

PROJECT TITLE

Is the Arctic sea ice a source of small particles relevant to climate change?

PROJECT DESCRIPTION

The Arctic is experiencing unprecedented warming and sea ice loss, but global models currently fail to predict observed changes in sea ice thickness and extent due to significant model uncertainties. Atmospheric aerosol represent the largest source of model uncertainty since aerosol particles influence radiative forcing and thus climate because they alter the planetary albedo both directly by absorbing and scattering sunlight and indirectly by modifying clouds. The sea ice covered Arctic ocean has been proposed to be an important source of aerosol particles, however only few data exist to date to test this hypothesis. The year-long Multidisciplinary drifting Observatory for the Study of Arctic Climate (MOSAiC) provided the unique opportunity to observe aerosol processes in the central Arctic ocean during the 2019-20 season. You will analyse and evaluate data collected with the BAS sampler package during MOSAiC, which was deployed on the sea ice on a tethered balloon. You will analyse vertical profiles of meteorological parameters and aerosol particles in the context of other available MOSAiC data. You will evaluate the impact of atmospheric and sea ice state on vertical particle profiles, as well as assess the role of sea ice as a particle source in comparison with transport

SUGGESTED LENGTH – 4-6 months

JOB DESCRIPTION

In a first step you will quality control data collected with the BAS sampler package, which was deployed sporadically on the sea ice on a tethered balloon throughout 2019-20. You will produce and analyse plots of vertical profiles of aerosol particles and evaluate vertical and temporal changes together with other available data in order to understand the impact of atmospheric and sea ice state on vertical particle profiles. You will then assess the role of sea ice as a particle source in comparison with transport using an online back trajectory model. At the end of your project you will write up your findings in a project report.

WHAT ARE WE LOOKING FOR?

Strong numerical skills (knowledge of a programming language such as Matlab, Python or similar);
Enrolment in a quantitative STEM program (physics, chemistry, environmental sciences or similar);
Some exposure to/ interest in environmental science.