1 PhD and 1 Post-Doc Position in „Sediment Dynamics“ at ETH Zurich

For our new research group in “Sediment Dynamics” at the Department of Earth Sciences at ETH Zurich, Switzerland, and within the context of a Swiss National Science Foundation (SNF) Professorship, applications are invited for one PhD position and one Post-doctoral researcher position to participate in the joint research program “Dynamic Nankai Trough (Japan) and Swiss Molasse Basin: Investigating NeoTectonics, Paleo-Earthquakes and associated Geohazards”. In this 4-year SNF-funded research program, we will use geophysical surveying methods, scientific offshore drilling, state-of-the-art core analysis, and in-situ and laboratory geotechnical testing to study the geological record of earthquake-triggered subaquatic sediment instabilities in marine and lacustrine sedimentary archives to quantitatively constrain paleoseismicity and related geo-hazards. This multi-method approach will enable us to use subaquatic landslides and seafloor deformation structures as tools for quantitative paleoseismology and as "proxies" for reconstructing the neotectonic evolution of the investigated ocean margin and/or lake and their surroundings.

a) PhD Position (4 years): Western Swiss Molasse Basin Paleoseismology and Neotectonic activity: New constraints from the sedimentary archive of lakes

Starting with modern geophysical investigations (high-resolution multibeam bathymetry and seismic surveying), coring and subsequent sedimentological and geotechnical analyses in Lac de Neuchâtel, followed by other lakes in Western Switzerland, the student will investigate the subaquatic landslide history, slope stability conditions and soft-sediment deformation structures and how these relate to the seismicity and the neo-tectonic evolution of the Western Swiss Molasse Basin, which to date has no proven record of significant earthquakes, but where recent studies have revealed seismically-active faults that potentially may be capable of producing strong earthquakes.

A Master or Diploma degree in geosciences at the start of the project (1. October 2011 or soon thereafter) is required. Successful candidates are expected to show broad earth-science interests, ability to conduct this multi-approach PhD project in a team and should have good communication skills in English and ideally also in German and possibly French).

b) Post-Doc research position (4 years): Site effects and stability of underwater sediments upon earthquake shaking: a generic approach towards quantitative paleoseismology

The Post-Doc researcher is expected to develop an own research project investigating theoretical aspects of earthquake-induced underwater sediment destabilization by means of geotechnical and geological analog and numerical modeling experiments. This will be integrative to the two case studies (Nankai Trough, Japan – conducted by the principal investigator M. Strasser; and the Western Swiss Molasse basin – conducted by the PhD student, see above), providing the theoretical background and process-oriented means to quantitatively interpret and analyze results from those, and possibly also other study areas, where earthquake shaking upon underwater sediment and “subaquatic paleoseismology” can be investigated.

A PhD degree in Earth Science or Geotechnical Engineering or related fields at the start of the project (1. October 2011 or soon thereafter) is required. Successful candidates are expected to show broad earth-science interests, as well as interest in submarine-landslide and seafloor-deformation research. He/she should have the ability to work in a team and ideally have analytical and/or modeling skills in soil mechanics and/or earthquake engineering, and a proven record to publish results in scientific journals.

For further information, please contact Michi Strasser (mstrasser@marum.de; Tel:+49 421 218 65682), currently based at MARUM, University of Bremen, Germany. Starting October 1st 2011, SNF Professor in “Sediment Dynamics” at the Geological Institute, ETH Zurich, Switzerland.

Please send your application files by e-mail to Michi Strasser (mstrasser@marum.de). Application are being considered until the positions are filled.