North of this discontinuity, the anomalies are characteristically of short wavelength and large amplitude and can rarely be continuously correlated for more than five miles. Four areas of exceptionally complex character can be seen: around Rockall Island the anomalies have a distinctive pattern due to ring dykes associated with the eroded volcano and are associated with a positive 128 m gal gravity anomaly. Further south the other areas, which also form the shoals, may represent similar intrusive complexes although there are no major gravity anomalies associated with them. However, it is possible that these areas may be inliers of metamorphic rocks surrounded by lava flows.

Copies of the charts and the report can be obtained from Admiralty Chart Agents.

Drifting buoys in the Rockall Trough

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A series of drifting buoys, tracked by satellite and drogued at depths between 15 m and 165 m, have been released in Rockall Trough. The buoys were specifically designed for current measurement and have a low wind drag.

Results show a general northeastward drift from Rockall Trough into the Norwegian Sea via the Faeroe–Shetland Channel, as expected. The total transport of near surface Atlantic water through the Faeroe–Shetland Channel is estimated to be about $3 \times 10^6 \, m^3 \, s^{-1}$. Six buoys then travelled northeastwards along the Norwegian coast, but two buoys followed topography down into the Norwegian Trench, and became trapped in the mixing between warm Atlantic water and cool Norwegian coastal water.

Topographic guiding was also apparent in Rockall Trough, both at the Scottish continental slope and around the banks such as Rockall and Hatton, generally with shallow water to the right of the current direction. Away from steep topography, currents were weak except in eddies which were mainly found in two areas, northwest of Porcupine and around Anton Dohrn Seamount. Observed current speeds in the eddies were about $0{\cdot}5 \, m \, s^{-1}$ with periods between 1 and 6 days. Eddy radii ranged from 7 km to 50 km, comparable to the scale of temperature anomalies apparent on IR satellite images. This scale is about the internal deformation radius and the eddy formation mechanism is likely to include baroclinic instability. The small cyclonic eddies found near Anton Dohrn are probably shed from a Taylor column generated above the Seamount.

Tagging near surface water of Rockall Trough with drifting buoys has left us an impression of areas of strong circular eddy motion and regions of strong comparatively steady flow above topographic guiding, between which the flows have an irregular interweaving nature, and are perhaps the remnants of decayed instabilities and eddies producing large scale mixing.