



Mass wasting-related Morphology of the Southern Central Chilean continental Margin - quantitative Comparison with other active Margins

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Offshore Southern Central Chile (35-42°S) large segments of the lower continental slope are shaped by mass-wasting events. The quantitative assessment of these features allows the comparison with well-studied cases elsewhere in terms of rheology, process dynamics and - ultimately - their implication for the tsunami hazard of the Chilean coasts. The cases to compare with are the continental margin of Oregon and the Pacific margin of Central America (Nicaragua and Costa Rica). Offshore Oregon, mass wasting events are visible as detached blocks which lie on top of the trench fill, have some 50-100 km² areal extent, maintain a part of their post-failure cohesion and produce high and steep headscarps. This particular segment of the margin is known for having produced historic tsunamis. An Olistolith, similar in size and morphological aspects is observed offshore central Chile.

Offshore central Costa Rica, the front of the margin wedge is heavily indented as a consequence of mass removal due to the interaction of the lower slope with seamounts which were formed at the Galapagos Hotspot are subducted along with the Cocos Plate. The resulting indentations resemble in size and their morphological appearance some large (600 km²) amphitheatre-shaped depressions which we see in swath bathymetry data of the middle slope of central Chile. Offshore Nicaragua, frontal oversteepening due to continuous frontal erosion leads to the formation of normal faults and mass wasting on the middle slope.

The Southern Central Chilean case is interesting because it represents a transition be-

tween a past erosional and a present accretionary phase. Today the trench is filled by sediments and frontal accretion as well as sediment subduction seem to be the prevalent processes which shape the lowermost slope, but a number of morphological features indicate oversteepening and extension, so some of the structures may be inherited from the erosional past.