in Bonn **https://www.un-spider.org/news-and-events/news/un-spiderdlrinternational-charterzfl-international-workshop-bonn**	Bonn	July 18-20, 2023	
6th World Landslide Forum 2023 in Florence **https://wlf6.org/**	Florence	November 14-17, 2023	

Event	Venue	Date	Speakers
Open data and Open knowledge Workshop hosted by GEO - Short presentation on the Charter	Geneva	June 15, 2023	ESA
Le Bourget Air Show 2023 - Short presentation on the Charter with CNES. Q&A session	Paris	June 23, 2023	
World Landslide Forum - Charter booth in the exposition hall, focused on Landslide response of the Charter and processing and visualization tools available in the ESA Charter Mapper. Booth organized by ESA, Attended by ESA, DLR, and UKSA	Florence	November 14-17, 2023	
Protecting Our Planet Day 2023 (POP23), Organized by the UK Space Education and Resource Office (ESERO-UK). ESA presented: "Protecting from Space" a 30-minute online presentation of the Charter to 50,000 high school students and teachers in the UK.	Online	November 30, 2023	
Lecture “EO for Disasters in Brazil” given by Laercio Namikawa at the University of Edinburgh (The Bayes Centre) - public event for university student	Edinburgh	April 25, 2023	INPE
Course given to PMs on the Charter image processing platform (Charter Mapper)	Bonn	October 2023	
Course given to PMs on the Charter image processing platform (Charter Mapper) regarding UN-SPIDER’s invitation (The United Nations Platform for Space-based Information for Disaster Management and Emergency Response): https://www.un-spider.org/news-and-events/news/un-spider-eclac-international-charter-training-course-latin-america.	Chile	November 2023	
Short course “Digital Image Processing for Rapid Mapping” focusing on images from the Disasters Charter, held at the GEOINFO symposium.	São José dos Campos	December 2023	
Project Manager Training, reported in "Sentinel Asia Newsletter". https://sentinel-asia.org/sanews/2023/sanews202302.pdf	Philippines	January 2023	JAXA
Project Manager Training, reported in "Sentinel Asia Newsletter". https://sentinel-asia.org/sanews/2023/sanews202308.pdf	Indonesia	August 2023	
Technical presentation at the 60TH UN COPUOS Science and Technology Subcommittee, “Earth Observation for Responsive Disaster Management	Vienna	February 10, 2023	KARI

Event	Venue	Date	Speakers
focused on International Charter: Space and Major Disasters"(Item 8, Hyun-Ok Kim, KARI).			
Space Pavilion in the 28th Conference of the Parties of the UNFCCC (COP28) **Space Agencies Leaders' Summit at COP28** **o 1st link: https://www.mediaoffice.ae/en/news/2023/December/05-12/Mohammed-bin-Rashid-meets-with-climate-policy-and-space-sector-decision-makers** **o 2nd link: https://wam.ae/article/apyusti-uae-space-agency-organises-first-ever-space** **o 3rd link: https://www.abudhabispacedebate.com/cop-28** **Space Agency Leaders Summit, Pledge for Enhancing Space-Based Climate Initiatives** **https://www.satnavi.jaxa.jp/files/document/pdf/SpaceAgencyPlegdeCOP28.pdf** **Launching the Operational Phase of Geospatial Analytics Platform** **o 1st link: https://www.cop28.com/en/schedule/launching-the-operational-phase-of-geospatial-analytics-platform** **o 2nd link: https://satelliteprome.com/news/uae-space-agency-launches-operational-phase-of-geo-spatial-analytics-platform/** **o 3rd link: https://www.zawya.com/en/press-release/companies-news/uae-space-agency-officially-launches-the-operational-phase-of-geo-spatial-analytics-platform-at-cop28-auscvvca**	Dubai	November 30 – December 13, 2023	UAESA
Edinburgh University Outreach event	Edinburgh	April 25, 2023	UKSA
The Global Space Conference on Climate Change (GLOC 2023) https://www.iafastro.org/events/global-series-conferences/gloc-2023/	Oslo	May 23-25, 2023	
Committee on the Peaceful Uses of Outer Space (UNCOPOUS): 2023, Sixty-sixth session Side event. Presentation: International Charter Space and Major Disaster", organized by the United Kingdom Space Agency, 5 June 2023	Vienna	June 5, 2023	

Event	Venue	Date	Speakers
(https://www.unoosa.org/oosa/en/ourwork/copuos/2023/index.html)			
Participated and presented on the Charter during a virtual Hurricane Data Mining Workshop organized by the University of Louisiana Lafayette Regional Applications Center – this is an annual event that prepares for the hurricane season and involves several regional emergency response agencies.	Online	June 1, 2023	USGS
Provided an overview presentation on the International Charter to USGS visitors from the Office of International Programs.	Sioux Falls	September 13, 2023	

UNOOSA and UNITAR/UNOSAT also contributed towards increasing Charter awareness through presentations to a wider public audience, ranging from Ministers and Heads of Agencies to operational entities within the UN system.

6.4 Press releases and articles

The following table summarises the main press releases, web and paper articles issued by the member agencies or others in 2023.

Table 20. List of 2023 press releases and articles

Date	Issuing agency	Title
February 2023	CNES	https://france3-regions.francetvinfo.fr/occitanie/haute-garonne/toulouse/seisme-en-turquie-et-en-syrie-des-images-prises-depuis-l-espace-pour-venir-en-aide-aux-victimes-de-la-catastrophe-2709502.html https://theconversation.com/earthquake-in-turkey-and-syria-how-satellites-can-help-rescue-efforts-199357 https://www.ladepeche.fr/2023/02/07/entretien-seisme-en-turquie-et-en-syrie-a-toulouse-comment-le-cnes-assiste-les-secours-grace-a-ses-satellites-10982761.php https://www.bfmtv.com/tech/seismes-en-turquie-et-en-syrie-comment-les-satellites-aident-les-equipes-de-secours_AN-202302090608.html https://www.lepoint.fr/monde/seismes-en-turquie-et-en-syrie-comment-les-satellites-peuvent-aider-les-secours-07-02-2023-2507656_24.php https://www.francetvinfo.fr/replay-radio/le-billet-vert/seisme-en-turquie-et-en-syrie-comment-la-technologie-spatiale-peut-servir-dans-ce-type-de-catastrophe_5621300.html https://headtopics.com/fr/seisme-en-turquie-et-en-syrie-des-images-prises-depuis-l-espace-pour-venir-en-aide-aux-victimes-de-35082503
September 2023		Séisme au Maroc : comment les satellites peuvent aider les secours à réagir au plus vite (theconversation.com)

Date	Issuing agency	Title
		PHOTOS AVANT-APRÈS. Les images satellites choc du tremblement de Terre au Maroc permettent d'aider les secouristes et les populations (francetvinfo.fr) https://www.airbus.com/en/newsroom/stories/2023-09-disasters-how-earth-observation-satellites-help-guide-emergency-workers
2023	CONAE	https://www.argentina.gob.ar/noticias/la-conae-capacito-los-gerentes-de-proyectos-de-la-carta-internacional-en-chile https://x.com/CONAE_Oficial/status/1732834260891967783?s=20 https://www.instagram.com/p/C0j_pa2O6wT/?igsh=bGpwaGlrcTgyeXl4 https://www.facebook.com/100068901202605/posts/pfbid0odxw36Hc99U7ujtmnBNxSXhNnNLUV8SmpE892FLrAK1QLGGnCN2WunWqSrz6J8pWl/?app=fbl https://www.linkedin.com/posts/conae_la-conae-capacit%C3%B3-a-los-gerentes-de-proyectos-activity-7138602967775035392-eYgk?utm_source=share&utm_medium=member_desktop
2023	CSA	**Social media publications** - Morocco earthquake in September - International Charter co-lead in October - Amplification of EUMETSAT co-lead announcement in October - COP28 in October - RADARSAT+ announcement in October **Mention on our website** - RADARSAT+ announcement: RADARSAT data to serve Canadians | Canadian Space Agency (asc-csa.gc.ca)
2023	DLR	• DLR supports emergency responders in Türkiye https://www.dlr.de/en/latest/news/2023/01/dlr-supports-emergency-responders-in-turkey • Flood in Somalia https://activations.zki.dlr.de/en/activations/items/ACT158.html • Flood mapping with EnMAP – Provision of crisis information in the frame of the International Charter "Space and Major Disasters" https://www.enmap.org/news/2023-06-26/ • Forest Fires Around the Mediterranean Sea: ZKI Supports with Information on the Development of Fire Areas https://activations.zki.dlr.de/en/activations/items/ACT160.html
February 14, 2023	INPE	“INPE auxilia nos trabalhos das equipes na região do terremoto na Turquia e Síria” (replicated on the INPE’s general website)
April 24, 2023		“INPE participa da 49º Reunião da Carta Internacional Espaço e Grandes Desastres” (replicated on the INPE’s general website)
September 08, 2023		“INPE fornece imagens e participa da elaboração de mapas para auxílio às vítimas da inundação no RS;”
October 19, 2023		“INPE participa da 50a. Reunião da Carta Internacional ‘Espaço e Grandes Desastres’;”

