International Charter
“Space & Major Disasters”
Overview

Disaster Risk Reduction
Across the Americas Summit
Reunión Cumbre de las Américas sobre Reducción de Riesgo de Desastres

Buenos Aires, Argentina
Septiembre 2017
• What is the Charter?
• Activation statistics
• Mechanisms to activate the Charter
• Operational Workflow
• Universal Access Initiative
• Disaster type examples
• Conclusions
An International agreement among participating Agencies to provide space-based data and information in support of response efforts during emergencies caused by major disasters.
The International Charter

- A unified system of space **multi-satellite data acquisition** and delivery for **disaster response** in case of **natural or human-made disasters**

- Now composed of **16 members**.

- **Data delivery** to civil protection agencies, emergency & rescue services and available to Humanitarian Aid actors of the United Nations.

- Operational: **24/7 on-duty-operator**

- Charter activations: **+/-40 events/year**

- **550+ disasters covered to date in 120 countries worldwide.**
The Charter brings together efficient space-based technologies to support disaster management.

The Charter’s capacities can be activated through a single access point which is available 24 hours, seven days a week.

Space agencies contribute:
- **Priority satellite tasking**
- Archive Retrievals
- Data processing at pre-determined level
- Organisation of map production
- Space Agency initiative for value-added data fusion
Disaster Types Supported

Natural events
- Earthquakes
- Fires
- Floods
- Ice jams
- Landslides
- Tsunamis
- Ocean storms
- Volcanic eruptions

Man-made events
- Oil spills
- Industrial accidents

A major disaster is a large, often sudden event with high impact in terms of lives and/or infrastructure & environment.

(slow-onset disasters, such as droughts, are not covered by the Charter; disasters due to armed conflicts are also not covered)
Limited mandate of the Charter

The Charter only supports the phase of immediate response to a disaster.

Charter activations generally last for about 1-4 weeks.

If needed, the Charter can be activated in advance (1-2 days).
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• **Activation statistics**
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November 2000 to June 2017: +550 Charter Activations
### Charter Activations (By Disaster Types)

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*Includes solid earth related phenomenon of a tsunami.

**Includes all wind type storms (hurricane, cyclone, typhoon and tornado).
Activations by Disaster Type

- Flood/Ocean wave: 51%
- Storm/Hurricane: 16%
- Earthquake: 11%
- Volcano: 6%
- Fire: 7%
- Ice/Snow hazard: 1%
- Landslide: 4%
- Others: 2%

As of June, 2017 – +550 Charter Activations
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The only bodies authorized to **directly** request the Charter to be activated are the **Authorized Users** - AUs (typically civil protection agencies, governmental relief organizations, or other authorities with a mandate related to disaster management).
Mechanisms to Activate the Charter

• **Direct activation:** The only bodies authorized to directly request the Charter to be activated for a disaster occurring in their country are the ‘Authorized Users’ (AUs). They are typically civil protection agencies, governmental relief organizations, or other authorities with a mandate related to disaster management.

• **Activation via an Authorized User on behalf of a user from another country without AU:** Authorized Users can access the Charter to request support for a disaster in another country with which they cooperate for relief purposes.

• **Activation via the UN for UN users:** The Charter has agreements with UNOOSA (Vienna) and UNITAR/UNOSAT (Geneva) to provide support to UN agencies. UNOOSA and UNOSAT may submit requests on behalf of users from the United Nations.

• **Activation for Asia Pacific users via Sentinel Asia:** Sentinel Asia is a regional collaboration for satellite based emergency response in Asia Pacific. Since 2009 the Charter has granted the Asian Disaster Reduction Centre the right to submit activation requests on behalf of national users of Sentinel Asia.
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Charter Operational Loop

EMERGENCY ON-CALL OFFICER (ECO)

ON-DUTY OPERATOR (ODO)

PROJECT MANAGER (PM)

MEMBER AGENCY MISSION PLANNING

AUTHORIZED USER (AU)

VALUE-ADDED PROVIDER (VAP)

END USER (EU)

DISASTER

ESA
CNES
CSA
NOAA
ISRO
CONAE
JAXA
USGS
UKSA/DMCII
CNASA
DLR
KARI
INPE
EUMETSAT
ROSCOSMOS
ABAE
Charter Functional Units

- Authorized Users (AUs)
- On-Duty Operator (ODO)
- Emergency on-Call Officer (ECO)
- Project Manager (PM)
- Data processing and distribution facilities
- Value-Added Providers (VAPs)
Authorized User (AU) Interfaces

• **AU – On-Duty Operator (ODO)**
  – AU submits the User Request Form (URF)
  – ODO checks the identity of the caller
  – ODO confirms the reception of the URF and its completeness

