



Satellite observations support to disaster monitoring: the operational use of COSMO-SkyMed constellation

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The aim of this work is to show some experiences recently made by ASI and DPC, with the collaboration of Italian research institutes and academies, in using satellite observations to monitor different steps of emergency management in Italy: the 2012 Emilia earthquakes and the 2012 seismic sequence in the Mt. Pollino area, the volcano Stromboli eruption, the floods occurred in Tuscany and Lazio.

The effectiveness of the satellite observations contribution to the disaster management is to day in phase of demonstration, and the encouraging results obtained up to now rely not only on the maturity of the data processing and interpretation techniques (more exploited), but also on the coordination in accessing and programming satellites systems.

During the past year, COSMO-SkyMed has been successfully used to acquire, in very short times, high quality images of disaster areas. When the emergency evolution made it necessary, after the set up the monitoring service went on several months.

Our experience confirmed how important is the availability of consistent series of satellite data, acquired on disaster prone areas in order to enable and facilitate post-disaster activities. Moreover, some results have been made possible thanks to science oriented initiatives sponsored by ASI and to the long-lasting cooperation among DPC and the national research institutions.

In general, to meet civil protection needs after a disaster, typical activities based on earth observation techniques, as rapid mapping, recovery and first evaluation of damage, require the following observation capabilities:

- medium-to-high spatial resolution
- high revisit time, coupled with large spatial and spectral coverage
- night/daylight and all-weather observations
- capability of very short response time and frequent revisit opportunities for the study area
- availability of a good reference archive
- access and provision of satellite data for operational purposes, based on well defined rules and procedures.

The experience made shows how all these characteristics play a key role during real emergencies.

Many players, each with its specific role but working as a single team, are involved in the emergency management: the Italian Space Agency, the national Department of Civil Protection, and the scientific institutions that are in charge to elaborate and interpret satellite data.

The work done up to now shows the importance of coordination for a sustained access to data source, in order to meet the requirements of the disaster monitoring and fully exploit the satellite system capabilities. This experience paves the way for a more effective and enlarged use of satellite observations in the civil protection domain.