Date	Issuing agency	Title
November 22, 2023		“INPE fornece imagens e participa da elaboração de mapas em nova inundação no RS;”
December 21, 2023		“INPE participa de missão na Venezuela para promover a cooperação em gestão de riscos e de desastres” (replicated on the INPE’s general website)
2023		Outreach publications related to the Charter were held in 55 posts on our Earth Observation/INPE social media, 32 of them on @twitter (currently 'X'), 11 on @facebook and 12 on @instagram.
2023		- LEAL, K.B.; ROBAINA, L.E.S.; KÖRTING, T.S.; NICOLODI, J.L. ; DA COSTA, J.D.; SOUZA, V.G.. Identification of coastal natural disasters using official databases to provide support for the coastal management: the case of Santa Catarina, Brazil. NATURAL HAZARDS , v. 1, p. 1, 2023. - NAMIKAWA, L.M.; KÖRTING, T.S.. UMA METODOLOGIA AUTOMATIZADA PARA EXTRAÇÃO DE CORPOS DE ÁGUA UTILIZANDO IMAGENS DO SENSOR WFI DO SATÉLITE CBERS-4 PARA APLICAÇÃO EM RESPOSTA A DESASTRES. In: Anais do XX SBSR, 2023, Florianópolis, SC, Brazil. - ROCHA, B.O.; KÖRTING, T.S.. BOAS PRÁTICAS DE PROCESSAMENTO DE IMAGENS PARA MAPEAMENTO RÁPIDO DE DESLIZAMENTOS. In: Anais do XX SBSR, 2023, Florianópolis, SC, Brazil. - BOSCOLO, H.K.; NAMIKAWA, L.M.; KÖRTING, T.S.; JUNQUEIRA, A.. CONTRIBUIÇÕES DO INPE PARA RESPOSTA ÀS EMERGÊNCIAS NA CARTA INTERNACIONAL ESPAÇO E GRANDES DESASTRES. In: Anais do XX SBSR, 2023, Florianópolis, SC, Brazil. - BOSCOLO, H.K.; NAMIKAWA, L.M. ; KÖRTING, T.S.; JUNQUEIRA, A.. CONTRIBUTIONS OF THE BRAZIL’S NATIONAL INSTITUTE FOR SPACE RESEARCH (INPE) TO EMERGENCY RESPONSE IN THE INTERNATIONAL SPACE AND MAJOR DISASTERS CHARTER. SPRINGER NATURE APPLIED SCIENCES (On March/2024: Accepted to be published); - MIRANDA, B.G.; PASSOS, F.O.; DIETZSCH, G.; FILHO, O.D.N.; MENDONÇA, T.L.J.T.; KÖRTING, T.S.; NAMIKAWA, L.N.; GHERARDI, D.F.M.; PEZZI, L.P.; QUEIROZ, G.R.. ASSESSMENT OF THE IMPACTS OF THE 2023 EARTHQUAKE IN DIYARBAKIR, TÜRKIYE WITH CBERS-4A SATELLITE IMAGES. In: Proceedings XXIV GEOINFO, December 04 to 06, 2023, São José dos Campos, SP, Brazil. - ROCHA, B.O.; ALVES, L.M.V.; OLIVEIRA, A.C.; COSTA, C.A.M.; KÖRTING, T.S.. FLUXO DE PROCESSAMENTO DE IMAGENS

Date	Issuing agency	Title
		PARA RESPOSTAS RÁPIDAS A DESASTRES NATURAIS. In: Proceedings XXIV GEOINFO, December 04 to 06, 2023, São José dos Campos, SP, Brazil.
February 14, 2023	KARI	The Korea Aerospace Research Institute has been providing satellite images for earthquake damage recovery to 'International Charter': https://www.youtube.com/watch?v=h8SM-7BCfSM
November 30 – December 13, 2023	UAESA	The First Space Pavilion participation at COP28 - 1st link: https://wam.ae/article/apswgrk-uae-space-agency-leads-first-space-pavilion - 2nd link: https://www.timesaerospace.aero/news/space/uae-space-agency-concludes-cop28-participation
2023		UAESA supports the Türkiye-Syria Earthquake crisis. - https://ae.linkedin.com/posts/uae-space-agency_uaesa-x-bayanat-activity-7031224839394717696-cc-C
2023		UAE Space Agency helps international relief efforts in Morocco after earthquake - https://www.thenationalnews.com/uae/2023/09/15/uae-space-agency-helps-international-relief-efforts-in-morocco-after-earthquake/
April 24, 2023	UKSA	UKSA Lead Period press release https://www.gov.uk/government/news/uk-takes-over-leadership-of-international-charter-space-and-major-disasters
October 2023		Natural Hazards Partnership Article (Newsletter 27) https://disasterscharter.org/web/guest/-/international-charter-newsletter-december-2023-issue-27
November 14-17, 2023		6th World Landslide Forum https://wlf6.org/

6.5 Users’ Appraisal

To understand how our service assists in disaster monitoring, and more importantly, to identify possible improvements to the Charter service, we gather feedback after each activation. We gather feedback from End Users, the recipients of our value added products, and from Project Managers, the individuals who coordinate each activation.

During an ongoing disaster the Charter products are primarily used to support communication, thus assisting in disaster situation awareness. After the event, they can support post-event analysis and training. Figure 60 indicates how the value-added products are used.

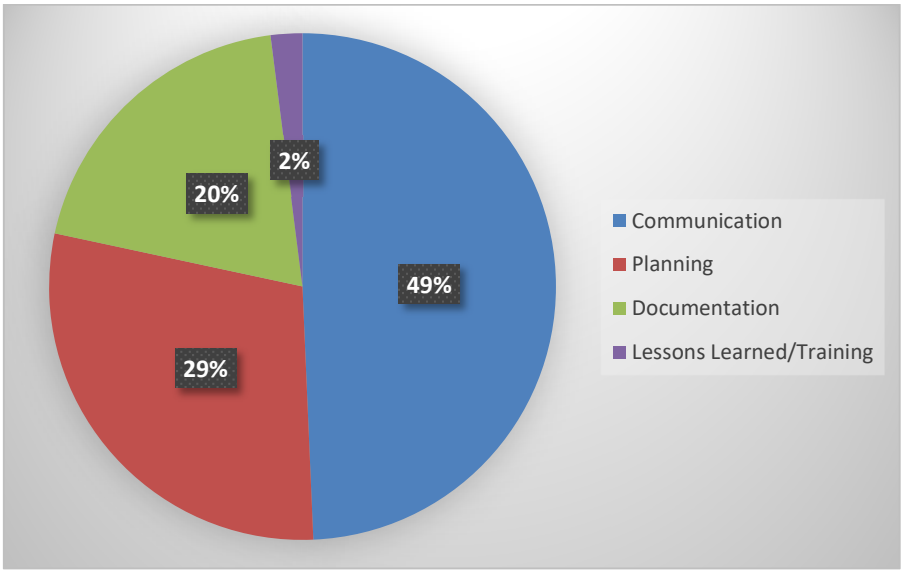


Figure 60. Breakdown of use of Charter value-added products in 2023

The feedback received in 2023 indicates that, end users are in general very satisfied with the Charter’s service, which continues to exceed user expectations. Figure 61 indicates the level of satisfaction based on feedback from end users when asked to rate the contribution made by the Charter service to the emergency events affecting them in 2023.

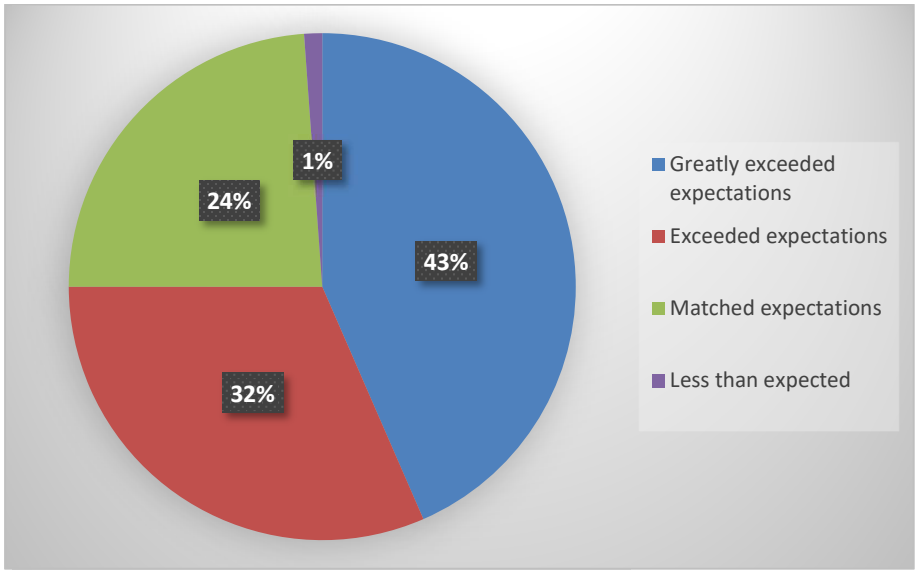


Figure 61. Level of satisfaction towards the contribution made by the Charter to emergencies in 2023

Occasionally, it is not possible to satisfy user needs for a specific satellite data. For example, this can happen due to the size of the impacted region, or due to cloud cover. Here is a selection of other feedback, including some suggestions for improvement, received from Project Managers and End Users:

- “A web map service for end users will provide a rapid update of the analytic result”.
- “The service can be improved by reducing the turnaround time for delivery of the products after the acquisition”.
- “If you could better explain the methodology used to generate the value added products we [the users] could perform a better analysis on the delivered products”.
- “The charter was quickly activated and we started to benefit from it immediately. We really appreciated it”.
- “The products [value added products] we received were excellent, they captured the flood very well and contained a lot of detailed information”.

