



Nordic Center of Excellence: Arctic Climate Predictions - Pathways to Resilient, Sustainable Societies (ARCPATH)

Yongqi Gao (1,2) and Astrid Ogilvie (3,4)

(1) Nansen Environmental and Remote Sensing Center/Bjerknes Center for Climate Research, Bergen, Norway (yongqi.gao@nersc.no), (2) Nansen-Zhu International Research Center, Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China, (3) Stefansson Arctic Institute, Iceland, (4) Institute of Arctic and Alpine Research (INSTAAR) University of Colorado, Boulder, USA

The Arctic is of fundamental importance in the climate system because of the key atmospheric and oceanic feedbacks that occur here. Added to this, global warming has caused intense changes in Arctic climate, with a rise in temperatures during recent decades that is close to twice that of other regions. These rapid changes are a challenge to communities already at risk from many other aspects that have to do with society as whole, in particular with regard to economic and political factors, as well as climatic effects. Loss of sea ice is particularly relevant, with a direct and immediate effect on Arctic communities, in the form of potential increased shipping (and attendant risks) as well as the complex issues involved in Arctic oil and gas exploration, together with effects on fisheries and marine mammals. The ARCPATH project addresses these issues by focusing on changes that will happen in the near future, with the overarching goal of fostering responsible and sustainable development. As well as considering specific aspects of climate and sea-ice changes, the project will focus on socio-economic changes in specific coastal communities in Iceland, Greenland and northern Norway. The project thus needs to take into account both natural and social science perspectives. ARCPATH will focus on knowledge gaps in: 1) improving Arctic climate prediction by reducing uncertainties originating from changes in sea ice and the ocean; 2) increasing understanding and reducing uncertainties regarding how changes in climate interact with many factors relating to local communities, including the development of local and international adaptation measures; and 3) supplying this knowledge as potential pathways to action through innovative adaptation plans for responsible development.