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LANDSLIDE PROCESSES AND STABILITY ASSESSMENT IN WEATHERED CARBONATE ROCK CLIFFS

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Many sites of the Apulian coast (southern Italy) consist of carbonate rock cliffs affected by intense erosion and development of slope instabilities. Present morphology of the coastal cliffs was mostly produced by the quaternary tectonics, and the severe and selective action of erosion by sea waves. In addition, due to the carbonate nature of rock masses, the role exerted by development of karst processes has to be considered. The cliffs are involved in different types of landslides, with several, complex mechanisms of rock slope failure. Assessment of the overall slope stability, and evaluation of the potential hazard, are related to the morphologic, lithologic, and structural characteristics of the rock cliffs, and to local meteomarine condition and erosion by sea waves as well.

This article provides a critical review of the common modes of failure in weathered and soft carbonatic rocks; the different theoretical formulations that allow predictions about the behavior of rock slopes are also examined. Examples of slope hazard indicators and mass movement typologies are in particular illustrated along a typical apulian area (stretch of Murgia coastline south of Bari).