



Slope instability in a historical and architectural interest site: the Agrigento hill (Sicily-Italy)

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The impact of landslides are an issue for many urban cities and their cultural heritage, especially where both natural factors and human actions are join. Indeed in these cases, both the geological-geomorphological area predisposition and the continuous human actions increase the possibility occurrence of a landslide. In order to study these landslides and their natural hazard, a multi-disciplinary approach is necessary. Agrigento (37°19'18"N; 13°35'22"E), founded around 580 b.C. along the Sicilian southern coast, is an example of a possible impacts of landslides on cultural heritage.

This work discusses the geological, geomorphological and hydrological data results, performed in order to study and the monitoring the landslide on the north side of the Agrigento hill (335 m a.s.l.), on which is localized the antique cathedral (sixteenth century) and the old city. The hill geology is a typical regressive Plio-Pleistocene succession and their lithology are clays (Monte Narbone formation), calcarenites, sands and silts of the Agrigento formation. The landslide phenomena, current since 1315, involves a calcarenitic pack (Pleistocene), weakly cemented, highly porous, fractured and fissured (E-W). This phenomena from 1924, at different times, have produced various types of instability such as: falls, flows and complex movements. From 7 March 2005 have been reactivated fractures of the calcarenitic pack, already highlighted by studies in 1966. These fractures have triggered slope movements damaging the cathedral and the various historic buildings. In order to reduce the risk and thus safeguard the monuments and the activity in this area, carried out the several studies. Since 2005, the landslide is the subject both geological-geomorphological studies and a continuous monitoring, which have used different techniques of different disciplines: interferometric analysis, interpretation of aerial and satellite imagery, geophysical investigations, stratigraphic survey, etc. The results of this studies carried out the landslide kinematics and the lithology involved, in this way it was possible to suggest targeted intervention.

Keywords: rotational landslide, rockfall, hazard, architectural heritage.