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South-Central Section - 57th Annual Meeting - 2023

Paper No. 20-5

Presentation Time: 9:20 AM

TRACKING DEEP-WATER OXYGENATION CHANGES OFFSHORE SOUTHERN CALIFORNIA

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Upwelling systems on eastern boundaries of subtropical oceanic basins are some of the most climatically dynamic regions of the oceans. Anthropogenic climate change has implications for these marine ecosystems, such as driving marine deoxygenation, driving ecosystem zonation, and driving the expansion of oxygen minimum zones (OMZ). There have been multiple studies evaluating drivers of marine oxygenation changes, yet there is still a need to understand surface processes and source waters influence on bottom-water oxygenation. The California continental margin is a well-studied upwelling system, where source water mixing of oxygen-rich subarctic waters to oxygen-poor subtropical waters is strongly influenced by the California Current, leading to one of the most primary production areas in the Pacific. Here we present data of redox sensitive trace metals to evaluate changes in the bottom water ventilation off the coast of Southern California due to climatic changes. Samples from several sediment cores were recovered via the R/V Roger Revelle Expedition RV2206 during the summer 2022. The sediment samples were digested applying a multi-acid digestion technique and analyzed together with pore water samples via inductively coupled plasma mass spectrometry. Interestingly, we observe a strong flux of specific heavy metals from the sediments into the overlying water column, likely impacting the benthic community and altering the primary metal-proxy signal at these sites with potential implications for the reconstruction of current ventilation through these geochemical and microfossil tracers. Overall, our preliminary results indicate fluctuations in the OMZ seaward expansion with implications for the oxygenation condition of the deeper water.

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[T9. Sedimentary Geochemical Characterization of Aquatic Oxygen Dynamics](#)

Tuesday, 14 March 2023: 8:00 AM-12:00 PM