All feedback is reviewed by the Executive Secretariat. Where possible, enhancements are implemented and service issues remedied.

8.1 Communication assessment

The improved version of the website facilitates the user navigation and information search.

Several channels were used to ensure more comprehensive communication to Charter users, stakeholders, and the general public:

- The publication and distribution of newsletters.
- The Charter website, which is still well visited.
- The Charter X (ex-Twitter) account. All Charter activations and news are distributed via tweets. Around 10,000 followers were counted by the end of 2023.
- The Charter videos available in the “Library” Section of the Charter Website as well as on YouTube.
- Participation in international/regional events all over the world to promote the Charter and the Universal Access (UA) initiative.
- Press releases and articles mainly via the web and in particular, the Charter website, Charter members’ websites, and UN-SPIDER communication channels.
- The Charter flyer and brochure in English and French are distributed and used regularly at conferences and workshops internationally.

7. Conclusions

In 2023, the following agencies took the lead agency duty, which rotates among Charter members on a six-month basis: KARI (October 2022 – April 2023), UKSA (April 2023 – October 2023) and EUMETSAT/CSA (October 2023 – April 2024). The Charter is 17 members and no new members have been integrated since 2018.

In total, the Charter has been triggered for 856 disasters in 139 countries between its inception in the year 2000 and the end of 2023.

Throughout 2023 alone, the Charter was activated 63 times in 40 different countries (6 activations occurred in countries which had never had an activation before). This is the highest number of activations ever seen in a single year since the inception of the Charter. Peaks in activations during February and March of 2023 were mainly due to non-seasonal events occurring in succession coincidentally, such as earthquakes and oil spills. February and March accounted for 30% of the year’s activations. The Charter was triggered three times for man-made disasters (an oil spill in The Philippines, an explosion in Guinea, and a missing Chinese vessel in the Ross Sea).

Considering the 50 most severe disasters in the EM-DAT database (92% of fatalities), the Charter covered 23 of them, accounting for 79,085 fatalities (86% of total). It can be noted from the previous 2 years of data that the Charter accounts for a much higher percentage of overall fatalities than overall events, meaning that the charter is often activated for the most severe events only. 2023 further demonstrated this trend.

A new Charter role was introduced in 2023, the Charter PM Deputy. The PM deputy is designed to solve two different issues:

- The first being a situation where the primary PM is unavailable for a period of time or is very busy and is in need of support with the activation.
- The second scenario involves training, if the primary PM is a new PM, an experienced PM can be added as the PM deputy in order to support and facilitate the learning process of the new PM. The PM deputy can perform all the same tasks as the primary PM, with the exception of submitting the PM report and closing the activation.

The web-based system COS-2 has provided operational support to the Charter since the beginning of March 2015. Overall, it has been used successfully in all Charter calls. Most of the Charter members have their EO metadata fetched on COS-2, allowing automated and on-line cataloguing of Charter acquisitions. Since September 2017, COS-2 can automatically record metrics and information that is necessary in order to generate system performance statistics used in this report. In 2023, the focus/estimated areas difference were implemented in COS-2 to better task the satellites, with consequent update of the scenarios, and the results are under analysis.

Universal Access (UA) is gradually progressing with interest and contacts but no new Authorized Users were granted in 2023.

In 2023, no ECO Training but one SARE exercise (SARE-27) was organized for Emergency on-Call Officers. Four Project Manager refresher training sessions and one Value Adder Providers Training were organized to strengthen the network of the Charter operation loop.

The Charter website is available in English and some pages are available in French, Chinese, Japanese, and Spanish. It allows Charter staff and Authorized Users direct access COS-2. The 26th and 27th Charter newsletters were issued in 2023. In addition, Twitter is frequently used as a tool to increase visibility of the Charter activations and other relevant news and raising public awareness on the Charter.

Successes of the ‘International Charter: Space and Major Disasters’ in 2023, such as improving our operational environment, welcoming additional authorized users, effectively communicating our mission and most importantly, responding to disasters as requested will continue going forward. The Members of the International Charter “Space & Major Disasters” remain dedicated to assisting emergency response efforts and providing improved access and benefit from satellite resources.

8. Appendix A: Disasters Charter X statistics for 2023

Link	Post	Date	Impressions	Engagements	Re-tweets
https://twitter.com/DisastersCharter/status/1702226596935938498	Our first map of the floods in #Libya uses imagery from #Sentinel2, #Pleiades and WorldView-2 to estimate the impact to Derna City after #StormDaniel: https://t.co/vunF2sGlNo https://t.co/OYHwZCzPsi	14/09/2023	132567	6797	382
https://twitter.com/DisastersCharter/status/1623654923207380994	Our first maps for the #earthquakes in #Türkiye are now available: https://t.co/4pdS679NlF #Pleiades and WorldView imagery were used to estimate damage to Cumhuriyet, Nurdagi, and Islahiye, though clouds obscure our view over some areas. https://t.co/75eZv7VIs1	09/02/2023	41588	2843	80
https://twitter.com/DisastersCharter/status/1702326708458991946	This map uses imagery from #Pleiades, acquired yesterday, to estimate the extent and damage of flooding in Derna City, #Libya, following #StormDaniel: https://t.co/vunF2sGTCW https://t.co/HgfkS0NeP4	14/09/2023	21218	1381	62
https://twitter.com/DisastersCharter/status/1625796461483917312	Following the #earthquakes in Türkiye, flooding occurred on the Orontes River in #Syria, which may have been caused by damage to a dam in Salqin. WorldView-2 and #Sentinel2 images were used to estimate the impact of the floods in this map: https://t.co/NtAPkXJ0FV https://t.co/L5J9wi2cRX	15/02/2023	27015	944	59
https://twitter.com/DisastersCharter/status/1701547270188027914	These maps use PlanetScope and CBERS-4 imagery to estimate water depth and buildings affected by flooding in Rio Grande do Sul, Brazil: https://t.co/00r4Jk22Rr https://t.co/1mDOUpfkS3	12/09/2023	13531	1460	50
https://twitter.com/DisastersCharter/status/1	These maps use #Pleiades imagery acquired on Tuesday to estimate damage to Sanliurfa, Adiyaman, Nurdagi, and Kirikhan after the #earthquakes in #Türkiye:	10/02/2023	9403	836	49

Link	Post	Date	Impressions	Engagements	Re-tweets
624012713356668928	https://t.co/4pdS679NlF https://t.co/p5d5OKzNO0				
https://twitter.com/DisastersCharter/status/1622564953398951936	The Charter has been activated to provide satellite data following the #earthquakes in #Türkiye: https://t.co/4pdS679NlF #earthquakeTürkiye	06/02/2023	71920	1252	47
https://twitter.com/DisastersCharter/status/1623265301696585729	.@UNOSAT have produced a preliminary report of damage to Latakia city in #Syria after the #earthquakes. The full report is available on our website: https://t.co/NtAPkXJ0FV #Pleiades images acquired yesterday are used to estimate damage in these comparisons. https://t.co/udGSnEaCGF	08/02/2023	19355	1636	43
https://twitter.com/DisastersCharter/status/1701189253139411073	The Charter has been activated to provide satellite data over the 6.8 earthquake in Morocco: https://t.co/7IDAXAuetk @UNOSAT produced a preliminary report estimating damage to villages in the area. #earthquakemorocco https://t.co/b2Qgz71cFp	11/09/2023	25535	854	35
https://twitter.com/DisastersCharter/status/1701862292596367560	These damage assessment maps use #Pleiades imagery to estimate the impact of the earthquake in Morocco in Souss Massa and Chichaoua Provinces: https://t.co/7IDAXAuetk #earthquakemorocco https://t.co/9KvjS8OqxJ	13/09/2023	9394	815	35
https://twitter.com/DisastersCharter/status/1621446432942161920	We now have a series of maps of the flood situation in Zambia: https://t.co/Onn48hoUV4 The maps use data from the #RCMSatellites, #SuomiNPP and #Sentinel2 to estimate the extent of flooding. https://t.co/YtCanvqPfp	03/02/2023	23006	687	30
https://twitter.com/DisastersCharter/status/1	WorldView animation over the city of Islahiye before and after the #earthquakes in #Türkiye. Collapsed buildings are noticeable in the	08/02/2023	10414	857	23

