



## **Earth Observation techniques for geophysical applications: the SISMA Project**

G. Bianco

Agenzia Spaziale Italiana, Centro di Geodesia Spaziale, Matera, Italy (giuseppe.bianco@asi.it, +39-0835-339005)

In the past few years, the Italian Space Agency (ASI) has started a series of Pilot Projects, carried out by National universities, research centers and private companies, aimed to the exploitation of Earth Observation (EO) techniques to assess and study hazardous geophysical phenomena.

In the SISMA (Seismic Information System for Monitoring and Alert) project, space EO techniques, such as GNSS (Global Navigation Satellite System) and SAR (Synthetic Aperture Radar) are integrated with geophysical methods to disclose the physics of earthquake generation in active seismogenic zones.

This approach complements usual seismic hazard estimates, based on the traditional probabilistic approach, and opens new routes in the modelling and understanding of the dynamics of fault zones. Synergic use of GNSS and Geophysical Forward Modelling (GFM) deformation maps at the national scale complements the information gained from purely statistical analyses of earthquake historical records. In such a way the rules of seismic hazard estimate in terms of observational data and of sound physical methodologies are established. Both GNSS and SAR techniques, at the smaller spatial scale of the seismogenic zones, coupled with expressly developed models for interseismic phases allow us to retrieve the deformation style and stress evolution within the seismogenic zones, providing the tools for establishing warning criteria based on deterministic grounds and rigorous forward geophysical models.