

Earth Observations for Disaster Risk Management Implementation Plan 2020-2022

Executive Summary

Full title of the Community Activity: **Earth observations for Disaster Risk Management**

Short title or acronym: **EO4DRM**

Existing or proposed category: **Community Activity**

Overview (summary of section 2 below).

Planned Activities (summary of section 4 below).

The Sendai Framework for Disaster Risk Reduction 2015-2030 includes two articles with explicit references to satellite Earth observation and several articles that refer to topics for which satellite observations are needed (e.g., geospatial information or risk maps). This activity aims at improving disaster risk management and reduction by providing timely risk information relevant to the full cycle of disaster management (mitigation, preparedness, warning, response and recovery) and will be used both directly by the end user community including the decision makers that have to take appropriate resilience and Disaster Risk Reduction (DRR) measures as well as Disaster Risk Management (DRM) more broadly, and by intermediate users such as science and research institutes that inform the actions of end users.

The activity builds on existing CEOS thematic pilots and demonstrators already underway with a view to creating a broader community of users and ensuring better linkages to end user communities. CEOS has previously undertaken three thematic pilots completed in 2017: Floods, Seismic Hazards, and Volcanoes, and a fourth Landslide Pilot will be completed by end of 2020. These Pilots were started under the GEO 2012-2015 Work Plan and have produced multiple risk products that have been taken up by civil protection agencies and other end users, and have generated new science products based on EO data. In the case of Volcanoes and Seismic Hazards, new Demonstrators have begun, with a view to achieving broader user uptake and sustainable financing for long-term applications.

Activities for the period

- Improve disaster risk management and reduction by providing timely remotely sensed and in situ information relevant to the full cycle of disaster management (mitigation, preparedness, warning, response, and recovery);
- Work in close coordination with International Charter: Space and Major Disasters, Sentinel Asia, Copernicus Emergency Management Services, and SERVIR to improve the full cycle of DRM;
- Implement the current strategy from the CEOS Agencies to better contribute to all phases of disaster risk management (DRM), in response to the needs of the user community;
- Promote timely and reliable access to in-situ data required in emergency events, and its coordination and integration with satellite-based products;
- Coordinate efforts towards a more-timely dissemination of information from globally coordinated systems for monitoring, predicting, risk assessment, early warning, mitigating, and responding to hazards at local, national, regional, and global levels;
- Demonstrate the validity of regional end-to-end systems through multi-actions single hazard pilot demonstrators with an initial focus on Seismic Hazards and Volcanoes, with direct involvement of the user community;

- Demonstrate the validity of multi-hazard Pilots such as a possible Generic Recovery Observatory (multi-year activity which aims to analyze recovery of severely damaged areas after the International Charter Space and Major Disasters data provision period ends);
- Integrate Early Haiti RO evaluation and concept work on Generic Recovery Observatory, to establish a new Recovery Demonstrator (multi-year activity which aims to analyze recovery of severely damaged areas after the International Charter Space and Major Disasters data provision period ends) aimed at demonstrating the validity of multi-hazard analysis and increasing the use of satellite EO for recovery;
- Improve the quality of risk information generated by the Pilots/Demonstrators by combining space data with relevant in situ data.

Suggestions for new activities from new partners are welcome.

Resources: In-kind contributions, especially satellite EO from agencies with commercial partners : ASI, CSA, CNES, DLR. Also open data sets and resources associated with their exploitation from other satellite agencies (e.g. ESA, NASA, USGS).

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Linkages across Work Programme Initiatives: GEO-DARMA, GSNL.

Purpose

The rationale for the Community Activity lies in the need to increase understanding of risk within the global and national risk management communities. Satellite data are a key component to improving understanding of risk, with regard to hazards, exposure and vulnerability, and increased use of satellite EO can inform the risk equation and reduce risk.

Past outputs of this activity have included a wide range of risk related information products ranging from information on co-seismic displacement or terrain displacement prior and during volcanic eruptions to information on flood depth and extent and receding flood waters. These products are specific to each user community involved in the activity. At this time, the main user communities are grouped by their thematic interests:

- Seismic hazards and risk;
- Volcanoes;
- Landslides;
- Recovery planning and monitoring.

The anticipated geographical scope is global.

