Wintertime Mixed Layer Instabilities in the Iceland-Faroe front: Why they matter.

The Iceland Faroe Ridge is the widest continent-free gap that separates the Nordic and North Atlantic basins. Associated with the ridge there is a sharp topographically locked front, usually referred as the Iceland-Faroe front, which separates the cold fresh waters of the Nordic seas, from the warm and saline waters of the North Atlantic. This frontal system also represents the northern most extension of the AMOC, where its upper and lower branch come into close proximity to each other, due to topographic forcing.
Observations during wintertime have shown a mixed layer that reaches the bottom topography, indicating deep convection and mixing. Whereas the main balance of heat transport across the ridge in the large scale sense, is determined by seasonal buoyancy fluxes and winds patterns, mixed layer instabilities can have, nonetheless, a local effect in determining the areas of intense mixing, therefore areas of water mass transformation. In this work, the effect of topography on mixed layer instabilities is addressed, along with the application to the mechanisms that control the local transport across the front.

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