



Earthquake imprints on a lacustrine deltaic system: Example of the Kürk Delta along the East Anatolian Fault (Turkey)

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Deltas contain sedimentary records that are not only indicative of water level changes, but also particularly sensitive to earthquake shaking typically resulting in soft-sediment-deformation structures. The Kürk lacustrine delta lies at the south-western extremity of Lake Hazar in eastern Turkey and is adjacent to the seismogenic East Anatolian Fault (EAF), which has generated earthquakes of magnitude 7. In this paper we have reevaluated water level changes and earthquake shaking that have affected the Kürk Delta combining geophysical data (seismic-reflection profiles and side-scan sonar), remote sensing images, historical data, onland outcrops and offshore coring. The history of water level changes provides a temporal framework for the depositional record. In addition to the common soft-sediment-deformation documented previously, onland outcrops reveal a record of deformation (fracturing, tilt and clastic dykes) linked to large earthquake-induced liquefactions and lateral spreading. The recurrent liquefaction structures can be used to obtain a paleoseismological record. Five event horizons were identified that could be linked to historical earthquakes occurring in the last 1000 years along the EAF. Sedimentary cores sampling the most recent subaqueous sedimentation revealed the occurrence of another type of earthquake indicator. Based on radionuclide dating (^{137}Cs and ^{210}Pb), two major sedimentary events were attributed to the AD 1874-1875 EAF earthquake sequence. Their sedimentological characteristics were determined by X-ray imagery, XRD, LOI, grain-size distribution and geophysical measurements. The events are interpreted to be hyperpycnal deposits linked to post-seismic sediment reworking of earthquake-triggered landslides.