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Variability in a limited area model of Icelandic Waters

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The Icelandic waters are simulated using the MOM4 ocean model and atmospheric forcing from ECMWF's ERA40 reanalysis and the NCEP/NCAR reanalysis. Additionally open boundary conditions derived from the Southampton Oceanography Institute's OCCAM model are used to drive mass exchange in and out of the region. A control simulation based on an average of the reanalysis results (1957–2002) is compared to a simulation forced by atmospheric fields averaged over a period of positive NAO (1991–1995). The control simulation reproduces most features of the observed currents and tracer fields, but does show a few shortcomings—particularly SW of Iceland. The positive NAO simulation shows a strengthening of the North-Icelandic Irminger Current and the East-Iceland Current as well as somewhat weaker flows across the Iceland-Faroe Ridge.