Abstract Submitted
for the DFD19 Meeting of
The American Physical Society

Species and orientation differences in copepod behavior in a Burgers vortex D. ELMI, S. SOUMYA, D.R. WEBSTER, Georgia Tech, D.M. FIELDS, Bigelow Laboratory for Ocean Sciences — We use a Burgers vortex experimental model to study the interaction of two marine copepod species (*Temora longicornis* and *Acartia tonsa*) with a single turbulent-like eddy structure. Tomographic-PIV experiments were performed at small-scale to quantify the velocity field of turbulent vortices modeling those that copepods encounter in their oceanic habitat. Turbulence intensities are discretized into four levels corresponding to dissipation rates of 0.002 to 0.25 cm^2/s^3. Three-dimensional swimming trajectories are retrieved from two orthogonal camera perspectives and overlaid on the Burgers vortex velocity structure to identify individual swimming kinematics and behavioral differences. We use apparatuses with the vortex axis aligned in horizontal and vertical directions to argue that the copepods are sensitive to the directionality of the hydrodynamic signals. By comparing the behavioral changes in four turbulence intensity treatments and a control treatment, we provide a framework to identify trends in behavioral responses. Both species of copepods increase their relative velocity as the strength of the Burgers vortex increases and the trend appears stronger in the vertically-aligned vortex. Further, the number of circular-shaped trajectories around the vortex core increases with increasing strength of the Burgers vortex for both species, and the trend is stronger for *A. tonsa*. These trends, together with the statistical analysis, suggest that changes in oceanic turbulence intensity as a result of climate change would affect the distribution of copepods.

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Date submitted: 31 Jul 2019 Electronic form version 1.4