

Abstract Submitted
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Observational Study of the Nantucket Sound's Marine Atmosphere Boundary Layer with application of Monin-Obukhov Similarity Theory and Critical Layer Theory¹ ROBERT JAQUETTE, Univ of Delaware — Long term atmospheric data collected from the Cape Wind Meteorological Tower has been studied to further our understanding of the turbulent structure of Stable Marine Atmosphere Boundary Layers. Following the Monin-Obukhov Similarity Theory, we have normalized and plotted these results from the collected data in order to study the dependence of our data on the stability parameter ($\zeta = Z/L$) as concerns the concept of "z-less" stratification. Results from this study suggest that only the non-dimensional standard deviation of the air temperature and dissipation of the Turbulent Kinetic Energy follow trends of "z-less" stratification in very stable conditions. Whereas, on the other hand, the standard deviation for each wind component and dissipation of the temperature variance deviate from this concept, suggesting that "z-less" stratification is not applicable in general. Additional work exploring Miles Critical Layer Theory is underway with the intent to consider wave affects on the turbulence, which are not considered in Monin-Obukhov Similarity Theory. However, due to naturally short transitional waves produced from the shallow water depths around the tower (6.6 m), studying the wind components for coherence is complicated by the nondispersive nature of shallow water waves.

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Robert Jaquette
Univ of Delaware

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