Link	Post	Date	Impressions	Engagements	Re-tweets
623367403546546187	aftermath, particularly near the centre of the image. White tents and emergency vehicles can be seen throughout the area after the earthquakes. https://t.co/oih0igw4KS				
https://twitter.com/DisastersCharter/status/1628422916911075328	Our first map of the floods in Brazil combines CBERS-4 and #Sentinel2 images to estimate flooded areas at Caraguatatuba: https://t.co/ABHAVNq8D5 https://t.co/hGSYIOcO8Q	22/02/2023	6544	273	21
https://twitter.com/DisastersCharter/status/1704044193742520513	This map uses #Sentinel1 data to estimate flooding in the Guaiba and Camaqua hydrographic regions of Brazil: https://t.co/00r4Jk22Rr https://t.co/z9VfyKFbqH	19/09/2023	11349	326	20
https://twitter.com/DisastersCharter/status/1626507437283876867	These latest maps of #Syria following the #earthquakes use images from a number of optical satellites to estimate damage in Jisr al-Shughur, Al Ataarib, Jindires and Salqin: https://t.co/NtAPkXJ0FV https://t.co/dJ6tLvTqhg	17/02/2023	3947	277	19
https://twitter.com/DisastersCharter/status/1629111519676887041	Imagery from #Pleiades and #PlanetScope were used to estimate areas affected by landslides at Sao Sebastiao, Brazil: https://t.co/ABHAVNq8D5 https://t.co/3zEIgHIKjM	24/02/2023	2933	323	18
https://twitter.com/DisastersCharter/status/1703681494600892746	This map uses imagery from #Pleiades to estimate the impact to Al Tamimi, #Libya after #StormDaniel: https://t.co/lddrEiniO5 https://t.co/LrWUronqjA	18/09/2023	5798	377	18
https://twitter.com/DisastersCharter/status/1622600629142097921	The Charter has been activated to provide satellite data following the #earthquakes in #Syria: https://t.co/S0PQA9NMzF	06/02/2023	27729	630	17

Link	Post	Date	Impressions	Engagements	Re-tweets
https://twitter.com/DisastersCharter/status/1624076636378304515	These maps use #Pleiades and WorldView imagery to estimate damage to Nurdagi, Karakopru, and Diyarbakir following the #earthquakes in #Türkiye: https://t.co/4pdS679NlF https://t.co/qVcDWaRBES	10/02/2023	2457	272	16
https://twitter.com/DisastersCharter/status/1727700049189097704	In this map, #TanDEMX and #CBERS4 data were used to estimate areas of flooding along the river between MuÃ§um and Cruzeiro do Sul in Brazil: https://t.co/Xes6MFdsk0 https://t.co/P5MCFFCMHY	23/11/2023	5446	234	16
https://twitter.com/DisastersCharter/status/1625062799360548865	This news describes how @inpe_mct, one of the Charter member agencies, is using CBERS-4A to acquire imagery over the #earthquakes affecting #Türkiye and #Syria: https://t.co/LvpeTfvsvQ	13/02/2023	2092	120	15
https://twitter.com/DisastersCharter/status/1684927310212841472	Impacts of wildfires near the city of Bejaia in Northern Algeria are shown in this #Sentinel2/#Pleiades animation. Charred vegetation can be seen to the east while the western portion remains unburned, indicating the extent of the fire in this region. https://t.co/ndC2TZ0dXY https://t.co/ThgtFOFfXm	28/07/2023	27524	292	15
https://twitter.com/DisastersCharter/status/1624044187480907782	These maps use WorldView imagery to estimate damage to Lilawa and Zayzafun in #Syria after the #earthquakes: https://t.co/NtAPkXJ0FV Insets provide closer comparisons of buildings before and after the earthquakes. https://t.co/KRYHhGfyBY	10/02/2023	3173	327	13
https://twitter.com/DisastersCharter/status/1700073203056472124	Our first post-cyclone map of Brazil uses #Sentinel2 imagery to estimate flooded areas at Montenegro in Rio Grande do Sul as of Wednesday: https://t.co/00r4Jk22Rr https://t.co/arQHpJ9jdP	08/09/2023	3381	206	13

Link	Post	Date	Impressions	Engagements	Re-tweets
https://twitter.com/DisastersCharter/status/1625418157639757824	The floods in Eswatini marks the 800th activation of the International Charter. Since 2000, the Charter has been asked to provide satellite data to support response for 800 disasters in 131 countries: https://t.co/VxFmXOhNVc https://t.co/eqZugQsOnM	14/02/2023	11474	354	12
https://twitter.com/DisastersCharter/status/1681293030291021827	These maps use imagery from PlanetScope to estimate flooding along the Yamuna River at Delhi: https://t.co/STkmIy8rp4 False-colour infrared imagery is used in the maps to help detect differences between land and water, before and after the floods. https://t.co/uOCNg5uINe	18/07/2023	3335	195	12
https://twitter.com/DisastersCharter/status/1737060117344895482	The Charter has been activated to provide satellite data over an explosion at an oil depot in Conakry, Guinea: https://t.co/as7FyJ9C6r Our first map of the disaster estimates the number of people and buildings in the affected area. https://t.co/zCyKCLQf1W	19/12/2023	1744	156	12
https://twitter.com/DisastersCharter/status/1613176553231319040	The latest issue of the Charter newsletter is now out: https://t.co/udXHxbFNNa Find out about recent activities of the International Charter, and the addition of new satellites to the Charter's virtual constellation. https://t.co/pR5jT2IZmA	11/01/2023	2915	78	11
https://twitter.com/DisastersCharter/status/1625190115705294867	These latest maps of the #earthquakes in #Türkiye use #Pleiades and WorldView images to estimate damage to Adiyaman, Hassa, and Antaka/Hatay: https://t.co/NtAPkXJ0FV https://t.co/85txTYwxZL	13/02/2023	3821	303	11
https://twitter.com/DisastersCharter/status/1633146319601651712	Our first maps following the oil spill in the Philippines use data from #Sentinel1 and the #RCMSatellites to estimate potential oil spills in the Oriental Mindoro area: https://t.co/dxLSYO5lMN https://t.co/Ri0K8Qcl47	07/03/2023	38698	641	11

Link	Post	Date	Impressions	Engagements	Re-tweets
https://twitter.com/DisastersCharter/status/1718920101942964499	These latest maps of Ghana use radar data from #TanDEMX and #Sentinel1 to estimate flooded areas and extent: https://t.co/ip61Rqh75c https://t.co/iZgMGMQrO7	30/10/2023	2830	151	11
https://twitter.com/DisastersCharter/status/1714644925550076172	Our first map of the floods in Ghana uses #TerraSARX data to identify bodies of water around the lower Volta River as of 16 October: https://t.co/ip61Rqh75c Potentially flooded areas are highlighted in darker blue. https://t.co/W0gYyYLQOU	18/10/2023	5443	186	11
https://twitter.com/DisastersCharter/status/1712412652733858073	This map uses imagery from #Pleiades to estimate damage and surface displacement in Ghoryan, Zindajan, Injil and Kushk districts following the #earthquake in #Afghanistan: https://t.co/S9gqmM0Hgn https://t.co/HVPOF3agI8	12/10/2023	4493	179	11
https://twitter.com/DisastersCharter/status/1625882155476783104	WorldView-2 images were used to estimate damage in Hatay province following the #earthquakes in #Türkiye: https://t.co/NtAPkXJ0FV Potentially damaged buildings are indicated in red. https://t.co/qfqHgGO6mr	15/02/2023	3028	171	9
https://twitter.com/DisastersCharter/status/1627975009284108288	These maps show post-#earthquake damage assessments of Azaz and Al Bab in #Syria: https://t.co/NtAPkXJ0FV The maps use high resolution images from #Pleiades and WorldView-2 to estimate damage. https://t.co/TwJmBvtjBY	21/02/2023	1493	141	9
https://twitter.com/DisastersCharter/status/1631250340086444033	The Charter has been activated to provide satellite data over the oil spill at Oriental Mindoro, in the Philippines: https://t.co/dxLSYO5lMN The spill occurred when an oil tanker sank off the coast following engine trouble.	02/03/2023	2417	69	9

