



Lead Author e-mail: [mat.strzelecki@gmail.com](mailto:mat.strzelecki@gmail.com)

**Title:** *The response of High Arctic coasts to the post-Little Ice Age glacier retreat and paraglacial landscape transformation - recent advances from Svalbard*

**Matt Strzelecki**<sup>1,2,3</sup>, Piotr Zagórski<sup>4</sup>

<sup>1</sup>*University Centre in Svalbard, Department of Arctic Geology, Norway*

<sup>2</sup>*Durham University, Department of Geography, UK*

<sup>3</sup>*Adam Mickiewicz University in Poznań, Department of Cryospheric Research, Poland*

<sup>4</sup>*Maria Curie-Skłodowska University in Lublin, Department of Geomorphology, Poland*

In contrast to mid and low latitude coasts, relatively little is known regarding the potential impacts of climate and sea-level change on High Arctic coasts. Indeed, many of the existing intellectual paradigms regarding the functioning of High Arctic coastal zone are now out-dated, based on descriptive geomorphology and a limited process-based understanding.

The pristine coasts of Svalbard provide a superb opportunity to quantify how High Arctic coasts are responding to rapid climate warming and associated changes in the cryospheric systems.

In this presentation, we summarize results of several coastal studies carried out by Polish and international research teams along paraglacial coast of Svalbard during the last two decades.

We reconstruct the post-Little Ice Age evolution of coasts in western, central and southern Spitsbergen to illustrate high variability in coastal zone responses to the paraglacial landscape transformation associated with the recent glacier retreat. The presented results document dramatic changes in sediment flux and coastal response under intervals characterized by a warming climate, retreating local ice masses, a shortened winter sea-ice season and melting permafrost.

Research was based on the combination of methods including aerial photogrammetric and GIS analyses, sedimentological tests of coastal deposits and field-based geomorphological mapping in Kongsfjorden, Billefjorden, Bellsund, Hornsund and Sørkapland.

The study highlights the need for a greater understanding of the controls on High Arctic coastal sediment budgets, especially given the potential for future accelerated warming and sea-level rise.

We also present the future research plans of SVALCOAST research group that was established to develop and unify coastal change research on Svalbard based on the network of Polish research stations.