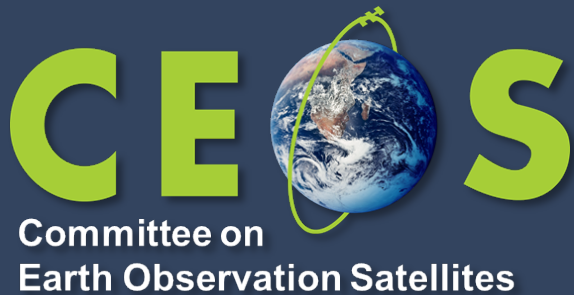


Recovery Observatory Demonstrator – recent updates and long-term sustainability approach

Linda Tomasini, CNES
Andrew Eddy, Athena Global
Dominique Blariaux, EU/Particip
Rashmin Gunasekera, WB/GFDRR
Emilie Bronner, CNES
Mathias Studer, SERTIT
Mathilde Caspard, SERTIT
Hélène de Boissezon, CNES

on behalf of the RO Demo Team

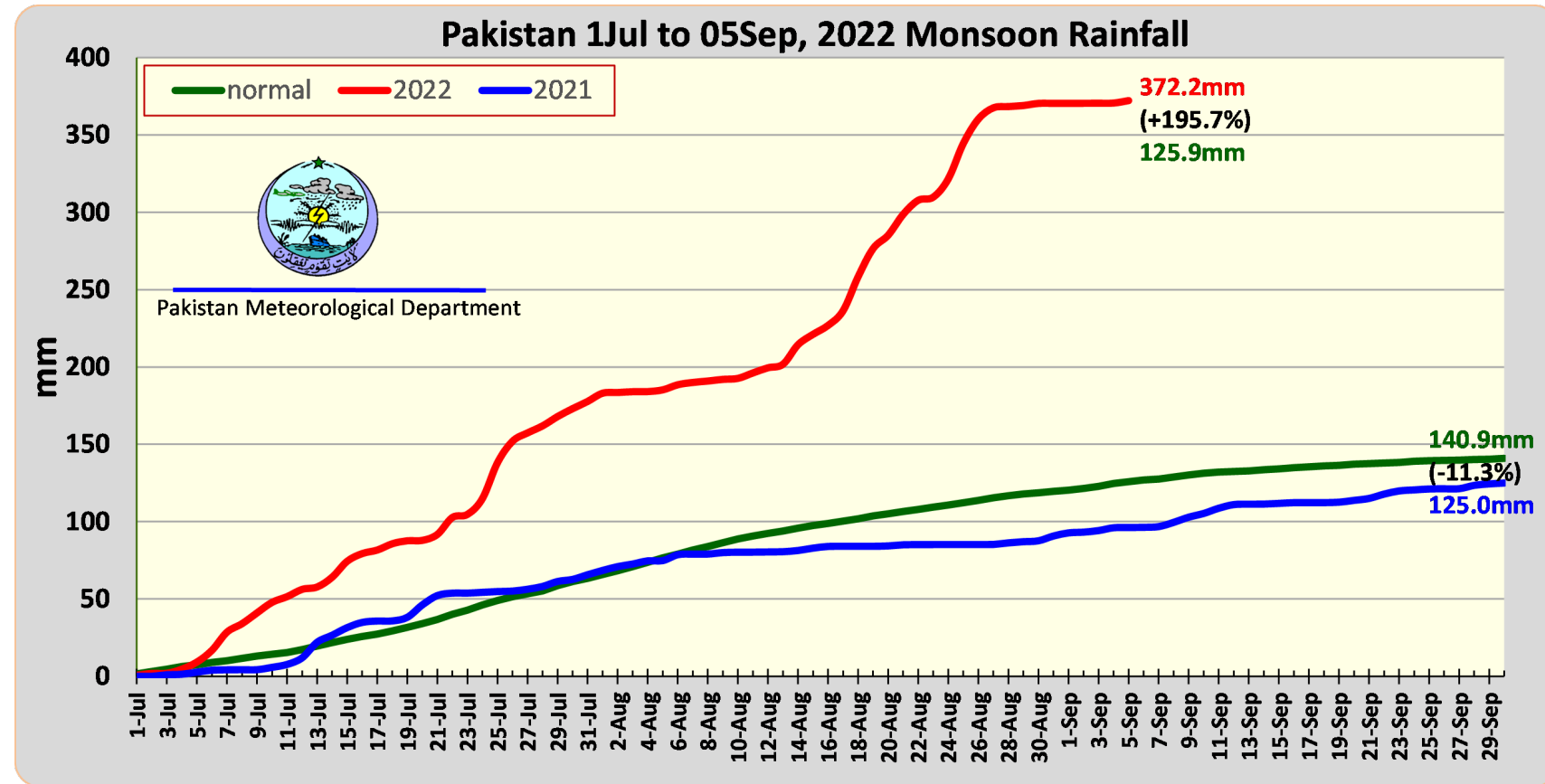


WG Disasters 19
CONAE Ground Station Facility
Córdoba, Argentina

