

Committee on Earth Observation Satellites

Disaster Risk Management 'enlarged actions'

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Disasters Working Group*





- **Committee on Earth Observation Satellites**
- **52 members including all the world's leading space, satellite and remote sensing agencies**
- **The 'space arm' of GEO**
- **4 Working Groups, 7 Virtual Constellations**
- **Main satellite data supplier for several global initiatives with international partners (e.g. Global Forest Observation Initiative, Global Agriculture Monitoring, Geohazard Supersites & National Laboratories, etc)**
- **More information on web site: www.ceos.org**

Space Agencies Contribution to Disaster Risk Management



- **Space agencies actively involved in DRM through national programmes and international initiatives, with major focus on Response phase.**
- **Multi-lateral agreements outside CEOS with various forms of cooperation e.g.:**
 - **International Charter Space & Major Disasters** (+15 members)
 - **Sentinel Asia** (Asia Pacific region)
 - **GMES Emergency Management Services** (SAFER, etc)
 - **Preparedness through DLR** (Tsunamis). Astrium/Meteo Fr (flash flood)



- **Other international initiatives (e.g. GEO) with significant CEOS** such as Regional end-to-end Flood Monitoring pilots in Caribbean and Namibia, the Geohazard Supersites and Natural Laboratories or Volcanic Ash Monitoring
- **CEOS Plenary decision (Oct. 2011) to create ad hoc Disasters Working Group** and develop 'enlarged actions' for DRM, with specific focus on DRR



Top Objectives:

1. Increase and strengthen the contribution of satellite EO to disaster risk management through coordinated 'enlarged actions'
2. Raise the awareness of politicians, decision-makers and major stakeholders of the benefits of using satellite EO in all phases of DRM

How ?

Improve the coordination of satellite EO observations and act to improve distribution of EO satellite data and to foster its use by DRM users



CEOS seeks to demonstrate space agencies' capacity to provide the right EO data and facilitate value adding to generate high-value information...



...and in so doing position EO from Space in the 2015 post-Hyogo framework for action



Major Actions:

1. Define a Global Satellite Observation Strategy for DRM

- Detailed assessment of needs, gaps and definition of observation requirements in terms of EO data (similar to FCT and JECAM)
- Definition of strategy in response to observation requirements;

2. Implement the Global Satellite Observation Strategy for DRM

- each CEOS agency to acquire, process and archive the EO satellite data and products (e.g. L0 to L2)

3. Set up a virtual repository for DRM-relevant data / products / information from both space agencies and DRM-Users and make the repository content accessible to all DRM users

- provide DRM user community with a series of tools to discover & access EO data through DRM-dedicated web portal (one stop shop); includes access to DRM Baseline Dataset

4. Set up DRM Data Processing Platform:

- a capacity to enable access to EO based Value Added products, tools & on demand processing - support science & services exploitation of Satellite EO (requires infrastructure for science data) – enable EO based content generation & hosting user generated content

5. Ensure the positioning of EO from Space in the 2015 post-Hyogo Framework of Actions

- 2015 post-Hyogo FA Plan (2015-2025) to be adopted at 2015 World Conference on Disaster Risk Reduction and UN Nations Assembly
- Close dialog with the major stakeholders in charge of defining the 2015 post-Hyogo FA

Supporting Actions:

6. DRM Outreach & Evaluation of CEOS DRM Actions

7. EO Capacity Building for DRM,

8. Satellite EO DRM Projects Database



CEOS-wide DRM Observation Strategy 2014-2016 to support delivery of three thematic pilots:

floods

volcanoes

seismic hazards

Three thematic teams created to develop pilots, established in partnership with users and practitioners from outside CEOS (government, research institutes, academia, private sector companies, etc). **Pilots to address all phases of DRM.**

Pilots work from existing understanding of user needs to define pilots at both global and regional levels

Assess & prioritize user needs

→ **Gap analysis** w.r.t. current CEOS Agencies assets

→ **Derive EO requirements** to address subset of gaps that can be addressed by CEOS with resources available

→ **CEOS Observation Strategy** in response to pilots EO requirements



Oct. 2011 – CEOS DRM initiative started

Oct. 2012 – CEOS DRM Report (recommended actions) endorsed by CEOS Plenary.

Dec. 2012 – Three Themes selected (floods, seismic risks, volcanoes)

May 2013 – Three Pilots defined

Jul. 2013 – EO Data Requirements finalised (apply to space agencies)

Aug. 2013 – Final proposals for Pilots

Sep. 2013 – DRM Observation Strategy in support to Pilots (1st issue)

Nov. 2013 – Endorsement by CEOS Plenary (and decision bodies of partner organisations) of Pilots, and by CEOS plenary of DRM Observation Strategy

Jan. 2014 – Implementation of three Pilots 2014-2016



**THANK
YOU ...**



Example: “Volcano” Pilot *(still being consolidated)*



Volcano Pilot Objectives



Global background observations at all Holocene volcanoes; **weekly observations at restless volcanoes**; daily observations at erupting volcanoes; **development of novel measurements**; 20-year sustainability; and capacity-building.

- Demonstrate the utility of integrated, systematic, space-based EO as a volcano monitoring tool on a regional basis and for specific case studies
- Provide space-based EO products to the existing operational community (such as observatories and VAACS) that can be used for better understanding volcanic activity and reducing impact and risk from eruptions
- Build the capacity for use of EO data at the majority of the world's volcanoes (particularly those that are not monitored by other means)



Regional monitoring of Latin American volcanic arcs using satellite deformation, thermal, ash, and gas monitoring



- **Regional monitoring** for thermal, gas, and ash emissions
- **Central America and Northern Andes** with L-band
- **Central Andes** with C-band
- **Select volcanoes** with X-band
- **Select volcanoes** with TIR, VNIR, and SWIR



Site-specific multi-disciplinary, multi-platform monitoring of volcanoes representing a diverse cross section of eruptive activity and unrest

- Persistent effusive eruptions (e.g. Hawaii)
- Lava lake activity and frequent eruptions (e.g. Congo)
- Dome-building (TBD)
- Volcano-tectonic/ice interactions (e.g. Iceland)
- Caldera systems (e.g. Campi Flegrei)

"Volcano" Pilot Partners



- **CEOS Space Agencies** (ESA, ASI, DLR, JAXA, CSA, NASA, CNES, USGS, NOAA)
- **Research community** (Bristol, Cornell, NOAA, USGS, BGS, INGV, IPGP, and other partners)
- **Operational Community** (VAACs, volcano observatories, VDAP, civil defense)
- **Consortia** (STREVA, GVM, IAVCEI, WOVO, Vhub, COMET+, ALVO) – regional scale multi-hazard modeling
- **Ongoing global/regional activities** (e.g. GAR-15)

"Volcano" Pilot: Contributions



- CEOS Agencies will provide satellite EO data covering pilot areas of interest
- Research community will provide personnel to develop derived products and training for end users
- The operational community will use the derived data products and report on their utility
- Consortia will help to link CEOS agencies and the research community with the operational users.

