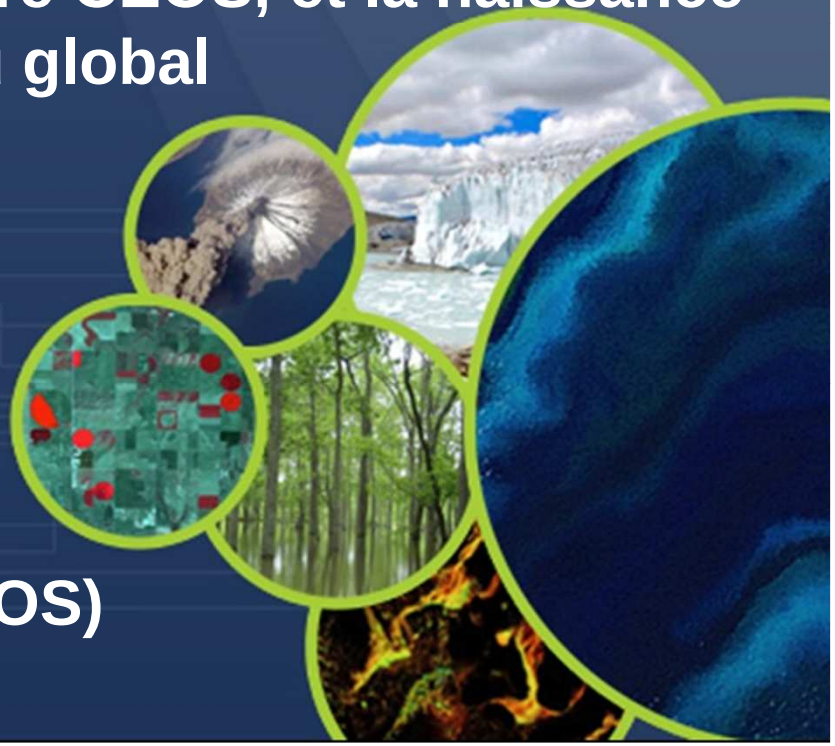
L'Observation de la Terre au service de la décision
l'expérience du RO post Mathieu Haiti

20 janvier 2021

CNIGS et webconf

Committee on Earth Observation Satellites

L'expérience du RO dans le cadre CEOS, et la naissance du RO Démonstrateur au niveau global



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Committe on Earth Observation Satellites

Committee on Earth Observation Satellites

CEOS represents the civil Earth Observation programs of more than 30 of the world's leading space agencies

Mission: promote exchange of data to optimize social benefits and inform decision making for securing a prosperous and sustainable future of humankind.
Key Stakeholders: national governments, the intergovernmental Group on Earth Observations (GEO), and organizations participating in treaties and global programs affiliated with the United Nations (UN).

Working Group on Disasters

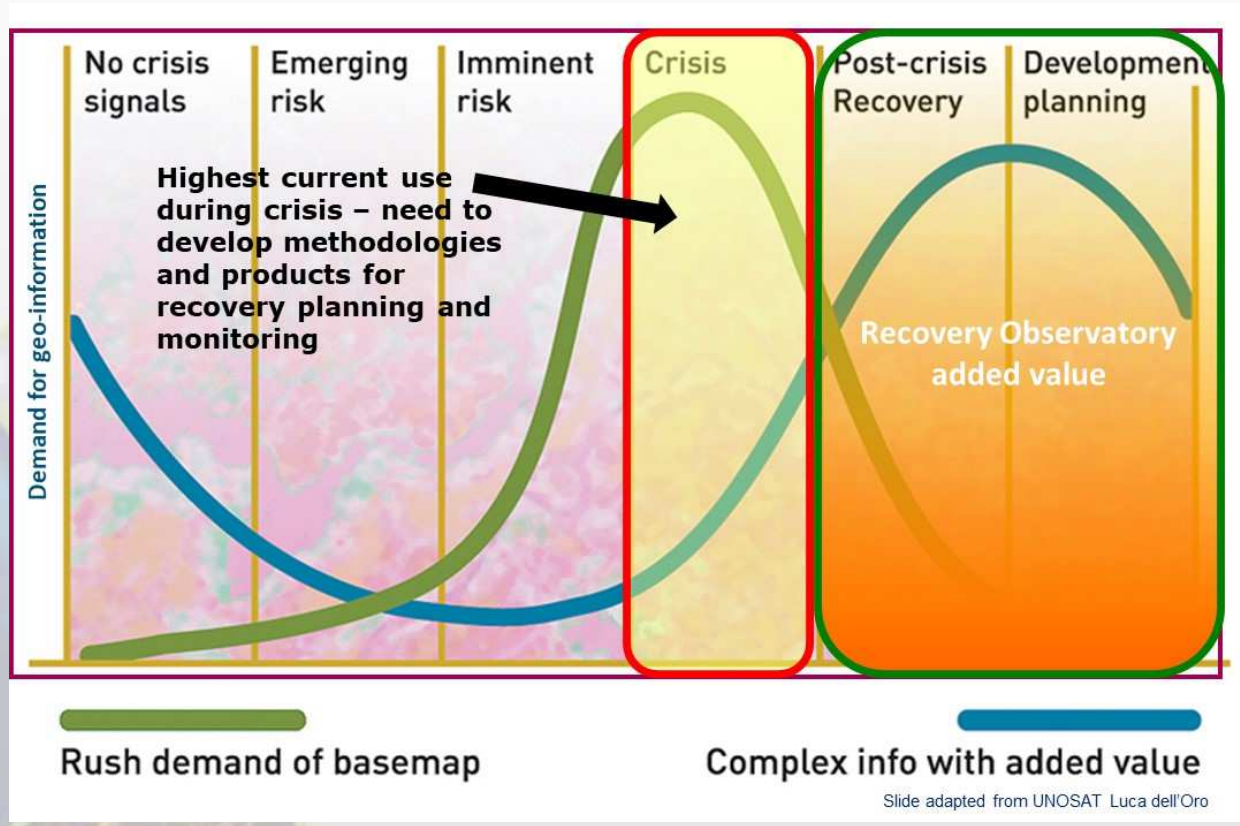
Ensures the **coordination of disaster-related activities** undertaken by the CEOS Agencies and acts as an interface between CEOS and the community of stakeholders and users involved in risk management and disaster reduction

