Reply on AC2
Francisco Beron-Vera

Community comment on "Characteristics of Robust Mesoscale Eddies in the Gulf of Mexico" by Yingli Zhu and Xinfeng Liang, EGUsphere, https://doi.org/10.5194/egusphere-2022-789-CC2, 2022

'The selection of the detection method depends on the mesoscale features people are interested in and the definition of eddies also varies with the detection methods.'

Objective eddy detection lies in the antipode of this type of thinking. The reason is that all users, independent of their viewpoint, should see the same flow-invariant feature(s). This way the debate over which eddy detection method is to be employed is constrained to be that one or those that do not depend on the observer assessment. I include the possibility that there can be more than one observer-independent vortex detection method, e.g., design to frame flow-invariant structures with boundaries that extremize relative stretching or diffusion across or as regions that minimally deform under advection, for which there are several measures. The Authors should take the time to read the Introduction to Focus Issue: Objective Detection of Coherent Structures, *Chaos* **25**, 087201 (2015); https://doi.org/10.1063/1.4928894. This paper should be allowed to be published.