



Changes in forcing factors affecting coastal and shallow water erosion in the future Arctic climate change projections.

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Driving factors of seabed and coastal erosion in the Arctic can be classified as thermal and mechanical. Thermal factors such as air and ocean temperatures affect the seabed and coastal ground temperatures. Mechanical factors such as ocean currents and surface gravity waves contribute to the seabed and coastal erosion due to shear stress. Due to polar amplification, the Arctic experiences strong increase in air and water temperature, sea-ice loss and changes in the ocean and atmospheric circulation, temperature and wind distribution. These climatic changes lead to changes in factors driving seabed and coastal erosion, which is expected to accelerate in the shallow Arctic regions such as the Laptev sea and East Siberian sea. In these regions, the coastal line to a large extent consists of frozen rocks, sediments and organic soils including ground ice. The increase of erosion rate of the coastal line will increase the release of organic and inorganic matter from thawed permafrost. Dynamics of thermal and mechanical drivers of seabed and coastal erosion in the present and future climate change (RCP8.5 scenario) simulated by the CMIP5 version of the MPI Earth system model and wave model WAM will be presented. Special attention will be given to changes in the air temperature, wind dynamics and development of new waves system in the “ice-free” Arctic and its role in the seabed and coastal erosion.