



Committee on Earth Observation Satellites

WGDisasters – Meeting 14

RO Demonstrator Implementation Plan and next steps

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Location [Virtual]

1 September 2020 @13:20 UTC



When and how satellite and remote sensing may be used in Recovery



Disaster Event



Post Disaster Needs Assessment



Disaster Recovery Framework



Emergency & Humanitarian Response: satellite imagery of affected area, infrastructure and population

Assessment process supported by more focused, sector specific images of pre and post disaster situation: agriculture, environment, infrastructure, housing, connectivity networks

Continued use of selected imagery to monitor and document recovery processes 6 Months +

RO Pilot

RNA/GRADE

PDNA

**DRF
REC PLANNING**

**RECOVERY
M&E**

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RO Demonstrator

and population

connectivity networks

RNA/GRADE

PDNA

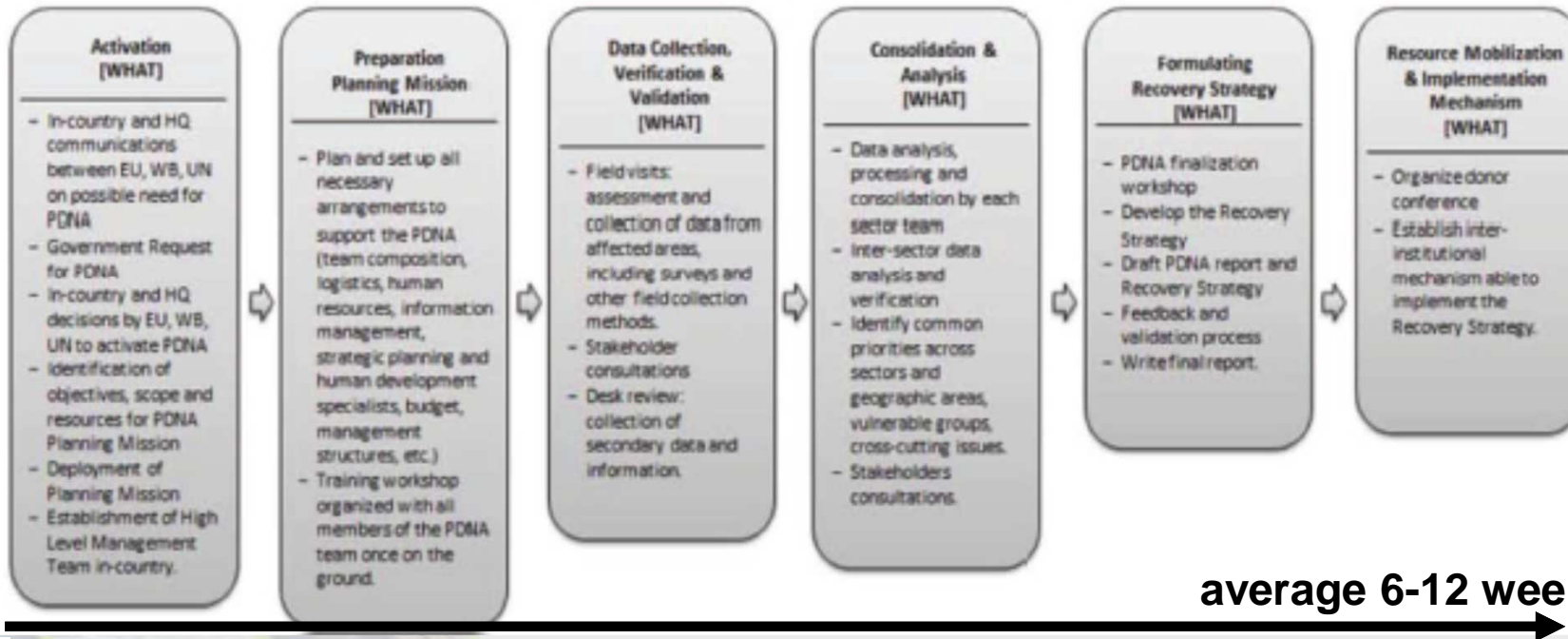
DRF REC PLANNING

RECOVERY M&E

	Baseline mapping	Monitoring
Buildings, shelters	<p>Building footprint mapping</p> <p>Urban blocks with damage grading</p>	<p>Building removal and construction</p> <p>Change in urban land use, morphology, density</p>
Camps/IDP	<p>Location of spontaneous and organized gathering areas</p> <p>Location of temporary dwellings</p> <p>Possibility of camp placement</p>	<p>Camp removal and installation</p> <p>Tent removal and installation</p>
Transport	<p>Baseline transport network</p> <p><i>Accessibility analysis</i></p> <p><i>Proximity analysis</i></p>	<p>Rebuilt transport facilities</p> <p>New transport facilities</p> <p>Removal of transport facilities</p> <p><i>Accessibility analysis</i></p> <p><i>Proximity analysis</i></p>
Infrastructure	<p>Baselines</p>	<p>Infrastructure change</p>
Environment	<p>Landcover</p> <p>Baseline vegetation change (e.g. mangroves, forested areas, agriculture)</p>	<p>Change in landcover*</p> <p>Loss of vegetation*</p> <p>Vegetation re-growth*</p>
Topography Land Use/Cover	<p>DEMs,</p> <p>Land use/Land cover maps</p>	<p>Land use/Land cover change maps*</p>

On the shelf EO products and services available for PDNA / Recovery

Post-Disaster Needs Assessment Process



Charter



Sentinel-Asia



Copernicus EMS

CEMS RRM STD Products

DSM (P1)
Reference (P2)
Damage map (P8)

CEMS RRM STD

CEMS RRM FLEX

Comprehensive EO-based overview

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Emergency & Humanitarian Response: satellite imagery of

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Continued use of selected imagery to monitor and document recovery processes 6 Months +

