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Geomorphic Analysis of the Karst Areas of the Niedere Tauern Region

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Some of the critical evidence for the Miocene and post Miocene uplift history of the Eastern Alps is derived from the Northern Calcareous Alps as it stems from the interpretation of sedimentological and geomorphic features that develop preferentially in karst systems. As such, evidence from the core of the Eastern Alps (around the principal divide in the Niedere Tauern region) is sketchy. Here, we present results from a study that investigates the neotectonic information preserved in karst features, in one of the few limestone regions in the core of the Eastern Alps. The field area is situated in the western part of the Niedere Tauern in permomesozoic cover that includes a range of carbonate karst. Field work in the 2013 summer showed that the region bears a series of morphological features that can be interpreted in terms of the young uplift history of the region. Mapping and computational analyses of the field area identified several planation surfaces that are aligned with cave levels. In one of these caves next to the summit of Steirische Kalkspitze 2459 m (notably one of the higher summits in the Niedere Tauern region), well rounded fluvial sediments were found that may be correlated with the Augenstein Formation of the Northern Calcareous Alps. The sediments are present in a phreatic section of the cave and are partly cemented onto the cave walls. One area shows sediments overgrown by a flowstone. A disequilibrium corrected U-Pb age of this flowstone is 682 ± 17 ka. This is clearly a minimum age for the deposition of the fluvial cave sediments and we interpret a multistage cave evolution involving deposition of the fluvial cave sediments which later on where eroded.