Geophysical Research Abstracts, Vol. 9, 00207, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-00207

Some interesting karst landforms in Miocene and Quaternary carbonate rocks along the central-western coast of Sardinia (Italy)

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At Punta Funtanas, close to Capo Frasca (central-West Sardinia), in some small coastal limestone outcrops a couple of localised but interesting karst landforms have been documented. In the area Miocene limestones are covered with Quaternary aeolian calcarenites and basalts. The Miocene carbonates form a shore platform, reaching a width of 20-50 m and located at approximately 5 m a.s.l. This relatively flat area is characterised by a very intense corrosion that has produced extremely well developed potholes fringed by sharp ridges. These landforms can be put in relation with the vicinity of the sea and related marine spray, leading to typical coastal karst phenomena. Among the most interesting landforms some more or less large and deep regular pits have to be mentioned. Three of these, situated close to each other, are all 5 meters deep and connect to a sea cave underneath. They do not appear to be controlled by fractures. Their development can be explained in several ways, comprising condensation-corrosion from below (cupola in the cave), erosion by rotating stones in potholes and kamenitze during sea level highstands and biokarstic processes, or a combination of all those. The altitude of their top, at more or less 5 meter a.s.l., is consistent with their genesis by rotating stones moved by wave action during the Tyrrhenian highstand, dated 125,000 B.P. The fact that below some of these pits basalt boulders are always present, and some other similar vertical shafts rise from the cave and are choked by these volcanic rocks also suggest the possible role of these dark boulders in the formation of the pits. The fact that they locally cover the high albedo limestone could induce condensation processes, and alteration of the silicates can lower pH and thus accelerate carbonate dissolution.

In the aeolian calcarenites some other curious cylindrical pits occur. These have smaller diameter, can reach 7 meter in depth and seem perfectly regular in shape. On the bottom some small pebbles have always been observed, suggesting their formation by rotational erosion. Nevertheless, the question how these pebbles could have been moved at least occasionally remains unanswered, because sea level has always been sensibly lower since the deposition of these wind deposits.

A detailed morphological study of all these peculiar landforms aims to better understand the genesis of this rather small but unique coastal karst landscape.