

Interactive comment on “Technical Note: Watershed strategy for oceanic mesoscale eddy splitting” by Q. Y. Li and L. Sun

D. nbsp;G. Bowers (Referee)

oss063@bangor.ac.uk

Received and published: 29 October 2014

It has been known for some time that much of the energy present in the surface waters of the the ocean lies in mesoscale eddies, with diameters of a few tens to a few hundred kilometres. Satellite instruments are able to detect these eddies in a number of ways - through differences in colour, temperature, or sea level from the surrounding water. In principle, therefore, satellites offer the potential for the accumulation of statistics, and therefore knowledge, of mesoscale eddies in the ocean.

Eddies can be identified by eye in satellite imagery - the eye and brain are very good at doing this - but some automated method is obviously desirable. This paper is about a strategy for the automatic identification of eddies in maps of sea level anomaly (derived from satellite altimeters). This can be problematic, especially if two eddies lie close

C989

together.

The problem is therefore an important one and I suspect that this paper presents a simple and robust way of tacking it, but I could not follow very easily the descriptions of how it is done. This is partly a problem of language, I suspect, but mostly because the descriptions are not written very clearly. For example, figure 2 illustrates how the process works: particles are imagined to roll down slopes into the regions of lowest sea level. In figure 2b, however, the particles don't seem to roll straight down hill. Is this just because the 'pixels' are not square? Also, I'm not clear what happens at the 'watershed'. A particle placed on a watershed will not roll either way (unless given a nudge, presumably). Is this how the watershed is defined? The text isn't very clear on what I imagine is a crucial point, I'm afraid.

The figures are supplemented by text in the form of a flow diagram. That's potentially a good idea but I don't think it works very well in this case. Perhaps MATLAB code would be clearer?

I therefore suggest that the authors think of a clearer way of presenting their method. I would suggest presenting a two-dimensional grid of numbers with one or two eddies present and show how their strategy would proceed, explaining in terms of the numbers in the grid.

Specific points:

page 1721 'reduce the contour of the SLA' doesn't make any sense. Do you mean reduce 'the number of contours'?

page 1722 I don't know what you mean by a 'simply connected set of pixels'. This phrase appears again later in your paper.

page 1724 line 1 in your steps: why do the eddies have to be cyclonic?

figure 1 I'm afraid I don't understand this diagram and I don't see how it adds anything that is not covered by figure 2(b). You don't label you axes. I think you should.

C990

