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InSAR monitoring for seismic risk management: the Sentinel 1 contribution

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InSAR data can provide effective information in different activities related to seismic risk management.
In the Assessment and Prevention phase, concerning scientific activities as hazard assessment, mitigation and preparedness, InSAR data have demonstrated to be very valuable. In particular, the parameterization of the seismic sources, the definition of the deformation rates related to the seismic cycle, the partitioning of strain among different faults, the improvement of tectonic models, are the main fields in which the contribution of InSAR-derived ground deformation information is important.
In the Warning and Crisis phase, concerning all activities needed to promptly and effectively respond to the effects of an earthquake, InSAR (and SAR) data have also a good potential in activities such as earthquake source identification, urban damage assessment, assessment of environmental effects of earthquakes.
The Sentinel 1 SAR data are expected to significantly contribute to both phases of seismic risk management, due to the improvements of the swath width, acquisition frequency, data acquisition/distribution policies, compared to the previous ESA SAR missions.
We will discuss the contribution of Sentinel 1 (A and B) in this field, starting from the experience of the ASI-SIGRIS project, which has demonstrated and assessed the operational use of multiband SAR data for seismic risk management. SIGRIS demonstrated that the high repeat pass frequency guaranteed by the COSMO-SkyMed constellation resulted in a considerable improvement of the information products for the seismic crisis management, and showed the advantage of the synergetic use of InSAR data from complementary instruments/platforms.