

Quaternary sciences –
the view from the mountains
 21-27 July 2011 in Bern, Switzerland

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Abstract Details

ID: 1113

Title: Tsunami impacts and their biochemical fingerprints in Dalaman (Turkey)

Content:

Throughout history, the dynamic interaction between the lithospheric plates along the Hellenic Arc caused the most damaging earthquakes that have affected the SW coasts of Turkey. Based on the variable and complex earthquake mechanisms, only some earthquakes are tsunamigenic while others are not. The low-lying coast of the Dalaman delta beach is a suitable place to preserve tsunami impacts. Under the 6th frame EU project, TRANSFER, a trench was opened in a slight depression behind the natural sand dunes, 270 m away from the present shoreline but outside the flood plain. Three landward-tapering sandy units (5-15 cm thick) were detected. Each unit overlies erosive contacts forming the top of non-marine clayey units. The lack of foraminifera in the samples is more likely due to taphonomic effects. Some quantitative estimation of marine biomarkers and specific deterministic ratios can also be successfully used to differentiate depositional environments by applying a number of concepts. In our case the candidate tsunami deposits were characterized by relatively lower concentration of elements. The remaining samples were mostly characterized by the higher concentration values of copper and oxide groups. The major lipid biomarkers (fatty acids and sterols) indicated biogenic contributions due to the presence of phytoplankton, zooplankton, bacteria and dinoflagellate species. A mixture of some marine and terrestrial biomarkers observed in the middle candidate tsunami unit can be explained by the accumulation of different sourced materials in the inundation zone together with tsunamigenic sands. In addition, the abundance of zooplankton markers in the middle candidate unit may indicate that the related tsunami occurred in the spring time because phytoplankton is an ample supply of food during the spring blooms.

Session: [47 Quaternary records of rapid coastal change \(co-seismic uplift/subsidence, storm impacts and tsunamis\)](#)

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