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Chemical Interactions around Pulsing Soft Corals[1] MATEA SANTIAGO, University of California, Merced, LAURA MILLER, University of North Carolina at Chapel Hill, SHILPA KHATRI, University of California, Merced — A subset of sessile Octocorals (Family Xenidaee) actively and almost constantly pulse their tentacles. Experimental results indicate that the pulsing facilitates the photosynthesis of the symbiotic algae that live on the Octocorals. It is hypothesized that a significant source of the corals energy is the byproduct of the photosynethsis by the symbiotes. We model the photosynthesis of the symbiotic algae as a gas exchange of carbon dioxide to oxygen, where the coral tentacles are modeled as a source and sink of chemical concentrations. Additionally, the fluid-structure interaction of the pulsing corals, modeled using the immersed boundary method, is coupled to these chemical concentrations. We will present numerical simulations with varying parameters which have been used to gain insight to the complex interactions between the pulse driven fluid flow and the surrounding chemical concentrations.

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