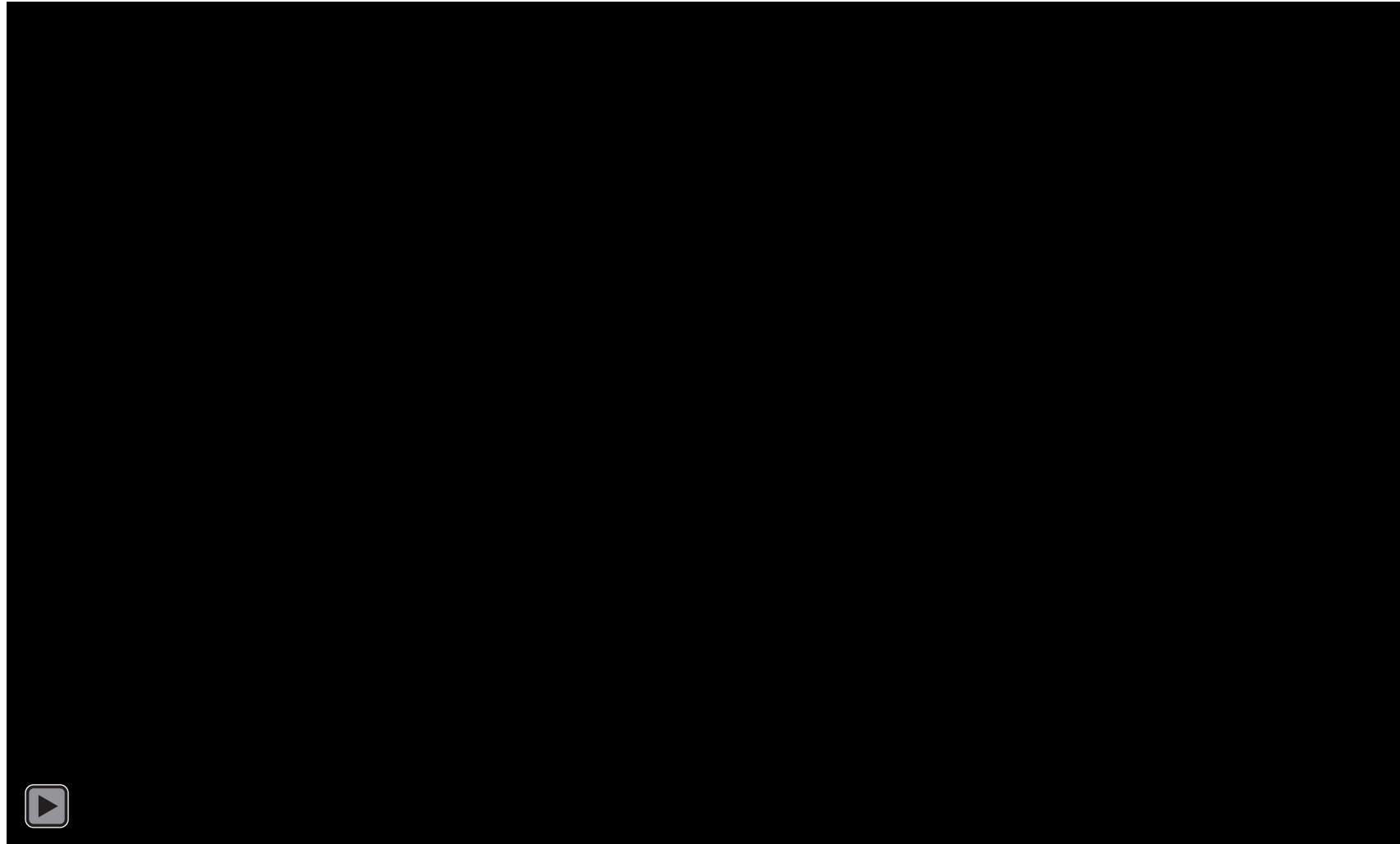
- *Pakistan Floods Activation Status*
- *Turkey/Syria Event (possible activation)*
- *Sustainability Sub-team*

Context

- Since mid-June 2022, severe heat waves caused stronger monsoon rains and melting glaciers
- Worst recorded flood event in Pakistan - submerged one-third of country, impacting 4,2 million people and killing more than 1,500 people



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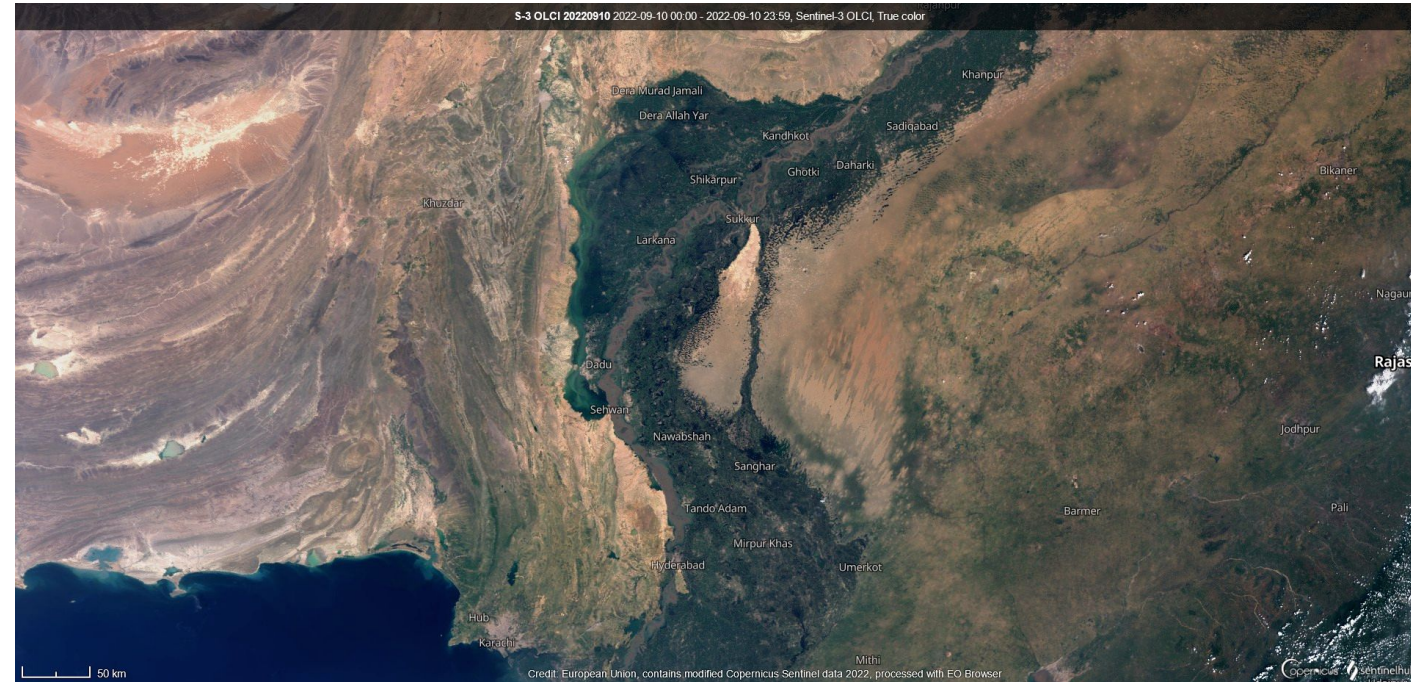