WG on Disasters, some achievements

- Global Observation Strategy (2020 updated)
- Ensured the appropriate inclusion of satellite EO in the "**Sendai Framework for Disaster Risk Reduction** 2015-2030", through participation in the Sendai process;
- Supported DRM outreach and evaluation of DRM activities;
- Developed a series of concrete actions:
  - Flood, Volcano, Seismic, Landslide projects
  - **Recovery Observatory project**
  - Geohazard Supersites and Natural Laboratories
  - GEO-DARMA (Data Access for Risk Management)

Focus on Recovery Phase

- **Recovery Observatory (RO)** proposed by CNES at the **first WG Disasters meeting** in 2013 !
- Earth Observation was already part of “response” in DRM cycle, but there was little contribution to “post-crisis”.



RO Objectives

- Demonstrate in a high-profile context the **value of using satellite Earth Observations to support Recovery** from a major disaster:
  - near-term (e.g. PDNA process, rapid assessments); and
  - long-term (e.g. major recovery planning and implementation, estimated to be about 3 years).
- Establish institutional **relationships between CEOS and stakeholders from the international recovery community**.
- **Work with the recovery community** to define a sustainable vision for increased use of satellite Earth observations in support of recovery.
- **Foster innovation** around high-technology applications to support recovery.

ROOT & CEOS approval

- **ROOT - Recovery Observatory Oversight Team**: created in 2013 with representatives from the **satellite data providers**, the **international recovery stakeholder community** (UNDP, WB/GFDRR,…) and **value-added providers**.
- The ROOT was co-chaired by the French Space Agency **CNES**, and the Global Facility for Disaster Reduction and Recovery (**WB/GFDRR**).
- It developed the **Recovery Observatory proposal, approved** by CEOS SIT in 2014
- It managed all the **preparatory activities** before the triggering on Haiti :
  - Characterization of RO product list
  - Work on RO scenarios
  - Development of basic RO infrastructure (DotCloud)
  - Establishing demonstration products in Malawi and Nepal in 2016
  - Monitor international events for potential triggering

