

Geological, Geomorphological and Hydrogeological Maps of the Todi Hill and of the Orvieto Cliff (Umbria, Central Italy).

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The Todi Hill and the Orvieto Cliff, in Umbria (central Italy), are affected by large and widespread mass movements and landslides which, in some cases, reaches the towns edges with their main scarps.

These landslides put at risk the stability of the towns and the preservation of an historical-cultural and environmental heritage, being of immense importance for the whole mankind.

In order to study these mass movements and to define a program of suitable works finalized to the stabilization of the two towns and to the mitigation of the hydrogeological risk conditions, the *Regione Umbria* and the *Perugia University* have been collaborating since several years.

This synergy has led to the compilation of new geological, geomorphological and hydrogeological maps - at 1 : 5,000 scale - of the Todi Hill and of the Orvieto Cliff.

The geological maps propose a review of the outcropping stratigraphic sequences and of the lateral and vertical relationships between the various formations. The adopted subdivision is based mainly on:

- a) sedimentological studies recently carried out on the clastic pleistocene sediments constituting both Todi Hill and the substratum on which the Orvieto tuffs have been deposited;
- b) volcanological analyses of pyroclastic sequence which comprises of epiclastites and a thick ignimbrite-like deposit of coeruptive plinian fall and pyroclastic flow units.

Moreover, in the Todi area, the structural survey, integrated with the re-interpretation of more than 200 drill-cores collected during the last 20 years, allowed to map several normal faults, cross-cutting the hill.

The geomorphological maps shows the various landscape forms due to the active morphogenetic processes and particularly focuse on the mass movements and their typology, according to the recent proposals of landslides classification.

The hydrogeological maps synthesize all the available geological and hydrologic data on a groundwater circulation model which – in addition to its intrinsic importance - is useful to identify that areas which are mostly exposed to landslide risk.