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# Vortex formation by topography along the West Greenland coast

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Recent literature empathized the role of eddies shed near the West coast of Greenland in restratifying the water mass in the interior of the Labrador Sea (Katsman et al., 2004). Those eddies play a key role also for the ecosystem in this region, as eddy-kinetic energy maxima coincide with high level of primary productivity during the spring bloom in April-May.
Here, with a simple quasigeotrophic 3-layer model, we study the physical mechanisms responsible for the formation of those eddies. The analysis of the interaction of the flow with the shelf topography allows for understanding why vortices form, their shape, number, structure and geographical distribution.
Numerical results are in good agreement with the observations. The bottom current plays a fundamental role. According to our analysis, the variability in both the atmospheric forcing and the deep circulation must be considered to understand the eddy-kinetic energy distribution in the Labrador Sea. A strengthening of the bottom current can indeed explain the changes in the vortex population recorded in 1996.