

SATELLITE MONITORING OF GEOHAZARDS

NEAR-REAL TIME MONITORING OVER WIDE AREAS



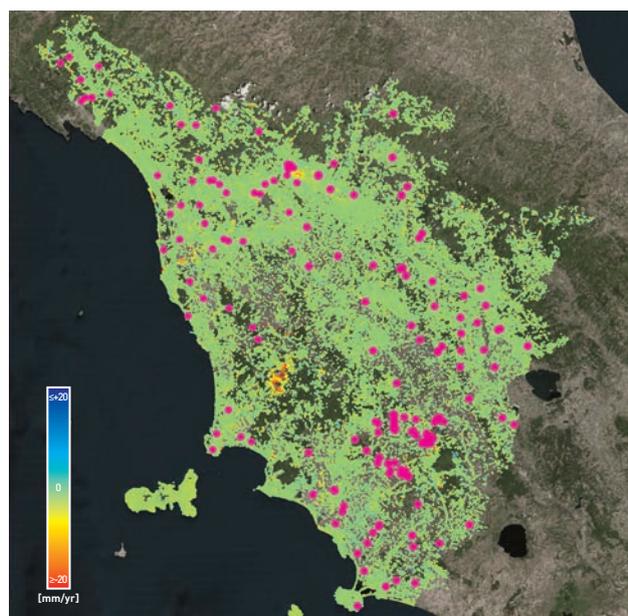
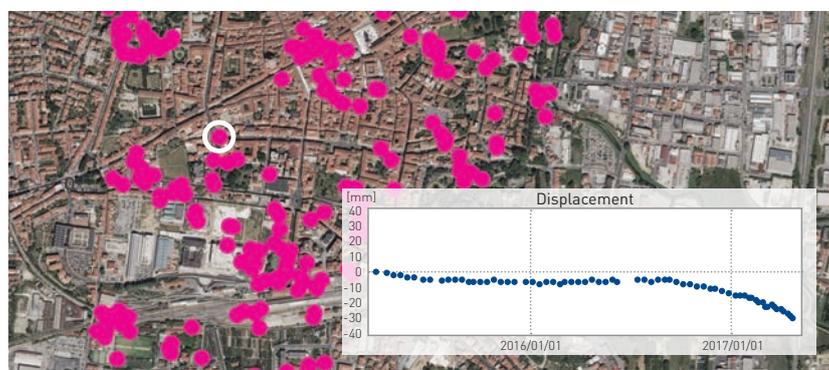
InSAR and Sentinel-1 for a near-real time monitoring program of ground deformation

TRE ALTAMIRA is making the transition from historical satellite analyses of radar imagery to near-real time monitoring programs at regional and national scales. Up-to-date displacement information is routinely provided to end-users and decision makers, relying on our advanced satellite InSAR technique (SqueeSAR®), our broad computing capacity and free access to timely Sentinel-1 images.



TUSCANY REGION. Our monitoring service is active over the entire region. Displacement maps are delivered with every new Sentinel-1 acquisition along with a trend variation analysis. The latter identifies areas where a change in the dynamic of motion is occurring and it is used for risk management by the Regional Authorities.

In the figures, fuchsia dots indicate areas of trend variation and are superimposed on the SqueeSAR® displacement velocity map.



Sentinel-1 offers fast updates of radar images

Sentinel-1A/B is a new satellite platform, specifically designed for ground deformation monitoring over large areas and operated by ESA. Sentinel-1 acquires images worldwide on a regular basis (every 6 days) and it is publicly available.

