



HAZARDS RELATED TO OPEN PIT QUARRIES IN THE KARST ENVIRONMENT OF APULIA, SOUTH-EASTERN ITALY

G. F. Andriani, N. Walsh

Dipartimento di Geologia e Geofisica, Università degli studi di Bari, Via Orabona 4, 70125
Bari, Italy

The Murge plateau (in the Apulia region of south-eastern Italy) is characterized by a Mesozoic sedimentary succession of regularly stratified fine-grained limestones. These materials exceed 6000 m in thickness, and are overlain by Plio-Pleistocene transgressive calcarenites. The peculiar geologic setting, and especially the widespread presence of carbonate rocks, determined the intense development of karst processes. Great part of the region is in fact characterized by karst morphology and the presence of a complex network of underground cavities and caves.

Many carbonate rocks in the area have been extracted in the past for construction purposes and as building materials. The intense extractive activity was principally localized in open pit quarries. Today, several quarries are still active, while, on the other hand, a number of them has been abandoned. Although Italian legislation provides quarry restoration at the end of exploitation, many of the abandoned quarries cause relevant environmental alteration and damages, and high hazards as regards slope instability problems and pollution. This paper deals mostly with the analysis of the factors controlling the different types of landslides (slides, falls, topples, etc.) in selected abandoned quarries of the Murge plateau. In particular, an effort will be made to evaluate the influence of the textural and geostructural features on slope stability in carbonate rock masses which are intensely affected by karst processes. Examples of rock slope failure mechanisms are illustrated at different scales. A new rock mass classification method for engineering design and a simple theoretical model for slope stability assessment is proposed.