



Recognizing seiche and tsunami effects in lake sediments

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The lacustrine 70-15-ka Lisan Formation outcropping around the Dead Sea contains superb examples of slump folds formed in water depths of <100 m. New structural data from individual horizons demonstrate that several of these gravity-driven slumps are coaxially refolded and reworked by folds and thrusts verging both back up and then down the palaeoslope. The uppermost folds are often truncated. A progressive increase in reworking and shearing is developed up through the folded sediment, culminating in an upward-finning breccia layer that is capped by a thin, typically graded horizon of undeformed fine-grained clasts. We interpret this sequence as a seiche-related deformation. Based on the similarity of the structures in the Lisan Formation and on additional supporting observations we interpret zigzag-shaped sand injections in artificial lake deposits on the Eastern Mediterranean shore as evidence for a tsunami, possibly associated with the earthquake of 25 November 1759. If this interpretation is correct it supports the hypothesis that onshore Dead Sea Fault earthquakes can trigger tsunamis in the Mediterranean.