

This research used Lagrangian drifter derived surface velocity to improve the numerical model simulated ocean velocity field, which is important for turbulence and transport studies at sub-mesoscale. The results show that there is a significant improvement of the model capability after the optimal interpolation using drifter-derived velocity and wind-induced velocity correction. However, the manuscript still has some flaws. For example, the long simulation settings are not detailed. The modeled results at all drifters of S1 and S2 are not presented and described in the manuscript. Therefore, this study may be accepted for publication in EGU sphere after minor revisions.

Major comments:

1. Line 125 in page 5, authors just present the tidal conditions for model's boundary. What are the other boundary conditions for simulation? Such as gradient, Clamped, Flather or other boundary conditions?
2. Two one-year long model runs are implemented in this research. Can authors provide more detailed modeling settings to make model stable in such long simulation.
3. In Figure 5, authors just present the model absolute errors at S2-4. May authors present the absolute errors using "Box-Whisker" plot over all drifters of S2?
4. Line 280-281, authors describe that the drifter S2-4 is well reproduced. Can authors plot all drifters of S1 and S2 in Figure 6 to make reader directly understand the simulation results. There is similar problem in Figure 7. In Figure 7, authors use drifters S1-2 and S2-1, why is it different from Figure 6? Can authors also present all drifters of S1 and S2 in Figure 7? Or using "Box-Whisker" plot to present separation distance in Figure 7? Furthermore, how about the wind-corrected trajectories of other drifters in S1 and S2? Can present other drifters in Figure 8? If other OI- or corrected trajectories are similar to S1-1 and S2-1, please describe the related statement of other trajectories in S1 and S2.

Minor comments:

1. Line 121 in page 5, the temporal resolution is 15 min, which is model output temporal resolution or model simulation temporal resolution?
2. Line 122-124 in page 5, authors provided the accuracy of MARC simulation results. Please provide a reference for this statement.
3. Line 158 in page 7, it should be the background model "velocity" u_m ?

4. Line 161 in page 7, please describe the meaning of primes in $u_m(x', t')$.
5. In Figure 3, please describe the meanings of blue dash and solid lines.
6. Line 253 in page 11, should add a comma after “seven (...)”.
7. Line 269-274 in page 11, authors should point out the discrepancy results in Figure 5 are from drifter S2-4.
8. In Figure 6, authors can change the lines' color of observed trajectories to easily distinguish the observed, M2D, and M2D-OI results. Such as blue lines for observed trajectory.
9. Line 306 in page 13, d_{opt} should be revised to d_{OI} ?
10. In caption of Figure 9, please describe the meaning of red trajectory. Meanwhile, authors should point out the semi-axis of the ellipse is represented by the black lines.