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A Lagrangian Turbulent Dispersion Model of Evolving Sea Spray Droplets Over the Ocean JAMES MUELLER, FABRICE VERON, Air-Sea Interaction Laboratory, University of Delaware — We have developed a turbulent Lagrangian model of sea-spray over the ocean. Our Monte-Carlo simulation follows individual droplets from ejection into the air until they reenter the ocean or attain a quasi-equilibrium state. The model includes a realistic surface wave spectrum, forming the bottom boundary. While suspended in the air, the droplet traverses an atmospheric boundary layer that includes a viscous sublayer, a wave boundary layer (WBL), and a stratified log layer. In addition, the droplet is subjected to turbulent velocities and turbulent scalars following the Kolmogorov-Obukhov-Corrsin theory. The droplet's velocity and evolution are solved using the complete, linear, unsteady equation of motion and the complete microphysical equations, respectively. The effect of temperature and humidity fluctuations on the evolution of droplet will be discussed, as well as the nature of turbulence in the marine boundary layer when following a droplet with inertia.

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