Abstract Submitted
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Turbulent Transport of Spray Droplets Near Realistic Multispectral Surface Waves[1] KYLE ROCHA-BROWNELL, University of Notre Dame, ROBERT JAQUETTE, FABRICE VERON, University of Delaware, DAVID RICHTER, University of Notre Dame — Functions governing the generation of spray and aerosols at the sea surface are often estimated using the so-called flux profile method, which requires only fixed-height concentration measurements. The simplest form of this method assumes a balance between spray emission and deposition, resulting in a simplistic power-law for vertical concentration profiles. The focus of this joint experimental-computational project is to evaluate the effect of multispectral waves on this power-law theory over a range of sea spray droplet sizes. Large-eddy simulations with inertial Lagrangian particles are used to resolve the turbulent transport of spray droplets around real multispectral wave data obtained from the University of Delaware Air-Sea Interaction Laboratory. During the simulation, concentration measurements are taken over this dynamic bottom boundary. For each case, the resulting concentration profiles are compared with that of the flux profile method. Agreement and discrepancies with the power-law theory, particularly as resulting from the finite inertia of the droplets, are discussed.

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