



## **A catastrophic event in Lake Geneva region during the Early Bronze Age?**

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Similarly to steep oceanic continental margins, lake slopes can collapse, producing large sublacustrine landslides and tsunamis. Lake sediments are excellent natural archives of such mass movements and their study allows the reconstructions of these prehistoric events, such as the 563 AD large tsunami over Lake Geneva (Kremer et al, 2012).

In Lake Geneva, more than 100 km of high-resolution seismic reflection profiles reveal the late Holocene sedimentation history. The seismic record shows a succession of five large lens-shaped seismic units (A to I), characterized by transparent/chaotic seismic facies with irregular lower boundaries, and interpreted as mass-movement deposits. These units are interbedded with parallel, continuous and strong amplitude reflections, interpreted as the 'background' lake sediments. The oldest dated mass movement (Unit D) covers a surface of 22 km<sup>2</sup> in the deep basin, near the city of Lausanne. This deposit has an estimated minimum volume of 0.18 km<sup>3</sup> and thus was very likely tsunamigenic (Kremer et al, 2012).

A 12-m-long sediment core confirms the seismic interpretation of the mass movement unit and shows that the uppermost 3 m of Unit D are characterized by deformed hemipelagic sediments topped by a 5 cm thick turbidite. This deposit can be classified as a slump whose scar can be interpreted in the seismic data and visualized by multibeam bathymetry. This slump of Lausanne was likely triggered by an earthquake but a spontaneous slope collapse cannot be excluded (Girardclos et al, 2007). Radiocarbon dating of plant macro-remains reveals that the unit D happened during Early Bronze Age. Three other mass wasting deposits occurred during the same time period and may have been triggered during the same event, either by a single earthquake or by a tsunami generated by the slump of Lausanne.

Although the exact trigger mechanism of the all these mass-wasting deposits remains unknown, a tsunami likely generated by this event may have affected the installation of palafittic villages on the shore of Lake Geneva during the Early Bronze Age.

### References:

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