RO Demo 4 activation



The **4th Recovery Observatory Demonstrator** was triggered 20 September at request of EU, on behalf of the tripartite team (**EU / World Bank and UNDP**), in support of:

- the **Post Disaster Need Assessment**
- the **Recovery Framework**



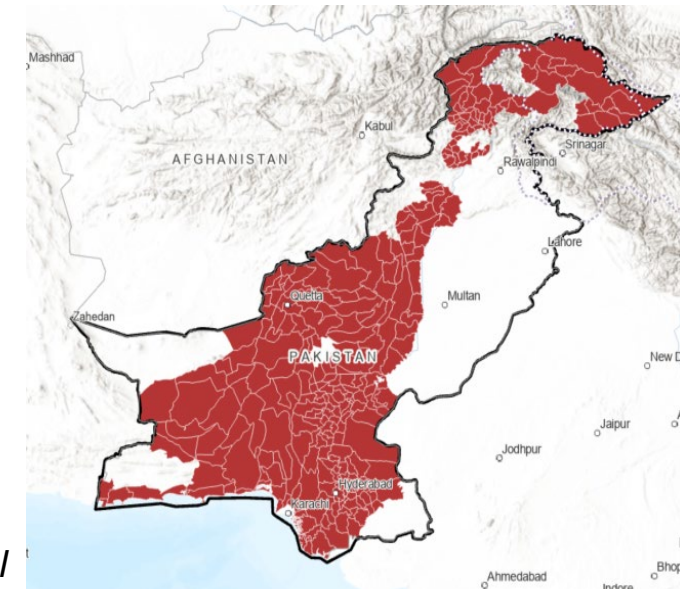
THE WORLD BANK



PDNA and DRF needs



- PDNA completed mid-October
- EU coordinated the PDNA process and led the agriculture sector
- RO activation focussed on providing complementary information to contributions promised from other partners (IPSOS, CIMA/LIST).
- The analysis focused on 84 districts identified as « calamity districts »
 - potential landslides that may have impacted orchards
 - potential impacted Natural Park and Reserve
- RO contribution continues with agricultural impact analysis
 - Rabi and Kharif crops analyzed pre and post disaster
 - results by July 2023



