Committee on the Peaceful Uses of Outer Space

Scientific and Technical Subcommittee

Fifty-ninth session - Vienna, 7–18 February 2022

Statement of Italy on item 9. Space-system-based disaster management support

Mr. Chair, distinguished delegates,

The Italian delegation would like to present today some activities in which Italy is involved within the framework of the Committee on Earth Observation Satellites (CEOS) through the work of the experts of the Italian Space Agency (ASI), who have been supporting the Committee since 1986.

I will focus the attention on the activities of the CEOS Working Group on Disasters in the field of Disaster Risk Reduction. As the number of casualties and economic losses increase due to the human-induced or natural disasters, the economic and geopolitical importance of the activities related to Disaster Risk Management and Reduction continues to rise.

And indeed, the CEOS space agencies involved in the activities of the Working Group on Disasters have initiated a series of concrete actions to support Disaster Risk Management, with a specific focus on Disaster Risk Reduction, for disaster preparedness and prevention. These actions have been carried out by strengthening, improving and coordinating the use of Earth Observation data through single-hazard Pilot and Demonstrator projects (currently focusing on floods, landslide, volcanoes and seismic hazards), multi-hazards projects as the Recovery Observatory, as well as the support to the GEO Geohazard Supersites and Natural Laboratories initiative.

Since 2012, ASI have been participating in the selection process of the Geohazard Supersites Natural Laboratories initiative, providing COSMO-SkyMed data to the projects and taking part in the CEOS Disaster Risk Management projects and in the Recovery Observatory. Furthermore, ASI participates in the Supersites initiative and in the CEOS Data Coordination

Team activities, whose task is to review and select the Supersites and to coordinate the provision of related satellite data.

Let me provide you with some recent concrete examples of the Italian contribution:

- COSMO-SkyMed data have been instrumental for the U.S. Geological Survey's Hawaiian Volcano Observatory to track volcano Kīlauea's reawakening in 2018. COSMO-SkyMed radar images were combined to form interferograms that showed ground deformation associated with the onset of the eruption, and the COSMO-SkyMed data were helpful for tracking the growth of the lava lake at Kīlauea, where optical data were hampered by absence of clear visibility.
- In the case of the eruption of the St. Vincent volcano, in April 2021, the interferometric use of COSMO-SkyMed data allowed the monitoring of the decrease of surface deformations and major changes recorded in the area (e.g. the volcanic dome collapse and crater filling phenomena).
- More recently, in the context of the Iceland Supersite, COSMO-SkyMed data were helpful to show deformation related to the dike intrusion on the Reykjanes Peninsula, which commenced on the 21st December 2021. The dike is located in a similar location to the previous one, which was intruded during late February-March 2021, and preceded the eruption in Fagradalsfjall.

To continue supporting the Supersites and the disaster risk management projects, ASI has planned to provide about 6000 COSMO-SkyMed products this year, while 19000 products have been delivered so far.

At the same time, ASI is actively involved in demonstrating novel scientific products that are generated based on a tailored exploitation of the Italian state-of-the-art COSMO-SkyMed radar imaging technology, to address specific challenges.

An example is the long-standing experience in the CEOS Recovery Observatory that has been acknowledged as a means to increase the contribution of satellite data to recovery from natural disasters in the Resolution adopted by the United Nations' General Assembly on 25 October 2021 A/RES/76/3. In coordination with the French National Centre for Space Studies (CNES) and the other CEOS space agencies, ASI is leading the demonstration activity based on radar data in Haiti, to monitor the recovery

and rehabilitation process of the south-western department that was severely affected by the Hurricane Matthew in October 2016 and, more recently, by the 7.2 Moment magnitude earthquake and Hurricane Grace in August 2021. Ad hoc collections of COSMO-SkyMed radar images are taken over the priority areas defined by the Haitian users, with the highest spatial resolution and the best temporal revisit that are allowed by operating the full COSMO-SkyMed constellation. The maps generated from the analysis of these images prove effective to assess not only the progress in the reconstruction of destroyed settlements and construction of new buildings and infrastructure, but also the environmental and societal impacts associated with the recovery, for example quarrying of building materials, waste disposal, risk to dwellings built in areas susceptible to landslides and ground instability.

Very important was also the coordination with the National Center for Geo-spatial Information of Haiti and other Haitian stakeholders in the activities aimed at developing, in the long term, a strong local capacity in the use of radar satellite data, for disaster risk management and reduction purposes.

Mr. Chair, distinguished delegates,

These are just few examples that show how the major Italian space asset, the COSMO-SkyMed constellation, is providing a relevant support to disaster management activities and Italy is committed to continue to use it in this way also in the future.

I thank you for your kind attention.