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The mining and quarrying activity and the destruction of the karst landscape: some significant case studies in Italy

L. Laureti (1)

Dipartimento di Scienze della Terra, University of Pavia, Italy (laureti@unipv.it / Fax: +39 382 985890)

In Italy the kart environments represent nearly half of the mountainous areas, with typical aspects characterized by strong articulation of the relief, often induced by recent tectonic evolution, with closed depressions and plateaus, steep slopes, sharp interface soil-rocks and soil sediments inside the fissures and rock cavities. Moreover a large variety of karst units can be recognized, from high mountains to coastal sides, from Palaeozoic limestones to Miocene evaporitic rocks.

From the middle Olocene the human impact in the italian karst areas cleared the original extensive sclerophyllous forests in order to utilise space for grazing and agriculture, but favoured in this way the erosion of the soil cover and, in time, caused a nearly complete desertification of many mountain slopes. Human pressure in karst areas modified also the local climates and the hydrological behaviour of the same ecosystems.

The forms of impact were and are represented by slope terracing for intensive agriculture, large use of fertilizer and pesticides, stocking of bio-masses of cattle, pigs and chickens in small areas, opening of very large quarries and great mines, besides other interventions, as development of urban and industrial settlements, building of roads, railways, tunnels, dams for artificial basins, creation of waste deposits.

Among all those forms of human impact, the mining and quarrying activities are responsible of high deterioration of the karst environment as a consequence of great rocks excavations and movements, together with metal polluted waters leaking.

After the closure and the abandonment of the nearly all Italian metal mines, especially

in Sardinia but also in the Alpine ore districts, the quarries excavation is really the main threat towards the Italian karst areas, because of the increase of the stony materials international market. By this regard, in this paper are showed the case studies referring to the Lombard Prealpine karst plateaus (where many interesting caves were destroyed) and to the karst systems of the Apuane Alps (Tuscany), where the quarries of the famous “Carrara marble” endangered the same great “Antro di Corchia”, today preserved by the creation of a natural park.