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Tectonic and climate control on quaternary evolution of the north-eastern Sila Massif (ionian Calabria, Italy)

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Along all the Ionian flank of Sila massif (north Calabria, southern Italy) important uplift is demonstrated by raised Pleistocene terrace landforms. Terrace remnants preserved between the Coriglianeto River and Trionto River catchments have been mapped in detail thanks to field survey, topographic and air-photo analyses. Accurate stratigraphical logging has been performed to understand the possible depositional scenario. Chronological constrains derive from direct micropaleontological dating of deposits underlying terraces and correlating the surfaces to the neighbouring areas. During Late Pliocene, while Coriglianeto River was developing a wide conglomerate fan and cliff breccia was generated by the already exposed Sila relief, the sedimentary record show a progressive deepening trend testified by the deposition of fossiliferous beach sandstones grading upward into gray silty-clay referred to Gelasian-Sicilian. Deltaic and subordinate alluvial and beach depositional systems characterized the area during middle Pleistocene testifying the onset of regional uplift inducing strong variation in the Sila hydrographical network. During this phase Coriglianeto river has been piracied by Crati river, and Trionto river catchment developed generating wide deltaic systems. With the aim to derive long-term cumulative uplift rate each surface has been related to the oxygen paleoclimatic curve. We obtained uplift rate ranging from 0,56 to 1,11 mm/yr. This discrepancy is related to the activity of a E-W north dipping fault array (Cetraro-Rossano line) generating different depositional systems. Showing less

displacement, also younger terraces was involved in E-W normal faults activity. To obtain preliminary fault slip rate estimates, a forward modeling procedure was adopted to fit the best-preserved terrace transects, using a code based on standard dislocation theory and assuming reasonable scenarios of regional uplift.