



REPORT

UN-SPIDER / DLR / International Charter Space and Major Disasters / ZFL International Workshop

Use of the ESA Charter Mapper during Activations

Organized by the
United Nations Office for Outer Space Affairs
through its
**United Nations Platform for Space-based Information for Disaster Management and
Emergency Response (UN-SPIDER)**
the
German Aerospace Center DLR
the
International Charter Space and Major Disasters
With the support of the
Center for Remote Sensing of Land Surfaces (ZFL) of the University of Bonn

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Introduction

Natural and man-made disasters cause tremendous damage to societies around the world. They lead to loss of lives and property, displace people from their homes, destroy livelihoods, and disrupt sustainable development efforts worldwide. Developing countries are particularly susceptible to the impact of natural and technological hazards as societies are more vulnerable and exposed, and less resilient to recover when disasters strike.

In November 2000, several space agencies joined forces to establish the **International Charter "Space and Major Disasters"**. The International Charter has been set up as a worldwide collaboration through which products generated from satellite imagery are made available free of charge to those responding to disasters in any region of the world. By combining Earth observation assets from different space agencies, the International Charter allows resources and expertise to be coordinated. Since it was launched, the Charter has been activated more than 830 times to contribute to disaster response efforts.

During activations, the members of the International Charter provide access to satellite imagery that is subsequently processed by Project Managers and Value-Added Providers (PMs & VAs) to generate useful and timely space-based information to be used in disaster response efforts. In the year 2022, the Charter introduced a new tool: the **ESA Charter Mapper**, to support PMs & VAs in the processing of satellite imagery in the cloud. The Charter Mapper can speed up the generation of space-based information by PMs & VAs. This can be especially useful for users in developing countries who may be facing challenges related to low internet bandwidths and limitations with computing power.

Convinced that space technologies can play a vital role in supporting disaster management, the United Nations General Assembly (UNGA) established the **United Nations Platform for Space-based Information for Disaster Management and Emergency Response** (UN-SPIDER) in 2006 as a programme to be implemented by the United Nations Office for Outer Space Affairs (UNOOSA). The General Assembly mandated UN-SPIDER to bridge the gap between the space and the disaster management communities to facilitate access to space-based information and services relevant to disaster management to support the full disaster management cycle. Since its establishment, the programme has been raising awareness about the International Charter and facilitating its activation by national disaster management agencies worldwide.

In recent years, UN-SPIDER has joined forces with the International Charter Space and Major Disasters to incorporate professionals from developing countries as PMs & VAs. Together, UN-SPIDER and the International Charter have organized training workshops for PMs & VAs. These trainings allowed them to learn about the internal working procedures established by the International Charter in case of activations. Furthermore, the Centre for Remote Sensing and Land Surfaces (ZFL) of the University of Bonn and UN-SPIDER have been implementing since 2019 the project entitled: *Spaceborne Earth Observation Applications for Emergency Response and Disaster Risk Reduction* (SPEAR), benefitting from the generous support provided by the German Aerospace Centre (DLR).

Recognizing the need to enhance the skills of PMs & VAs engaged in activations, UN-SPIDER, the International Charter Space and Major Disasters, the German Aerospace Centre (DLR) and the Center for Remote Sensing of Land Surfaces (ZFL) of the University of Bonn joined forces to organize the *"UN-SPIDER/DLR/International Charter/ZFL International Workshop: Use of the ESA 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.

The workshop was carried out by experts from the European Space Agency (ESA), Terradue, ARGANS and the German Aerospace Centre (DLR). It allowed participants to enhance their skills using the Charter Mapper to process satellite imagery in case of floods, forest fires, earthquakes, and

landslides. In addition, participants were able to provide feedback and useful suggestions to the experts from the International Charter. This report compiles information on the workshop.

