



SESSIONS EUCOP6_ 2023

Session title: Polar Coastal and subsea environments in Transition: Arctic – Antarctic perspectives

Names, affiliations and emails of the conveners:

Matt C. Strzelecki. University of Wroclaw, Poland; mateusz.strzelecki@uwr.edu.pl
Frederieke Miesner. Alfred Wegener Institute, Helmholtz Center for Polar and Marine Research, Germany; frederieke.miesner@awi.de

Mette Bendixen. McGill University, Canada; mette.bendixen@mcgill.ca

Michael Angelopoulos. Alfred Wegener Institute, Helmholtz Center for Polar and Marine Research, Germany; michael.angelopoulos@awi.de

Summary: Polar coastlines make up over one third of the global total and are among the most dynamic in the world. Due to climate change, polar coastlines are increasingly vulnerable to rapid change. Patterns of Arctic coastal change are mostly associated with decreased sea ice cover, which is leaving coasts exposed to waves and storm action for longer each year. Additional influential factors include coastal permafrost degradation, storm-surge flooding, and intensified sediment supply from glacierised catchments. These changes have wide-ranging impacts on circum-polar Arctic coastal communities through the destruction of culturally important sites and modern infrastructure. In the Antarctic region, accelerated deglaciation has exposed new coastlines where permafrost-related processes and fluxes of sediments from paraglacially transformed glacial landforms control coastal dynamics. Along the coast, permafrost transitions from terrestrial to submarine where its thermal state rapidly changes. Despite considerable research over the past decade, a great deal remains unknown about the nature and distribution of subsea permafrost. This session invites submissions that will improve our understanding of polar (Arctic and Antarctic) coastal dynamics on local and regional scales. We encourage submissions focusing on both sub-aerial and sub-aqueous processes driving changes to coastal morphology, as well as abstracts which discuss rates of change and socio-economic impacts. We also welcome contributions with new field measurements, mapping or modelling efforts, or process-understanding field and laboratory experiments relevant to permafrost at the coast and beneath the shelf seas. In addition, contributions may focus on sediment and microbiological processes affecting carbon stocks and greenhouse gas emissions, on the morphology of seabed features related to permafrost thaw or gas emissions, or on hypersaline permafrost environments, since salt transport can change subsea permafrost state and remains an important knowledge gap. The objective of our session is to provide a platform for discussions on various aspects of coastal change and its impact on the resilience of polar environments and societies. We particularly encourage contributions from members of ACD (Arctic Coastal Dynamics), CACCON (Circum-Arctic Coastal Communities KnOWledge Network), Permafrost Coastal Systems Network (Per-CS), Nunataryuk, and EO4PAC groups.