



EGUsphere, referee comment RC2  
<https://doi.org/10.5194/egusphere-2022-231-RC2>, 2022  
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## Comment on egusphere-2022-231

Anonymous Referee #2

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Referee comment on "Global coarse-grained mesoscale eddy statistics based on integrated kinetic energy and enstrophy correlations" by Imre M. Jánosi et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-231-RC2>, 2022

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The paper presents a reasonable method for analyzing mesoscale eddies. It is based on an observed correlation between the enstrophy and kinetic energy and assumes that eddies have a Gaussian profile. The paper presents application of these ideas to global AVISO data. I am generally favorable of the work but have a few comments and questions that I hope the authors can address.

- In the abstract, please consider replacing "super vortex proxy" with "vortex proxy." As you mention in the text, the word "super" may be an overstatement.
- In Fig. 1, it is unclear from the caption if the quantity being visualized in (b) is  $|v_g - v'_g|^2$  or  $|v_g|^2 - |v'_g|^2$ . Please be more explicit.
- On line 74, you compare the results to the dataset of Faghmous (2015). Is there a reason? Have you considered also using Chelton et al dataset? Can you please comment in the paper? Would doing so constitute too much additional work?
- In eqs. 1,2,3,4, do you use absolute or anomalous values? I suspect you are using SLA, but it is confusing when you use  $v'_g$  to represent anomalies in Fig. 1 and  $v_g$  (sometimes  $v$ , without subscript) to represent the same thing in the text and equations.
- In eq. 5, you essentially define  $R_{eff}$  as the ratio of the EKE to  $Z$ . But in eq. 2,  $R$  is a parameter representing the radius of the eddy. Can you please comment on the relation between  $R_{eff}$  and  $R$ ?
- Line 122, the word "inevitable" is perhaps better replaced with another word? I could not understand the sentence.