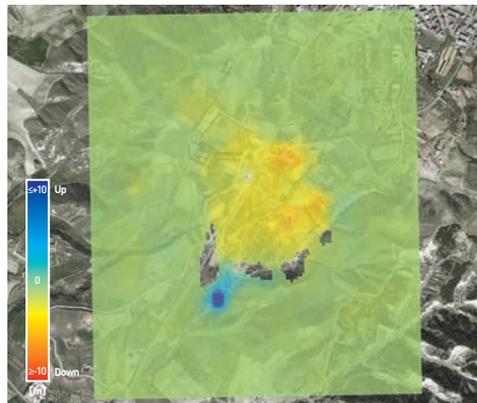
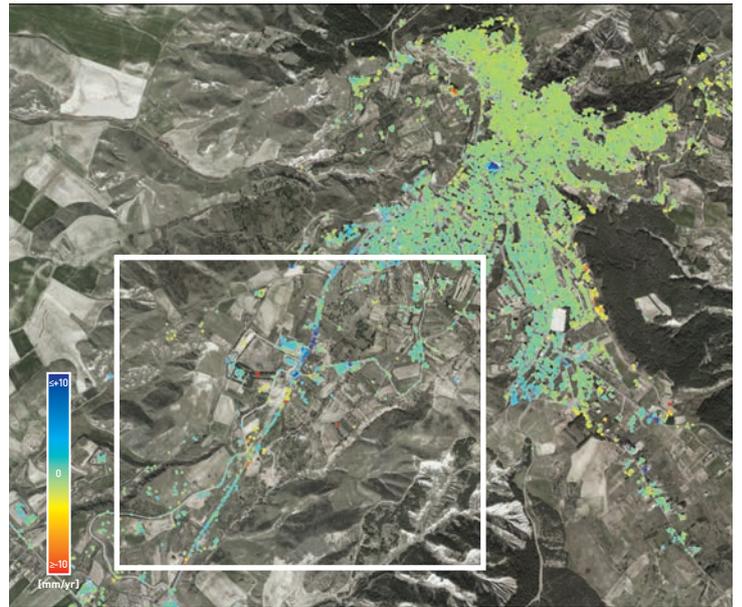
SINGLE, AT-RISK AREA

Assess the temporal evolution of a single, at-risk area

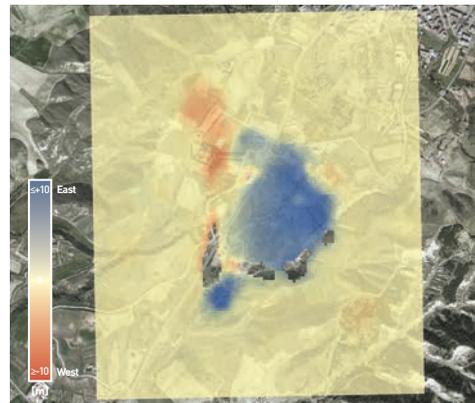
TRE ALTAMIRA provides different approaches to detect and monitor complex motion patterns related to a single, at-risk area. With our multi-temporal radar data analyses, it is possible to extract a history of motion, ranging from millimetres to metres, without the installation of any in-situ equipment. After a critical event, satellite information is also used to assess residual risk in the area and to measure ground deformation resulting from it.

MONTESCAGLIOSO (ITALY). On the right, the result of our SqueeSAR® study over Montescaglioso, before the landslide occurred (in the box area) on the 3rd December 2013. The Italian Civil Protection Department (DPC), through the University of Florence, used SqueeSAR® measurements to identify precursor movements. Below, the results of our Rapid Motion Tracking (RMT) analysis over the landslide area to estimate rapid movements during the event.

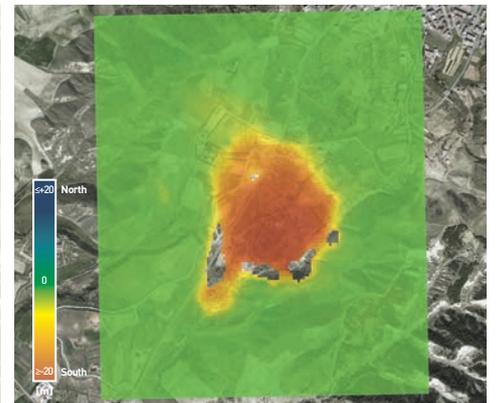
Satellite imagery: COSMO-SkyMed. Background image: Google Earth.



Vertical Displacement



East-West Displacement



North-South Displacement

With over 20 years' experience, **TRE ALTAMIRA** is globally recognized as the world leader in satellite SAR technology. We offer our clients reliable and timely information on how areas of interest are changing over time, allowing them to mitigate risks, optimise operations and plan future activities.

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