

NEPTUNE TALKS

a series of online scientific lectures



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Marine Terraces as Indicators of Late Quaternary Tectonic Activity: Examples from Greece

Coastal regions above subduction zones are of great interest for studying the active tectonic processes if suitable geomorphic markers that allow us to quantify the deformation of the upper plate are present. Among the geomorphic markers palaeoshoreline indicators, such as marine terraces, are commonly used to determine rates and patterns of long-term rock uplift and tilting in tectonically active settings e.g. convergent plate boundaries. Marine terraces are uplifted palaeo-platforms of marine origin that formed in the coast as relatively flat and generally smooth surfaces that dip gently seaward bounded inland by a sea cliff. They are thought to form during periods of relative sea-level stability (e.g. when the rates of rock uplift and sea-level change balance each other) and are abandoned following sea-level highstands. The formation of a flight of marine terraces (a sequence of uplifted palaeo-platforms with step-like morphology) in a coastal region is the result of the interaction between long-term uplift and Quaternary cyclic sea-level fluctuations, associated with global climatic changes.

This presentation focuses on examples of long-term rates of tectonic uplift estimations inferred from uplifted marine terraces in coastal regions along the emergent fore-arc of the Hellenic Subduction Zone, where the African tectonic plate is subducting beneath the Eurasian plate. The role of marine terraces in defining long-term mean rates of fluvial incision is also presented.

27 January, 4:00 pm UTC+1

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