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Mesoscale variability of currents in the Rockall Trough

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The Rockall Trough, northeastern North Atlantic, is characterized by high mesoscale variability for an eastern boundary region. Both cyclonic and anticyclonic eddies are commonly found in the Rockall Trough, but questions remain as to their formation, development and movement. The region is important for the North Atlantic circulation at large because of its role as a passageway – and a potential choke point - for warm, saline water masses flowing towards the Nordic Seas. We have studied the mesoscale variability at the southern entrance to the Trough using in situ data from moored current meters, and geostrophic currents derived from satellite altimetry. A comparison of a year-long in situ time series (October 2003-October 2004) with satellite data showed high correlation (r = 0.86 for the zonal, and 0.61 for the meridional current component) between remotely sensed and directly measured current velocities in the upper kilometre of the water column. Similarly good agreement was found with Argo float drift velocities. A longer time series of satellite-derived velocities was used in order to study the current variability on eddy time scales. Here we present some statistics of the circulation in the Rockall Trough for the period 2001-2006. Some of the mesoscale features found here appear to be meanders in the northeastward current through the deeper part of the Trough, but other formation mechanisms are also discussed, as well as the link between these local phenomena and the larger scale circulation in the North Atlantic, and the implications for the mixing of water masses in the Trough.