Background

Since 2003, the United Nations Office for Outer Space Affairs (UNOOSA) has served as a Cooperating Body to the International Charter Space and Major Disasters. The International Charter delegated two key tasks to UNOOSA:

- To raise awareness regarding the International Charter.
- To elevate requests for activation of the International Charter on behalf of agencies and organizations of the United Nations.

Since then, UNOOSA has carried out these two tasks. It has raised awareness about the International Charter in its international conferences and workshops; and since 2007, its UN-SPIDER programme has continued to implement these tasks on behalf of UNOOSA. Together, UNOOSA and its UN-SPIDER programme have elevated requests for activation of the Charter 105 times, and since 2014, UN-SPIDER has advocated for the incorporation of National Disaster Management Agencies (NDMAs) as Authorised Users (AUs) of the International Charter. By July 2023, 29 NDMAs have been incorporated as AUs with support of UN-SPIDER. In addition, UN-SPIDER has encouraged professionals from developing countries to become PMs & VAs of the International Charter to support activations in their countries or their geographic region.

In the year 2019, the International Charter and UN-SPIDER joined forces to organize two training courses for project managers, one in Bonn, Germany (<https://www.un-spider.org/news-and-events/news/un-spider-hosts-international-charter-project-manager-training-bonn>), and another one in Beijing, China. A subsequent training course was carried out at the end of 2021 in Guatemala City, Guatemala, which was co-organised by the Central American Coordination Centre for Natural Disaster Reduction (CEPRENAC), the International Charter, and UN-SPIDER (<https://www.un-spider.org/advisory-support/training-activities/regional-training-course-international-charter-activations>).

The 2023 workshop in Bonn was planned to raise the skills of PMs & VAs of Africa and Europe regarding the use of the Charter Mapper. It was originally conceived to be implemented in May 2022, but due to COVID-19 restrictions, it was postponed until July 2023. The International Charter provided a list of potential participants from Africa and Europe, and several of these were invited to participate in the workshop. A few additional participants from Asia, Latin America and Europe were invited by UN-SPIDER to benefit from the workshop.

Objectives

The UN-SPIDER/DLR/International Charter/ZFL International Workshop: “Use of the Charter Mapper during activations” aimed to contribute to an increased use of space-based information to respond to the challenges posed by disasters with a focus on developing countries. The objectives of the International Workshop were:

- To raise awareness regarding the ESA Charter Mapper implemented by the International Charter to facilitate and expedite the generation of useful space-based information to be used in disaster response efforts.
- To facilitate the exchange of lessons learned regarding activations of the International Charter.
- To contribute to increasing the skills of PMs & VAs in case of activations of the International Charter.

All these objectives were met as planned through training activities on the use of the Charter mapper and discussions during the workshop.

Attendance

The training workshop 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.

Several participants work in national space agencies or space institutes (Algeria, Belarus, Ethiopia, Nigeria, and South Africa), others work in national disaster management agencies (Eswatini, Germany, Madagascar, Sri Lanka, and the NGO Doctors without Borders), and others are engaged in government agencies (Colombia), and in academic institutions (Germany).

Agenda

The agenda of the workshop included opening and closing segments as well as three sessions. The agenda is presented in Annex 1. During the opening segment, remarks were made by representatives of UN-SPIDER, DLR, ESA on behalf of the International Charter, and ZFL. Subsequently, participants and trainers introduced themselves and made interesting remarks regarding their experience during activations of the International Charter and on the use of the Charter Mapper.

The closing segment included remarks by UN-SPIDER, DLR, ESA on behalf of the International Charter, Terradue, ARGANS, and ZFL.

SESSION 1: Updates for Project Managers and Value-Added Providers

This session, in the format of plenary presentations, allowed participants to take note of novel features incorporated by the International Charter, including new guidelines and procedures for project managers and value-added providers, as well as efforts carried out by UNOOSA and UN-SPIDER as a Cooperating Body to the International Charter.

