**Ocean Science**
Discussions

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# Interactive comment on "Eddy characteristics in the South Indian Ocean as inferred from surface drifter" by Shaojun Zheng et al.

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This manuscript presents an analysis of eddies detected using GDP drifter trajectory data. There are two categories of data which can be used for eddy detection: the one is Eulerian data, and the other is Lagrangian data. The GDP data belong to the latter one. Using the GDP drifter trajectory data to study eddy characteristics is not new, but its application into the SIO is the first time so far as I know. The trajectory sampling number shown in the manuscript assures the analysis is statistically significant, especially in the center of SIO.

The topic is very interesting to readers of the journal and the study will make a contribution to the scientific understanding of the physical processes in the SIO.

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The manuscript is well written. I enjoy reading the manuscript.

However, in general, the analysis of the eddy data set needs to be enhanced. Given the large area of the study, though it is difficult to discuss the mechanisms of eddy generation, evolution and termination, it is useful to make some attempts in this aspect.

Specific Comments:

1) A loop is not equal to an eddy. Given the complexity in the physical processes in the ocean, a loop made by a drifter could be not enough to make sure it is trapped just by an eddy. Applying the inertial criteria is a good start but not enough. I suggest that the authors use two or more loops made by the drifter as another criteria in eddy detection and see if it significantly affects the result. And also removes those loops with the scale as the basin scale.

2) Another concern is that the background current mean should be removed in the analysis, especially near the western boundary current. When the mean current is removed, the reconstruction of a trajectory will not affect results in other areas but near the jet.

3) Some speculations about why there are more anticyclonic eddies detected than cyclonic eddies should be presented in the text . 10 % difference between the numbers of cyclonic and anticyclonic eddies guarantees an explanation.

4) More discussion about small scales of eddies (submesoscale) should be presented.

5) The availability of the data samples will affect the results. It should be discussed in the text.

Interactive comment on Ocean Sci. Discuss., 11, 2879, 2014.

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