Link	Post	Date	Impressions	Engagements	Re-tweets
https://twitter.com/DisastersCharter/status/1663094392943529985	In these maps, imagery from #Pleiades, #SuomiNPP and #Sentinel2 are used to estimate the flood extent in the Hiraan region of Somalia: https://t.co/tjvDRGuStw https://t.co/n7IuI4e9We	29/05/2023	2444	106	9
https://twitter.com/DisastersCharter/status/1684896347290206208	Our first map of the wildfires in Tunisia estimates the number of forest fires active at Nefza, Ain Draham, and Tabarka as of 25 July: https://t.co/7a2RMKnxfC https://t.co/BSHAM5mJX0	28/07/2023	3339	97	9
https://twitter.com/DisastersCharter/status/1694248670579863648	Radar images from #SAOCOM and the #RCMSatellites highlighting the extent of flooding caused by #TyphoonKhanun in the Primorye region of eastern Russia. In the post-event image, the black shading to the right-hand side indicates areas submerged by water: https://t.co/becq3N8iBW https://t.co/6yzTFuOcJq	23/08/2023	1515	71	9
https://twitter.com/DisastersCharter/status/1620373292673810433	We now have a series of maps showing Tropical Storm #Cheneso's impact to #Madagascar: https://t.co/ZABtIo339q The maps, produced by @CopernicusEMS estimate damage in different areas using a combination of radar and optical imagery from satellites. https://t.co/AIBYWSrPpg	31/01/2023	7719	220	8
https://twitter.com/DisastersCharter/status/1625159505938882560	These maps use #Pleiades and WorldView images to estimate damage to the cities of Jableh and Idlib in #Syria after the #earthquakes: https://t.co/NtAPkXJ0FV Insets provide comparisons of affected locations. https://t.co/azuMdBEd7K	13/02/2023	3127	242	8
https://twitter.com/DisastersCharter/status/1628006764107952129	The Charter has been activated to provide satellite data over floods and landslides affecting Brazil: https://t.co/ABHAVNq8D5	21/02/2023	1672	70	8

Link	Post	Date	Impressions	Engagements	Re-tweets
https://twitter.com/DisastersCharter/status/1641390269269516289	Our first map of the floods in South Africa uses #Pleiades imagery to show heightened water levels on a river near Port St. Johns: https://t.co/RS7wq7dKVv https://t.co/n4Tnk4B0EM	30/03/2023	5461	313	8
https://twitter.com/DisastersCharter/status/1701228193540112705	These maps use radar data and optical imagery from multiple satellites to estimate flooded areas in Rio Grande do Sul in Brazil: https://t.co/00r4Jk22Rr https://t.co/5Kt8vGzrQY	11/09/2023	4301	282	8
https://twitter.com/DisastersCharter/status/1643609268258496519	These maps use imagery from #Sentinel2 and SPOT-6 to estimate the extent of flooding in Shabelle District, Ethiopia: https://t.co/jazLmg8GGO https://t.co/JTBTE7ZDFJ	05/04/2023	4785	281	8
https://twitter.com/DisastersCharter/status/1646127634005229569	These flood maps of Brazil use data from optical and radar satellites to estimate areas of flooding in Xapuri and Brasilia: https://t.co/sieGu2dlaV https://t.co/iPKT1fwLKj	12/04/2023	2597	182	8
https://twitter.com/DisastersCharter/status/1688499151418368000	The Charter has been activated to provide satellite imagery over the landslide at Shovi in Georgia: https://t.co/BcOlB01Z3d Our first report on the disaster uses images from WorldView-2 and #Pleiades to estimate potential damage to the area. https://t.co/3krwW2dgPd	07/08/2023	12489	315	8
https://twitter.com/DisastersCharter/status/1727279521215504620	In these maps, #CBERS4 and #Pleiades imagery were used to compare the flood situation at Encantado and Roca Sales in Rio Grande do Sul State in Brazil: https://t.co/YeeEU57wyL The images from 19 November show that the river has spilled over into the surrounding areas. https://t.co/sK0zHw13d8	22/11/2023	2977	198	8
https://twitter.com/D	These maps use imagery from #Pleiades and #CBERS4 to estimate areas affected	21/11/2023	3104	153	8

Link	Post	Date	Impressions	Engagements	Re-tweets
isastersChart/status/1726990078252306598	by flooding at MuÃ§um, in Rio Grande do Sul State, Brazil: https://t.co/YeeEU57wyL https://t.co/LHH0OUiliA				
https://twitter.com/DisastersChart/status/1628725016735907846	In these maps, radar data from #Sentinel1 and #TerraSARX were used to estimate the extent of floods in Mozambique: https://t.co/6kqYrKBpco https://t.co/5cqmkJnfYU	23/02/2023	2914	87	7
https://twitter.com/DisastersChart/status/1629037613200945152	Data from the #RCMSatellites and #Sentinel1 were used to estimate the extent of flooding in Mapout province, Mozambique: https://t.co/6kqYrKBpco https://t.co/0NO5ZA0mHB	24/02/2023	1685	111	7
https://twitter.com/DisastersChart/status/1635220309585596417	The Charter has been activated to provide satellite data of floods and landslides in Ecuador, following #CycloneYaku: https://t.co/UXGVfVyWWm	13/03/2023	1354	50	7
https://twitter.com/DisastersChart/status/1701573098913357850	The Charter has been activated to provide satellite data over the floods in #Libya following #StormDaniel: https://t.co/vunF2sGlNo	12/09/2023	2007	84	7
https://twitter.com/DisastersChart/status/1737416891121979485	This preliminary damage assessment report produced by @UNOSAT provides before and after comparisons of Conakry in Guinea following the explosion at the oil terminal: https://t.co/wyHCRfqRx9 Smoke plumes and potential damage are visible, as well as temporary shelters. https://t.co/DvTmWGELtL	20/12/2023	1375	167	7
https://twitter.com/DisastersChart/status/1615714305969733634	The Charter has been activated to provide satellite data over a #landslide in #Colombia: https://t.co/VHtPkiO0SH	18/01/2023	3901	76	6

Link	Post	Date	Impressions	Engagements	Re-tweets
https://twitter.com/DisastersCharter/status/1625144356599463940	The Charter has been activated to provide satellite data over the wildfires in Chile: https://t.co/Wm2JAtFyhb	13/02/2023	1230	29	6
https://twitter.com/DisastersCharter/status/1627599134508154881	The Charter has been activated to provide satellite data over the earthquake that affected Masbate Island in the Philippines: https://t.co/jEM7kXLvdx	20/02/2023	1371	31	6
https://twitter.com/DisastersCharter/status/1630263958501224455	Data from #TerraSARX was used to estimate the extent of flood water following #CycloneFreddy in these maps of Manakara Atsimo and Vohipeno, #Madagascar: https://t.co/lmmOK9D85x https://t.co/hlhYpHGaUE	27/02/2023	2171	113	6
https://twitter.com/DisastersCharter/status/1633470567251681280	This map uses imagery from #Pleiades to estimate damage to Aniwa Island in #Vanuatu following #CycloneKevin and #CycloneJudy: https://t.co/orcFMqqd8F https://t.co/tSP0meBzKT	08/03/2023	3807	170	6
https://twitter.com/DisastersCharter/status/1633811642180947971	This damage assessment map uses #Pleiades imagery to estimate the impact of #CycloneKevin and #CycloneJudy in Espiritu Santo, #Vanuatu: https://t.co/orcFMqqd8F https://t.co/D7TtjYPc3O	09/03/2023	996	50	6
https://twitter.com/DisastersCharter/status/1636290358370869250	In this map, estimated #landslide damage to Pangkalan village in #Indonesia is overlaid on a WorldView-3 archive image: https://t.co/cClbPPRdVY https://t.co/HdZ7FQcFlU	16/03/2023	2053	110	6
https://twitter.com/DisastersCharter/status/1688868869543194625	This map estimates the impact of the landslide and mudslide in the Oni District of Georgia: https://t.co/Pzvmk9tY22 WorldView-2 and #Pleiades images are used to compare the area before and	08/08/2023	2291	75	6

Link	Post	Date	Impressions	Engagements	Re-tweets
	after the disaster. The inset shows a closer view of Shovi. https://t.co/iqtXibGmLV				
https://twitter.com/DisastersCharter/status/1715291572227486156	These maps use radar and optical imagery to estimate flood areas in the lower Volta River area of Ghana, between 16 and 18 October: https://t.co/ip61Rqh75c https://t.co/03DstMMRf1	20/10/2023	1478	58	6
https://twitter.com/DisastersCharter/status/1714200609929179526	The Charter has been activated to provide satellite data over the floods in Ghana: https://t.co/OL5etiwT4T The floods were a result of Akosombo Dam overflowing.	17/10/2023	1086	42	6
https://twitter.com/DisastersCharter/status/1625543086116929537	Potential earthquake damage to buildings at Jindires in #Syria is estimated in this map, using #Pleiades and WorldView-2 images: https://t.co/NtAPkXJ0FV The before and after comparison shows a clear example of collapsed buildings. https://t.co/lHEbgeif8m	14/02/2023	2001	148	5
https://twitter.com/DisastersCharter/status/1630879287807967235	#Pleiades imagery was used to estimate the locations of landslides and impact to buildings at BoiÃ§ucanga and Camburi in Brazil: https://t.co/ABHAVNq8D5 https://t.co/42CvdQqEcz	01/03/2023	1410	130	5
https://twitter.com/DisastersCharter/status/1637823821846593542	In these maps, imagery from #Pleiades and WorldView-3 are used to estimate locations of #landslides on Serasan Island in #Indonesia: https://t.co/cClbPPRdVY https://t.co/Pr9WLMblHl	20/03/2023	2093	154	5
https://twitter.com/DisastersCharter/status/1699710501939245103	The Charter has been activated to provide satellite data following a cyclone in Brazil: https://t.co/MCSSOw1I5c	07/09/2023	1507	31	5