The first presentation entitled *“Introduction to International Charter”*, was made by an expert from DLR. It allowed participants to recall several topics, including the types of hazards for which the International Charter can be activated and examples of those for which it cannot be activated.

He made participants aware of the more than 830 activations of the Charter since the year 2000, many of them due to floods. He presented charts of yearly activations, activations by country, geographic region, and type of hazard or event that triggered the activation. He noted that more than 130 countries have benefitted from the support provided by the International Charter since it started providing support in the year 2000.

He reminded participants of the Universal Access Policy that was introduced by the International Charter in 2012, and indicated that by July 2023, there were 96 Authorized Users (AUs) in 88 countries. He noted that many African and Asian Countries do not have AUs yet.

Participants were reminded of activation procedures, the roles of PMs & VAs, On-Duty-Operators (ODO), Emergency-on-Call Operators, the activation cycle and the Universal Access Policy. The expert from DLR made participants aware that the Charter recently introduced a new scenario: “Explosions” as in the case of the explosion in the Port facilities in Beirut in August, 2020.

During the discussion that followed this presentation, the Head of the UN-SPIDER Bonn Office inquired whether a new scenario could be introduced in the case of “Near-Earth Objects” including asteroids. He also commented on the usefulness of mechanisms to allow PMs & VAs to exchange lessons learned

during activations. The expert from ESA agreed with this suggestion, commenting on the usefulness of a community of practice composed of PMs & VAs.

The expert from DLR commented that there are on-going efforts to introduce a “plan of value-added products”, to be visible during an activation so that the Project Manager can keep track of efforts carried out by value-added providers.

The expert from ESA indicated that the Charter is working with UNITAR to use their platform to have an improved oversight regarding who is working in which geographic region or area of interest.

The second presentation, by the expert from ESA, focused on the use of the COS-2 system to activate the International Charter. He started his presentation commenting that it is very important to follow procedures when elevating requests for activation of the International Charter. The expert provided an in-depth explanation regarding the different sections of the COS-2 system that are used to elevate requests for activations and stressed the following points:

- The COS-2 system is now the preferred way for Authorised Users to elevate requests for activations. It is preferred in contrast to the older MS Word form. The COS-2 system allows for an improved way of entering the geographical details of the Areas of Interest (Aoi). It also allows for the detection of mistakes in the data more easily.
- It is very important to define what is needed (products) and which are the affected areas (Aoi).
- It is very important to define Aois as precisely as possible. For example, in case of flash floods, outline the areas that may really be flooded and avoid outlining areas very far away from such floods.

He made participants aware that the COS-2 system now includes two types of Aois:

- The **Focus area** to be used to define concrete areas for damage assessment.
- The **Estimated disaster area** to be used to cover additional areas to detect if and where they are affected by the disaster. The use of these Estimated disaster areas is optional.

Regarding the size of Aois that demand the use of very-high-resolution (VHR) satellite imagery, he suggested areas smaller than 40 kilometres by 40 kilometres. However, he noted that ICEEYE satellites for example have a five-kilometres swath only which should be taken into consideration when requesting VHR imagery.

The expert noted that the report of activations by project managers is essential for the International Charter to improve its efforts. So, he encouraged project managers to compile the feedback from Authorised Users and End Users, to include comments, recommendations, and suggestions, as well as critical issues that the International Charter needs to be aware of.

The expert pointed out that Authorised Users can elevate a request to the Helpdesk at the Secretariat of the International Charter to request changes in the focal points at the institution of the Authorised User.

In addition, he pointed out that soon the International Charter will incorporate the notion of **Deputy Project Managers** to support Project Managers during activations. Deputy Project Managers could be designated to support a Project Manager in his or her first activation, or when the activation demands greater engagement.

In the third presentation, UN-SPIDER commented on efforts carried out by UNOOSA and its UN-SPIDER programme as a Cooperating Body to the International Charter. The expert from UN-SPIDER noted that UNOOSA was incorporated in 2003 as a Cooperating Body to implement two key tasks:

- To raise awareness regarding the International Charter.
- To elevate requests for activation of the International Charter on behalf of agencies and organizations of the United Nations.

