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A Mercury Times Series in the Southern California Upwelling Region

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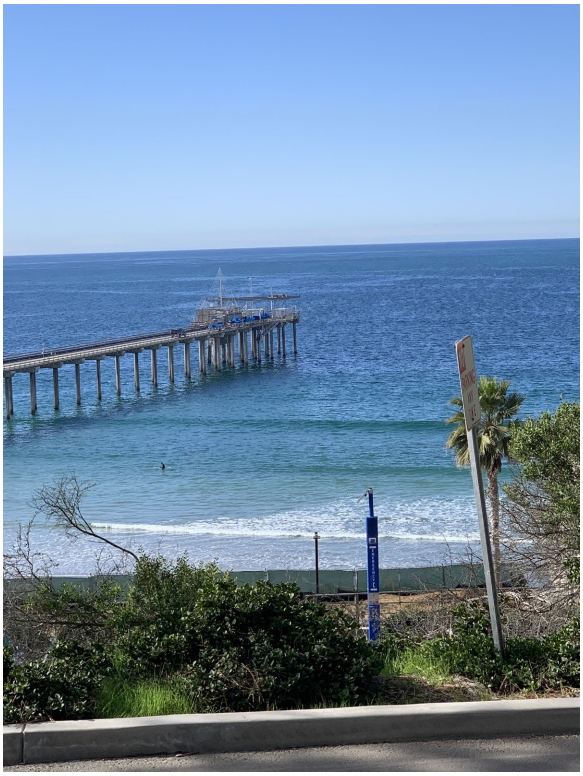

The Ellen Browning Scripps Memorial Pier (Scripps Pier) is an integral aspect of the research conducted at Scripps Institution of Oceanography in California, USA. Time series for various oceanographic properties have been sampled since the initial construction of the Scripps Pier, and more time series are established annually along with many short-term experiments. Records for temperature date back over 100 years, and shorter time series include dissolved oxygen, salinity, nutrients, and microbial community composition. This setting is unique due to the proximity of the La Jolla Submarine Canyon, which allows for the deeper (~180 m) waters to mix with surface waters, stimulating biological productivity. The Scripps Pier is ideal for studying mercury (Hg) speciation in surface waters due to the ability to sample two depths – deep (Canyon) and surface waters, which can help elucidate the processes that drive Hg methylation through high-resolution measurements. For this project, we have established a time-series of Hg speciation at Scripps Pier to isolate parameters that drive variability. Here, we present data from two years of weekly sampling for total mercury (THg) and methylmercury (MeHg) along with one year of weekly sampling dimethylmercury (DMHg). We find that THg concentrations average 1.21 ± 0.71 pM (range 0.32 – 5.08 pM), MeHg concentrations average 0.08 ± 0.59 pM (range 0.030 – 0.230 pM), and DMHg concentrations average 0.023 ± 0.023 pM (range 0.004 – 0.09 pM). We analyze trends in our data over time in conjunction with other time series to better understand MeHg production and cycling and biological uptake in coastal waters.