

Abstract Submitted
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Impact of Sea Spray on Air-Sea Fluxes¹ FABRICE VERON, JAMES MUELLER, University of Delaware — The contributions of sea spray drops to the total air-sea exchanges of momentum, heat, and mass remain an open question. A number of factors obscure any simple quantification of their contribution: the number of drops formed at the ocean surface and the per-drop contribution to the fluxes. To estimate these per-droplet fluxes, we present results from a large number of drop trajectories, which are simulated with a recently developed Lagrangian Stochastic model adapted for the heavy drop transport and evaporation within the marine boundary layer. Then, using commonly accepted spray generation functions we present estimates of spray fluxes which account for the mediating feedback effects from the droplets on the atmosphere. The results suggest that common simplifications in previous sea spray models, such as the residence time in the marine boundary layer, may not be appropriate. We further show that the spray fluxes may be especially sensitive to the size distribution of the drops. The total effective air-sea fluxes lead to drag and enthalpy coefficients that increase modestly with wind speed. The rate of increase for the drag coefficient is greatest at moderate wind speeds, while the rate of increase for the enthalpy coefficient is greatest at higher wind speeds.

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