# General comments

The revised version of the article submitted by V. Onink and collaborators and entitled **Empirical Lagrangian parametrization for wind-driven mixing of buoyant particles at the ocean surface**, has replied to all the recommendations made by the two reviewers. To my mind, efforts for a more complete discussion of their results have been made. Nevertheless, by reading the new material provided in the revised version, below are some recommendations that need to be addressed for the manuscript to be granted publication.

**1.** By discussing the KPP model in greater details, especially by considering the influence of the parameters $\theta$ describing the Langmuir Turbulence (LT), the authors have improved the quality of the comparison with observations. However, the SWB model also has adjustable parameters, the most obvious one is the depth over which the intensity of turbulence is constant. The choice to make the transition for the decay of turbulence at $H_s$ is as arbitrary as the value for $\theta$ to represent the intensity of the LT. Thus, it should be associated with a parametric study as well because changing this value into $1.5H_s$ or $2H_s$ could lead to improved comparison with observations as well. The sake of a parametric study for SWB is also to give an equivalent attention to the two models, there is currently a stronger emphasis on the KPP model. If the outputs are revisited for SWB, it can also modify the conclusion that KPP model performs better with respect to observations.

**2.** The goal of the comparison of the two diffusion models (KPP vs SWB) is to discuss the influence of the physics important for vertical transport modeling, and no model alone does a perfect job, although KPP with strong enough LT seems a better choice. The ultimate question that should be considered in this context is the question of adding up the two models.

# Other comments

Here is a list of other points of lesser importance.

- *l.271.* 'by' instead of 'be' ?
- *l.319-320.* The variance in the modeled data is much less here because the numerical runs are 1D, and does not reproduce the fluctuation of ocean dynamics... It is unlikely that wind condition are the only origin of this variability in observations (currents, fronts, meso-scale eddies, etc).
- *l.457-459.* The reference Poulain et al. 2018 is with the wrong year. The online version of the paper is 2018, the official (doi) reference is in 2019 (53(3), 1157-1154).