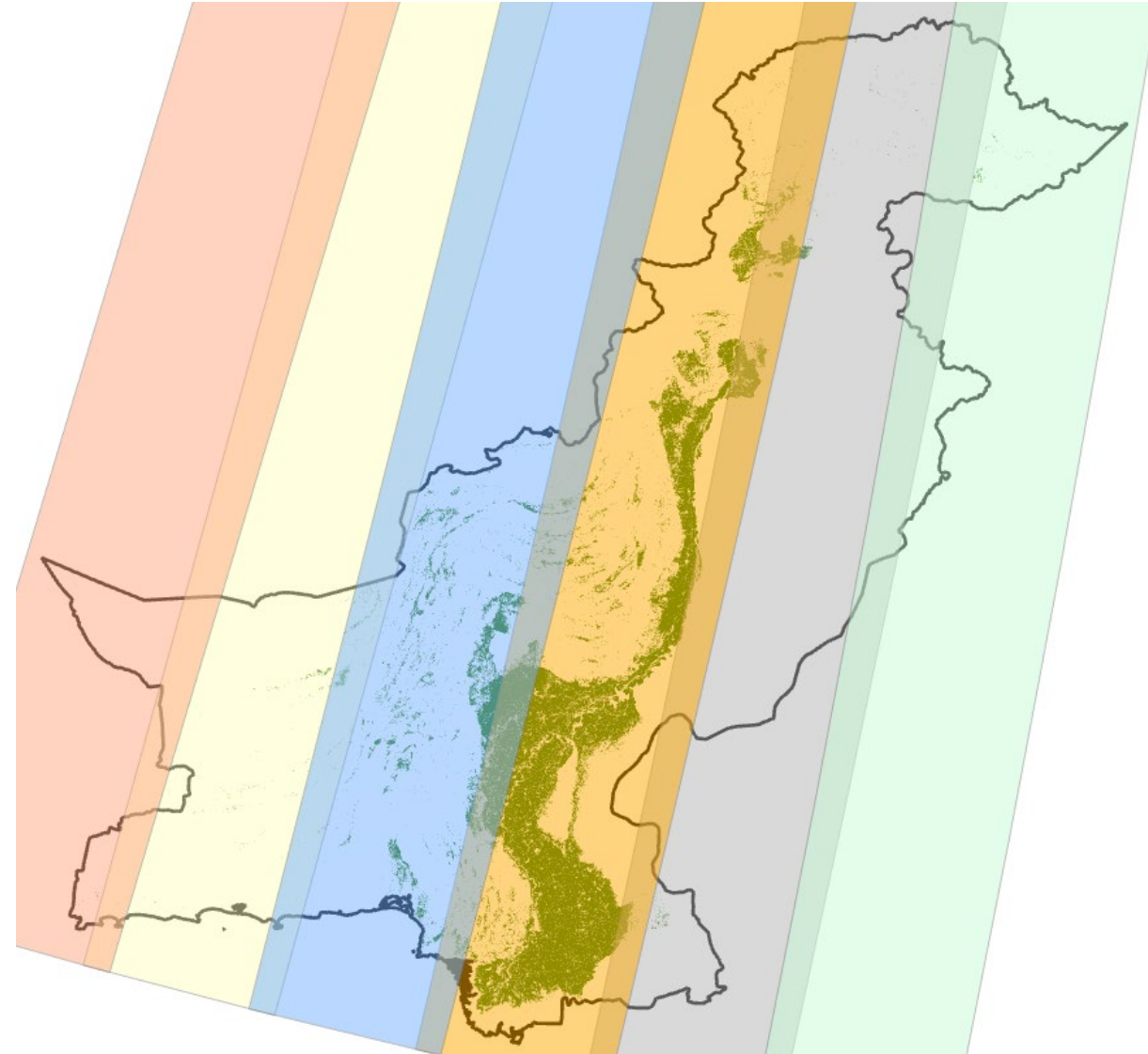
*The 84 calamity districts
with a priority level*

Recovery Framework contribution

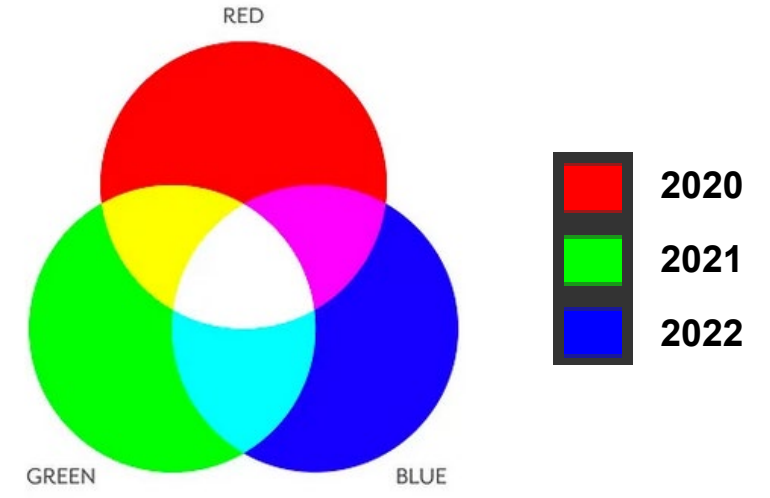
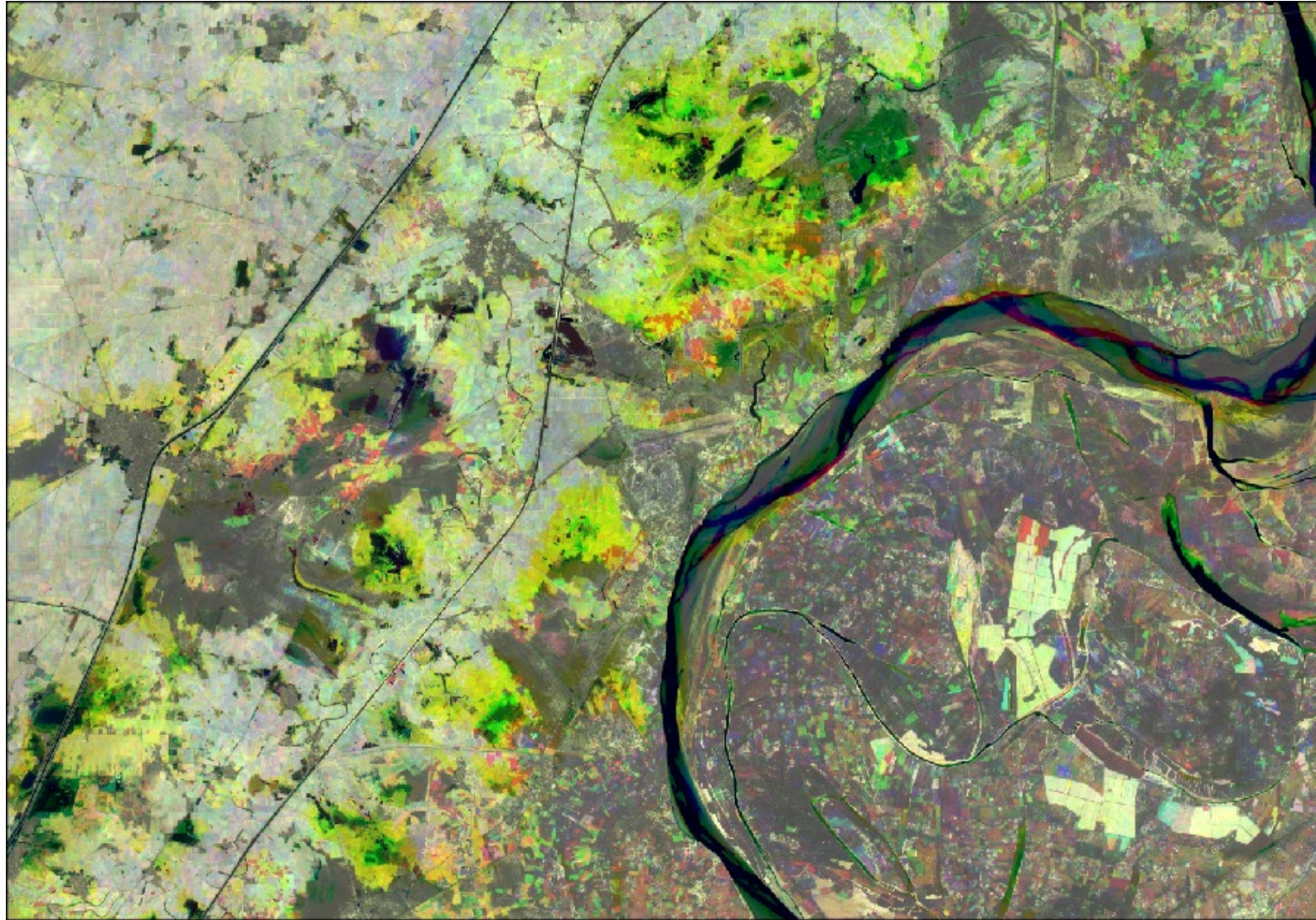


