Stratigraphic singularity: An earthquake located off Jersey triggered the mudflow preserving the only loess outcrop actually known under the seas

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Abstract

A five meters long core sample, retrieved in 2007 from the Harve de Lesay (France), Latitude: 49°20'00N, Longitude: -178'88'15E and located between Jersey and the Cotentin Peninsula (France) has been studied using different techniques (image processing, granulometry, petrography, malacology, palynology and tentative dating).

Between the lower part and the top, the core is a yellowish loess, a black mud and a grey shelly formation. The basal formation, which displays a typical loess grainularity, is the only loess found anywhere in situ on the seabed worldwide. Elsewhere, this fragile sediment has always been washed out by the successive Quaternary transgressions.

The overlying mud formation, which displays all the characteristics of a mudflow, sealed up the loess deposit. Because this core has been sampled on the rim of a submarine valley located in front of a major onshore geological disruption (the Saint-Germain-sur-Ger transcurrent shearing), clearly associated with an active seismic zone, it is likely that the protection of the loess deposit from erosion was initiated by an earthquake that triggered the overlying submarine mudflow.