

Mass wasting as major agent of shaping the morphology of the Southern Central Chilean continental margin

D. Voelker (1), W. Weinrebe (1), J. H. Behrmann (1,2), J. Bialas (2), D. Klaeschen (2)

(1) SFB574, IFM-GEOMAR Leibniz Institute for Marine Sciences at the University of Kiel, Wischhofstr. 1-3, Germany (dvoelker@ifm-geomar.de / Phone: +49-431-6002566) (2) Marine Geodynamics, IFM-GEOMAR

Offshore Southern Central Chile (35-42°S) large regions of the middle and lower continental slope are shaped by a variety of mass-wasting processes. The quantitative assessment of these features on the basis of swath bathymetry data of several cruises of RV SONNE and a recent cruise of RRS JAMES COOK allows the comparison with well-studied cases elsewhere in terms of forearc deformation and 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 offshore central Chile was a target of RRS JAMES COOK cruise JC23. We have obtained single channel seismic reflection data as well as wide-angle refraction seismic data which elucidate the internal structure of this feature. Also, gravity core samples were retrieved, which will probably allow to date the mass wasting event, and relate it to the subduction dynamics and climate history of this particular segment of the Chilean continental margin.