



Pleistocene mixed volcanoclastic-carbonate deposits at the western margin of the Apulian Foreland (Ostuni, Southern Italy), and their palaeo-environmental significance

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The Apulia Platform is a thousands meters thick Cretaceous carbonate sequence which, since the Oligocene, became the foreland of the Southern Apenninic Chain of Italy. During the early Pleistocene, the Apulian Foreland was dissected by direct faulting into horsts and grabens; this structural setting produced the establishment of a shallow marine carbonate environment. As a consequence, carbonate deposits started to be deposited and to cover shore platforms around, and on top of, the horsts. Later on, the Apennine Chain and the central sector of the foreland, the Murge High-plains, emerged due to uplifting of the area, whilst the edifice of Mount Vulture began its volcanic activity. Eventually, during the middle and the late Pleistocene, Apulia was brought to its present conformation. The area around the town of Ostuni, in the southeastern Murge, is intensely affected by karst processes which resulted in the formation of some tens of karst caves. Many of these are of remarkable importance for the palaeoethnology and the archaeology of the Mediterranean basin, since several remains have been found therein. To provide an example, the cave at S. Maria di Agnano hosted three Upper Paleolithic (Gravettian) burials; one of these (named Ostuni 1) is a pregnant woman preserving almost all the fetal remains, which makes it an extraordinary discovery. History of the occupations of the karst caves in the Ostuni territory, integrated by geological, morphological and karst data, may provide useful information for the palaeoenvironmental and palaeoecological reconstruction during the Quaternary in southern Italy. The mixed volcanoclastic-carbonate deposits which are the object of this study have been found near the cave of S. Maria di Agnano, overlying the Cretaceous carbonate bedrock where the cave opens. The deposits are

little cemented and strong weakened. The volcanic materials are mainly represented by pumice, scoria, feldspar, feldspathoid and pyroxene. The petrography features of the grains suggest a volcanic activity contemporaneous to the sedimentation of deposits. Besides the volcanic materials, shells of benthonic forms, and particularly of gastropods and bivalves, are very common in the deposits. Shells are generally intact and very abundant, especially as regards the smallest exemplars. Whitish soft nodules (probably calcium sulphate-carbonates) are also present. Sedimentology and stratigraphy of the deposits cropping out along the Agnano slope have to be examined taking into account also further elements: among these, the Quaternary sea level changes in the area, the resulting effects on the karst caves, and the presence of other deposits, starting from eolianites on nearby slopes. The latter, entirely consisting of carbonate grains, are referred to the early Pleistocene and do not contain any volcanic materials. This paper presents some preliminary considerations on the mixed volcanoclastic-carbonate deposits, in the attempt to include them within the framework of the overall geological and palaeogeographical setting of the Ostuni area. Based upon the data so far collected, the mixed deposits might be referred to the end of the early Pleistocene or, more probably, to the middle Pleistocene, and would represent littoral shelf (nearshore) facies, with contribution of volcanic materials likely deriving from the activity of Monte Vulture.