Link	Post	Date	Impressions	Engagements	Re-tweets
https://twitter.com/DisastersCharter/status/1704409800358969714	Flooded areas are estimated along the Uruguay and Ibicui Rivers in Brazil in this map, which uses SAR data from the #RCMSatellites: https://t.co/00r4Jk22Rr https://t.co/AmjoQR3UOd	20/09/2023	722	76	5
https://twitter.com/DisastersCharter/status/1643575966675922947	This comparison of WorldView-2 images highlights a mudslide close to a road near Port St Johns in South Africa: https://t.co/RS7wq7dKVv https://t.co/nH0p9i6v8h	05/04/2023	2155	135	5
https://twitter.com/DisastersCharter/status/1643592283483242496	This comparison uses WorldView-2 images to identify an area of road affected by floods near Port St Johns in South Africa: https://t.co/RS7wq7dKVv https://t.co/8QVfEDj2uQ	05/04/2023	3411	189	5
https://twitter.com/DisastersCharter/status/1655879758616440832	The Charter has been activated to provide satellite data over the floods and landslides in the Congo: https://t.co/pGSZYBhD8P Our first map of the disaster uses #Sentinel2 imagery to estimate the extent of landslides in Kalehe Territory. #CongoFloods https://t.co/JalZ0Lv9O7	09/05/2023	1269	46	5
https://twitter.com/DisastersCharter/status/1656685695488933888	The Charter has been activated to provide satellite data over Myanmar in anticipation of #CycloneMocha's expected impact: https://t.co/OQgaUPVDbc Forecasts currently suggest the storm will make landfall on Sunday.	11/05/2023	1463	69	5
https://twitter.com/DisastersCharter/status/1683776450204164097	We now have a series of maps of the landslides in South Korea: https://t.co/rmiLZiisLT These maps use imagery from #Sentinel2 and #Pleiades to estimate impact of the landslides. https://t.co/d5wObmQEBC	25/07/2023	3047	127	5
https://twitter.com/DisastersCha	The Charter has been activated to provide satellite data over floods and	21/08/2023	1244	23	5

Link	Post	Date	Impressions	Engagements	Re-tweets
rt/status/1693560418919129375	landslides affecting Vietnam: https://t.co/Z3j99TYdwv				
https://twitter.com/DisastersCharter/status/1694285598150816094	In this map, data from the #RCMSatellites are used to estimate flooded areas at Ussuriysk in Russia following #TyphoonKhanun: https://t.co/becq3N8iBW https://t.co/QBBHls5qz0	23/08/2023	948	43	5
https://twitter.com/DisastersCharter/status/1737838707284337084	This new preliminary damage assessment report examines the oil terminal explosion in Conakry, Guinea, as of 20 December: https://t.co/wyHCRfrpmH Compared to the previous report, we can see decreasing smoke, which provides a clearer view of the oil terminal. https://t.co/ORQthr6ncZ	21/12/2023	780	72	5
https://twitter.com/DisastersCharter/status/1628396915506180097	The Charter has been activated to provide satellite data following #CycloneFreddy's impact to #Madagascar: https://t.co/lmmOK9D85x	22/02/2023	907	27	4
https://twitter.com/DisastersCharter/status/1630518590251098117	The Charter has been activated to provide satellite data for #CycloneJudy's expected impact to the Solomon Islands: https://t.co/Vs9YerSGJi	28/02/2023	915	29	4
https://twitter.com/DisastersCharter/status/1632688600117661697	The Charter has been activated to provide satellite data over #Vanuatu following #CycloneKevin: https://t.co/orcFMqqd8F Kevin followed just two days after #CycloneJudy also affected Vanuatu.	06/03/2023	1255	24	4
https://twitter.com/DisastersCharter/status/1633758820282380288	The Charter has been activated to provide satellite imagery of the #landslides in #Indonesia: https://t.co/cClbPPRdVY	09/03/2023	2112	49	4

Link	Post	Date	Impressions	Engagements	Re-tweets
https://twitter.com/DisastersCharter/status/1702282501224358204	These ground deformation maps use #Sentinel1 data to assess displacement after the earthquake in Morocco: https://t.co/OCejschbJr #earthquakemorocco https://t.co/OQCXxvQvIE	14/09/2023	1661	491	4
https://twitter.com/DisastersCharter/status/1707365587536527498	The Charter has been activated to provide satellite data over floods affecting South Africa: https://t.co/zReWS5EEnU	28/09/2023	1010	25	4
https://twitter.com/DisastersCharter/status/1657000210004951043	The Charter has been activated to provide satellite data over #Bangladesh in anticipation of #CycloneMocha: https://t.co/1qzizQDELV The storm is still forecast to affect Bangladesh and Myanmar on Sunday.	12/05/2023	7308	218	4
https://twitter.com/DisastersCharter/status/1658110332114546702	These damage assessment maps use #Pleiades and WorldView-2 imagery to estimate the impact of landslides at Nyabibwe and Chabondo in the #DRCongo: https://t.co/pNBsbSBc9y https://t.co/gZMi6Uxp5L	15/05/2023	1497	105	4
https://twitter.com/DisastersCharter/status/1671442659313893378	The Charter has been activated to provide satellite data over floods in Ethiopia: https://t.co/GMOcMybmEu	21/06/2023	1179	25	4
https://twitter.com/DisastersCharter/status/1683404501342998528	The Charter has been activated to provide satellite images over Friday's landslide in Quetama, Colombia: https://t.co/jJ3Qb5gtU9	24/07/2023	1088	29	4
https://twitter.com/DisastersCharter/status/1686355058768683008	The Charter has been activated to provide satellite data of #TyphoonDoksuri's impact to China: https://t.co/99HJ1ebBtJ	01/08/2023	986	19	4

Link	Post	Date	Impressions	Engagements	Re-tweets
https://twitter.com/DisastersCharter/status/1719280868601069898	This damage grading map uses #Pleiades imagery to estimate damage to Utupua in the Solomon Islands after #CycloneLola: https://t.co/GcdPm4dv4U https://t.co/UZhVGLA62m	31/10/2023	997	31	4
https://twitter.com/DisastersCharter/status/1712087907085729981	#Sentinel1 radar data over Scotland are used in this comparison, which shows large differences in backscatter over flooded areas (in black) south of Carnigons National Park: https://t.co/GGba25vTqE The Earn and Tay Rivers show abnormally high-water levels post-event. https://t.co/IKjLN0oNB4	11/10/2023	775	42	4
https://twitter.com/DisastersCharter/status/1711286263192412193	The Charter has been activated for floods in the United Kingdom: https://t.co/GGba25vTqE Floods and landslides have caused widespread disruption in Scotland over the weekend.	09/10/2023	1141	26	4
https://twitter.com/DisastersCharter/status/1620348392428965890	The Charter has been activated to provide satellite data over the floods in Zambia: https://t.co/Onn48hpsKC	31/01/2023	1298	27	3
https://twitter.com/DisastersCharter/status/1625416064824639491	The Charter has been activated to provide satellite data over floods in Eswatini: https://t.co/tVwiRuBxXm	14/02/2023	1043	31	3
https://twitter.com/DisastersCharter/status/1626534693356142592	The Charter has been activated to provide satellite data over floods in Mozambique: https://t.co/6kqYrKBpco	17/02/2023	856	23	3
https://twitter.com/DisastersCharter/status/1	These maps use #Sentinel2 imagery to estimate areas affected by the wildfires in Chile: https://t.co/Wm2JAtFyhb	20/02/2023	1936	114	3

Link	Post	Date	Impressions	Engagements	Re-tweets
627713685559906305	Affected areas are bordered in yellow. https://t.co/XYAkPUw0oa				
https://twitter.com/DisastersCharter/status/1630221894363250688	The Charter has been activated to provide satellite data following #CycloneFreddy's impact to #Mozambique: https://t.co/vxKoreIgWb	27/02/2023	948	19	3
https://twitter.com/DisastersCharter/status/1640737994775691271	The Charter has been activated to provide satellite data over floods in South Africa: https://t.co/RS7wq7dKVv	28/03/2023	1051	36	3
https://twitter.com/DisastersCharter/status/1701963638251081938	This map uses SAR data from the #RCMSatellites to estimate flood areas in Montenegro, Brazil: https://t.co/00r4Jk22Rr https://t.co/hoASgBwK50	13/09/2023	1267	77	3
https://twitter.com/DisastersCharter/status/1704074928746611003	In April, @spacegovuk took on the lead role for the Charter, a rotating position that changes every six months. Find out more and learn about activities the UK Space Agency have carried out since then: https://t.co/WKaDsvbHzB https://t.co/J9XU1vRB6p	19/09/2023	3234	39	3
https://twitter.com/DisastersCharter/status/1704517731314225587	In these maps, imagery from #Pleiades and WorldView-2 and -3 are used to assess the impact of floods at the Derna, Benghazi and Almarj dams in #Libya: https://t.co/lddrEiniO5 #StormDaniel https://t.co/nYNYULwThe	20/09/2023	602	55	3
https://twitter.com/DisastersCharter/status/1643538010057711623	.@laercionamikawa, @inpe_mcti's representative to the Charter's Executive Secretariat, attended the 20th Symposium on Brazilian Remote Sensing #sbsr2023 this week. At INPE's booth he presented how the Charter supports disaster response with examples of maps. https://t.co/jzebU5CrmD	05/04/2023	1528	23	3

