Abstract Submitted
for the DFD17 Meeting of
The American Physical Society

**The effect of existing turbulence on stratified shear instability**[1]
ALEXIS KAMINSKI, WILLIAM SMYTH, CEOAS, Oregon State University —
Ocean turbulence is an essential process governing, for example, heat uptake by the ocean. In the stably-stratified ocean interior, this turbulence occurs in discrete events driven by vertical variations of the horizontal velocity. Typically, these events have been modelled by assuming an initially laminar stratified shear flow which develops wavelike instabilities, becomes fully turbulent, and then relaminarizes into a stable state. However, in the real ocean there is always some level of turbulence left over from previous events, and it is not yet understood how this turbulence impacts the evolution of future mixing events. Here, we perform a series of direct numerical simulations of turbulent events developing in stratified shear flows that are already at least weakly turbulent. We do so by varying the amplitude of the initial perturbations, and examine the subsequent development of the instability and the impact on the resulting turbulent fluxes.

[1]This work is supported by NSF grant OCE1537173.

Alexis Kaminski
CEOAS, Oregon State University

Date submitted: 19 Jul 2017 Electronic form version 1.4