- Analysis of NDVI values from Sentinel-2 optical images of both crop seasons, before and after the 2022 summer event

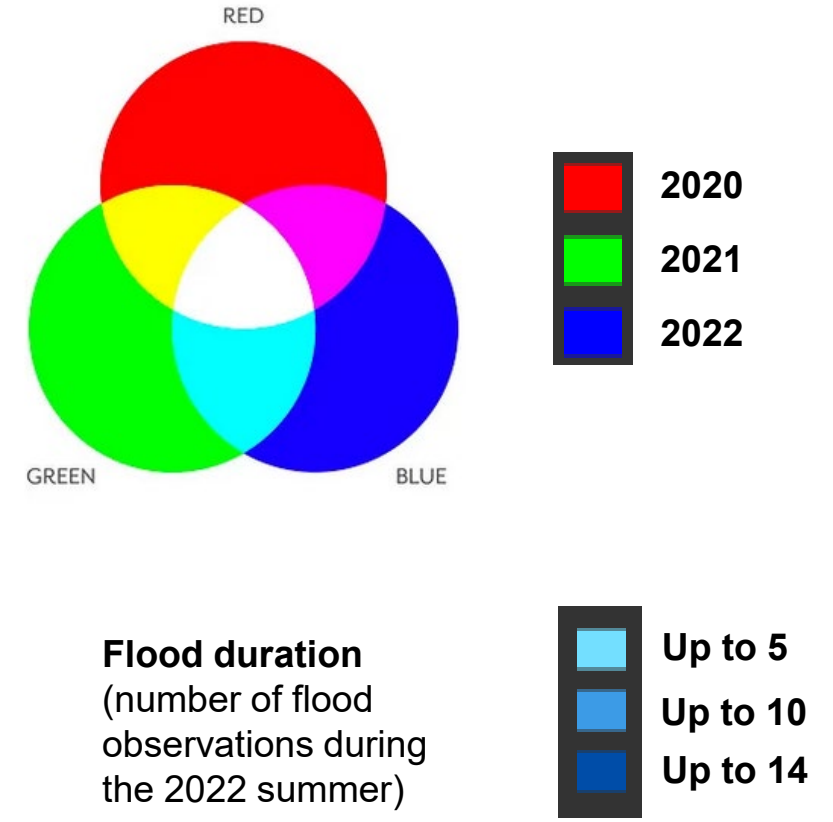
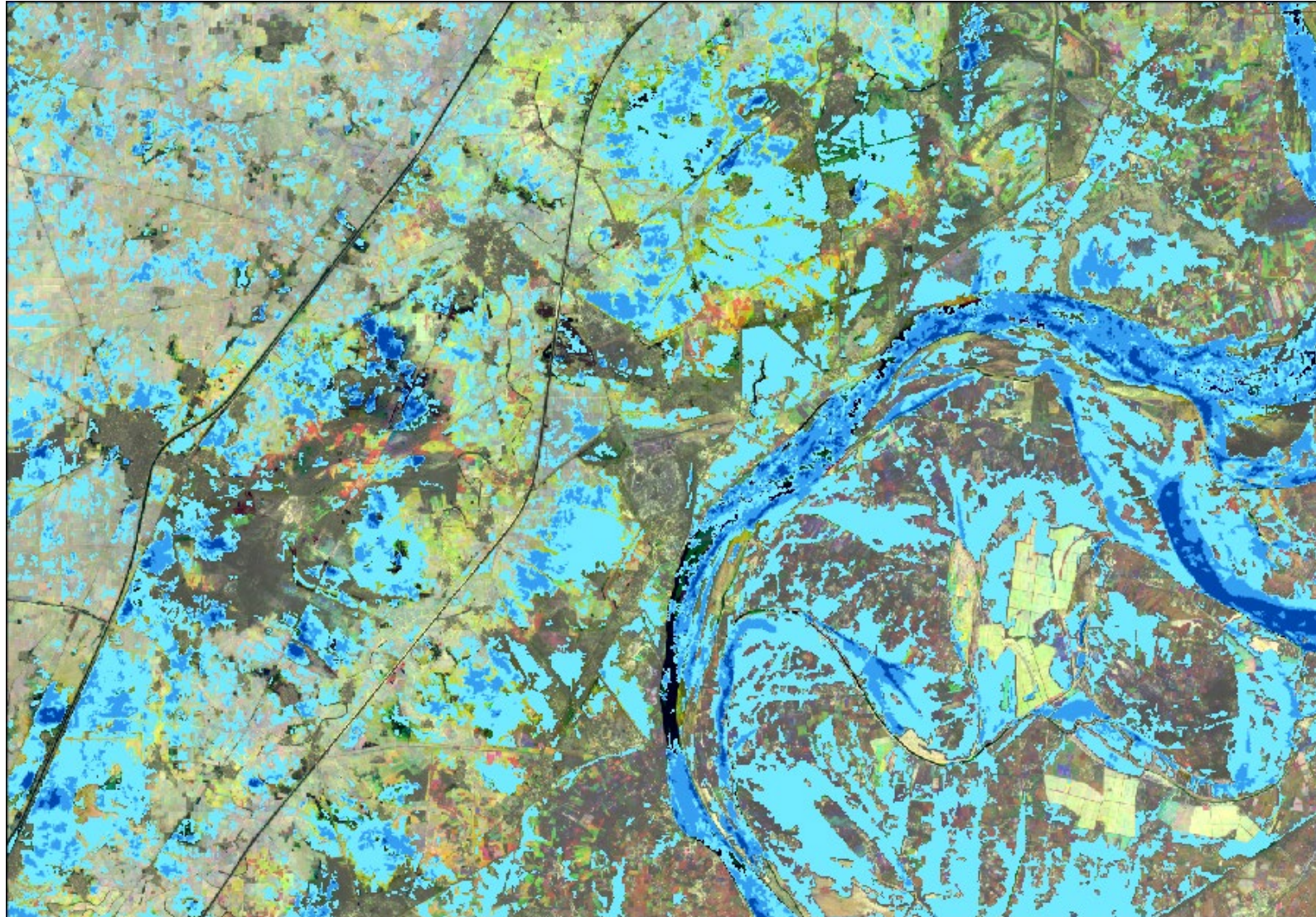
RABI	KHARIF
Rabi crops are sown between September and October	The Kharif Crops are sown between April and May
Rabi crops are harvest at the end of the winter season (February/March)	The Kharif crops are harvested after the monsoon or rainy season (September)



