

Subduction and advective pathways of particulate organic carbon

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A large fraction of the ocean's particulate organic carbon (POC) pool consists of small, non-sinking particles and cells that are advected by currents and transported from the productive euphotic layer to the stratified pycnocline beneath. This advective pathway for POC can significantly impact the carbon budget, as well as heterotrophic organisms in the mesopelagic. It is estimated to be particularly important in dynamic frontal regions and seasonally stratified regions such as the OVSN study site. We propose to evaluate the underlying processes and transport pathways for this vertical POC flux. Our study will quantify the POC flux as a function of physical and biological factors including isopycnal slope, submesoscale dynamics, primary productivity, and the particle size spectrum within the OVSN region. This will be done by leveraging the OVSN observations and modeling frameworks in collaboration with the OVSN team.