6th YOUNG GEOMORPHOLOGISTS' DAY
Geomorphology for Society
from risk knowledge to landscape heritage
Cagliari, 28-30 September 2015

RELATIONSHIPS BETWEEN MORPHOSTRUCTURAL SETTING AND KARST LANDSCAPE OF ALBURNI MTS, SOUTHERN ITALY

Simona CAFARO [1,2], Erwan GUEGUEN [3,4], Marcello SCHIATTARELLA [1]

[1] Dipartimento di Scienze, Basilicata University, Potenza, simona.cafaro@unibas.it, marcello.schiattarella@unibas.it
[2] Gruppo Speleo-Alpinistico Vallo di Diano
[3] CNR-IMAA, Potenza, gueguen@imaa.cnr.it
[4] Centro Altamurano Ricerche Speleologiche

The Alburni Mts. represent one of the most important karst features of southern Italy, with about 250 registered caves. They constitute an impressive carbonate massif of the southern Apennines, made of Mesozoic-Cenozoic limestone of the Campania-Lucania platform. The study area is located inside the National Park of Cilento and Vallo di Diano and is bordered by two major rivers such as the Calore and Tanagro rivers, along which many villages and small towns are located. This area has been repeatedly affected in the last centuries by the effects of the activity of a regional, partly blind, NW-SE-striking fault system responsible for several huge earthquakes.

From a morphostructural viewpoint, the Alburni Mts constitute a quite simple NW-SE-trending monocline, dipping toward SW. The massif covers an area of about 250 km^2 crossed by several sets of faults, mainly represented by NW-SE and NE-SW trends, often showing a clear morphological expression, responsible for the genesis of a squared framework of flat-topped ridges and flat-bottomed valleys at the top of the massif. Such faults have displaced part of an ancient flat landscape, testified by the widespread fragments of the southern Apennines summit palaeosurface, late Pliocene - early Pleistocene in age. The activity of the southern master fault of the Auletta basin (i.e. the Alburni Line) was surely prolonged till mid-Pleistocene times, age of one of the youngest orders of slightly rotated land surfaces.

This work aims at identifying the role played by tectonic structures on karst development and to put such structures in relationship with the remnants of erosional flat land surfaces, still recognizable on the carbonate massif. To this scope, a morphostructural analysis has been carried out to map morpholineaments, land surfaces, and other morphotectonic markers. Further, structural data about fault and fracture systems have been collected from both surface and subsurface survey, using in the latter case the extended net of explored karst caves. Our field results beside confirming the correlation between main faults and cave development, also point out to the role played by small-scale faults and pervasive jointing. In fact, karst mainly localizes along mesoscale fault and joint zones, as well as along bedding planes. The statistical analysis of 243 investigated caves is consistent with the cave end levels or terminations grouped in four different altitude ranges (450-500, 800-850, 1050-1100, and 1300-1350 meters a.s.l., respectively), which seem to be connected to the ancient base-levels of erosion in which palaeosurfaces developed. Such data suggest a discontinuous lowering of the (relative) erosion base level due to a polyphase tectonic uplift.