Geophysical Research Abstracts, Vol. 9, 04132, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-04132

Comparison of sediment properties from two geological settings

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Submarine slides have been mapped on continental margins throughout the world, and they seem to occur in many different geological settings. The triggering and dynamics of submarine slides can differ from one region to the other, dependant on the properties of the involved sediments. In this study we discuss the influence of geological setting on the properties of the deposits in two different regions, the Storegga Slide (SS) area on the mid-Norwegian glacial continental margin, and the Chengbei area (CB) from river-fed setting at the Yellow River subaqueous delta, China.

A number of geotechnical boreholes have been drilled and sampled in the SS and CB areas. The main objectives of this study are to identify differences in sediment types and their properties in relation to the geological setting, in particular the difference between sediments in a glacial setting and a river-fed setting, and to assess the role of these differences in the potential for and mechanisms of submarine sliding.

Different geotechnical properties were found from different geological settings: River-fed sediments at CB area showed lower plasticity, compressibility and undrained shear strength. Glacial-fed sediments at SS area showed higher plasticity, compressibility and undrained shear strength. Both CB and SS are slide prone areas: Slides happened in weak marine layers in SS area, and unstable phenomena can be found in liquefied silty layers in CB area.

Acknowledgement

This document has been made possible thanks to the support from the European Science Foundation (ESF) under the EUROCORES Programme EUROMARGINS, through contract No. ERAS-CT-2003-980409 of the European Commission, DG Research, FP6.