



Genetic models of poljes in Sicily

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Geomorphological and geological studies have been carried out to contribute to the recognition of controlling causes and to the definition of genetic models for poljes of Sicily.

A polje is a kilometric closed depression developed mainly on karst rocks, with a conspicuously flat and alluviated bottom affected by intermittent flooding. A polje is usually characterised by relatively steep slopes enclosing an almost perfectly horizontal floor, caused by lateral solution planation related to flooding events. The origin of a polje is due to dissolution of the land surface, although geological structure generally influences its genesis. These large depressions are often elongated according to the direction of main faults, in consequence of a control due to tectonics or to differential erosion.

The performed researches have shown the existence of at least seven poljes located along the north-western (chain zone) and the southern (deformed foredeep zone) areas of Sicily. These large karst depressions are developed on Mesozoic limestone/dolomitic rocks within the chain zone and on Messinian gypsum rocks within the deformed foredeep zone. They are up to 4 km in length, can reach surfaces of 3-8 km² and are around hundred metres deep, with steep slopes and a flat bottom. Generally, they are open, occasionally active depressions and their genesis seems to be strongly controlled by structure. In particular, the studied poljes occur in two different geological/geomorphological settings: a) in graben-like tectonic depressions, where important fault slopes/scarps border the flat bottom; b) in complex depressions controlled by structure, where wide fault line slopes/scarps or large inclined degraded structural surfaces mark the poljes. Finally, landscape analysis leads to the proposition of two main genetic models in which the development of poljes is primarily due to tectonics or differential erosion followed by dissolution.