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Pulsing soft corals generate sustained upward jets and regions of strong mixing between their tentacles. LAURA MILLER, JULIA SAMSON, Univ of NC - Chapel Hill, SHILPA KHATRI, University of California at Merced — Xeniid soft corals increase the local flows around each individual polyp as well as the whole colony through the collective pulsing behaviour of their polyps. This pulsing behaviour is thought to increase mass transfer of nutrients and gas exchange between the organism and its environment. We present a description of the flow fields around pulsing polyps and qualitatively compare actual flow data to both 2D and 3D immersed boundary simulations of polyps. We analyze the flows generated using Lagrangian coherent structure (LCS) and circulation analysis. LCS analysis describes the effective boundaries between mixing regions; particles found in one LCS might be restricted to a certain region of the flow field and never trade places with particles from another structure. Our results show that oppositely spinning vortices are generated during each contraction and expansion of the tentacles. Strong sustained mixing occurs within the polyp during the expansion phase. In addition, a continuous upward jet is sustained during the entire pulsing cycle.

Laura Miller
Univ of NC - Chapel Hill

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