Since 2003, UNOOSA has carried out these two tasks. It has raised awareness about the International Charter in its international conferences and workshops. In 2006, the United Nations General Assembly established UN-SPIDER as a programme under UNOOSA, and since 2007, the programme has continued to implement these tasks on behalf of UNOOSA.

The expert from UN-SPIDER noted that between 2003 and July 2023, UNOOSA and its UN-SPIDER programme elevated 105 requests for activation of the Charter (13% of all activations of the Charter up to July 2023). UNOOSA and its UN-SPIDER programme rank second after UNOSAT of UNITAR in terms of activations. He commented that these activations were carried out at the request of UN agencies and organizations, NDMAs and government agencies of countries in Africa (37 activations), Asia (47 activations), Latin America and the Caribbean (13 activations) and Oceania (8 activations).

He also noted that since the launch of the Universal Access Policy by the International Charter, UN-SPIDER promoted the incorporation of NDMAs in developing countries. By July 2023, he commented that UN-SPIDER had engaged 29 NDMAs as Authorised Users (9 in Africa, 7 in Asia and Oceania and 13 in Latin America and the Caribbean).

The expert from UN-SPIDER also commented that the current international workshop is the fourth training event carried out jointly with the Charter. The three previous training workshops were carried out in Bonn, Germany (2019), Beijing, China (2019), and Guatemala City, Guatemala (2021). He concluded this presentation indicating that two additional training workshops are foreseen to be organised in 2023: In Santiago de Chile for South American PMs and VAs and in Beijing, China, for PMs & VAs from Asia.

In the fourth presentation entitled “Using the COS-2 system as Project Manager during activations and new features introduced”, the expert from ESA recalled the activation cycle, outlining again the roles of those who carry out tasks during activations, including:

- Authorized Users (AU)
- End Users (EU)
- On Duty Operators (ODO)
- Emergency on Call Officers (ECO)
- Order Desk / Mission & Production Planners (MPP)
- Project Managers (PM)
- Value Added Providers (VA)
- Executive Secretariat (ES)

He outlined that once a project manager is appointed by the International Charter for an activation, the tasks that she or he should carry out include:

- Reviewing the information included in COS-2 related to the activation.
- Validating the dossier elaborated by the ECO and then working on the basis of the dossier.
- Dividing the work among VAs if needed, asking them to indicate in COS-2 the footprint of the planned Value-Added Products (VAP).
- Check the COS-2 acquisition plans to take note of the satellites that have been tasked and what type of imagery is in the pipeline to be acquired and subsequently processed.
- Request new imagery in case new Aols are requested by the Authorised User or in case the activation is extended. This is particularly important as the initial tasking of satellites at the beginning of the activation is expected to run for around 10 days. If more imagery is required after those 10 days, the PM needs to elevate new requests.
- Keep in contact with the Authorised User and the End Users. Inform them when products may be expected for their subsequent use.
- Check the products elaborated by the VAs before sending them to the Authorised User and the End Users.

- Send questionnaires to the Authorised User and the End Users to get their feedback regarding the activation.
- Close the Activation.
- Elaborate the report.

The expert from ESA commented that the Project Manager shall check with the Authorised User if some Aols could be closed (i.e. no need for additional data over the area), and in case of need, define new Aols in case the event has reached other geographic areas not originally contained in the activation request.

In addition, the expert commented that if a Deputy Project Manager is assigned, the Deputy cannot close the activation, nor elaborate the PM report.

The expert from Terradue gave the last presentation of this session introducing the **ESA Charter Mapper**. He commented that The ESA Charter Mapper is a processing environment developed by Terradue of Italy at the request of ESA. He noted that the aim of the Mapper is to support PMs & VAs during activations. It allows PMs & VAs to access EO data online and perform visual and GIS analysis and basic EO processing.