Recovery Framework contribution



Recovery Framework contribution



RO Demo 5? Turkey and Syria – possible activation



- **On February 6th 2023, a major earthquake struck southwestern Turkey and Syria. The Kahramanmaraş event is the most significant earthquake to strike the region in recent years. To date over 12,000 aftershocks, up to Mw 6.7; Final death toll >57,000; >850,000 people are displaced; >160,000 buildings destroyed; Length of the main seismic ruptures: >400 km and >150 km**
- **RO Demo response to the event:**
 - **Liaison with EU and WB (Tripartite agreement partners);**
 - **Liaison with GSNL during establishment of event supersite;**
 - **Generation of report with links to existing products – understanding status of Copernicus response;**
 - **Informal team discussion to prepare for possible activation.**
- **To date, no formal RO activation has taken place. The RO did not prepare products for the Rapid Assessment (timeline too short); complexity of political situation in the area has increased difficulty of making a formal contribution; no formal Disaster Recovery Framework has been established, but should one be established, RO is prepared for activation.**

- *Created spring 2022 – representatives from tripartite agreement, space agencies and solution providers*
- *2 mtgs in June and September 2022*
- *Reintegrated to RO Demo Team December 2022*
- *Work expected to continue to end 2023, with emphasis moving to implementation – cost-benefit and reporting to partners*

Partner contributions



Openly available response data and products

- International Charter
- Copernicus EMS RM
- Sentinel-Asia
- UNOSAT
- Open-source sat data (Landsat, Sentinels, DTM)
- Data bases (landcover, population,...)

