



A window on the deep ocean: Demonstration that the steep western Atlantic continental slope acts to filter out mesoscale noise and provides a quiet window into the deep circulation.

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In order to meaningfully monitor a large-scale phenomenon such as the meridional overturning circulation, we must face the challenge that most point measurements are dominated by mesoscale or even smaller scale variability, and hence do not reflect the large scale. Theory suggests that steep slopes should act to suppress the mesoscale variability in ocean bottom pressure, suggesting that steep continental slopes should be a good place to measure. This is fortunate, as the zonal integral of northward transport at a particular latitude and depth can be monitored using pressures on the continental slope at that depth. First, we show in a 1/12 degree resolution ocean model how that suppression of the mesoscale opens up a low-noise window in the very narrow band of the continental slope, and then we demonstrate using bottom pressure measurements from the continental slope near to Halifax, Nova Scotia, that the same suppression is observed in the real ocean, and that the observed variability is very similar in character to that seen in the model. There is, therefore, a practical way to monitor large-scale, deep ocean flows.