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Arctic coastal processes and hazards

G. Cherkashov (1), V. Rachold (2)

(1) VNIIOkeangeologia, St.Petersburg, Russia (cherkashov@vniio.ru / Fax: +7 812 1141470), (2) Alfred Wegener Institute, Research Unit Potsdam, Germany (vrachold@awi-potsdam.de Fax: +49 331 2882137)

The coastal zone is the interface through which land-ocean exchanges in the Arctic are mediated and it is the site of most high-latitude human activities. The coastal margin represents a complex interface of numerous processes and states, and this zone is extremely vulnerable to predicted environmental changes, such as decreased sea ice extent and thickness, sea level rise, increasing storm frequency, biodiversity destabilization, and anthropogenic stressors. These coasts are typically permafrost-dominated and exhibit rapid erosion with serious implications for ecosystems and communities, e.g. infrastructure damage, loss of housing, damage to hunting and fishing grounds, etc. (see Arctic Climate Impact Assessment (ACIA) – key finding #5).

Changes in the coastal zone will not only affect regional biological and human systems, but are also likely to exert influence on the global system though the degradation of coastal and offshore permafrost, which can lead to the release of greenhouse gases (GHG). Fluxes of sediment, carbon, and nutrients resulting from coastal erosion play an important role in the material budget of the Arctic Ocean.

This poster gives an overview of ongoing international circum-Arctic coastal activities, such as the IASC (International Arctic Science Committee) / IPA (International Permafrost Association) project Arctic Coastal Dynamics (ACD). An outlook on future activities which are currently underway within the framework of the 2^{nd} International Conference on Arctic Research Planning (ICARP II), the second phase of the IGBP-LOICZ (International Geosphere-Biosphere Program – Land-Ocean Interactions in the Coastal Zone) program and the International Polar Year (IPY) 2007/2008 will be provided.