



Drilling and monitoring of natural and man-made landslide trigger mechanisms at the Ligurian slope (Mediterranean Sea): the tsunamigenic 1979 Nice Airport landslide, southern France

Achim Kopf and the IODP 748-full2 proponents Team

University Bremen, MARUM, Bremen, Germany (akopf@uni-bremen.de, +49 421 218 65805)

Concerning geohazards, the current IODP Initial Science Plan expiring in 2013 refers mainly to earthquakes and gas hydrate dissociation. However, submarine landslides represent a major societal threat and an exciting research target given the wealth of trigger mechanisms and their interaction at both active and passive ocean margins. Hence a mission-specific drilling proposal at the Ligurian Margin off Nice (Eastern Mediterranean) was submitted recently where a large number of trigger mechanisms of slope failure can be addressed in a small area, e.g. seismicity, sedimentary/tectonic loading, creep of weak clays, groundwater-charging as well as man-made construction. Drill sites aim to characterize the metastable slope beside of the former collapse structure, and the re-deposited material partly occupying the present-day landslide scar. The target depth at each site will provide reconnaissance data and characterization of the underlying strata down to ~150mbsf. Geotechnical drilling (coring, in situ sonic CPTU) will identify mechanically weak vs. strong layers, hydraulically active horizons, and zones of overpressure owing to groundwater-charging or vertical loading. Long-term objectives include borehole observatory installations and monitoring of the governing physical parameters affecting slope failure (pore pressure, temperature, strain, seismicity) in this socio-economically relevant part of the French Riviera. Joined national funding (e.g. as pilot studies such as seagoing missions, small research projects), EU funding and other international collaboration may provide a huge step forward in landslide research, because even large-scale observatories on the seafloor or in the boreholes become affordable in the shallow water, ideally in real-time given that a cable can be deployed from shore. ECORD mission-specific drilling combined with an EU Integrated Project would provide the basis for a lighthouse project on geohazard research visible on a global level.