Sustainable RO, integrated into Recovery process

and population

connectivity networks

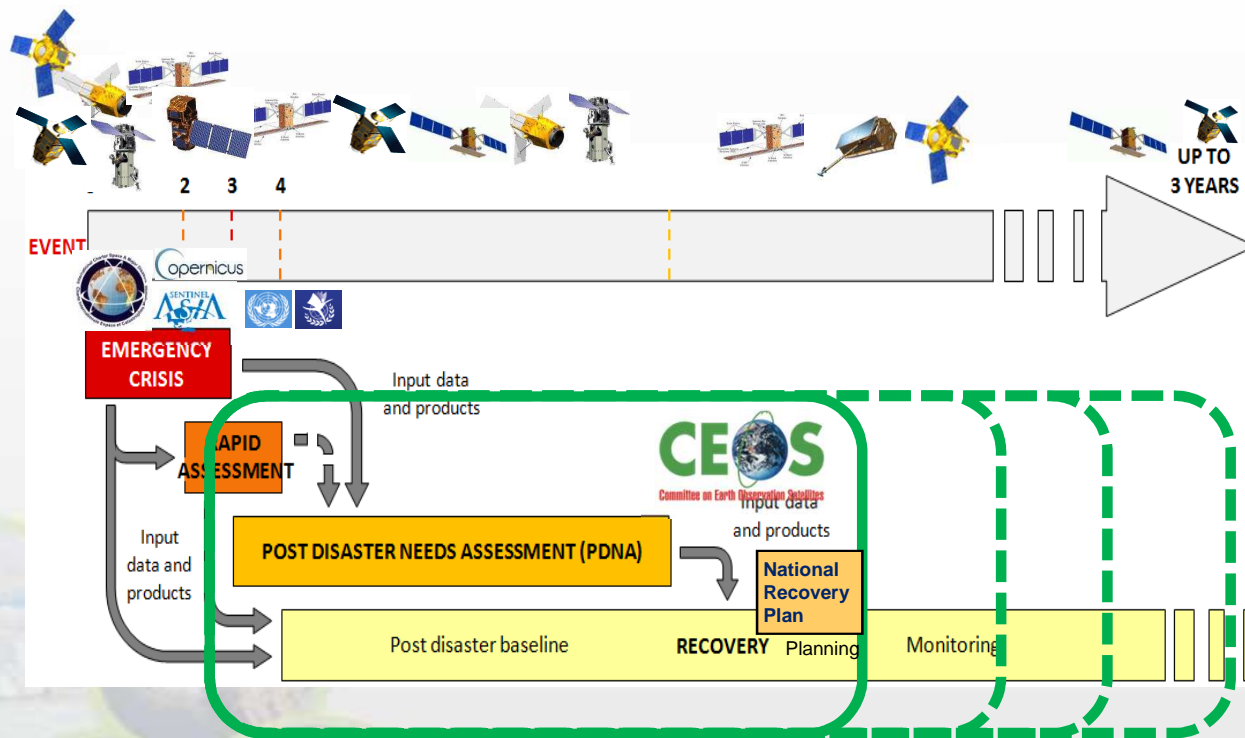
RNA/GRADE

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Objective in medium term : RO integrated in Recovery process



“Recovery Observatory” : Process allowing operational use of EO for Rapid Assessments, PDNA, Recovery planning & Recovery M&E

- **CEOS WGD RO Demo** lead: H el ene de Boissezon (CNES), Andrew Eddy (RO Sec, Consultant to CNES)
- **WB:** Rashmin Gunasekera, Claudia Soto + ESA liaison (TBD)
- **GFDRR:** Mare Lo, Elad Shenfeld
- **EU/EC:** Claes Andersson, Dominique Blariaux, Thomas Hockley - Attilio Gambardella, Peter Spruyt
- **UNDP:** Rita Missal
- **UNOSAT:** Samir Belabbes, Einar Bjorgo
- **NASA:** Jean-Paul Vernier
- **ESA :** Philippe Bally, Christoph Aubrecht

- **CEOS WGD Leader:** David Green / Dave Borges (NASA)
- **CEOS WGD Data Coordination Team:** Pierric Ferrier (CNES)

- **GEO Sec:** Steven Ramage (interim GEO Sec Disasters focal point)



- **3-year RO Demonstrator** to validate technical model, focusing on early recovery step
- **Ad hoc Demonstrator** (no formal structure), based on best effort, between satellite EO community, DRM / Recovery international stakeholders.
- **User-driven approach** : activated by Tripartite Agreement partners (**UNDP, GFDRR/WB, EU**)
- **RO demonstrator activations** extend Charter / Copernicus observations to complete damage assessment and support Recovery planning (disasters, geography, assessment type)
- **In-kind contributions** from **Recovery partners**
- Contributions from **CEOS partners** (data and value-adding) : ASI, CNES, CSA, NASA, ...
