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Study of Turbulence Statistics in Large-Eddy Simulation of Ocean Current Turbine Environments SPENCER ALEXANDER, PETER HAMLINGTON, University of Colorado, Boulder — As ocean current turbines move from the design stage into production and installation, a better understanding of both oceanic turbulent flows and localized loading is needed by researchers and members of industry. The use of realistic ocean turbulence in Large-Eddy Simulations (LES) of ocean turbines is essential in obtaining realistic ocean turbine loading and characteristics. In this study, an ocean current turbine environment is simulated using the National Center for Atmospheric Research (NCAR) LES model. The inflow and boundary conditions are designed to represent conditions during an observational campaign at Admiralty Inlet in Puget Sound (Thomson, et al. 2012). Comparisons are first made between the LES simulation results and available measurements from the Admiralty Inlet, and further measures are then presented from the LES results, including vertical profiles of Reynolds stresses, anisotropy, turbulent loading, and two point correlations.

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