

OCEAN OPTICS XXIV

Valamar Lacroma Dubrovnik Hotel | Dubrovnik, Croatia | October 7–12, 2018

<https://oceanopticsconference.org>

Wednesday, October 10

Poster Session 3

16:00–18:00

Poster 107

PHYSICAL SUBDUCTION AND SEQUESTRATION OF PARTICULATE ORGANIC CARBON IN THE NORTH ATLANTIC

The oceanic biological carbon pump encompasses a variety of mechanisms by which CO₂, fixed into organic form by phytoplankton, is transported from the sunlit surface layers to the interior ocean. Here, we investigate the physical arm of the biological pump; a process by which upper ocean density fronts within the eddy field generate submesoscale vertical velocities, injecting particulate organic carbon rich waters to depth. A suite of biogeochemical (BGC) Argo profiling floats, equipped to measure optical backscatter, are used to identify features of eddy driven subduction in the North Atlantic, a hot spot for carbon storage and biological activity. Once the characteristics of these water masses are identified, output from the Hybrid Coordinate Ocean Model (HYCOM) will be used to define trajectories over weeks to seasons. By combining observations and modeling, we will investigate how much of the subducted carbon may be sequestered on long timescales vs. the amount re-entrained into the deep mixed layer the following winter.

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