Ber. Inst. Erdwiss. K.-F.-Univ. Graz	ISSN 1608-8166	Band 9	Graz 2004

CENOZOIC RELIEF GENERATIONS IN CORSICA (FRANCE): DEM-ANALYSIS AND MORPHOTECTONIC EVOLUTION

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The crystalline (Variscan) part of Corsica represents a natural labora-tory for quantitative studies of surface processes in rugged mountain-ous areas. In general, steep relief in Variscan Corsica is found in pla-ces of strongest Neogene uplift. According to DEM evaluation, the relief in alkaline magmatic rocks is steeper than in the more common calcalkaline granites. Mapping of relief parameters yielded two gene-rations of paleorelief: an older paleosurface in the level of the summits and a younger, mid-elevated piedmont-type planation surface.

In Middle to Late Eocene times, a flysch basin on the SE Corsica margin was supplied from its uplifting western margin. A thermal event at ~30 Ma, testified by low-temperature thermochronology, was accompanied by surface uplift and relief formation in the course of flank uplift of the rift shoulder. Oligocene valley incision in the fault scarps to the W caused slow retreat and eastward migration of the drainage divide. After the climax of rift shoulder uplift (~30 Ma) the steep local relief in the W declined and subsided due to thinning and cooling of the rift margin, and became partly sealed by debris. Maxi-mum burial probably occurred in the Early Miocene during differen-tial counterclockwise rotation of Corsica. An uplift event at ~17 Ma caused tilting of the summit surface which had acquired its shape before this tectonic event. Untilted high-elevated paleosurfaces record uplift in the range of ~400 m by ~17 Ma in southern Corsica, but up to 1500 m in northern Corsica. In the SW of Corsica, stagnation of uplift in the Middle Miocene enabled formation of the piedmont paleosur-face, possibly by marine abrasion, whereas further to the NW more hilly relief developed. By 11 to 10 Ma, uplift of the eastern margin by up to 1000 m caused a tilt of the piedmont paleosurface to the SW. During the Messinian, additional even uplift of ~300 m affected entire Corsica. Residual uplift of less than 200 m since 5 Ma affected large parts of the Corsican coast, except of the NW and the NE where uplift was 3 to 5 times higher. Pleistocene higher uplift along the drainage divide was driven by isostatic compensation of glacial valley erosion.