CEOS best efforts RO data and products

- Dedicated acquisitions of commercial data
- Complex satellite products (e.g. SAR interferometry)
- RO liaison officer and overall coordination
- Value adding services
- Capacity building

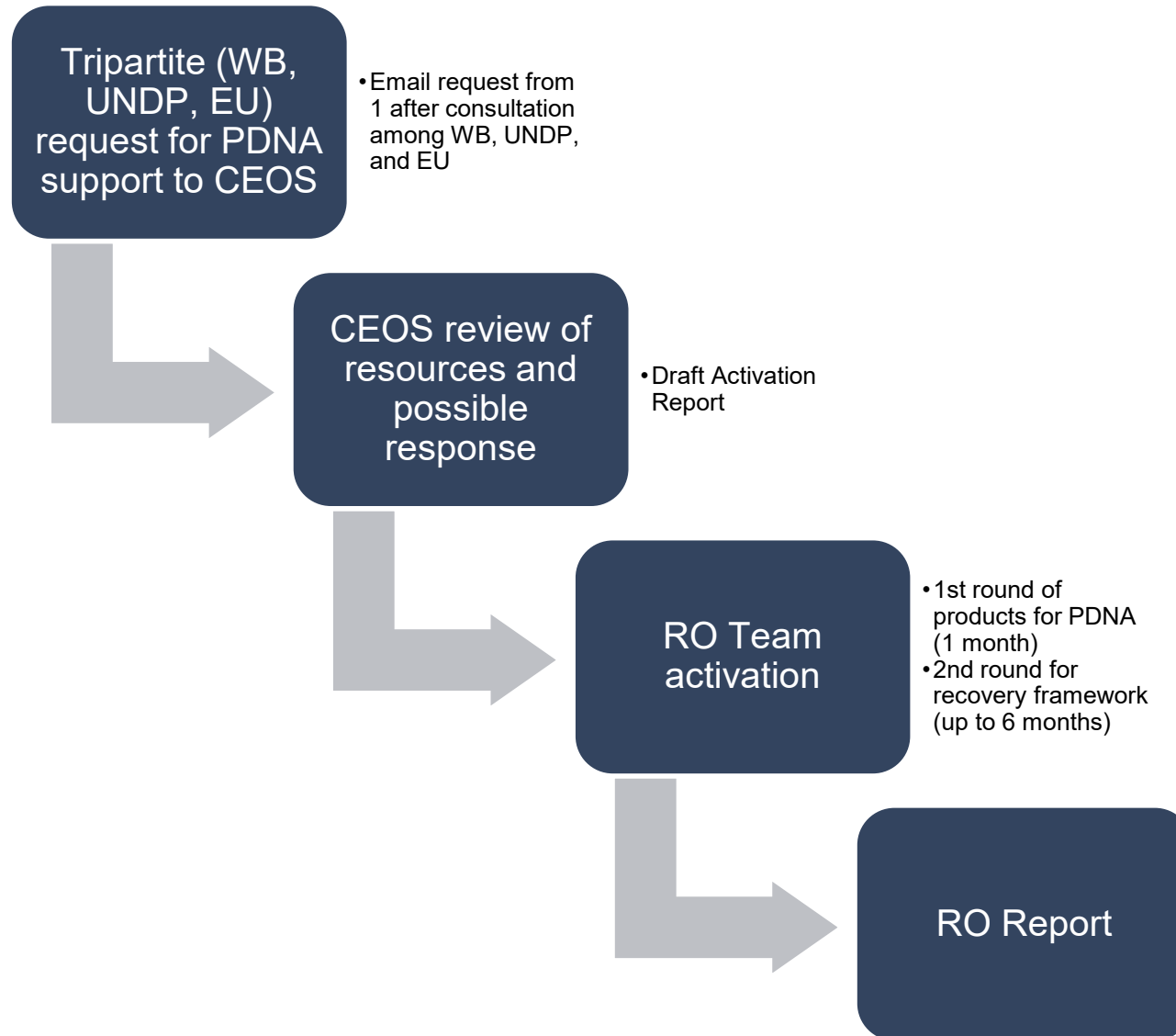
Ad hoc contributions: academia, international organizations (e.g. CEMS, FAO, UN)

- Linkages to Copernicus Risk and Recovery and ESA GDA, EO Clinic
- Value adding services
- Expert analysis
- Integration of other advanced data sources (e.g. social media, drones, ...)

