

Abstract Submitted
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Interactions of Ocean Fronts with Waves and Turbulence¹ BAYLOR FOX-KEMPER, NOBUHIRO SUZUKI, Brown Univ — High resolution simulations and observations of the ocean surface boundary layer have revealed 100m to 10km frontal and filamentary structures in temperature and other properties worldwide. The formation and evolution of these features, through frontogenesis, instability, and frontolysis is an important and often poorly-simulated part of the climate system, yet fronts and filaments strongly affect surface layer dynamics and the transport of energy, momentum, and gasses through this layer. These features also dominate the transport of oil spills and pollutants over a wide range of scales. Analysis of a multi-scale, non-hydrostatic, large eddy simulation spanning 20km fronts to 5m turbulence will be presented. The theory of the interactions of the fronts with turbulence and surface waves will be illustrated, and the consequences of these interactions on frontal strength and tracer transport will be quantified.

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