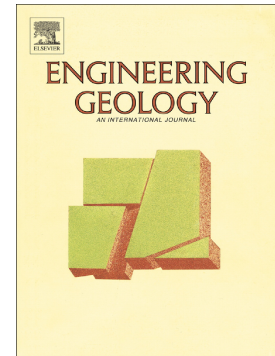


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## IN SITU AND SATELLITE LONG-TERM MONITORING OF THE LATRONICO LANDSLIDE, ITALY: DISPLACEMENT EVOLUTION, DAMAGE TO BUILDINGS, AND EFFECTIVENESS OF REMEDIAL WORKS

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### Abstract

The slow and continuous movements of a deep and complex active landslide system cause severe damage to *Latronico*, a village of the Italian southern Apennines. In order to obtain a deeper insight in the phenomenon, its kinematic features have been investigated by means of both ground based displacement measurements (by mobile and fixed-in-place inclinometers) and by the processing of images acquired by synthetic aperture radar sensors (ERS, Envisat, COSMO-SkyMed satellites). The results of the analyses show that the landslide system includes different phenomena at different scales and of different age, from old and huge landslides (early stage of last post-glacial) to young shallower reactivations. Secondary creep and rain-induced displacements coexist, occurring at different depths. The reconstruction of the kinematic history of the system *inhabited area-subsoil* shows that the yearly average displacement rates have been almost constant over the last 25 years (several cm/year). The depth of the slip surfaces and the volumes of the instable soils explain why the numerous and expensive remedial measures and stabilization interventions have had very limited effects, if any, on the displacement rate field.

KEYWORDS: landslide, monitoring, displacement, triggering rainfall, SAR,

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