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# Shallow landslides mapping at Telega (Prahova County, Romania)

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Within the framework of the European DIGISOIL project, the Telega landslide (Romania) has been selected (with other landslides) to be investigated reffering to shallow landslides.
This landslide presents the distinctive feature to be controlled by salt dissolution at its base, bottom of the valley located in the middle of an anticline structure. Consequence of this chemical phenomenon is the genesis of caves and voids inside and between salt blocks and surroundings flyschs. This complex geological and structural context is thought to generate destabilization of the flank of the Telega valley, at least on the left bank of the Telega river. Recent field observations show that this dissolution process is apparently increasing, manifested by several collapses at the base of the landslide with in particular economical consequences for the spa located at the foot of the landslide.
The geophysical investigations carried out during the last 2 years allowed us to characterize precisely the morphology of the base landslide and provide a good estimation of the moving mass. The thickness of the upper sliding layer ranges between 2 and 10 meters. The volume computed for the Telega landslide reaches about 240'000 m3.
Geophysical research by resistivity imaging method (made in 2010) had to determine the detailed structure of the upper subsoil, to explain phenomena that cause dynamic processes of land instability. Investigated area was limited to the profiles L (landslide axis), T1, T3 and western limit of slide.
The method applied was vertical electrical sounding (VES) using SuperSting R8/+64 authomatic resistivity and IP imaging system and inversion software EarthImager 1D, EarthImager 2D, and EarthImager 3D.
Results obtained directly consist in 2D sections of inverted resistivity sections along each profile, starting from the apparently stable area from west to landslide axis. By processing the primary data, will be built more longitudinal sections parallel to the corresponding profile section L, in the western part of the slide. In final, will obtain 3D images of the structure of subsoil space.
Profile T10 starts at the intersection of the L longitudinal profile with T1 transversal profile measured in 2009 and continue to the SW on a different route from the latter, hence the difference between their topography surface. There are evident differences between T10 section and T1 section. Vertically, inverted resistivity section does not exceed the conductive horizon above the salt massif. In the resistive horizon above the surface landslide, resistivity shows different variations of the structure and composition. Here, the landslide surface continues to depth beyond the western limit of landslide observed on the surface. Finally, near the landslide axis (m 104), the landslide surface dip suddenly. At 2 m depth another shape is the limit of separation between two horizons with different resistivity, which may represent a shallow landslide surface. In conditions of heavy rainfall, it will activate a priority.
Resistivity data show that the moving mass is rather conductive (few tenth of $\Omega$m) while the basement is highly conductive ($\sim$1 $\Omega$m). Results of the penetrometric soundings (20 soundings, up to 4 m deep) distributed all over the landslide are in very good agreement with the other geophysical data. They show the presence of a hard interface (Qd $\sim$ 40 Mpa), more or less pronounced, corresponding to the conductive basement. These results have been included in the general data to generate the base of the landslide after interpolation.