

Morphology, genesis and distribution of subsidence features in Dinaric karst in Slovenia

Andrej Mihevc

Karst research institute ZRC SAZU, Postojna, Slovenia (mihevc@zrc-sazu.si)

Dinaric karst is built mostly of Mesozoic limestones and dolomites. Because of large uninterrupted areas of karst, long geomorphic evolution and pure karst rocks there is not much sediment cover over karst. In spite of that the appearing of subsidence are very common. They are connected to parts of karst with specific geomorphic evolution, mostly contact karst and karst poljes where thick clastic sediments are deposited.

Contact karst is the karst that developed under the impact of allogenic streams. As the contact of surface and underground flow is sensitive in some past climatic conditions these areas were often zones of sedimentation. At present washing of sediments into karst prevails sedimentation causing subsidence in ponor zones of blind valleys or border depressions very frequent.

Karst poljes are the areas of karst where karst water table is close to the surface. This means low vertical gradient in karst and sedimentation or good sediment preservation. However, because of regular seasonal oscillations of water level, part of the year these sediments are in conditions where piping and subsidence can occur.

In both areas collapses occur after the floods or after drop of the level of karst water below surface, mostly close to ponors or estavelles. On other geomorphic settings where collapses occur like relict poljes, dry valleys or on levelled surfaces they occur after heavy rains, often connected with thawing of snow.

Collapse features are mostly cylindrical or steep-sided, usually a few metres to tens of metres in diameter. With time they transform to shallow depressions or funnel like dolines.

From the point of view of geohazard the main zones of subsidence are well known and respected by locals. Even land use in endangered zones is usual less intensive and the damage caused by them is relatively small. However with loosing traditional knowledge, disobeying recommendations and growth of settlements and infrastructure the likelihood of damage increases.