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**Swimming response of marine copepod species to small-scale turbulent-like eddies** D. ELMI, D.R. WEBSTER, Georgia Tech, D.M. FIELDS, Bigelow Laboratory for Ocean Sciences — The swimming kinematics of three species of marine copepods (*Acartia tonsa*, *Temora longicornis*, and *Calanus finmarchicus*) were studied in response to small-scale turbulent-like eddies using a Burgers vortex model. A stable Burgers vortex structure is generated in the laboratory that simulated an individual turbulent eddy at dissipation rates between 0.002 and 0.25 $cm^2s^{-3}$, which copepods are likely to encounter in their environments. The vortex structure was generated in four intensities, plus stagnant flow conditions, to examine how copepods respond to the intensity and orientation of turbulent eddies in their habitat. All treatments were generated with horizontal and vertical orientations of the vortex axis (separately). Tomographic PIV was used to measure the three-dimensional flow field and to quantitatively assess that it matches the target parameters of natural turbulent structures. Three-dimensional trajectories were digitally reconstructed and overlaid on the vortex flow field to obtain swimming kinematics relative to the flow field. The results show behavioral responses that are species dependent. As the vortex intensity increases, the copepods are more likely to swim in circular trajectories around the vortex axis. Species dependent responses also include changes in relative swimming speed, path complexity, hop or escape frequency, and other measures that depend on their mechanosensory system and swimming mode.

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