



SESSION SUMMARY

Session Title: Facilitating Recovery and Inclusion through Satellite Earth Observation (EO)

Session Type: Thematic

Date and Time: Monday, May 13, 11:00 am -12:30 pm, Room 3

Key Speakers and Agencies:

Moderator:

Mr. Andrew EDDY, President and CEO, Athena Global- Secretary of RO Haiti and G-RO Team

Speakers:

Mr. Bobby PIARD, Director-General, Centre national d'information geospatiale (CNIGS), Government of Haiti - Co-lead of the Haiti post-Matthew Recovery Observatory (RO)

Dr. Samir BELABBES, Research Associate, UNOSAT

Mrs. Hélène de BOISSEZON, French space agency (CNES) - Co-lead of the Generic Recovery Observatory (G-RO) ad hoc Team

Mr. Ricardo Zapata-Martí, Consultant to EU, International consultant, former UN ECLAC Economist

Mr. H. Kit Miyamoto, CEO, Miyamoto Global



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Helene de Boissezon opened the session by welcoming the participants and presenting a short overview of the objectives of the session, which were threefold:

- Increasing awareness on how satellite imagery has been used in the past to scale up inclusion in the recovery process;
- Advocating for the use of satellite EO to enable inclusive recovery efforts;
- Discussing how the use of EO technology can be improved to support recovery planning and monitoring.

Andrew Eddy, President and CEO of Athena Global and moderator for the session, offered an overview of how the session would unfold, with three presentations followed with a series of key questions put to the panelists, with two panelists responding each time, followed by open questions from the audience. He also presented on behalf of Bobby Piard, sharing the achievements at mid-point of the four-year Haiti RO, established in the aftermath of Hurricane Matthew in Haiti.

The key message of the presentation was that this four-year project is a unique laboratory to explore how satellite data can be used for a range of thematic issues dealing with early recovery planning, and long-term recovery monitoring. At the midway point, the focus is now on capacity building and technology transfer to ensure Haitian experts are able to generate satellite-based products to support recovery after future events.

Samir Belabbes presented on UNOSAT work in support of recovery. A special agreement on Standard Operating Procedures has been signed between UNOSAT and UNDP and this has greatly increased operations, especially in support to PDNAs, like that in Laos in 2018. However, UNOSAT has supported other early recovery efforts with many organizations, including the FAO in Haiti after Hurricane Matthew.

Helene de Boissezon presented on the concept of a generic, replicable RO that could offer a clear path for access to satellite data and products during



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early recovery planning, from the crisis to the development of the National Recovery Plan, including more systematic support to PDNA work and recovery financing development. The work on this topic is being led by an ad hoc team including the World Bank/GFDRR, UNDP, the European Union, the Committee on Earth Observation Satellites, and UNOSAT. The first step in the process has been to capture the lessons learned from the state of the art of application of satellite data to recovery, which has been put forward in an advocacy paper. The next step is to develop the concept by working on a statement of the parameters for EO satellite support and the development of cost-benefit scenarios.

After the key note presentations, Andrew Eddy led a targeted panel discussion grouped along three main themes. Before starting, he asked the participants to identify themselves by a show of hands. Many participants had some experience working with satellite imagery or imagery-based products. Many had used it during response, but not many during recovery. Two-thirds of the participants were in some way actively involved in recovery. Several participants had worked directly on PDNAs.

Main Benefits of Satellite Technology for Recovery:

What are the main benefits of using satellite EO for recovery? How can we increase the use of EO, in order to apply the full range of EO data to recovery challenges?

Question 1 for panel:

Lead response **Samir Belabbes**: the use of satellite imagery offers the best cost effectiveness for a fast and detailed response to damage after major events, reducing PDNA costs.

Second response **Ricardo Zapata-Marti**: Ricardo felt that one of the main benefits available from satellite EO is the rapid overview of what the situation is right after the impact, what are accessibility issues, which can serve to prioritize the response. In this respect, better response can be organized if there is good baseline data before the event. Organizing this baseline data should be a priority.



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Follow up question from audience: a participant from Brazil mentioned the capability to go back to the past through EO. Another participant gave an example of baseline data sets in Norway: risk areas in Norway have large volumes of INSAR data collected and this can be used for change detection after events.

Inclusive Recovery and Satellite Technology Innovations:

How can satellite EO be used to better prepare for disaster recovery? How can inclusive recovery be advanced using these technologies? What can be expected in the future in terms of technological innovations that will facilitate recovery monitoring?

Question 2 for panel:

Lead response **Hélène de Boissezon**: EO can help increasing risk awareness among population, keeping the memory of risk, of major disasters, when populations quickly “forget” catastrophic events. There are many useful data that can be prepared in advance, as a baseline for disaster relief, and when this is done, satellite data can then be used to calculate impact on vulnerable populations. Baseline data includes not just archived satellite data, but also related in-situ data or socio-economic data.

