

Abstract Submitted  
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**Modeling the structure and dynamics of a sea spray-stratified hurricane boundary layer**<sup>1</sup> YEVGENII RASTIGEJEV, North Carolina A&T State University, SERGEY A. SUSLOV, Swinburne University of Technology, Australia — Accurate modeling of the interaction between sea spray and a turbulent hurricane boundary layer is important for correct forecasting of the hurricane path and intensity. Here we applied a variable density (non-Boussinesq) E-epsilon turbulence closure model to describe the sea spray-stratified hurricane boundary layer structure and dynamics. The model accounts for the effects of variation of turbulent energy and turbulent mixing length due to the sea spray presence, and the spray inertia. The obtained results confirm that the influence of such variations is significant over the complete range of possible spray concentration values. It is shown that when the spray concentration is large the inertia effect dominates the momentum exchange close to the sea surface decelerating the airflow relative to the reference logarithmic profile. However, at higher altitudes the flow acceleration caused by the turbulence suppression is always observed provided that the spray droplets are sufficiently small. It was also found that the variable density model predicts a faster decrease of the drag coefficient with the flow speed than the Boussinesq model.

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Yevgenii Rastigejev  
North Carolina A&T State University

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