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Shelf flow crossing over a strait: Experimental JOSEPH KUEHL, University of Delaware, VITALII SHEREMET, NOAA — Motivated by the phenomenon of Scotian Shelf Crossover events (Bisagni et al. 1998), a problem of a shelf flow that is interrupted by a strait is considered. Laboratory experiments in a rotating tank with barotropic and baroclinic flow over flat and sloping shelves confirms that the flow is steered by the bathymetric contours and mainly circumnavigates the gulf. In order to jump across the strait, as suggested by earlier theories, the flow must have unrealistically high Rossby numbers. However, the near bottom friction relaxes the bathymetric constraint (Kuehl 2014) and causes the formation of a peculiar jet crossing the strait diagonally. Numerical solutions for realistic values of the frictional parameter reproduce the results of the laboratory experiments and are similar to the patterns observed in the satellite derived sea surface temperature fields (Smith 1983). Bisagni, J. J., R. C. Beardsley, C. M. Rusham, J. P. Manning, and W. Williams, 1996. Deep-Sea Research, 43, 1439-1471. Kuehl, J. J., 2014. Geophysical Research Letters, 41. Smith, P. C., 1983. Journal of Physical Oceanography, 13, 1034-1054.

Joseph Kuehl
University of Delaware

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