Imagery received from COS-2 is ingested and calibrated automatically and can be viewed online at full resolution. PMs & VAs can browse imagery online, select the EO data of interest, analyse and process them online with on-demand services and toolboxes to generate geo-information products. The Activation Workspace allows them to:

- Browse full resolution EO data as rasters on the map.
- Search manually for EO data in the data collections ingested from COS-2.
- Upload external EO data outside COS-2 from local workstations or free EO Data catalogues.
- Submit processing jobs using EO processors.
- View the results.
- Store & share EO data and VA products with other partners involved.

The ESA Charter Mapper handles both optical and radar imagery. The graphical user interface includes:

- A menu bar at the top.
- A data services panel in the left margin.
- The central map area that includes its toolbar.
- A processing services panel that allows PMs & VAs to select specific ways to process imagery.

In the case of radar imagery, the Mapper allows for a quick SAR overview without speckle filtering. In the case of GIS, it allows PMs & VAs to import and draw vector data. The mapper also allows them to upload auxiliary data such as Copernicus DEM, JRC Global Surface Water, and WorldPop.

SESSION 2: Introduction to the Charter Mapper

During this session, participants continued to become aware of the main features of the ESA Charter Mapper and examples of its processing capabilities in case of activations. The session began with a presentation by an expert from ARGANS regarding the features of the Mapper and examples of its use in activations for different types of events.

In the case of floods, he commented that the Mapper allows for flood detection either using optical or radar imagery. He provided examples of results related to floods in Honduras, Nigeria and the Philippines. In the case of the Philippines, the examples addressed the detection of floods over cropland.

In the case of wildfires, he presented the example of forest fires in Chile. He noted that Mapper performs a *Burned Area Severity* (BAS) analysis using the swir22 and nir bands of calibrated optical

imagery. He presented the recent example of fires in Chile and indicated that the Mapper can be used to see images acquired on different dates, allowing for easy detection of change (pre- and post-conditions).

In the case of earthquakes, he presented results of the recent earthquakes in Türkiye and Syria. In this case the Mapper allows for *change detection* processing using the feature of sliders and both optical and radar imagery can be used. Damage to infrastructure can be detected using SAR amplitude changes. He noted that in the case of optical imagery acquired at different angles of incidence, the Co-Registered stacking service of the Mapper can be used to align the images quickly to facilitate comparisons. The expert from ARGANS presented another example of the analysis of the detection of floods due to a dam break on the Syria / Türkiye border.

In the case of volcanic activity, he presented examples of activations in Indonesia and Hawaii in the United States. He commented that the SAR amplitude change service facilitates the visualization of lava flow. In addition, the DInSAR Displacement Mapping service allows for the visualization of interferograms depicting changes in vertical elevation (uplift or subsidence).

In the case of landslides, the expert from ARGANS presented an example of activations in Brazil and the Philippines. He indicated that the Mapper uses changes in NDVI values to identify the location of landslides.

He concluded his presentation commenting that the *mCube Multi-Mission Mapper* can be used outside the scope of activations for additional analysis. This mapper was developed by Terradue.

In a complementary fashion, the expert from ESA indicated that a training environment for the ESA Charter Mapper is now available for PMs & VAs to enhance their skills on the use of the tool. This version contains permanent sample data and temporary training data collection is feasible. PMs & VAs should contact the Helpdesk of the International Charter to get an account.

