



## **Dating mass-transport deposits along continental margins affected by bottom currents**

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Dating submarine slides is important for three main reasons: 1) relating particular deposits to a known catastrophic event such as an earthquake, volcanic eruption or tsunami wave for which instrumental or historical documentation is available; 2) determining the failure recurrence, by assigning the age to multiple stacked mass-transport deposits in a basin to improve the assessment of geological risk; 3) understanding the relation among the slope failure and long-term changing parameters like sea-level fluctuation and oceanic circulation regime.

This contribution poses the conceptual problem in dating mass-transport deposits occurred along continental margins swept by bottom currents, where a variety of morphologies and internal geometries are observed in the stratigraphic record. Bottom currents may result in the deposition of sedimentary drifts against and up-drift of morphological irregularities associated to the failed masses. Furthermore, these currents can maintain the slide scar and the top of the displaced masses

devoid of younger sediment or even enhance erosional surfaces originally generated by the failure processes. All these factors make extremely problematic the assessment of the age of mass-transport deposits.

In order to assess the relative age of mass-transport deposits located in areas affected by bottom currents it is crucial to: 1) establish seismic-stratigraphic correlations to deeper water areas, commonly impinged by relatively slow bottom currents, where sediment drifts bury failed masses; 2) define the bottom-current paleo-circulation by reconstructing the regional stratigraphic setting; 3) study in-situ organisms that colonize the mass-transport products swept by strong bottom-currents.