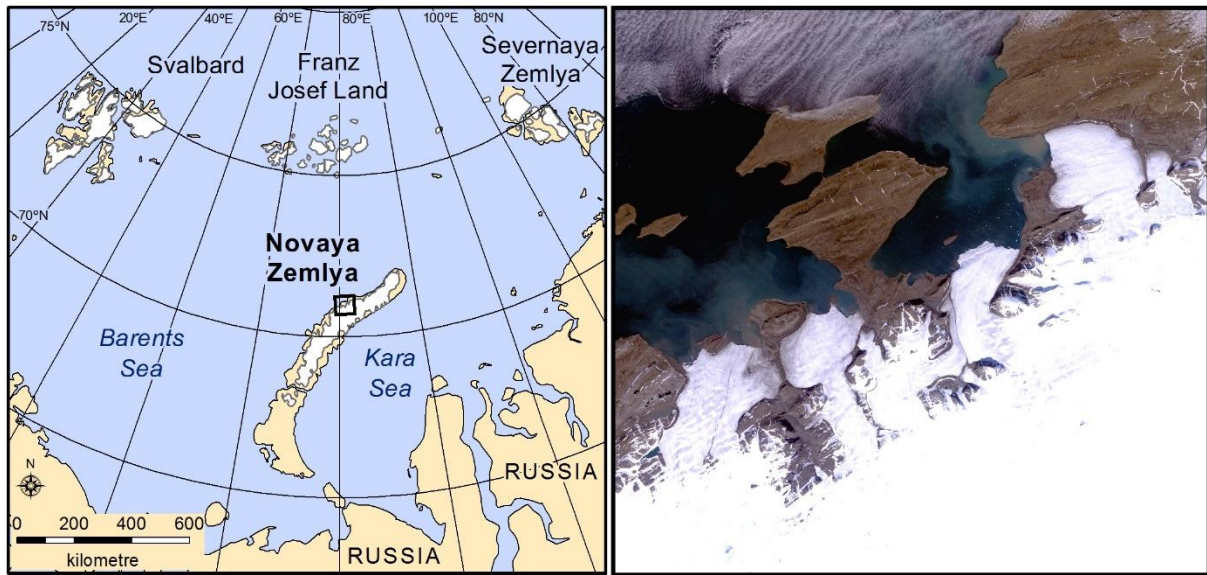


## Multi-decadal retreat of Novaya Zemlya outlet glaciers, Russian High Arctic

This project aims to quantify the decadal-scale retreat of marine-terminating outlet glaciers, located on Novaya Zemlya, Russian High Arctic, and to relate observed changes to climatic forcing.



Arctic ice masses have rapidly lost ice from the mid-1990s, through a combination of negative surface mass balance and accelerated ice discharge from marine-terminating outlet glaciers. In the past decade, the northern ice cap of Novaya Zemlya underwent substantial mass loss and accounted for 80% of all ice loss from the Russian High Arctic. Its major marine-terminating outlet glaciers retreated dramatically during this period and this has been linked to a reduction in sea ice concentrations around the archipelago. However, little is known about multi-decadal glacier behaviour on Novaya Zemlya and its potential impact on overall ice loss from the ice cap, which contains almost 18,000 km<sup>3</sup> of ice.

This work will:

1. Quantify outlet glacier retreat rates on Novaya Zemlya from the 1970s to present day, using a combination of satellite imagery sources.
2. Assess differences in glacier behaviour according to terminus type (land-, lagoon- or marine-terminating glaciers) and location (Barents versus Kara Sea coast), in order to investigate potential driving factors.
3. Evaluate observed patterns of retreat in relation to changes in climate, sea ice and ocean temperatures, as determined from remotely sensed and directly measured data products.
4. Identify any previously unclassified surge-type glaciers, which undergo periods of retreat and advance that are not directly related to climate forcing.

This project is a collaboration between Dr Rachel Carr and Ms Heather Bell, Durham University.