Nonlinear Processes in Geophysics Discussions

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Comment on npg-2021-1

Anonymous Referee #2

Referee comment on "Enhanced internal tidal mixing in the Philippine Sea mesoscale environment" by Jia You et al., Nonlin. Processes Geophys. Discuss., https://doi.org/10.5194/npg-2021-1-RC2, 2021

The present manuscript describes spatial pattern and seasonal variability of the diapycnal diffusivities in the Philippine Sea. It was shown that seasonal variability was strong in winter and weak in summer at mid-latitudes, with the seasonal fluctuations more obvious in the upper ocean. The diapycnal diffusivitie that is spatially inhomogeneous were estimated from ARGO float data with the fine scale parameterization. The present manuscript is good scientific quality and well written. The obtained results are interesting however revision is needed:

1. More convincing comparison and analysis is needed for diapycnal diffusivities scatters fig 6-7.

2. As far as in fig 3 (diapycnal diffusivities) and fig 5 (Vertical structures of geometric averaged diapycnal diffusivities) Philippine Sea was divided for two zones (a) 10°N -25°N and (b) 25°N-35°N, but on figures 6-7 Philippine Sea was divided into three zones 10°N -15°N, 15°N-25°Nand 25°N-35°N it is difficult to compare the results for zone (10-25) and make a conclusions about that results on fig 6-7 is consistent with the results of Fig.3 and Fig.4.

3. In line 182 H is described as is the mixed-layer depth and was set to a constant 25m, however in Eq (8) H(Đ□) – near-inertial energy flux.

4. Typo in Figure 3 Seasonal cycles in diapycnal diffusivities (colorful line) and near-inertial energy flux from wind (green) extents to 250-500 m, 500-1000 m and 1000-1500 m in (a) 10°N -25°N and (b) 10°N-25°N (should be 25°N -35°N).