**CONTROLS ON PHYTOPLANKTON AND PARTICLE DISTRIBUTIONS IN THE SANTA BARBARA CHANNEL, CALIFORNIA**

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In coastal waters, bio-optical properties and carbon fluxes are often determined by how advective currents, tides, internal waves, re-suspension, stratification, mixing and river outflows interact over various time and spatial scales. To understand what controls particle distribution in the optically complex and productive Santa Barbara Channel (SBC), satellite ocean color data for the larger SBC was complemented with highly resolved (~0.5 Hz, ~100m horizontally, ~0.5m vertically) glider-derived measurements of temperature, salinity, chlorophyll and CDOM fluorescence, spectral backscatter and dissolved oxygen obtained across the innershelf SBC over various seasons and stratification conditions. The data allowed detailed characterization of bloom developments, establishment of cross-shelf gradients of phytoplankton and their relationship to local and mesoscale physical forcings, formation of intermediate nepheloid layers, and the effect of storms in augmenting sediment re-suspension. While the seasonal cycle was responsible for much of the variability in optical properties throughout the channel, strong episodic events dominated variability in phytoplankton and optical backscatter measurements in the innershelf. Overall, variability in suspended particle loads was well explained by changes in significant wave height, whereas the occurrence of phytoplankton blooms was linked to changes in larger-scale circulation patterns, exemplifying the impacts of local versus remote controls on particle distributions.

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