



Century-scale observations of sea-surface temperature from the Iceland-Faroe gateway

M. Miles (1,2), H. Hátún (3)

(1) Bjerknes Centre for Climate Research, Bergen, Norway, (2) Environmental Systems Analysis Research Center, Boulder, Colorado, USA (3) Faroese Fisheries Laboratory, Tórshavn, Faroe Islands (email: martin.miles@geo.uib.no, martin.miles@esarc-colorado.org, hjalmarh@frs.fo)

The Nordic Seas is a key region in the northern oceans, with exceptionally large and complex variability, owing to ocean-ice-atmosphere interactions across a range of time scales. Therefore, the apparent changes in the subpolar North Atlantic/Nordic Seas reported in recent years need to be considered from a longer time perspective. Documentation of multidecadal-to-century-scale variability derives from long instrumental, historical and high-resolution paleo-environmental records. Many parts of the Nordic Seas are well sampled hydrographically (e.g., Alekseev and co-workers). However, there are relatively few regular, continuous measurement series that extend more than a few decades - therefore, these data may not capture the full range of seasonal-to-multidecadal variability. An alternative may be to take advantage of island coastal station measurements that extend back into the 1860s. The number of high-quality, century-scale oceanographic and meteorological time series from Iceland, the Faroes and adjacent areas is remarkably extensive for a high-latitude, sparsely-populated environment.

This research quantitatively explores and analyses the century-scale records that exist from the Iceland-Faroe and Greenland-Iceland gateways between the North Atlantic and the Arctic Mediterranean Sea. The first objective is to establish the degree to which the coastal sea-surface temperatures (SSTs) may be representative of shelf and regional conditions (after, e.g., Hansen and Meincke). The second objective is to identify the variability and relationships between SST in different locations in and near the Iceland-Faroe gateway. The ultimate goal is to identify how these may be linked to interannual to multi-decadal scale variability in the Iceland-Faroe Front, Atlantic

water inflow and changes in the Faroe Current, e.g., east-west displacement. Here, we focus on the first two objectives, achieved using coastal SST measurements together with historical and modern hydrographical data from the Faroes and Iceland shelves and monthly surface air temperature data. Emphasis is on the winter season, when the coastal SSTs are found to be most representative for shelf and regional ocean-climate studies.