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Seaglider observations of vertical velocity in the Labrador Sea

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Five Seagliders spent a combined total of over 24 months in the Labrador Sea between 2003-2005. The hydrographic observations made by Seagliders can then be used to estimate vertical water velocities, in stratified regimes (observing internal waves), and mixed regimes (including wintertime mixed layers during deep convection exceeding 1000m deep). Across the seasons and from shelf seas to deep water, the vertical velocity regimes will be described, with particular focus on the velocity measurements during deep convection (Jan-Feb). New results from the high-resolution hydrographic measurements show striking horizontal density variability over tens of kilometers, containing sufficient buoyancy to restratify the region to the degree of stratification observed by Argo floats in April. Concurrently, the vertical velocity measurements show narrow, fast, downwelling plumes between broader and somewhat slower upwelling regions. These new measurements offer a compelling snapshot of deep convection, in both hydrography and vertical velocity, at unprecendented resolution.