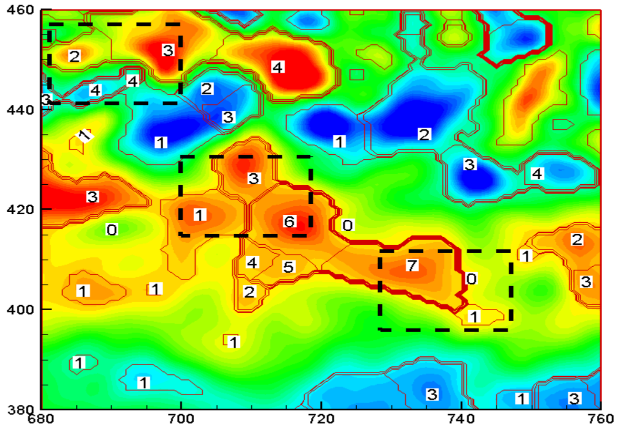
We thank the anonymous referee for your comments and suggestions. In general, we find there is something not clearly described and some figures are not well illuminated. We now add some paragraphs and modify the figures in our revision by following your suggestions.

Comments 1 - The study presents a method to detect mesoscale eddies; however, the authors never provide a geophysical definition for such structures. They try to provide one in section 2.2; however, to me, that is rather a functional definition on which the detection method is then based on. All the other studies cited in the manuscript (e.g. Chelton, 2011; Chaigneau, 2008; Nencioli, 2010) first clearly identify what geophysically they consider an eddy (e.g. a coherent structure characterized by water rotating around a common center), and then develop their algorithm accordingly (minimum of OW parameter; spiraling streamlines; rotating velocity vectors around a velocity minimum). Without providing such definition it is hard to understand why this method would provide improved results in terms of eddy shapes and intensity than, for instance, the method by Chaigneau et sal., 2011 (pag. 1721, lines 6-13). More importantly, without such definition it is hard to understand why (for example) the area marked by 2 in Figure 4 should be considered all part of the same eddy. Based on the geophysical definition adopted in previous studies it should not: the area clearly crosses multiple isolines, thus encompassing water masses not rotating around the common center in 2. The same is valid for the area 3. It is important to notice that the study by Haller and Beron-Vera (2013) also cited multiple times in the manuscript, adopts an even more conservative definition: an eddy is not only a rotating structure, but also a structure that retains all its initial mass as it propagates (that's the reason why they are compared to black holes). The eddies identified in figure 4, do not correspond to this definition either. My impression is that the method could be used to identify the areas around single local minima. Then within those areas, one of the existing methods could be used to identify the portion corresponding to a mesoscale eddy.
Reply : Yes, this splitting strategy can be used to identify the areas around single local minima. For isolated mononuclear eddies, all kinds of eddy definitions are approximately similar regardless Geodesic eddy, SSH eddy, OW eddy and ME eddy (see Fig. 8 in Haller and Beron-Vera (2013)), although the Geodesic eddy by Haller and Beron-Vera may look better. We also emphasize that "*Because this study focuses mainly on the splitting strategy, the choice of parameters is not of concern, and we simply use SLA as an example.*" However, the strategy itself is not self-contained for eddy identification. It should be based on an eddy definition; this is what we described in section 2.2. As pointed out and suggested by the reviewer, we now follow the suggestion by providing a geophysical definition for eddies to clarify this.

Comments 2 - At the same time, I am not convinced that the method could work on realistic SLA fields, where local maxima and local minima of SLA coexist. (Note that the examples only show applications to SLA field characterized by negative values). In hydrology, watersheds identify the boundaries between different drainage basins. By definition, they correspond to mountain ridges. Therefore, for the way the method is currently presented, my suspect is that in the presence of local maxima of SLA the boundary of a cyclonic eddy would be identified across such maxima. As such, it is hard

to understand how the method would be capable to identify anticyclones, as well. A more realistic example with a SLA field including both cyclones and anticyclones at the same time should be provided.
Reply : This method works very well on realistic SLA, because local maxima and local minima of SLA are differently treated in the identification method. For example, the SLA of cyclonic eddies are negative below a threshold, and anticyclonic ones are positive above a threshold (e.g. pg 207, “Anticyclonic and cyclonic eddies are defined separately.” in CH11). This makes the anticyclonic and cyclonic eddies being divided into different connection regions. We add a description for this at the end of Section 1. We also add a paragraph in section 3.4 to describe how to deal with anticyclonic eddies with this method. The following figure is an example of splitting of SLA on July 5th 2006 with this method.



This is an example of splitting for SLA on July 5th 2006, noting that there are lots of the anticyclonic eddies in the middle of the region.

Comments 3 - Finally, it is really hard to understand sections 3.2 and 3.3, which describe how the method works. I think that paragraphs with proper sentences (instead of the two bullet-lists provided) should be used to describe the algorithm. Please reduce the use of code notation (e.g. i = i+1; if i > n) to the minimum necessary.
Reply : Suggestion followed. We add some paragraphs before the algorithm to describe how it works. And the figures are also modified. We use number to mark the pixels to illuminate how we split the eddy with the algorithm. The algorithm is directly taken from our Fortran program, we hope the algorithm details will be helpful for those who want to write the programs.

Comments Also, the first sentence of section 3.2 says: "For any multinuclear eddy, the following...". Would that multinuclear eddy be detected by your method? If so, how? Or, should another method be applied before applying your method? If so, you should clearly state that your method of detection would not be completely independent/original but it would simply complement one of the existing detection methods.
Reply : The multinuclear eddy could be detected by any method (In fact, nearly all the existed methods can detect multinuclear eddy). In this study, the eddy is identified by only checking the eddy conditions (2) and (3) in section 2.2. A similar method and procedure can be found in CH11. As this paper mainly concerns the splitting method, we

omitted the multinuclear eddy detection. Now we add the detection procedure at the end of section 2.2.

Comments Similarly, point 1 (still on page 1724): "Label the extrema as cyclonic...". How are those extrema identified? No detail is provided.

Reply : We identify the extrema by using the definition in section 2.2 (A point within the region is a local extremum if it has an SLA greater or less than all of its nearest neighbours.). This is very common step in previous SLA based eddy identification methods, so we omitted it. Now we add some explanations both after the definition and at the method in section 2.2.