- **1st RO Demonstrator test** late 2020/early 2021; **3-5 RO Demonstrations** over 2021-2023
- **Standard duration** of observatories to be **three to six months** with strong emphasis on early observations; possibility of extension with outside support for longer-term monitoring
- **2023: report to CEOS Plenary** and partners : lessons learned, recommendations

RO Demonstrator seeks approval of Implementation Plan further to WGD #14 mtg and presentation by WG Chair to 2020 SIT.



- **RO Demonstrator** approved in principle at **CEOS SIT #35 April 2020** – Implementation Plan presented today
- **Case study of recent PDNAs / RPBA / GRADEs and survey of past rapid assessment leaders** : ongoing
- Meetings with :
 - EU contact person at FPI/PDNA-RPBA (Claes Andersson) and consultant team (Particip – D Blariaux)
 - EC contact person at Copernicus EMS (Attilio Gambardella, replacing Françoise Villette) and team
 - RO Demonstrator group mtg #6 (replaces “Generic RO ad hoc group” : same membership)
 - RO Demonstrator group mtg #7 (June 17th)
 - World Bank D-RAS team and ESA representative at WB for EO4SD and EO Clinic
 - Liaison with UNDP and UNOSAT.
 - Consultations with space agencies on satellite contributions: ASI, CNES, DLR, ESA, NASA, and others (CONAE, CSA/CCMEO initiated but not completed)
- Demonstrator will be **triggered by PDNA planning teams** who will propose RO following Charter activation and PDNA or other assessment mission (cf Implementation Plan)
- **Linkages with other programs and resources** initiated (ESA/EO Clinic, ESA/GDA) and on going (letters sent to the international Charter, Copernicus EMS – to be completed with Sentinel Asia, UN SPIDER, Foundations, ¹⁰...)

