

# **COSTA-Canada: a Canadian Contribution to the Study of Continental Slope Stability – an Overview**

By

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In 1929, 27 people were killed in a coastal village of Newfoundland by a tsunami possibly generated by a submarine landslide that was triggered by a major earthquake. This is some time ago, but now, Canada's continental margin and coastline is the focus of more and more attention as we see increasing economic activities in various fields including natural resources (oil and gas), transportation (port development), electrical transmission, and communication (fibre optics cables, etc...). It is clear that the major natural hazards threatening economic activities and populations along the Canadian coastline are earthquakes, submarine landslides and tsunamis. The goal of this project is, consequently, the assessment of continental slope stability along the Canadian continental margin, estuaries and fjords with respect to natural processes and human activity. It will be the Canadian contribution to major European effort on this very same topic that involves Norway, France, England, Italy and Spain. Over a period of four years, we will make comparison between well investigated sites in the Atlantic and the Pacific, develop new analytical approaches based on field, laboratory and numerical modelling of submarine landslides. To achieve our goal will require the establishment of a precise database, the integration of field (seismic surveys) and laboratory data (e.g. strength testing) in a 3 dimensional model that will represent the full extent of a submarine landslide hazard. Some aspects related to the transition from slide to catastrophic movements will also be evaluated with small scale physical models. This visualisation will be incorporated in a new approach to define the hazard and integrate it to a risk assessment methodology which will help us evaluate the risks involved, in a given marine environment, with regards to earthquakes, landslides and tsunamis. This project is part of a web which has emerged from exchanges with European colleagues (COSTA-Europe, J. Mienert co-ordinator) but also from researchers within project STRATAFORM. COSTA-Canada is funded by the Canadian Science and Engineering Research Council of Canada until 2003.