

DSGSD and active tectonics interactions analysed by means of DInSAR and geomorphological studies: case studies in Central Italy.

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A multidisciplinary approach to study surface deformations through DInSAR-SBAS, photogeology and ground based data is proposed. The morphostructural elements inherited by tectonics and by DSGSD (Deep Seated Gravitative Slope Deformations) have been analyzed. The investigated areas are in the Central Apennines: the Maiella Mt., the east sector of the Fucino Plain (Serrone-Parasano structure) and the east sector of the Colfiorito Plain (Prefoglio structure).

A detailed photogeological analysis on the Volo Italia (1987-1988) dataset, supported by SPOT images, 20m pixel-size DEM and in situ observations, has been performed in such areas. The aim of this approach is to detect and quantify soil deformation patterns related to tectonic and gravitative causes. The investigated areas clearly pointed out DSGSD in correspondence with active faults. The displacement patterns from DInSAR-SBAS have been compared with results from abovementioned data. Therefore the proposed approach allowed to characterize the kinematic aspects of active deformations following their temporal evolution. In particular the east portion of the Colfiorito plain shows the reactivation during the 1997 Umbria-Marche earthquake of DSGSD close to its eastern edge, coinciding with the Prefoglio Mt. structure.