We thank Dr. Peter Cornillon for their kind comments and careful read of the manuscript. Each of their comments (copied directly below in black font) are addressed below, and we describe our corresponding changes to the manuscript.

Referee #2: Peter Cornillon

As with the previous version, I really enjoyed this manuscript—even more this time through now that I had a better understanding of it and time for my mind to assimilate the ideas. The authors have addressed all of my comments from the first pass. I have a few quite minor comments, which the authors may want to address.

1) In my first review, I indicated that I was a bit confused by the definition of CD. The authors have clarified the definition but now, it seems to me that they have it upside down. They say: "CD is the ratio of the area enclosed by a contour to the area between the curve and its convex hull". They go on to say that "a perfectly circular contour has CD = 0 because the convex hull is identical to the contour itself." Given their definition, wouldn't that mean that CD is infinite, since the area between the curve and the convex hull is zero and, since CD is the ratio of the area in the contour to (which I take to mean divided by) the the area between the curve and the convex hull?

You are correct and thank you for catching that. We fixed the sentence in the revision: "*The CD is the ratio of the area between the contour and its convex hull to the area enclosed by the contour*" (Line 221).

2) Lines 231-232 "A low CI indicates that the particle set has spread apart over the time frame, whereas a high CI indicates compressing behavior." I always get confused when low and hi are used if the number can change sign; i.e., does it mean signed or magnitude. I realize that in this case they mean signed but it took me a rereading to sort this out. A simple rewording would address this "Negative CI indicates that the particle set is spreading and positive CI means that it is contracting."

We agree that your suggestion is clearer. We revised the sentence to: "*A negative CI indicates that the particle set spread apart over the time frame, whereas a positive CI indicates that it contracted*" (Lines 231-232).

3) Fig. 2, frame b, Is the label for CD correct? I'm guessing that it should be 0.019 or larger. But, it's tough to guess at this. If I'm wrong, no need to modify the text.

The label is correct in the figure. However, we understand how the figure labels might have caused confusion. Although the "target" CD was 0.03, the contour that was output by the floater algorithm has an "actual" CD of 0.119. The CD value is high due to the filament that it encompasses in the lower right (see the green contour in panel e). This large difference in the "target" and "actual" CD occurred because the floater algorithm did not identify a contour close to the target. Instead, it output a contour located in between the contours with CDs incrementally lower and higher than the target, regardless of the actual CD.

More information on the decision tree for these boundaries is in Appendix B. We updated this text to be explicitly clear that the actual CD of a contour is not necessarily equivalent to the target CD (i.e. the input in for the algorithm):

> "*Starting with target CD = 0.03, we check if the outputted contour has an actual CD <= 0.03. In some cases, the actual CD may be much higher than the target if the algorithm cannot find a contour with the desired CD. If the actual CD passes the criterion, then…*" (Lines 559-561).

To avoid confusing the reader in the main text, instead of labeling the contours in panel (e) with the "target" CDs, we labelled them with the actual CDs of the contours. We also updated the caption of Figure 2 accordingly:

> *"An RCLV vortex and its potential boundaries derived by varying the target CD in the floater algorithm. (a) Particles were initialized inside the contour with CD = 0.011 and advected backward in time for 32 days. The particles are yellow at the initialization, and orange at their locations after advection. (b) Particles initialized in the contour with CD = 0.119. (c) Particles initialized in the contour with CD = 0.049. (d) Particles initialized in the contour with CD = 0.07. (e) Contour output from different target CDs."*

4) Line 356, when referring to the "eddies are in the Lee of the Hawaiian Islands" you might want to add parenthetically that the prevailing winds in this region are from the east northeast. Most people reading the manuscript will likely know this but for those who don't…

We added a sentence near the line suggested:

> *"The highest frequencies of both RCLVs and SLA eddies are in the Lee of the Hawaiian Islands. Eddies there are sustained by the background currents (Calil et al., 2008; Yoshida et al., 2010; Liu et al., 2012) and the wind stress curl generated where mountains interfere with the northeasterly trade winds (Lumpkin, 1998; Yoshida et al., 2010)."* (Lines 356-358).

We had detailed the generation mechanisms of the Hawaiian Lee Eddies in the Discussion section (Lines 469-475), rather than in the Results sections. There we also added the word "northeasterly" to describe the direction of the trade wind (Line 473).