



THE UNIVERSITY *of* EDINBURGH

News Release

Issued: Friday 7 June 2019

Rapid retreat of Arctic coastline revealed in images from the air

Extreme erosion of Arctic coastlines in a changing climate – up to a metre a day – has been revealed with drone surveys.

Storms in the Canadian Arctic are washing away increasing amounts of coastal permafrost – frozen ground – which is exposed when sea ice melts during the summer.

The results highlight the ongoing change in the region, as a warming climate leads to longer summer seasons. Sea ice melts earlier and reforms later in the year than before, exposing the coastline and presenting more opportunities for storms to cause damage.

An international team of researchers led by the University of Edinburgh flew drone-mounted cameras over a section of permafrost coastline on Herschel Island, also known as Qikiqtaruk, off the Yukon coast in the Canadian Arctic.

The team mapped the area seven times over 40 days in the summer of 2017. Their results, from image-based computer models, showed that the coast had retreated by 14.5 metres during the period, sometimes more than a metre a day.

Comparison with surveys dating from 1952 until 2011 showed that the rate of erosion in 2017 was more than six times the long-term average for the area.

Around the Arctic, rapidly changing permafrost landscapes threaten infrastructure essential to local communities such as on Qikiqtaruk - Herschel Island, as well as significant cultural and historic sites.

The study, published in *The Cryosphere*, was carried out in collaboration with the University of Exeter, Alfred Wegener Institute, Germany, the GFZ German Research Centre for Geosciences, the Vrije Universiteit Amsterdam and Dartmouth College. It was supported by the UK Natural Environment Research Council, the National Geographic Society, and Horizon 2020.

Dr Andrew Cunliffe, currently of the University of Exeter's Geography department, who led the study, said: "As the Arctic continues to warm faster than the rest of our planet, we need to learn more about how these landscapes are changing. Using drones could help researchers and local communities improve monitoring and prediction of future changes in the region."

Ranked among the top universities in the world

Dr Isla Myers-Smith, of the University of Edinburgh's School of GeoSciences, who took part in the study, said: "Big chunks of soil and ground break off the coastline every day, then fall into the waves and get eaten away."

For further information, please contact:

Catriona Kelly, Press & PR Office, 0131 651 4401; 07791 355940; Catriona.Kelly@ed.ac.uk

Ranked among the top universities in the world