RO Triggered on Haiti

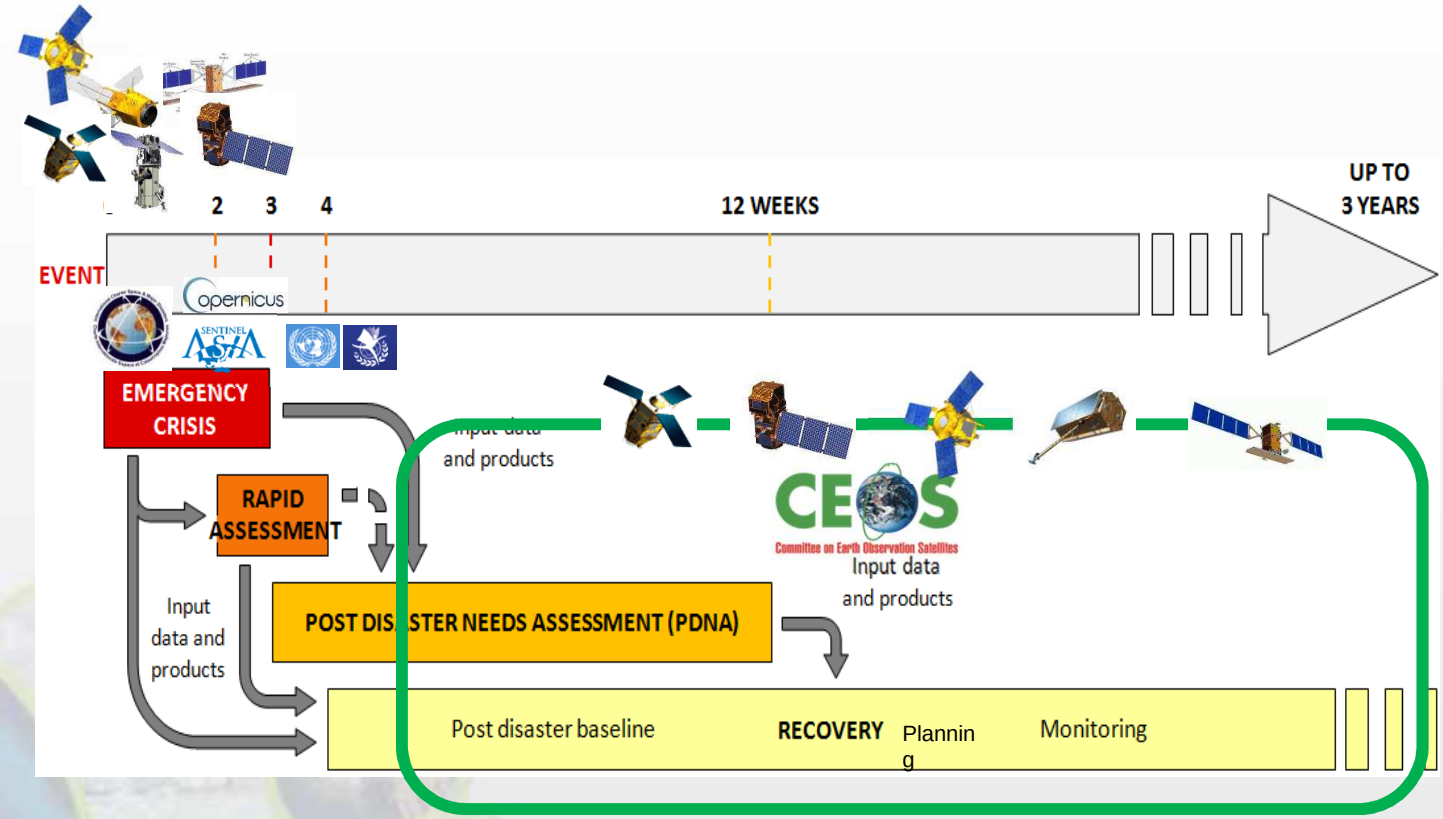
- **Triggering of the RO Pilot decided by CEOS Chair in consultation with CEOS Principals, December 22, 2016**, after significant impact of Hurricane Matthew in Southwest Haiti (October 2016);

Haiti RO post Matthew covers three departments: Grand'Anse, Sud, and Nippes

Partners


GFDRR
Global Facility for Disaster Reduction and Recovery
agenzia spaziale italiana
Gouvernement de la République d'Haïti
Ministère de l'Environnement
Copernicus
AthenaGlobal
wisdom
THE WORLD BANK
NOAA
cnes
RÉPUBLIQUE D'HAÏTI
PRIMATURE
CIAT
Comité Interministériel d'Aménagement du Territoire
UNDP
CNIGS
Centre National de l'Information Géo-Spatiale
UNEP
sertit
UniQ
Université Quisqueya
ueh
UNIVERSITE D'ETAT D'HAITI
NASA
DLR
RESEARCH FOUNDATION
cima
OBSERVE TO PREDICT, PREDICT TO PREVENT