SESSION 3: Table-top simulations of activations

In this session participants were divided into five working groups. Each group was assigned a "simulated" activation that was elevated by a national disaster management agency. Groups were assembled as follows:

Group 1: Floods in Southern Africa (participants from Eswatini, Madagascar, South Africa, and Germany). Use Case: Cyclone Freddy in Madagascar (Act-812)

Group 2: Floods in Western Africa (participants from Nigeria, Austria, and Germany). Use case: Flooding in Nigeria (Act-777)

Group 3: Forest fires in North-Western Africa (participants from Algeria, Colombia, and Germany). Use Case: Wildfire in Tunisia (Act-766)

Group 4: Floods in Western Africa (participants from Ethiopia, Sri Lanka, and Germany). Use case: Flooding in Nigeria (Act-777)

Group 5: Earthquakes and Landslides (participants from Belarus and Germany). Use case: Earthquakes in Türkiye (Act-797), Tropical Storm Nalgae in the Philippines (Act-789)

All groups followed the same procedure of gradually learning the functions of the Mapper, starting from basic visualization and moving to advanced processing. The groups benefitted from the active guidance of the experts from Terradue and ARGANS during this segment of the workshop.

Upon completing their respective thematic tutorials, the groups were given time to prepare a short presentation of their results and feedback from their experience. The groups then presented their results to the organizers and other participants, showing that the training was successful as all groups were capable of generating useful results within the mapper.

Discussion

The workshop included a dedicated discussion session moderated by UN-SPIDER that was used to address several topics including lessons learned on the use of the ESA Charter Mapper during activations, suggestions for improvements to the Mapper, and potential next steps.

Participants who had previous experience with activations noted the usefulness of the Mapper in comparison to activations before the Mapper was available. They noted that there was no longer a need to download satellite imagery. This reduced the amount of time required to process imagery and to generate results which subsequently could be shared with the Authorised and End Users. Other users indicated that the Mapper allowed for a standardization of products to be supplied to Authorised and End Users and for improved coordination among PMs & VAs. PMs remarked that it was very useful for all products generated by VAs to be available in one single common tool. In the case of floods, participants recognized the capacity of the Mapper to detect flooded areas more easily.

The expert from ESA noted that the Mapper is expected to be used primarily to visualize which satellite imagery is available during activations and to identify which imagery is really useful for subsequent download and processing. PMs & VAs can then decide whether to process the imagery in the Charter Mapper or to download it and use their own software and established workflows for its processing. He indicated that while the Mapper had built-in services, it is not mandatory to use it for processing the data and aims not to replace the capacity of dedicated software for imagery processing. He noted that a key advantage is that all the data can be found in same data format (GeoTIFF), which allows for faster generation of products to be provided to Authorised and End Users.

During this discussion, participants also elevated suggestions to improve the Mapper. Among them:

- The capacity to incorporate layers containing information on population.
- Using change detection procedures with the Bare Soil Index (BSI) to complement the NDVI change detection procedure implemented in case of landslides.
- The incorporation of the capacity to download some products in KML/KMZ format for easy access and visualization by End Users in the field, who may have limited access to internet.

Regarding next steps, several suggestions were discussed. A suggestion was elevated by UN-SPIDER to explore activations just before hurricanes, typhoons or cyclones make landfall in the case of Small Island States in the Pacific, the Caribbean, and the Indian Ocean for example. Another suggestion elevated by UN-SPIDER was for “light” activations of the Charter in case of volcanic activity in volcanoes with snowed peaks. These “light” activations would imply a lesser amount of satellite imagery tasked, but the activation extended for a longer time due to the uncertainty regarding when a massive eruption may take place.

Additionally, a suggestion was elevated for dedicated virtual trainings, to be co-organized by the International Charter and UN-SPIDER, to train PMs & VAs on the use of specific services implemented in the Mapper and to present new features.

Furthermore, a suggestion was elevated to implement procedures to keep the links among PMs & VAs, geared to facilitate the horizontal exchange of lessons learned and tips on the use of specific features and services of the Mapper.

