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Structure Formation in stable stratified turbulence YOSHI KIMURA, Nagoya Univ., JACK HERRING, NCAR — Numerically it is widely observed that horizontally scattered pancake vortices are dominant structures in stably stratified turbulence. One of the fundamental properties of pancake vortices is that these strong enstrophy regions correspond to strong vertical shear regions. In this paper, we will propose a possible scenario for producing pancakes from random initial conditions. Our starting point is existence of vortex shear layers extended horizontally in stratified turbulence. Fincham *et.al* conjectured the so-called vortex network among the vortex layers in stably-stratified turbulence, and proposed the several ways of connections of vortex lines. One typical case observed numerically is that in which vortex lines go back and forth between a positive and a negative vorticitiy regions making loops. These loops are repeated several times as if they formed a "coil of vortex lines" which may be similar to an assembly of vortex rings. we have proposed that coiling vortex lines induces a strong jet penetrating the coil[1]. Because of such jets, we could expect that a strong local horizontal velocity exists which pulls and drives the parts of nearby vortex sheets. In our recent stratified turbulence simulations (512^3), we observed many dynamically active double-decker pancakes in the flow, which supports the above scenario.

[1] Y. Kimura & J.R. Herring: Diffusion in stably stratified turbulence, *J. Fluid Mech.*, **328** (1996) 253–269.

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