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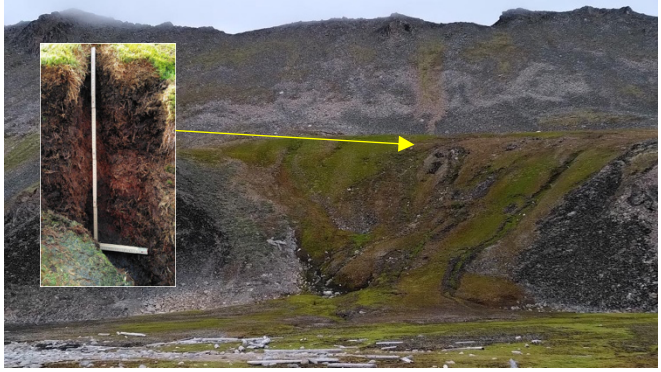

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Master's thesis opportunity

Impact of climate change and human activities on little auks (Alle alle) colonies in Ukaleqarteq, Greenland over the last millennium

Context: Little auks (*Alle alle*) breed on the coasts of Greenland. A large colony of several hundred thousand little auks at Ukaleqarteq, east Greenland (70.727° -21.572°) has been monitored since ca. 20 years, the main focus being on their adaptation to global warming and the impact of pollutants. However, the age of this colony is unknown as well as how past climate variations and the history of human activities have affected them.
These birds are ecosystem engineers: through their droppings, they transform their environment, leading to the accumulation of organic deposits, including peat. Various indicators preserved in these deposits (pollen grains, seeds, isotopes, trace metal elements, nitrogen, carbon, etc.) can be used to reconstruct the long-term evolution of this colony and environment. Previous palaeoecological studies have revealed variations in the pressure exerted by the birds on their environment over the last 1,000 years, in relation to changes in climate and human impact.

Goals: This project aims to characterise the relationship between testate amoebae living in moses and the intensity of bird impact and using a quantitative model of this relationship to reconstruct past changes in colony size over the last centuries. Surface samples and peat monoliths will be collected in the area of the colony and surrounding valleys.

Knowledge and skill required: High motivation. Interest for arctic ecology, excellent physical health, tolerance for cold, mosquitoes and life in total absence of luxury, willingness to use a shorgun in case of emergency.

Collaboration: Emilie Gauthier, Chrono-environnement Laboratory UMR 6249/CNRS, University of Franche-Comté, Besançon, France.

Keywords: Arctic climate change; seabirds; soil micerobiology; palaeoecology; human impact.

Working place: Laboratory of Soil Biodiversity, University of Neuchâtel

References: Des mergules et des Hommes : https://vimeo.com/289469043?login=true

Contact: Edward Mitchell, Laboratory of Soil Biodiversity, UniNe (edward.mitchell@unine.ch);

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