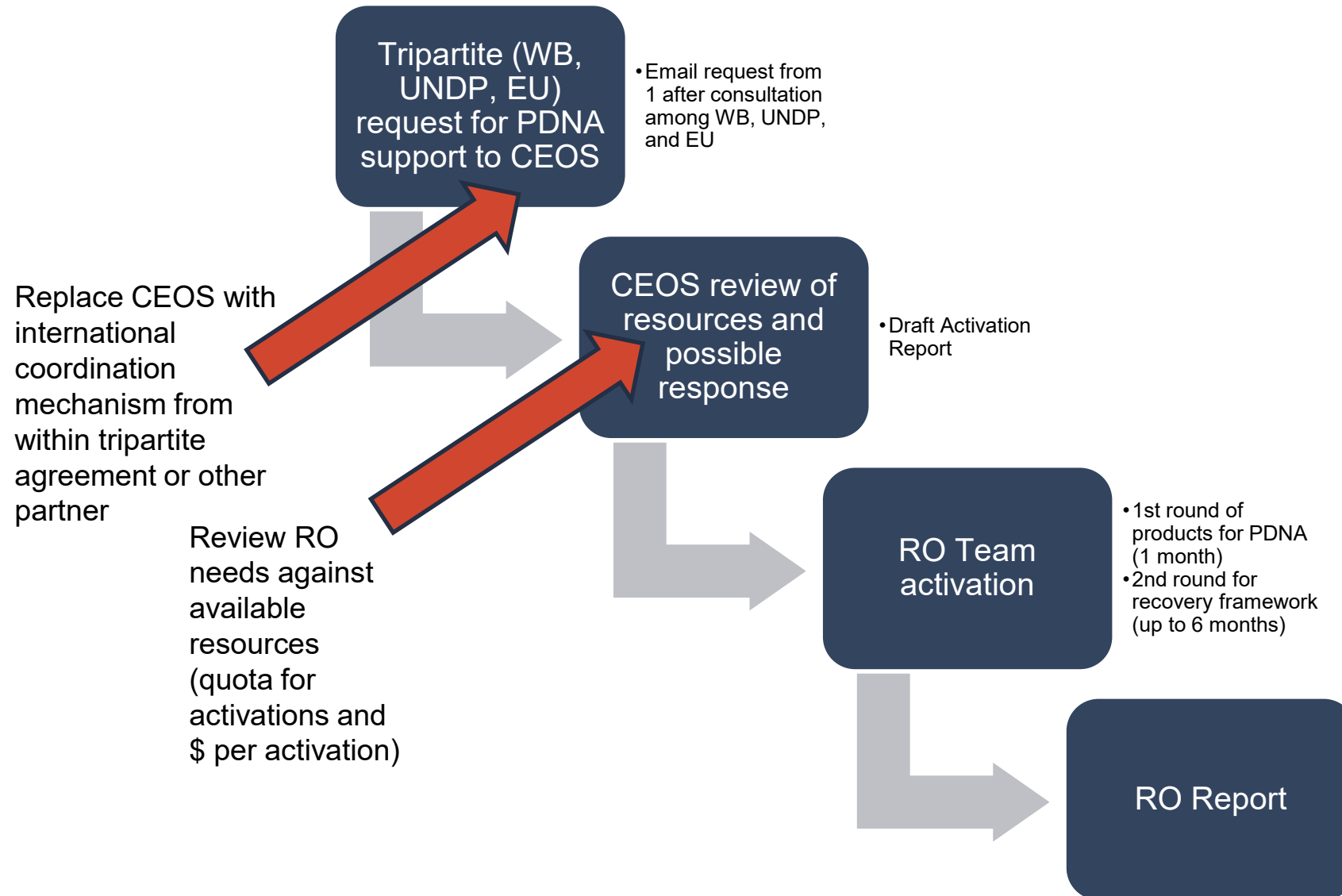
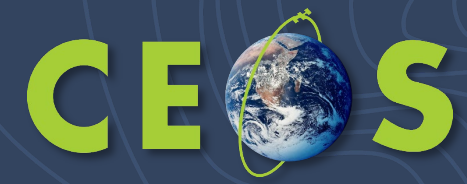
Integrated Situational Awareness to support recovery:

- Informed PDNA;
- Pre and post disaster baselines;
- Medium term monitoring;
- Capacity building assessment and plan.

Activation – RO Demo



Activation – POST RO Demo



- **Key to RO sustainability lies in demonstrating benefit for work of RO to DRM community, especially PDNA Tripartite Agreement**
- **RO Demo team (UNOSAT, SERTIT, CIMA, WASDI) to determine use cases and costed benefits**
- **Use case approach to be based on different balance points – 25k ; 50k ; 80k**
- **Schedule:**
 - **May – kick off of activity with partners; identification of main use cases to be treated (working meeting, tentatively planned for DC mission with WB – week of 22 May?)**
 - **June – presentation of draft use cases to RO Demo Team telcon – discussion and refinement**
 - **July and August – finalization of use cases and preparation of promotional materials for the cases**

Sustainability Challenges — and approaches to address them



- ❖ Many solutions rely on marriage of free and open data with commercial data sets – **data cost** remains a hurdle
 - Work with hotspots and provide **total coverage at varying resolutions**; ensure solutions are scalable.
- ❖ **Awareness** of specific benefit still limited in recovery community
 - Showcase RO Demo successes from **stakeholder viewpoints**
- ❖ Understanding of **differences in satellite data** solutions still low (e.g. free and open data vs commercial datasets)
 - Focus on **integrated solutions** but bring **clear cost-benefit** to show how using commercial data sets augments overall benefit of satellite EO usage
- ❖ Short timeline for PDNA means **budgets** not usually available to invest in EO (especially value-added products which are key)
 - Identify **cost-benefit wins and set up funds in advance of disaster to be able to tap into resources**
- ❖ Continuous effort to be put on **Capacity Building** (not only technical, decision makers too) and **co-construction**
 - Strengthen **links WG CapD / WG Disasters**, for a synergistic action ; Develop **“peer awareness”**

Necessary “Core” RO (as perceived to date)



RO Liaison function (to transition from satellite agencies to recovery stakeholders)

- *Document and encourage satellite contribution from wide array of sources*
- *Understand needs and coordinate tasking of CEOS satellites if required*
- *Prepare dedicated PDNA contribution on as required basis*
- *Serve as principal PoC for satellite community with recovery stakeholders*

Identify dedicated RO funds that can be activated on demand – existence of funding makes significant difference in ability to contribute quality contributions quickly (e.g. Pakistan – IPSOS and CIMA through WB and ADB)

Capacity building – only RO has a developed CB component to involve local and regional technical expertise and create longstanding institutional relationships; however new projects (e.g. Copernicus hubs) have significant CB components. Work to identify synergies and roles for post-demo phase.

- *Complete cost-benefit analysis (significant effort in May/June)*
- *Work to increase RO awareness within partner organizations – missions to Washington (May or fall) and Brussels (fall)*
- *Joint WGCapD activity – DRM leadership events in June and November, promotional video under development (text in July, video fall)*
- *Identify RO sustainability vision (RO Demo team before WGD20)*
- *Report to WGD20 (September) and CEOS Plenary (October)*