2D ELECTRICAL RESISTIVITY IMAGING FOR THE STUDY OF TRANS-ROTATIONAL EARTHFLOWS IN BASILICATA REGION (SOUTHERN ITALY)

In the frame of a project supported by the Italian Ministry of Research “Design of geophysical monitoring network in areas of Basilicata Region characterized by an high hydrogeological hazard” we developed a research activity focussed on 2D electromagnetic monitoring and modelling of landslide bodies.

The Basilicata region is one of the more exposed regions of the southern Italy to the different types of hydrogeologic hazard and shows a complete panorama of mass movements with a predominance of trans-rotational slides that frequently continue under form of earthflow slides.

In order to study some trans-rotational earthflows located in the Basilicata region (Fig. 1) as Varco Izzo, Latronico, Rossano di Vaglio and Campomaggiore landslides, we carried out 2D electrical resistivity imaging (ERI), perpendicular and parallel oriented respect to the longitudinal axes of landslide, combining advanced technologies for data acquisition and new methods for data inversion (Loke and Barker, 1996; McCann and Forster, 1990). In the field we used a multielectrode system, with 32-48 electrodes, and a dipole-dipole array layout with an electrode spacing varying from 10 to 30 meters.

Fig. 1 - Map of the Basilicata region with location of the test-sites.
Notwithstanding the relatively low resistivity contrast between the slide material and the bedrock and the geological complexity of the investigated areas, the high-resolution of the electrical images interpreted with geological constrains allow us to estimate the thickness of landslide material, to reconstruct the geometry of the earthflows (Gallipoli et al., 2000) and to identify the possible surfaces of the reactivation (Fig. 2).

**Fig. 2** - Compared analysis between the longitudinal electrical resistivity imaging of Varco Izzo landslide and the stratigraphical data coming from the boreholes.

**REFERENCES**

