

## **Quantitative dating of Pleistocene terrace deposits of the Kyrenia Range, northern Cyprus: implications for timing, rates of uplift and driving mechanisms in an incipient collision zone**

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The Kyrenia Range is a narrow E-W trending mountain range up to c. 180 km long by up to ca. 20 km wide, which is located <100 km south of the Anatolian orogenic plateau within the easternmost Mediterranean Sea. The Kyrenia Range structural lineament underwent tectonically driven uplift mainly during the Pleistocene in a setting dominated by incipient continental collision. The likely driver of the uplift was the collision of the Eratosthenes Seamount, an inferred promontory of north Africa, with a subduction zone located to the south of Cyprus. To help understand the tectonic processes driving the uplift of the Kyrenia Range several quantitative techniques have been used to date uplift-related terrace deposits exposed on the northern flank of the range. Uranium-series disequilibrium (U-series) dating provides ages of 127, 131 and 242 ka from solitary coral in shallow-marine deposits of the lowest terraces, whereas optically stimulated luminescence (OSL) dating gives ages of 53 and 76 ka from coastal aeolianite deposits. Prior to major tectonic uplift a shallow-marine carbonate-depositing sea existed in the vicinity of the Kyrenia Range. Some of the youngest pre-uplift marine carbonates yielded a reversed magnetic polarity, which constrains them as older than the last palaeomagnetic reversal (0.78 Ma). The combined evidence suggests that marine environments persisted into the Early Pleistocene, prior to major surface uplift of the Kyrenia Range lineament, which appears to have climaxed in the Mid-Pleistocene. The inferred uplift rates of the Kyrenia Range lineament range from >1.2 mm/yr during the Mid-Pleistocene to <0.2 mm/yr during the Late Pleistocene. The uplift rates of the Kyrenia Range appear to be, on average, significantly faster than those inferred for some adjacent regions of the Eastern Mediterranean during the Pleistocene (e.g. Lebanon coast; Anatolian plateau southern margin). The new data also suggest that the Kyrenia Range was uplifted contemporaneously with the ophiolitic Troodos Massif in southern Cyprus, which is in keeping with the model of regional-scale collision of the Eratosthenes Seamount with the Cyprus trench. The uplift of the Kyrenia Range lineament took place directly adjacent to the southern margin of the much larger Anatolian orogenic plateau, which was also mainly uplifted during the Pleistocene. The timing and processes involved in the uplift of the Kyrenia Range lineament are relevant to long-term processes of continental accretion and plateau uplift. On a longer timescale, the uplift of the Kyrenia Range in an incipient collisional setting can be seen as a step towards final accretion into a larger Anatolian orogenic plateau as collision intensifies. Terranes similar to the Kyrenia Range lineament may therefore exist embedded within the uplifted margins of orogenic plateaus in other areas of the world (e.g. southern Tibet).