RO Pilot timeline

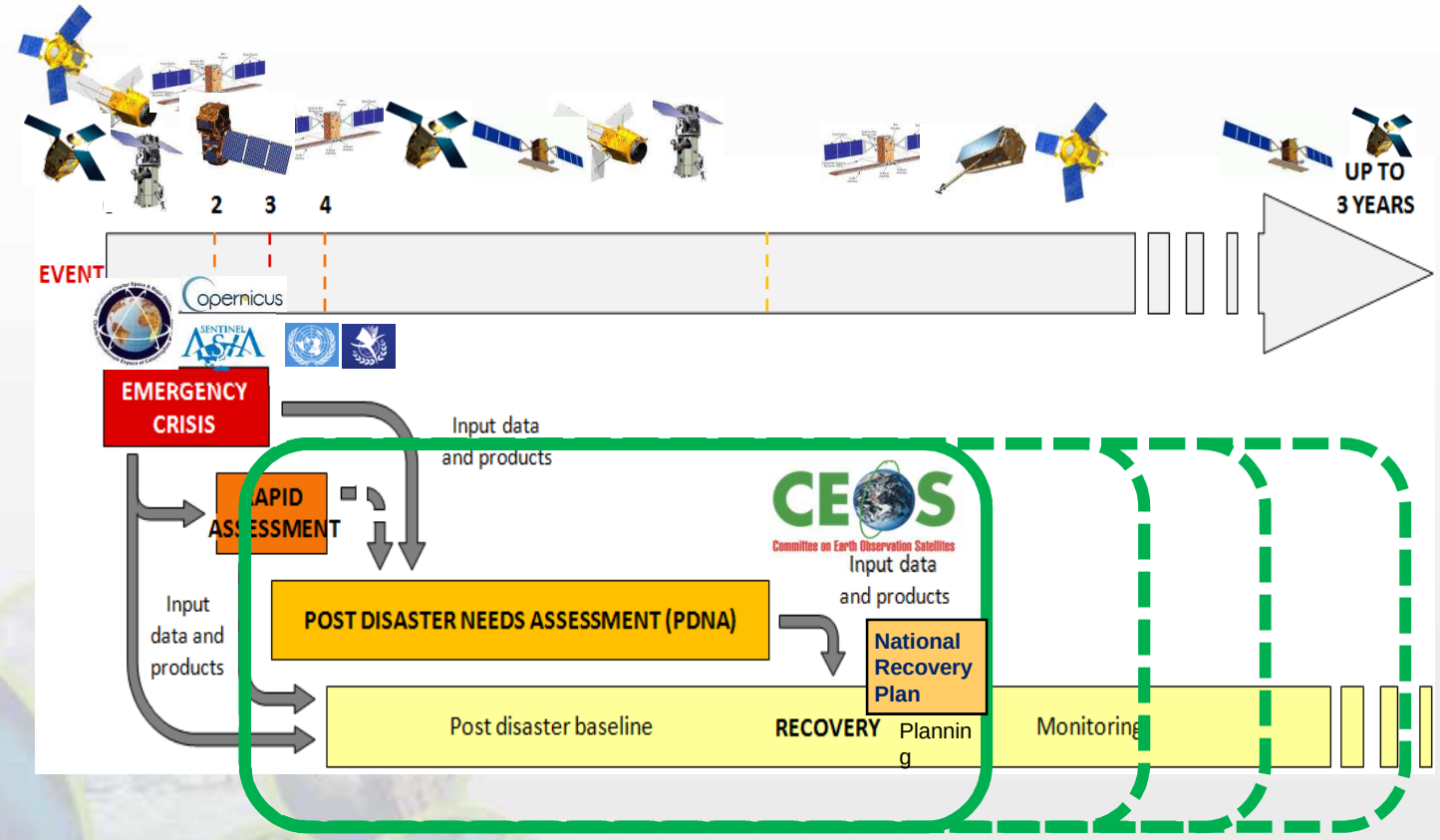


"Recovery Observatory" Pilot : exploratory project for helping reconstruction planning and monitoring during the whole recovery process (3 years)

Lessons Learned from Haiti RO Pilot

- Need for **predefined procedures** between RO, Charter / SentinelAsia/ Copernicus and PDNA, and with data providers for data licensing
- Need for clear **end-to-end approach** from Event through to National Recovery Plan
- Need for **clear relay to Local Users** through international stakeholders
- Need to **define at outset value-adding approach** and determine level of effort (sliding scale of benefits)
- Need to **document RO product methodology** and develop **technology transfer procedure**
- Benefit of **using existing technology platforms** and **decisionmaking** mechanisms
- Need to identify funds to ensure **local Capacity Development** (ad hoc)
- Need to **fast-track roll-out** and plan for **legacy strategies** at outset

RO Demonstrator timeline(s)



"Recovery Observatory" : a concept for helping Rapid Assessments & PDNA, Recovery planning & Recovery monitoring

