

DESCRIPTION FOR THE GENERAL PUBLIC

The Arctic plays an incredibly important role in the shaping of the earth's climate, including in Europe and Poland. Numerous studies have demonstrated that it is in the Arctic that climate changes happen first, and most markedly. The importance of the role of the Arctic in shaping climate has been understood since the end of the 19th century, and since then research carried out there has enjoyed a high level of interest. However, this interest has intensified in the last few decades (due, in part, to the Fourth International Polar Year), as we witness global warming dramatically manifesting itself, precisely in the Arctic.

About 15 years ago, the Intergovernmental Panel on Climate Change stated that man has made a significant contribution to global warming. This argument, however, has not been conclusively proven, and controversy remains over the extent of man's part in the process. In order to answer this last question we need to understand the scale of the natural changeability of the climate. A reliable evaluation of that scale is only possible with an analysis of climate changes in the pre-industrial era, which in global terms is assumed to be the period before the middle of the 19th century. As a result, research into the climate of the last millennium has taken on a new importance.

The fundamental objective of the project in question is the acquisition of the maximum possible knowledge on the significant warming of the Arctic climate that took place in the years 1921–1950, and on its causes. These matters are little understood, despite a real wealth of associated literature. In the period under study, the impact of man on the climate of the Arctic was small. A fuller understanding of the causes of that period's climate changes, which were similar in scale and progression to current Arctic warming, can help us to (among other things) determine future climate changes in the region and the world as a whole. An understanding of such changes is exceptionally important to human progress and urgently awaited by policymakers.

In order to achieve this goal, all available meteorological and environmental data needs to be gathered together from European libraries and archives, as well as worldwide data centres (Fig. 1). The project team will carry out queries at, among others, British, Norwegian and Russian libraries and archives. The collected data will be quality checked by analysing them for errors, and then either correcting them or removed them from the analysis. The data which pass this stage will be subjected to extensive statistical calculations. The results of these calculations will allow an accurate description of Arctic climate conditions for the period in question to be built with the help of diverse statistical techniques and climate models. Climate models are currently our most important tool for studies of the climate and climate change. The realization of the project's aims will also be a significant contribution to our understanding of the extent of the natural changeability of the Arctic climate, and this in turn will help us to evaluate the real impact of human activity on the climate of the region and other parts of the world.

ARCHIVAL DATA → DIGITIZATION → SUPERCOMPUTERS → CLIMATE RECONSTRUCTION



Fig. 1. Stages of research work leading to weather and climate reconstructions.