Finally, the expert from ESA suggested the establishment of the notion of a network or community of practice of PMs & VAs to continue this process of enhancing the use of the Mapper and other tools and procedures implemented by the International Charter

Conclusions

The UN-SPIDER / DLR / International Charter / ZFL International Workshop was able to achieve its objectives:

- It was able to bring together 15 participants from Africa, Asia, Europe, and Latin America to become aware of the Charter Mapper and its use in case of activations.
- It facilitated the exchange of lessons learned regarding activations of the International Charter and the benefits of the use of the Charter Mapper in case of floods, forest fires, earthquakes, and landslides.
- It contributed to increase the skills of PMs & VAs regarding procedures and tools implemented by the International Charter during activations.

In addition, the workshop provided ample opportunities for participants to discuss relevant issues with experts from ESA, Terradue, ARGANS, DLR and UN-SPIDER; for participants to elevate suggestions regarding how to improve the functionality of the ESA Charter Mapper and for UN-SPIDER to elevate suggestions on potential enhancements to the activations of the International Charter.

Furthermore, the workshop allowed UN-SPIDER to enhance its links with ESA, DLR, ARGANS and Terradue; as well as with the participants from different countries. It also allowed UNOOSA and its UN-SPIDER programme to continue their efforts as a Cooperating Body to the International Charter.

Annex 1

Tuesday 18 July 2023

12:00 – 13:00	Registration	
International Training Workshop Opening Segment		
13:00 – 13:30	Opening Ceremony <ul style="list-style-type: none"> - Welcome remarks by UN-SPIDER - Welcome remarks by the International Charter - Welcome remarks by DLR - Welcome remarks by ZFL - Group photo 	UN-SPIDER, International Charter, DLR, and ZFL
13:30 – 14:00	Tour de Table	Participants
SESSION 1: Updates for Project Managers and Value-Added Providers		
This session will allow participants to take note of novel features incorporated by the International Charter, including new guidelines and procedures for project managers and value added providers. It will also be used by UN-SPIDER to share some lessons learned from previous activations of the International Charter.		
14:00 – 14:20	Introduction to the International Charter	International Charter
14:20 – 14:35	Using the COS-2 system to activate the International Charter	International Charter
14:35 – 15:00	UN-SPIDER: The role of UN-SPIDER in activations of the International Charter.	UN-SPIDER and ZFL
15:00 – 15:30	Using the COS-2 system as Project Manager during activations and new features introduced.	International Charter
15:30 – 16:00	Coffee Break	
SESSION 2: Introduction to the Charter Mapper		
This session will allow participants to become aware with the Charter Mapper and its features.		
16:00 – 17:30	Introduction to the use of the Charter Mapper	International Charter
End of first day		

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SESSION 2 (CONT.): Introduction to the Charter Mapper		
<i>This segment of the session will be used to complement the information presented on the previous day on the Charter Mapper and its features</i>		
09:00 – 10:30	Introduction to the use of the Charter Mapper	International Charter
10:30 – 11:00	Coffee Break	
11:00 – 13:00	Initial practice: using the Charter Mapper	International Charter
13:00 – 14:00	Lunch	
SESSION 3: Table-top simulations of activations		
<i>In this session participants will be divided into working groups. Each group will be assigned a "simulated" activation that has been elevated by a national disaster management agency. Participants in the groups will use the Charter Mapper to generate relevant information.</i>		
14:00 – 14:30	Introduction to the "simulated" activations	International Charter, UN-SPIDER, DLR, ZFL
14:30 – 15:30	Simulated activations	Participants
15:30 – 16:00	Coffee Break	
16:00 – 17:30	Simulated activations (cont.)	Participants
End of second day		

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SESSION 3 (CONT.): Table-top simulations of activations		
09:00 – 10:30	Simulated activations (cont.)	Working groups
10:30 – 11:00	Coffee Break	
11:00 – 12:30	Presentations of products by each of the working groups.	Working groups
12:30 – 13:30	Lunch	
14:00 – 15:30	Discussion	UN-SPIDER, International Charter, DLR, and ZFL
15:30 – 16:00	Coffee Break	
16:00 – 16:30	Closing segment	UN-SPIDER, International Charter, DLR, and ZFL
End of International Training Workshop		