RO Demonstrator Triggering and Set Up

- **RO Demonstrators** based on **extension of Charter activations** for major events retained by Recovery stakeholders and RO Demo team.
- **RO Demo leadership** will liaise with Tripartite Agreement partners (World Bank/GFDRR, UNDP, EU) and monitor possible activations.
- All activations are at **request of a Tripartite partner**.
- Request to activate an RO is made by the partner to CEOS through **RO Demonstrator lead**, who **consults with CEOS RO Demo partners** and confirms best effort contribution as planned in Implementation Plan. This takes place **in the 2 to 3 weeks following the event**. Only activations requested by Tripartite partners and deemed feasible by CEOS RO Demo partners will be approved.
- **Activation Plan for each RO** is drafted and **submitted to RO Demonstrator Team**, covering scope and length of activation, key milestones and reporting process on use of satellite data in RO.
- For each RO, a **RO liaison** is designated (volunteer agency) who **works directly with PDNA (or other) user team** to establish requirements, organise access to satellite-derived data products, coordinate with value-adding partners and report to RO Demonstrator Team. The RO liaison is designated from one of the RO Demonstrator partners. He/She will also update the Activation Plan if required during the 2 to 6 month activation period.

- Capacity Building is **systematically** part of international stakeholders activities in a country.
- **Existing capacity** would be an asset for triggering RO but variety of scenarios and **ad hoc approach** should be set up.
- Linkages with **WG CapD** capacities : to be analysed
- **Proposed strategy**: identify local node of expertise; evaluate capacity; make linkages to existing data streams and value-adding sources; develop ad hoc CB plan; hand-off.
- Capacity Building is critical but requires **long-term commitment**. RO activity can initialize CB plan and set wheels in motion.
- **Capacity Building** should **focus on Recovery monitoring** rather than Early Recovery, so is mostly outside scope of RO Demonstrator : **WG CapD scope?**

RO Demo Implementation Plan – Partner Contributions (1/2)

CEOS Agencies

ASI: contribution of Cosmo-SKYMED imagery during the RO activations. Possibility of value-added contributions in support of one activation on a best effort basis through ASI partner eGEOS (to be explored Q3 2020)

CNES: contribution of Pleiades and SPOT imagery. Contribution of value-added products through CNES contract to supporting partner in support of one activation on a best effort basis.

DLR: TerraSAR-X data in extension of Charter activation for 3 to 5 ROs over three years. Possibility of value-added contributions for one activation on a best effort basis through DLR-ZKI (to be explored Q3 2020).

ESA: access to ESA EO Clinic at request of World Bank or UNDP – three months support to provide value-adding in conjunction with one or two activations of the RO – approximate cost of each activation provided 45k.

European Union and EC/Copernicus: Support through CEMS Risk and Recovery STD service at request of EU Delegation in affected country or other Copernicus Authorised User, to generate standard recovery products. Membership in RO Demonstrator Team. Possible role as RO liaison through Particip, for selected activations on a best effort basis, especially if EU is lead for PDNA/RPBA process for selected activation.

NASA: Membership in the RO Demonstrator Team – possible support through NASA centres on a best effort basis based on selected activations, as well as possible commercial data contributions or liaison with providers (Planet, Maxar, etc).

Still to be discussed: **CONAE, CSA/CCMEO, others...** consultations continuing through the fall.

RO Demo Implementation Plan – Partner Contributions (2/2)

Non-CEOS agencies and organizations

World Bank / GFDRR: activation of ESA's EO Clinic (approx. 45k for value added support). Possible liaison support especially during assessments conducted by World Bank or GFDRR.

UNDP: support for the publication of the final report of the RO Demonstrator. Small dedicated budget of 10k to be used for selected value-adding activity on a best effort basis. Possible use of Standard Operating Procedures established with UNOSAT to organise UNOSAT support to RO. Possible activation of ESA's EO Clinic to be explored.

UNOSAT: possible use of Standard Operating Procedures to provide value-adding information products to RO.



Thanks for your attention!

