

Neogene-Quaternary Contourite Deposition on the West Shetland Slope and Faeroe-Shetland Channel

DAMUTH, JOHN E., University of Texas at Arlington, Arlington, Texas; HILARY C. OLSON, University of Texas Institute for Geophysics, Austin, Texas

The Neogene and Quaternary sediments of the West Shetland slope in the Faeroe-Shetland Channel have been deposited and modified through complex interaction of downslope and parallel-to-slope depositional processes. The uppermost slope is dominated by mass-transport deposits, which were apparently deposited during glacial cycles when expanding ice sheets supplied large amounts of terrigenous sediment to the slope. In contrast, the middle to lower slope has been dominated by contour-current deposition, which have redistributed large amounts of sediments along the slope since late Oligocene time. A field of large migrating sediment waves and drift deposits up to 45 km wide extends continuously along the middle slope between 550m and 1200m water depths for ~175 km. The upslope limit of these waves corresponds to the upper limit published for the Norwegian Sea water, which flows southwestward through the Faeroe-Shetland Channel. Apparent migration of the waves is upslope and perpendicular to the flow of this watermass. Published current measurements in this region indicate strong southwestward currents up to 40 cm/sec above the sediment waves. A few submarine canyons occur on the upper slope and probably provide conduits to the basin for turbidity currents and related mass flows, which apparently followed channel-like pathways along the troughs of the sediment waves to the basin. In addition, a few thick (>100 m), regionally extensive mass-transport deposits also occur beneath the seafloor in the northeast (e.g. Miller Slide).