



The Norwegian Atlantic Current Observatory

Kjell Arild Orvik (1), Peter M Haugan (1), Karsten Kvalsund (2), Idar Hessevik (1), and Erik Magnus Bruvik (1)
(1) Geophysical Institute, University of Bergen, Bergen, Norway (orvik@gfi.uib.no), (2) Runde Environmental Centre

The Norwegian Atlantic Current Observatory (NACO) is a national infrastructure program funded by the Norwegian Research Council and hosted by the Geophysical Institute, University of Bergen. It includes investments in gliders, development of glider operation capabilities and eventually offering of service to the research community. During 2012 we have achieved experience with Seaglider operations in collaboration with Optimare. Currently the NACO is operational with Seagliders in the water along two transects; 1) The Svinøy section in the southern Norwegian Sea and 2) The Lofoten Basin along the 70th latitude. Both sections capture the entire Atlantic inflow toward the Arctic. The iRobot SG560 was deployed in the Svinøy section in May 2012 and successfully recovered in December after an eight transect mission. The SG559 was deployed in July and is scheduled to be recovered in late January 2013 after completing four 800 km crossings of the Lofoten Basin between Lofoten on the Norwegian coast and Jan Mayen Island. Both have been profiling to 1000m depth. Offshore of the shelf edge current (the Eastern branch of the Norwegian Atlantic Current) the observations of the Svinøy section reveal the slab like extension of warm and saline Atlantic water down to about 500m depth with the major baroclinic front and its associated frontal jet around the 2000 m isobaths. However, the observations show large variability of the baroclinic field demonstrating the unstable structure of the front. The baroclinic front has a subsurface structure with an associated 100m thick surface layer extending farther northwestward into the Norwegian Sea. Across the Lofoten Basin the Atlantic water is 800 km wide going down to about 800 m depth with the major baroclinic front toward the Jan Mayen Island. A striking feature of the observations is the vigorous eddy field along the entire sections revealed both in the hydrography- and velocity field. The eddy field is most energetic in the central Lofoten Basin associated with a deepening dome of Atlantic water down to about 1000 m depth and an anticyclonic velocity field. These findings substantiate a quasi-permanent anticyclone of Atlantic water in the central Lofoten Basin.