RO Demonstrators mainly focused on PDNA / Rapid Assessment

Haiti Recovery Observatory (RO) Pilot transition to **RO Demonstrator**

Presented at CEOS SIT#35 and Plenary2020

Based on lessons from Pilot (2017 – 2020) completed, Demonstrator will:

- **Deliver a use and utility report** reviewing and evaluating the timely contribution of EO data/products at several scales
  - **Characterizing impacts on livelihoods, environment and security**
  - **Assessing general and sectoral needs**
    - *Post-Disaster Needs Assessments* (PDNAs) with UN Development, EU, World Bank and others for reconstruction and rehabilitation
    - *Global RApid-post-disaster Damage Estimation (GRADE) approaches with governments and other stakeholders for reconstruction*
  - **Determining extent and scale of damage and losses**
    - *Complement Charter observations to complete damage assessment and support recovery planning (3-6 months)*
- **Complete** 1 RO Test than 3-5 ROs over 3yrs
  - **Communicate results to CEOS agencies and stakeholders**

Maps and analysis at various scales

- **Mid-scale** (10m) overviews of changes in land use and cover updated every 10 days for 6 months
- **High-resolution** hot-zones and lifelines, infrastructure, transport, residences, camps …updated every 1 to 2 months
- **Integrate essential ancillary data**: terrain validation data, aerial and drone data, statistics, cartography, ….

RO Demonstrator

- Review/assess **use of EO satellites** in **past Post Disaster Needs Assessments** (PDNAs) – report in 2020 (based on interviews)
- Work with **UNDP, World Bank/GFDRR, and EU** to include satellite-derived information products in PDNAs and GRADE assessments
- Contributions from stakeholders (under discussion WB/GFDRR, UNDP, EU) and CEOS partners (data and value-adding resources: ASI, CNES, CSA/CCMEO, DLR, EC Copernicus, ESA)
- **1st RO demonstrator test late 2020** using ESA's EO Clinic ;
  3 to 5 demonstrations over 2021-2023 (~ 3 years)
- **RO demonstrator activations** extend Charter observations to complete damage assessment and support Recovery planning (~ **3-6 months**)
- **Report to CEOS Plenary** (2023) and to other partners and make recommendations for sustainable on-going use of satellites

RO Demonstrator approved in principle March 2020 (CEOS WG Disasters and Strategic Implementation Team (SIT#35); Implementation Plan fall 2020

RO Demonstrators

- **First RO Demonstrator :**

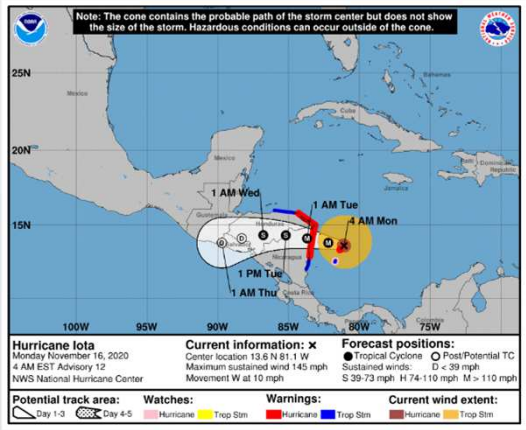
Request on Beirut Blazes recovery

Aim : monitor the implementation of the Reform, Recovery and Reconstruction framework (3RF) in Beirut area, during a 18 months duration.

Further to EU proposal, the tripartite (WB, UNDP, EU) technical team responsible for the preparation of the 3RF have agreed to add the use of satellite services.

- **Possible triggering on Eta/Iota impact on Honduras (and other areas)**

Request from CEPREDENAC, being analyzed



Space Agency prospective

- Demonstrated the **value of satellite Earth observations** to support major post disaster:
  - Satellites can be a very useful tool to **fill data gap** where **no other information are available** and to get **synoptic information** over large areas.
  - Satellite can provide information (together with other data set) in a wide **range of thematic products** relevant for recovery (short and long term)
- **RO Pilot**: **First CEOS project focused on Recovery** phase with large participation and interest from space agencies
  - Demonstrated **need of coordination** between space agencies resources (i.e. coordinated acquisitions, capacity building, etc..)

Space Agency prospective

- Implemented a **worthy model of collaboration** with Haitian partners that could be reproduced:
  - **Users** had **critical role** in the definition and in the management of the project (user driven approach, coconstruction)
  - Developed methodologies based on **free and open data and software** to ensure sustainability also after the end of the project
  - Consequent **capacity building** and **academic conferences** program
- Opened the challenge to establishing a **generic capacity to support major disaster recovery**

Mesi ampil !