This activity aims at improving disaster risk management and reduction by providing timely risk information relevant to the full cycle of disaster management (mitigation, preparedness, warning, response and recovery) and will be used both directly by the end user community including the decision makers that have to take appropriate resilience and Disaster Risk

Reduction (DRR) measures, and by intermediate users such as science and research institutes that inform the actions of end users.

Through this GEO Community Activity, the delivery of risk information will be improved through the consolidation of the delivery process for the data (from EO providers) and information (from practitioners). This activity will further implement the current strategies to better contribute to all phases of DRM in response to the needs of the user community. The two approved Demonstrators will explore the possibility of partnership with other DRM stakeholders, enlarging the concept of the Pilots to address new geographic areas, and more systematic application. New Demonstrators in other areas may be created based on interest from new partners joining the Community Activity. Implemented through the CEOS WG Disasters, the Demonstrators have a three-year life cycle and will be re-assessed to ensure sustainable results at the end of that period. The WG is considering new Demonstrators and other thematic pilots, most notably addressing Climate Change Adaption which was discussed at its March 2019 meeting. In addition, since 2017, CEOS has led the creation of a Recovery Observatory (RO) to follow the impact of Hurricane Matthew in Haiti for a four-year period. The RO is co-led by the Haitian government, with active participation of the World Bank/GFDRR, UNDP and UNEP. The RO will be the subject of an early evaluation in 2019 to determine the issues and challenges for the establishment of a generic RO in the 2020-2022 period. This Generic RO may also serve as the basis of a new pilot activity aimed at the community of recovery practitioners active in global recovery efforts after major disasters.

Key activities

The key activities for the period are listed below:

- Improve disaster risk management and reduction by providing timely remotely sensed and in situ information relevant to the full cycle of disaster management (mitigation, preparedness, warning, response, and recovery);
- Work in close coordination with International Charter: Space and Major Disasters, Sentinel Asia, Copernicus Emergency Management Services, and SERVIR to improve the full cycle of DRM;
- Implement the current strategy from the CEOS Agencies to better contribute to all phases of disaster risk management (DRM), in response to the needs of the user community;
- Promote timely and reliable access to in-situ data required in emergency events, and its coordination and integration with satellite-based products;
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- Demonstrate the validity of regional end-to-end systems through multi-actions single hazard pilot demonstrators with an initial focus on Seismic Hazards and Volcanoes, with direct involvement of the user community;
- Demonstrate the validity of multi-hazard Pilots such as a possible Generic Recovery Observatory (multi-year activity which aims to analyze recovery of severely damaged areas after the International Charter Space and Major Disasters data provision period ends);
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provision period ends) aimed at demonstrating the validity of multi-hazard analysis and increasing the use of satellite EO for recovery;

- Improve the quality of risk information generated by the Pilots/Demonstrators by combining space data with relevant in situ data.

The WG is considering new Demonstrators and other thematic Pilots, most notably addressing Climate Change Adaption which was discussed at its March 2019 meeting. Further details on these new activities will be included in updates to the Implementation Plan.

In addition, since 2017, CEOS has led the creation of a Recovery Observatory (RO) to follow the impact of Hurricane Matthew in Haiti for a four-year period. The RO is co-led by the Haitian government, with active participation of the World Bank/GFDRR, UNDP, UNEP, UE delegation in Haiti. The RO is the subject of an early evaluation in 2019 to determine the issues and challenges for the establishment of a Generic RO in the 2020-2022 period. This Generic RO may also serve as the basis of a new Demonstrator activity aimed at the community of recovery practitioners active in global recovery efforts after major disasters. This activity is expected to begin in earnest in 2020 and will be included in updates to the Implementation Plan.

Governance

The activity will be managed through the CEOS WG Disasters. Participation in the WG is not limited to CEOS members and all partners in the activity are invited to join in the management of the projects. A copy of the Terms of reference of the WG Disasters is available on the CEOS website under WG Disasters.¹

Each Demonstrator or Pilot has its own dedicated community and is managed within that community, with semestrial reporting to the WG Disasters.

Data Policy

There is a broad range of data being contributed to this activity, including of course satellite EO, but also in-situ data sets and other types of data such as socio-economic data. Most of the data sets are free and open access data sets. In some cases, in-kind contributions of commercial data sets from satellite providers are subjected to licenses and limited in their use and distribution. The CEOS pilots are consistent with the GEO Data Management Principles.

¹ <http://www.ceos.org>