

Mid- to Late Holocene mineral deposition and peat decomposition in the Faroe Islands: geochemistry, mineralogy and tephra

The climate of the Faroe Islands is heavily determined by variations in important large-scale climate patterns of the North Atlantic Ocean like the AMOC and NAO. This makes the Faroe Islands highly interesting in a paleoclimatic context, with the possibility of tracing past variation in these patterns and assessing landscape impact from any change. Previous paleoclimatic studies on the Faroe Islands have been mostly focused on biological proxies and/or lacustrine sediments. To improve the spatial coverage and the range of proxies and archives used, a peat core representing the last ~8000 years from the mire complex of Mýrarnar is examined with the aim to reconstruct past variation in mineral deposition and peat decomposition. This is done through interpreting variations in elemental geochemistry determined by XRF analysis, mineralogy inferred from XRD, SEM-EDS and ATR-FTIR analyses, ash content and bulk density throughout the peat sequence. The degree of peat decomposition in the studied sequence generally increases with time, indicating that the Holocene climate of the Faroe Islands became gradually drier. Eight mineral deposition events are identified by increased lithogenic element and mineral input, with peaks dated to 7790, 5740, 4440, 4130, 3740, 2800, 1960 and 820 cal yr BP. At least three of these events have considerable contents of tephra, while the character of the other events remains unknown. It is possible that the uncharacterized events represent further tephra deposition. They could also represent storm events where remobilization of previously deposited tephra could make up much of the lithogenic input. To improve the paleoclimatic interpretation of the Mýrarnar lithogenic input record, further characterization of the mineral deposition events and future directions on differentiating climatic and volcanic signals are proposed.