Second response **Samir Belabbes**: Samir indicated that to be useful, satellite products must be released quickly – within hours or days for response, and within days or weeks for recovery. Such information provides an updated baseline for a possible new event.

Follow-on question from audience: Per-Martin Bagesund from IUCN indicated that recovery products based on satellite data would be valuable for eco-system-based approaches to recovery, and that this is also linked to livelihoods. Andrew indicated that in fact, two years into the Matthew recovery, the eco-system-based products are the most critical, and understanding long-term environmental changes is possible from satellite data. This requires however to collect the right data after the event. The requirements for recovery monitoring and change detection are different than for humanitarian relief and early response, which was confirmed by Ricardo. We need to be aware of this and schedule data acquisitions after disasters.



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Helene made the point that in the Haiti RO, synergy has been achieved with two WB projects in Nippes and Sud departments looking at resilient agriculture post-Matthew and with BID project looking at Macaya Park Protected Area regeneration.

Recovery and Vulnerability:

How has satellite imagery been used to ensure inclusion of vulnerable groups in the recovery planning and monitoring? How can early action support prioritization of response and reduce the impact on vulnerable populations? Is there a different approach in the use of satellite EO for major disasters than for recurring or protracted crisis?

Question 3 for panel:

Lead response **Kit Miyamoto**: Kit indicated that rapid assessment tasks require at the same time 'the big picture' and 'specific areas' detailed knowledge; both of them can be addressed by EO data. But he pointed out how critical it was to merge satellite data sets with field data, and how the two work together to provide better information during and after disasters. A lot of work takes place on the ground, and this data can be updated with satellites in some cases. Or it can validate satellite-based analysis. In Haiti in 2010, 430,000 buildings were inspected on the ground in the weeks after the earthquake. These data sets need to be better merged with satellite data for integrated products. In Palau in 2018, 1500 people died from liquefaction. This is something not well understood, and satellite data can help us understand the extent of liquefaction after an event and help manage response to this.

Second response **Ricardo Zapata-Marti**: in Mozambique, satellite data was critical to assess the full extent of the impact but was better at calculating affected area than extent of damages. Damage estimates were undervalued in the GRADE satellite-based assessment process. EO was useful for PDNA after Idai and Kenneth, but no operational procedure exists at this time. Validation remains critical, as well as merging with other data sets (cell phone photos, messages etc.).



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Follow-on question from audience: The National Economic Development Agency of the Philippines indicated that satellite data is critical for obtaining a rapid assessment of damage but is not used extensively for recovery. The satellite data used is from classified sources and is analyzed by visual interpretation. Andrew indicated it was important to understand how classified data sets can be used selectively to improve the information available from publicly available data.

A representative of the African Risk Capacity initiative active in Kenya indicated that satellite data plays a critical role in reducing financial risk as it can drive indices that trigger payouts. It is used for assessing drought impact.

Roberto Paganini of UNDP indicated that their Standard Operating Procedures with UNOSAT has resulted in far better cooperation on PDNAs after major disasters. There is still much work to do to bring lessons learned to each new activation, but things are moving forward. Roberto asked what was stopping CEOS from implementing the lessons learned in Haiti and scaling the RO to a global level. Andrew indicated that the RO was the result of in-kind investments by participating organizations and that this requires the mobilization of significant resources. It is critical to find a way to do this more effectively and more cost-effectively in particular. The Haiti RO is successful now because of solid relationships built between institutions over time. This cannot be easily replicated. A clear institutional cooperation framework must be established to chart out how international stakeholders can forge relationships at the national level in the days after a major disaster so that CEOS and satellite agencies can identify the right capacity in a country and work on developing it in the months after a disaster. It cannot work without strong capacity development and empowerment of national agencies. Helene made the point that future RO work must be closely tied both the PDNA process and recovery planning from a financial perspective.

A representative from the Government of Dominica indicated that satellite data was crucial there in determining the most affected areas and coordinating response as well as planning priorities for recovery work. The satellite data was Charter data triggered by a UN agency.



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A representative from the ILO (International Labor Organisation) indicated that they have a large program using EO data and there is a challenge to make satellite-based products useful and tangible for the end users, in this case local farmers. Andrew indicated this was also raised during Jeremie workshop at local level in Haiti. ILO has some suggestions to be shared offline but is looking for Haiti RO suggestions as well. It remains a challenge.

Kit indicated that there are many complementary technologies. In the US they use a lot of lidar data to perform change detection after events. They also work with NASA-JPL using SAR data.

Helene thanked participants for their very active participation in the event and the many relevant questions. It is a long road but a lot has been achieved in Haiti in the RO project, and the lessons are being brought into the Generic RO work, and there is a clear path for improvement ahead. Satellites cannot do everything. They should not be oversold. We need to find the best fit with other technologies and procedures and bring all this together for more effective recovery. A final comment was made on better exploiting popular well-adopted technologies like mobile apps and ensuring we can bring information to the end user in a form they can work with.