

# Abstract

Assemblages of diatoms preserved in sediments may directly reflect the floristic composition and productivity of water-column diatom communities, and they can be very good bioindicators of paleoecology and paleoclimatology. The objective of this thesis was to document the diatom flora of Faeroe Islands fjords and to explore the potential of diatoms as indicators of Holocene environmental changes in the Faeroe Islands. Some well-known worldwide benthic taxa, which can be found in Arctic, Subarctic, and sometimes also in tropical marine waters, and some unknown and relatively poorly studied taxa, are described. A formal transfer of two species, which should be distinguished as separate taxa at the species level, has been made.

Changes in the diatom species composition in the Skalafjord from a lacustrine to a marine flora indicate that the inner part of the Skalafjord was transformed from a lake that existed before 7700 years BP to a marine environment subsequent to this time. This transition was probably caused by a catastrophic event that took place between 7700 and 6400 years BP.

Based on diatom data from four cores temporal paleoceanographic and paleoenvironmental changes through the mid and late Holocene of the Faeroe Islands are described. The freshwater flora found in the marine environment between 1200 and 700 cal. BP is related to increasing precipitation and is suggested to be related to enhanced North Atlantic cyclone activity, which may be a typical feature of the Medieval Warm Period. Presence of the species *Actinocyclus normanii*, which is an indicator of trophic activity, may be related to the human settlement on the Faeroe Islands at 1200 cal. BP. Paleoenvironmental changes are analyzed using maximum-likelihood factor analysis (MLFA). The two factors generated are suggested to be related to oceanic influences in the region. Factor 1 is represented by a warmer-water diatom assemblage and is suggested to correspond to inflow of Norwegian-Atlantic Current water into the Skalafjord. Factor 2 is an indicator of a colder-water diatom assemblage that corresponds to inflow of Arctic-Norwegian Water Mixing (ANWM) water during the 4900-3200 cal. BP time interval.

**Keywords:** Northern Atlantic, Faeroe Islands, Skalafjord, Holocene, diatoms, environmental change, factor analysis, quantitative environmental reconstruction.