

VINCENZO IURILLI (\*), GIUSEPPE CACCIAPAGLIA (\*), GIANLUCA SELLERI (\*\*),  
GIOVANNI PALMENTOLA (\*,†) & GIUSEPPE MASTRONUZZI (\*)

## KARST MORPHOGENESIS AND TECTONICS IN SOUTH-EASTERN MURGE (APULIA, ITALY)

**ABSTRACT:** IURILLI V., CACCIAPAGLIA G., SELLERI G., PALMENTOLA G. & MASTRONUZZI G., *Karst morphogenesis and tectonics in South-Eastern Murge (Apulia, Italy)*. (IT ISSN 0391-9838, 2009).

The south-eastern border of the Murge plateau (Italy) is limited by the so-called «Soglia Messapica», which structurally separates the southernmost part of Apulia, the Salento peninsula, from the rest of the Apulian foreland. Here, the Murge plateau is characterized by a well defined karst landscape; in particular, the caves and their fillings represent potential geomorphological archives in which proof of recent tectonics may be found. Among the five caves considered in this study, the Grotta di Nove Casedde is the most representative; its forms have been analyzed in relation to the surface features. Hypogeous and surface data together have allowed us to individuate two tectonic phases recorded by fractures and breakdowns in speleothems. Analyses of the speleothems indicate that tectonic phases could have taken place before and after a phase of chemical deposition which is characterized by the growth of speleothems, aged 90 ka by means of Th/U analyses.

**KEY WORDS:** Neotectonics, Speleogenesis, Karst Morphosequences, Murge, Apulia (Italy).

**RIASSUNTO:** IURILLI V., CACCIAPAGLIA G., SELLERI G., PALMENTOLA G. & MASTRONUZZI G., *Morfogenesi carsica e tettonica nelle Murge Sud-orientali (Puglia, Italia)*. (IT ISSN 0391-9838, 2009).

Il margine sudorientale delle Murge (in Puglia, Italia) è indicato nella letteratura classica come «Soglia Messapica»; esso corrisponde alla zona di separazione strutturale tra la Penisola salentina e il blocco dell'avampaese apulo. Le numerose cavità carsiche ivi presenti costitui-

scono, con i relativi depositi, possibili archivi geomorfologici dell'attività tettonica recente.

Tra le cinque grotte studiate, quella di Nove Casedde è la più rappresentativa; in questo lavoro se ne analizzano le forme in relazione a quelle di superficie. I risultati mostrano concordanza tra dati ipogei ed epigei nell'indicare la ripresa dell'attività tettonica in almeno due fasi, evidenziate da fenomeni di fratturazione e crollo in speleotemi; analisi Th/U collocano le due fasi a cavallo della formazione di speleotemi di 90 ka di età.

**TERMINI CHIAVE:** Neotettonica, Speleogenesi, Morfosequenze carsiche, Murge, Puglia

### INTRODUCTION

In karst systems, hypogeous and surface landforms are linked despite their different vertical locations. As the hypogeous environment is relatively preserved by exogenous agents, its landforms may persist for a long time particularly in periods of low or no hydraulic activity. At the present time, most of the Apulian karst systems in the vadose zone are characterized by such conditions that may be considered at «low morphogenetic potential». Tectonics predisposes the speleogenesis, playing an important role also in the development of underground drainage networks and, thus, in the circulation of water (Knez, 1998). Its role in karst systems should be considered from two points of view: (i) as an energy input, both mechanic and potential, and (ii) as a morphogenetic agent, in case the karstic forms record the direct or indirect effects of shocks. The geomorphological data recognizable in caves have been useful in the reconstruction of recent tectonic behaviour, and of the series of seismic events occurred in both prehistoric and historic times (Forti & Postpischl, 1984; Postpischl & alii, 1991; Gilli, 1999; Gilli & alii, 1999; Lemeille & alii, 1999; Mocchiutti & D'Andrea, 2002). Therefore, also endokarst landforms must be studied arranging them in a network that represents a succession of morphogenetic events both depositional and erosive; this can be defined as the *morphosequence* (*sensu* Dramis & Bisci, 1998).

(\*) Dipartimento di Geologia e Geofisica, Università degli Studi «Aldo Moro», via Orabona 4 - 70125 Bari (Italia) (iurilli.uniba@gmail.com).

(\*\*) Geo Data Service s.r.l., Taranto.

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