SLOPE STABILITY ASSESSMENT OF THE TRÆNADJUPET SLIDE AREA OFFSHORE THE MID-NORWEGIAN MARGIN

D. LEYNAUD (1), J. MIENERT (2), University of Tromso, Norway
(1) dleynaud@ifremer.fr, Fax: (33)298224570; (2) Juergen.Mienert@ibg.uit.no

Large-scale submarine slides occurred during the Holocene on the continental slope offshore mid-Norway, north and south of the Vøring Plateau. The Trænadjupet slide event that affected an area of 14100 km² is located north of the Vøring Plateau. It occurred about 4,300 years B.P., 4000 years after the giant Storegga slide that affected an area of about 112,500 km². A slope stability evaluation was performed in order to explain why the sliding took place on a very gentle slope (1 degree). This was done first with the deterministic approach using the Limit Equilibrium and the Finite Element methods, for static, pseudo-static and dynamic cases. Then the probabilistic approach was applied using the limit equilibrium method with the 1st and 2nd order reliability methods (FORM and SORM) and the Monte Carlo simulation to include the parameter uncertainties (soils parameters, seismic loading). The Finite Element modelling indicates that the slide triggering impacted preferably the upper 40 meters of the sediment column. The trigger could have been caused by one large earthquake of magnitude larger than 5.8 (retrogressive failures) but cyclic loading due to several earthquakes could also explain the slide, affecting the shearing resistance in the NYK contourite drift unit (weak layer) by excess pore pressure generation.