



Quantitative Analysis of submarine Morphology and Identification of submarine Landslides along the continental Margin of southern and central Chile

D. Völker

Institut für Geologische Wissenschaften der Freien Universität Berlin, Malteserstr. 74-100,
D-12249 Berlin, Germany (voelker@zedat.fu-berlin.de)

The submarine morphology of the Pacific continental margin of South America changes dramatically in relation to patterns of seismicity and parameters of the subduction process along strike. The detailed morphology of active continental margins and in particular the lowermost continental slope bears information about the subduction process, the seismological character of a margin segment, as well as its rheology and down slope transport processes.

Morphometric parameters describing the morphological attributes of the slope quantitatively (e.g. roughness, distribution of slump structures, aspect ratio) are used to decipher this mixed signal. As was shown at a number of active margins (e.g. Nankai, Costa Rica, Nicaragua, Cascadian), some parameters can be related to the seismic character (frequency, focal depth, magnitude of earthquakes etc.) and the potential seismogenic hazard of the coastal segment. This contribution intends to show the potential of this method for example locations along the forearc of Central and Southern Chile.

Submarine slope morphology is shaped fundamentally by submarine landslides. Thus, describing slope morphology is basically also the description of distribution, style and shape of submarine slumps. The identification, description and - if possible - dating of submarine landslides along the Chilean / Peruvian continental margin also serves an additional interest, as these processes possibly contribute (and, historically, seem to have contributed) to the multifold tsunami risk along this vulnerable coast. Several landslide events are proposed and described.

The poster presents first results of an upcoming project which aims to integrate swath bathymetry data of German and US-American cruises into a comparative study covering the continental slopes of Chile and Peru. This project forms part of a scheduled larger network of modular projects called COastal Seismic and Tsunami Hazard along the Andean Forearc (COSTHAF) which deals with various aspects of the seismic segmentation and potential tsunami hazard along this coast.