

Interactive comment on “GEM: A Dynamic Tracking Model for Mesoscale Eddies in the Ocean” by Qiu-Yang Li et al.

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1 GEM is relatively independent to eddy identification MEI, but the ratios r_1 and r_2 might be sensitive to the method used in identification. We noted that O-W based identification is much sensitive than SLA based one, since O-W based eddies are much smaller. We also point out that ratios r_1 and r_2 should only be valid for small time steps. This is something like CFL condition (for time step) in computer fluid dynamics. In general, we think any tracking method should have this time-step limitation (depending on eddy size/propagation speed), if one don't want to mix one signal with another.

2 There are lots of merging/splitting examples according to the data. We made some animations (.gif files) of them, but we do not want to include them into the present paper except for the example in Fig.11, because the paper is too long to be hold by us. From

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2014, we spend too much time in reversing this paper but few time in the analysis of results and other studies. Besides, one technical problem for us is how to illuminate it since .gif file can't play in word. Should we take the animation as supplement?

3 Without segmentation, the strong interaction of eddies “in conjunction”, which leads to genesis and termination of eddies, is more likely missed. However, some weak interaction of eddies in some far distance (watershed free) could still be recorded. We are sure for this because we have analyzed many cases of the output data. We noted (not mentioned in this paper) that lots of merging/splitting records occurred at the interaction of two eddies with a certain distance. This kind of interaction can't be recorded by previously interaction-free tracking algorithm (only isolated tracking eddy record), but it is still scientifically very interesting to investigate.

4 We add a new figure 13, which presents the merging/splitting events with lifetime.

5 The codes are written in Fortran 90/95 standard with windows platform, including seven f90 program files (2 for MEI, 4 for GEM and 1 for both). In order to maintain the potential revisions of the codes and manuals, we plan to upload both the codes and manual at https://www.researchgate.net/profile/Liang_Sun20/ after the publication of the paper.

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