

***Interactive comment on “Comparison between three implementations of automatic identification algorithms for the quantification and characterization of mesoscale eddies in the South Atlantic Ocean” by J. M. A. C. Souza et al.***

**M. Petersen (Referee)**

mpetersen@lanl.gov

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The authors conduct an eddy census and tracking study using four years of sea level anomaly data of the South Atlantic. Four methods of eddy detection are compared: wavelet packet decomposition, Okubo-Weiss with and without filtering, and the geometric winding-angle approach.

I found this study to be extremely thorough, detailed, and complete. I appreciate the comparisons between the four methods in all statistics presented, as the Okubo-Weiss

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method, which is most often used in the literature, often performs poorly compared to the geometric winding angle method. For example, the radius of eddies does not change with latitude in figs 6 and 7 for OW, as one would expect from dynamical arguments. Differences in tracking Agulhas rings in fig 10 highlight the differences in eddy identification.

I do not have any general criticisms of the work. The methodology is sound, and data analysis appears to be correct. I believe this is a substantial contribution to the field, as both the comparison of methods and eddy characterizations are useful.

The title and abstract are appropriate descriptions of the work. The introduction is motivational and has strong grounding in the literature. Methods are briefly but clearly described, with references to papers with more detail. Tables, figures, and their associated text are all clear and well labeled. The authors obviously paid close attention to these details.

The claim of seasonality in anti-cyclonic Agulhas ring formation on page 501 and Fig 11 is somewhat weak. If one averages over two months, there is only a difference of a few eddies between summer and winter. However, the labeling is clear, so the reader can make his own conclusion from the plot.

There are grammatical errors throughout the paper, but nothing too serious for nonnative speakers. Common mistakes are plurals in the first of multiple nouns (tracks lengths should be track lengths, eddies formation regions should be eddy formation regions) and verb conjugation. See attached pages with my mark-ups.

Please also note the supplement to this comment:  
<http://www.ocean-sci-discuss.net/8/C116/2011/osd-8-C116-2011-supplement.pdf>

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