

CEOS Disaster Risk Management

Seismic Hazards Demonstrator

CEOS WG Disasters 10th meeting



Philippe Bally (ESA)
Stefano Salvi (INGV)
Theodora Papadopoulou (ARGANS c/ ESA)



Context and Overview



- Intends to expand the precursor Seismic Hazards pilot activities
- Aims at addressing priorities of the *Sendai Framework for Disaster Risk Reduction 2015-2030* using Earth observations (EO) and in particular:
 - Priority 1 - Understanding disaster risk (hazard characteristics)
 - Priority 2 - Strengthening disaster risk governance at regional and global level.
- Main goal: to **provide data and capabilities to generate EO based scientific information to be released to decision makers for seismic hazard assessment**
- **Addresses two challenges** identified in the precursor CEOS Pilots:
 - **Exposing results to decision makers**, based on a consensus methodology for product generation to avoid confusing end-users.
 - **Broaden the use and increase acceptance of EO techniques**, aiming to educate geoscience centres and decision-makers.

Objectives



Not on an emergency basis

- I. Pursue **global tectonics mapping** in the long term
- II. Expand **active fault mapping** from regional to global coverage primarily using VHR optical data supporting supporting geomorphological and morpho-tectonics studies
- III. **Develop a collaborative framework with geoscience centres** to promote adoption of EO-based technology by decision makers, establish a consensus methodology for research product generation and dissemination to decision makers.
- IV. **Support local capacity building in coordination with GSNL** and other initiatives to broaden the use and acceptance of advanced EO products by geoscience centres and academia and facilitate end users with their interpretation.

On an emergency basis

- V. Exploit EO data to derive **advanced research products for earthquake response**: expand to target of at least 10-12 EQ per year
- VI. **Articulate with EO disaster response capabilities** e.g. the Charter to make sure users are aware of and use it.

Status of activities (1)



I. Global tectonics mapping

- *Not started - Awaiting data volumes confirmed*

II. Active fault mapping

- University of Leeds requested optical imagery for cities in Central Asia
- HUA interested requested SAR/optical imagery for urban active fault mapping in:
 - Greece (sub-urban Athens, in collaboration with University of Athens). Aim to monitor potential deformation along the faults using both SAR and optical data
 - Iran (Kerend-Zahab area, in collaboration with the International Institute of earthquake Engineering and Seismology (IIEES), Academy of Sciences of the I.R. Iran)

III. Develop a collaborative framework with geoscience centres

- Activity launched by Geohazards Lab WG
- Demonstrator to work closely with Geohazards WG on the **definition and standardization of seismic products**

III. Support local capacity building in coordination with GSNL

- Identifying possible solutions to organise on-site courses/seminars and webinars:
 - Online training: webinar (CEOS WGCapD: TBD)
 - On-site training (preferred option):
 - HUA (Greece) can support a 1-week training course in their premises (up to 25 participants)
 - HUA, BRGM and INGV proposed to provide training material
 - Interest from Ecuador (Yachay Tech and ESPOL: some participants can receive travel funding from their institutions)

Status of activities (2)



V. Advanced research products for earthquake response

- *Not started - Awaiting data volumes confirmed*

VI. Articulate with EO disaster response capabilities

- Proposed action: WG Disasters to contact Charter to redefine terms of agreement (& introduce the Demonstrators).

Contributions



Space agencies:

- **ESA**
- **ASI**
- **DLR**
- **CNES**

Partners from the community:

- **COMET /UK**
- **University of Leeds /UK**
- **CNR-IREA /Italy**
- **INGV /Italy**
- **ISTerre/Institut de Recherche pour le Développement (IRD) /France**
- **National Observatory of Athens (NOA) /Athens**
- **BRGM /France**
- **Harokopeion University of Athens (HUA) / Greece**
- **CEO-YachayTech / Ecuador**
- **CNRS IPGP /France**
- Interest expressed: **NASA JPL/USA**

Data requirements seeking for approval



Agency	ASI Cosmo-SkyMed	CNES Pleiades	CSA RADARSAT	DLR TerraSAR-X	ESA Sentinel-1 & 2
Quota per year	600 stripmap images 50 spotlight images	2000 sq. km. tristereoo	100 stripmap images	100 stripmap images	open

- **Document on data requirements circulated**
- **Seeking for approval** from CEOS agencies
- **1st data request received** (expression of interest) from University of Leeds
 - Tri-sterero Pleiades and SPOT imagery needed for active faults in Central Asia
- **Data from upcoming SAR missions** (SAOCOM, NovaSAR, NISAR) **welcomed for testing** (once available)
- **Response to data requests:**
 - During the pilots, the user had to submit a *CEOS Data Request Form* to the DCT and once approved the dedicated Data Request Form of the concerned agency
 - **Proposition:** Agencies to provide templates of Data Request Forms (if available), so that both the *CEOS Data Request Form* and the agency's Data Request Form will be submitted at the same time (time for approval to be reduced up to 2 weeks).

Governance and meetings



The Seismic Hazards Demonstrator activity shall be managed by three co-leads that oversees its implementation.

Activity	Responsible
Supervision of the activity, Coordination with partners, Articulation with EO disaster response activities	ESA (Philippe Bally)
Scientific Advisory, Supervision of the activity, Coordination with GSNL	INGV (Stefano Salvi)
Coordination with partners and user communities, Reporting, Meetings/Teleconferences, Website, Promotion	ESA (Dorella Papadopoulou)

- ❖ 1 meeting per year with contributing partners (probably during the EGU conference in April)
- ❖ 1-2 teleconferences per year (or as needed)

Conclusion



➤ **Launching the activity:**

- ✓ Data requirements circulated
- ✓ Approval by CEOS agencies is necessary to launch the activity (first requests received)

➤ **Propositions/Points for discussion:**

- ✓ Approval of quota
- ✓ WG Disasters to contact Charter to redefine terms of agreement (& introduce the Demonstrators).
- ✓ Agencies to provide templates of Data Request Forms (if available), so that both the *CEOS Data Request Form* and the agency's Data Request Form will be submitted at the same time (time for approval to be reduced up to 2 weeks).

➤ **Webpage:** under revision



Thank you!