Link	Post	Date	Impressions	Engagements	Re-tweets
https://twitter.com/DisastersCharter/status/1654406295703760896	The Charter has been activated to provide satellite data over the #floods and landslides affecting #Rwanda: https://t.co/uz9hRGNTkp	05/05/2023	720	14	3
https://twitter.com/DisastersCharter/status/1654440233755189253	Our first map of the #floods in #Rwanda uses #Sentinel1 data to estimate the extent of flood water at Kigali City: https://t.co/uz9hRGNTkp https://t.co/ttnj44R4wg	05/05/2023	740	79	3
https://twitter.com/DisastersCharter/status/1658768296596865025	The Charter has been activated to provide satellite data, to assist the search for the missing crew of a Chinese fishing vessel: https://t.co/kx1AtUWMU9 The 39 crew and passengers of the Lupeng Yuanyu 028 have been missing since the vessel capsized in the Indian Ocean yesterday.	17/05/2023	2266	51	3
https://twitter.com/DisastersCharter/status/1666036828766367744	The Charter has been activated to provide satellite data over floods in Ecuador: https://t.co/nKF6GCMDSP	06/06/2023	838	28	3
https://twitter.com/DisastersCharter/status/1679460602693971976	The Charter has been activated to provide satellite data over the floods affecting India: https://t.co/Vg2M3BSaxD	13/07/2023	730	24	3
https://twitter.com/DisastersCharter/status/1681245461963853825	Our first map of the floods in South Korea estimates flooded areas, using #Sentinel1 and the #RCMSatellites to compare the area before and after the flooding: https://t.co/xlvv8ve1uQ https://t.co/0oeW23ynAD	18/07/2023	559	25	3
https://twitter.com/DisastersCharter/status/1	We now have a series of maps of the floods in India: https://t.co/STkmIy8rp4 These maps use radar data from #TerraSARX and #ICEYE to estimate	18/07/2023	749	53	3

Link	Post	Date	Impressions	Engagements	Re-tweets
681269114440957952	flooded areas in Delhi. https://t.co/PvFnESaom4				
https://twitter.com/DisastersCharter/status/1688902129723817984	The Charter has been activated to provide satellite data over #TyphoonKhanun's anticipated impact to South Korea: https://t.co/yW4YFjTw2z Khanun is expected to arrive in Korea on Thursday.	08/08/2023	1217	22	3
https://twitter.com/DisastersCharter/status/1693530776422236545	The Charter has been activated to provide satellite data over #TyphoonKhanun's impact to Russia: https://t.co/P8zoTiP8eF	21/08/2023	1311	23	3
https://twitter.com/DisastersCharter/status/1717824875836920124	The Charter has been activated to provide satellite data for #HurricaneOtis' impact to Mexico: https://t.co/HZPY9DIL0M The Category 5 storm made landfall at Acapulco on Wednesday.	27/10/2023	847	18	3
https://twitter.com/DisastersCharter/status/1716828330056622104	The Charter has been activated to provide satellite data for #CycloneLola's expected impact to the Solomon Islands: https://t.co/vo11AiKNO3	24/10/2023	929	14	3
https://twitter.com/DisastersCharter/status/1716435132595220822	These maps estimate damage in Herat province following the #earthquakes in #Afghanistan: https://t.co/S9gqmM0Hgn https://t.co/8aEbOkmhwG	23/10/2023	1205	108	3
https://twitter.com/DisastersCharter/status/1711670399547699581	.@UNOSAT produced a preliminary damage assessment report following the #earthquake in #Afghanistan: https://t.co/S9gqmM0Hgn The report uses #Pleiades, WorldView, and GeoEye-1 imagery to estimate damage in Zindajan and Injil districts. https://t.co/B2Sf8CakHC	10/10/2023	977	70	3

Link	Post	Date	Impressions	Engagements	Re-tweets
https://twitter.com/DisastersCharter/status/1711351626168963101	The Charter has been activated to provide satellite data over the #earthquake in #Afghanistan: https://t.co/mVXdzyau1C The 6.3 magnitude earthquake struck the country on 7 October.	09/10/2023	890	27	3
https://twitter.com/DisastersCharter/status/1711332206893822176	The Charter has been activated to provide satellite data over floods in India: https://t.co/0RX8Nn1Gdo The disaster is affecting Sikkim state, where the glacial Lhonak Lake caused major flooding on the Teesta River.	09/10/2023	762	15	3
https://twitter.com/DisastersCharter/status/1728013716631761083	In these maps, #Pleiades imagery was used to show flooded areas in Montenegro, Pareci Novo, SÃ£o SebastiÃ£o do CaÃ and other urban areas in Rio Grande do Sul State, Brazil: https://t.co/Xes6MFdsk0 https://t.co/CPCkbe9IF9	24/11/2023	913	64	3
https://twitter.com/DisastersCharter/status/1726604401580912645	The Charter has been activated to provide satellite data over flooding in Brazil: https://t.co/YeeEU57wyL Our first map is available and estimates the extent of flooding at Itaqui along the Uruguay River as of yesterday. https://t.co/hle3Hjr1WZ	20/11/2023	807	29	3
https://twitter.com/DisastersCharter/status/1722616455253102915	These maps use data from #Pleiades and the #RCMSatellites to estimate damage to buildings and flooded areas in Mexico after #HurricaneOtis: https://t.co/oX8eqbOJ2x https://t.co/8wklvVQ724	09/11/2023	1684	99	3
https://twitter.com/DisastersCharter/status/1722212295554810129	This map provides an assessment of estimated damage to buildings on Pentecost Island in #Vanuatu after #CycloneLola: https://t.co/I0wfgpgUom https://t.co/3xrjSVPwEt	08/11/2023	794	35	3
https://twitter.com/DisastersCharter/status/1	The Charter has been activated to provide satellite data over the #earthquake in #Nepal: https://t.co/1C9pIzpAYk	06/11/2023	1149	28	3

Link	Post	Date	Impressions	Engagements	Re-tweets
721486436485022095	The 6.4 magnitude earthquake occurred in Karnali province on 3 November.				
https://twitter.com/DisastersCharter/status/1737079294168322441	The Charter has been activated to provide satellite data over yesterday's 6.2 magnitude earthquake in the Gansu province of China: https://t.co/ygoCzIRC7f	19/12/2023	677	23	3
https://twitter.com/DisastersCharter/status/1732394604438139014	The Charter has been activated to provide satellite data over the eruption of Mount #Marapi in Indonesia: https://t.co/pkHJpa3HT4 The initial eruption took place on 3 December, but there has been further activity since then.	06/12/2023	1022	37	3
https://twitter.com/DisastersCharter/status/1626571231817334784	This map has been updated to replace the pre-disaster second inset. https://t.co/xZEN13Mwta	17/02/2023	792	27	2
https://twitter.com/DisastersCharter/status/1635606509789802501	The Charter has been activated to provide satellite data over #Madagascar following #CycloneFreddy: https://t.co/R4Yvz1cTTj This is our second activation for the storm's impact to Madagascar, as it returns to the country after February.	14/03/2023	799	14	2
https://twitter.com/DisastersCharter/status/1635614816248233986	The Charter has been activated to provide satellite data over #Peru following #CycloneYaku's impact: https://t.co/0gtRQih9Du	14/03/2023	754	23	2
https://twitter.com/DisastersCharter/status/1640669035141398531	The Charter has been activated to provide satellite data over floods in Somalia: https://t.co/jazLmg8GGO	28/03/2023	999	21	2
https://twitter.com/D	The Charter has been activated to provide satellite data over the flash	24/05/2023	1346	28	2

