



Occurrences and facies relations of clastic karst deposits of Southern Germany

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Karst areas often exhibit a great many of clastic karst deposits resting upon karstified carbonate rocks or within karst cavities. These deposits originate from different geological sources. By means of Southern German localities clastic deposits from superficial and subsurface karst structures were studied.

Loamy karst deposits formed at or near to the surface of the Franconian or Swabian Alb often exhibit allochthonous components and a wide range of petrographic attributes, mostly they show close relations to the specific geology of the surrounding area. They have to be interpreted as “pedo-sedimentary complexes”. Main characteristic of these surface deposits is the mixing of different components at which corrosive, gravitative, pedological and several sedimentary processes are acting. Superficial dislocation of material and sedimentary conditions are controlled by the surface relief.

At first clastic endokarst sediments can be classified by their occurrences, subsequently by their depositional processes:

1. Deposits of the entrance cave facies (ECF) exhibit a heterogeneous spectrum of material due to local geology. Lateral transitions to surface deposits often can be observed.
2. Cracks and smaller cavities near to the surface (crack filling facies, CFF) mainly are filled with loamy to clayey sediments similar to those of the surface. Additionally, coarser particles can occur or they form local individual deposits.
3. Cave domains far from the cave entrance (inner cave facies, ICF) comprise silt, sand or gravel, higher amounts of clay are unusual. For the most part the environment is characterised by fluvial activity.

Due to main environments the crack filling facies and inner cave facies offer different portions of fluvial deposits, sediments formed by gravity action or percolation, deposits resulting from gradual decomposition of carbonate rocks and incision debris. Especially, the fluvial environment can be subdivided into several subfacies based on different hydrological conditions.

The present work considers a dynamic view to mobilisation, displacement and depositional processes acting permanently within a karst area. Varying connectivities to different extent were determined with respect to these facies or subfacies domains. During their transport through a karst area the clastic deposits are formed by erosion, selection of components, mixing, corrosion and resedimentation all the time. Consequently, an individual clastic sediment represents a temporal and spatial section within a cascade of different sedimentary environments or subfacies which are interconnected between the surface and the final depocenter.