• **AU/End User (EU) – Emergency on-Call Officer (ECO)**
  – ECO calls the AU/EU for information on the Disaster
    • Geographical location of the affected area
    • Type of disaster
    • Extent of disaster
    • Type of data processing/product (if applicable)
    • Target delivery time
    • Delivery medium and address
    • Any additional information

• **AU/EU – Project Manager (PM)**
  – PM contacts directly the AU/EU if required
  – PM obtains further information on the requirement
  – PM apprises the AU/EU with regard to the data acquisition planning
  – PM solicits AU/EU's appraisal of the Charter activation
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Universal Access
launched in September 2012

Any national disaster management authority can apply to become a Charter Authorized User
1. Must be a **national disaster management authority** or its delegated agency in that country

2. Must have the **capacity to download and use maps**

3. Must be able to **submit and pursue an activation request in English**
A registration form* (in English, French and Spanish) is available for national authorities to express interest in becoming a Charter Authorized User.

1. The candidate fills in the questionnaire providing all required information.

2. The questionnaire, with an official cover letter from the organisation, must be sent to: ExecutiveSecretariat@disasterscharter.org

3. The request is assessed by the Charter members.

*The form may be downloaded together with the Information brochure from the Charter website: www.disasterscharter.org/web/guest/activating-the-charter or www.disasterscharter.org/web/guest/home
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Flood disaster example: India 2015

Inundation due to heavy rains in parts of Jammu & Kashmir state – map prepared by NRSC based on RISAT-1 and TerraSAR-X
Flood disaster example: Malawi 2015

Inundation in the South of Malawi – map prepared by Malawi Department of Surveys, Ministry of Lands, based on Radarsat-2 data.
Example: Kathmandu after the major earthquake on 25 Apr 2015

Important affected buildings and visible spontaneous gathering areas in Kathmandu on 27 Apr 2015. Map produced by SERTIT based on Pléiades data.
Example: Nepal earthquake landslide inventory

Preliminary Landslide Inventory Following 25 April 2015 Nepal Earthquake

Legend
- Cities and towns
- Main roads
- Rivers
- Country boundaries
- Epicenter
- Damaged roads/bridges (Tomnod.com)

Interpretation
This satellite image interpretation map shows the combined landslide maps produced by an international team including British Geological Survey, Durham University, ICIMOD, MDA and NGA. The scale of mapping was between 1:5,000 and 1:10,000 and the satellite image resolution is between 2.5 m and 22.5 m.

More than 3000 new landslides were mapped (by the publication date). Geolocation of landslides may not be accurate.

Insets show detailed mapping.
Example: Landslide caused by the Nepal earthquake on 25 Apr 2015

Observation: A new major landslide has blocked the valley resulting in development of a lake. Several other small new landslide are also seen.

Location of the landslide: 84° 47' 30" E & 28° 33' 8" N
Tsunami in Japan, March 2011

Pre- and post-disaster image from the RapidEye satellite constellation.
Estimated directly affected population
(product made by DLR/ZKI, based on flood extent derived from TerraSAR-X data and Landscan 2009 population data)
Example: Damage analysis after Typhoon Haiyan, Philippines, November 2013

Daanbantayan, affected individual housing, detected via Pléiades data
Example: Sinabung volcano eruption in 2014
Example: Chilean volcano eruption in Apr. 2015

“Calbuco” Volcano pre- and post-eruption RapidEye images (product made by DLR/ZKI)
Detection of burnt areas and active fires based on Landsat-8 data.
Map produced by DLR/ZKI.
Oil spill in the Gulf of Mexico

Deep Water Horizon Oil spill extent, Radarsat-2 image acquired 28 April 2010

(copyright CSA, RADARSAT-2, MACDONALD, DETTWILER & ASSOCIATES LTD)
Conclusion

• The Charter is an **agreement** among participating space agencies.

• Its “**satellite constellation**” can deliver key information that brings benefit to disaster response operations.

• The Charter is focused on the **immediate response phase**.

• More than **550 disasters** have been covered since 2000 in more than **120 countries** worldwide.

• **National Disaster Management authorities** can become **Charter Authorized Users** to be able to directly activate the Charter through Universal Access Initiative.

• **Universal Access** benefits national users in countries beyond those of the Charter members, who were previously unable **to make direct requests** to the Charter during emergency situations.
Website www.disasterscharter.org

@DisastersChart
Follow the Charter on Twitter

Newsletter
https://www.disasterscharter.org/web/guest/news/newsletter

Emergency enquiries from users requiring direct access to Charter resources should be addressed to:
ExecutiveSecretariat@disasterscharter.org

General requests for information should be addressed to
webmaster@disasterscharter.org