Link	Post	Date	Impressions	Engagements	Re-tweets
isastersChart/status/1661398997397827584	floods affecting Somalia: https://t.co/6cpuY03ILR This is our second activation for floods in Somalia since March.				
https://twitter.com/DisastersCharter/status/1671495306452643841	These maps use data from the #RCMSatellites, #TerraSARX and ResourceSat-2 to estimate flood areas in Kachchh district, India, after #CycloneBiparjoy: https://t.co/4x4srnNfj9 https://t.co/ILSZUF4EFK	21/06/2023	1093	65	2
https://twitter.com/DisastersCharter/status/1680911312140791809	The Charter has been activated to provide satellite data over the floods affecting South Korea: https://t.co/D6IsnOPZT7	17/07/2023	802	19	2
https://twitter.com/DisastersCharter/status/1683748888069406720	The Charter has been activated to provide satellite data over the wildfires in Algeria: https://t.co/S2U86XRenq	25/07/2023	779	19	2
https://twitter.com/DisastersCharter/status/1689618567333904384	Our first map for #TyphoonKhanun uses data from the #RCMSatellites to estimate flood areas at Gimcheon in South Korea as of last night: https://t.co/jVk9OUqtMP https://t.co/0SojPM33Fw	10/08/2023	1321	53	2
https://twitter.com/DisastersCharter/status/1689974423002984449	This map uses data from the #RCMSatellites to estimate flooded areas at Geumsan in South Korea following #TyphoonKhanun: https://t.co/jVk9OUqtMP https://t.co/hrFgQBlndU	11/08/2023	1485	56	2
https://twitter.com/DisastersCharter/status/1716819542587187389	The Charter has been activated to provide satellite data for #CycloneLola's expected impact to #Vanuatu: https://t.co/RANFQGL90X	24/10/2023	704	23	2
https://twitter.com/D	Our first maps of the flooding in India estimate the boundaries of South	12/10/2023	617	34	2

Link	Post	Date	Impressions	Engagements	Re-tweets
isastersChart/status/1712449550386909565	Lhonak Lake as of 9 and 10 October, using data from KANOPUS-V and the #RCMSatellites: https://t.co/SBlvlHs0B8 https://t.co/jLqngTPo55				
https://twitter.com/DisastersChart/status/1727630666395681017	Flood extent at Bardere, Beledweyne, Jilib, and Jowhar in Somalia are estimated in these maps: https://t.co/QC6DfzV9mk The maps use imagery from #Pleiades and #Sentinel2 to estimate water extent and numbers of buildings potentially affected. https://t.co/5UXBNggb2h	23/11/2023	669	27	2
https://twitter.com/DisastersChart/status/1723004500250603978	The Charter has been activated to provide satellite data over the floods affecting Somalia: https://t.co/dl3sdWnpk2	10/11/2023	955	21	2
https://twitter.com/DisastersChart/status/1740042796168511929	The Charter has been activated to provide satellite data over Eswatini following a recent heavy hailstorm: https://t.co/mWUmc3EzqJ The storm affected thousands of people and damaged hundreds of buildings.	27/12/2023	1080	24	2
https://twitter.com/DisastersChart/status/1641117042605424640	The Charter has been activated to provide satellite data over continued floods in Brazil: https://t.co/sieGu2dlaV	29/03/2023	1336	29	1
https://twitter.com/DisastersChart/status/1701133353527677006	Read about @inpe_mcti's involvement in our activation for the floods in Brazil. https://t.co/S4MbDK8Oe5	11/09/2023	1364	17	1
https://twitter.com/DisastersChart/status/1650779613314924555	. @inpe_mcti reported on the 49th Charter Meeting, which is taking place this week in Edinburgh. https://t.co/ft82ahBaQQ	25/04/2023	881	19	1

Link	Post	Date	Impressions	Engagements	Re-tweets
https://twitter.com/DisastersCharter/status/1658832848600662019	This damage assessment map uses #Pleiades imagery to estimate the impact of #CycloneMocha to Saint Martin's Island in #Bangladesh: https://t.co/X6RfbOz0uH https://t.co/t8M8dDmDUE	17/05/2023	712	49	1
https://twitter.com/DisastersCharter/status/1662115046762205186	This map uses imagery from Jilin-1 and #Pleiades to analyse the impact of flooding at Beledweyne, in Somalia: https://t.co/tjvDRGuStw The analysis estimates that 67% of the town is heavily affected by the floods. https://t.co/ED1Q01jvZc	26/05/2023	711	27	1
https://twitter.com/DisastersCharter/status/1668879647830933506	The Charter has been activated to provide satellite data over #CycloneBiparjoy's anticipated impact to #India: https://t.co/scXzpi3n6T The storm is forecast to make landfall tomorrow.	14/06/2023	964	34	1
https://twitter.com/DisastersCharter/status/1673306019605225472	These maps look at coastal areas and villages in India following #CycloneBiparjoy: https://t.co/4x4srnNfj9 The maps use imagery from WorldView-2 and KANOPUS-V, with reference images from ResourceSat-2, to estimate the amount of water in the areas after the cyclone. https://t.co/L0eXWhx03C	26/06/2023	524	38	1
https://twitter.com/DisastersCharter/status/1674344997108297730	The Charter has been activated to provide satellite data of the floods and landslides affecting Chile: https://t.co/YVB9Qyv90w	29/06/2023	915	35	1
https://twitter.com/DisastersCharter/status/1681639270287589379	This flood map of South Korea estimates flooded areas using a comparison of #Sentinel1 and KOMPSAT-5 SAR data: https://t.co/xlvv8ve1uQ https://t.co/0u0ehLCZGX	19/07/2023	635	25	1
https://twitter.com/DisastersCha	The Charter has been activated to provide satellite data over the wildfires	25/07/2023	827	22	1

Link	Post	Date	Impressions	Engagements	Re-tweets
rt/status/1683843380868947969	affecting Tunisia: https://t.co/KY8QX4DH1F				
https://twitter.com/DisastersCharter/status/1717857510638440647	In this map, imagery from #Pleiades was used to estimate damage to Nendo Island in the Solomon Islands after #CycloneLola: https://t.co/GcdPm4dv4U https://t.co/SqXnUtcGix	27/10/2023	525	18	1
https://twitter.com/DisastersCharter/status/1716377440275370272	Our latest maps of the floods in Ghana estimate flood areas in the lower Volta River, and the estimated impact of flooding in Mepe community: https://t.co/ip61RqhEUK https://t.co/TVPJtpoYUO	23/10/2023	545	29	1
https://twitter.com/DisastersCharter/status/1715373012290039943	See more from the 50th Charter Meeting in this article from @obtinpe, where they describe their involvement in the meetings this week. https://t.co/qcGTSx4ZF4	20/10/2023	708	9	1
https://twitter.com/DisastersCharter/status/1715354976954855576	During the meeting, the role of the Charter's lead agency was handed over from @spacegovuk to @eumetsat and @csa_asc together for the next six months.	20/10/2023	222	3	1
https://twitter.com/DisastersCharter/status/1715354778207756665	The 50th Board and Executive Secretariat meetings for the International Charter concluded today. Hosted by @eumetsat in Germany, the meetings brought together representatives of the Charter members to discuss the Charter's current status and strategic goals.	20/10/2023	350	6	1
https://twitter.com/DisastersCharter/status/1729086542835286364	We have a new report, which uses #Pleiades imagery to estimate the numbers of buildings damaged in Port-au-Prince following the recent storm in Haiti: https://t.co/cdTBKamBB9 https://t.co/3cnnpxKwfy	27/11/2023	704	44	1

Link	Post	Date	Impressions	Engagements	Re-tweets
https://twitter.com/DisastersCharter/status/1727349234037317840	These maps use #Pleiades and #CBERS4 imagery to compare the situation at Arroio do Meio, Roca Sales, and Colinas before and after the recent flooding in Brazil: https://t.co/YeeEU56YJd Flood waters from the river can be seen spilling into urban and agricultural areas. https://t.co/EAzhDoufk6	22/11/2023	598	35	1
https://twitter.com/DisastersCharter/status/1726628281502544271	The Charter has been activated to provide satellite data over Haiti following the storm at the weekend: https://t.co/7gZBmjPp6O	20/11/2023	775	9	1
https://twitter.com/DisastersCharter/status/1726568024751444062	The Charter has been activated to provide satellite imagery over the 6.7 magnitude earthquake in the Philippines: https://t.co/YcAuCN6kI2 The earthquake struck Mindanao on Friday.	20/11/2023	569	8	1
https://twitter.com/DisastersCharter/status/1726529582269129182	Representatives of the International Charter attended #WLF6 in Florence, Italy, last week, demonstrating how the Charter monitors landslides from space. https://t.co/QReUuOP4F1	20/11/2023	407	25	1
https://twitter.com/DisastersCharter/status/1721527279858131445	In this map, #Pleiades imagery from 1 November was used to estimate damage to roads in Mexico after #HuricaneOtis: https://t.co/oX8eqbObcZ https://t.co/6DNwj9NCqn	06/11/2023	895	19	1
https://twitter.com/DisastersCharter/status/1739964980546662883	Our first map following the recent earthquake in China estimates the number and location of relief and rescue tents in Jishishan County as of 21 December: https://t.co/hfRfuYecsD https://t.co/UwHUeOICGx	27/12/2023	558	29	1
https://twitter.com/DisastersCharter/status/1	The Charter has supported landslide monitoring since our very first activation in 2000. Learn more about how the Charter monitors landslides and see examples of related activations:	20/11/2023	404	10	0

Link	Post	Date	Impressions	Engagements	Re-tweets
726544362526609457	- Landslides page: https://t.co/1ukMEWKHVs - Landslides & floods article: https://t.co/AyiSWxPOco				