



## Glider surveillance of physics and biology in the southern California Current System

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**ABSTRACT:** Since 2005, Spray underwater gliders have been used to sample sections across the southern California Current System (CCS). Properties measured are depth-averaged velocity and profiles of temperature, salinity, Acoustic Doppler Profiler shear, chlorophyll a fluorescence, and 750-kHz acoustic backscatter. Although slow and carrying a relatively small sensor suite, gliders observed multiple 350-700-km sections that reveal details of known elements of the CCS circulation like the California Current and Undercurrent as well as a previously undescribed undercurrent 100-200 km offshore. The long time series with high spatial resolution disclose the close link between fronts in physical and biological variables, both the main pycnocline front and secondary weaker but sharp fronts farther offshore. These fronts appear to organize chlorophyll and acoustic backscatter fields, particularly during spring. Much of the patchiness of chlorophyll is associated with vertical displacements of fields that are much smoother within potential density surfaces. The horizontal structure of both chlorophyll and spice (the dynamically passive variable formed from temperature and salinity) appear to be formed by mesoscale stirring.

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