

Interactive comment on “Evidence of eddy-related deep ocean current variability in the North-East Tropical Pacific Ocean induced by remote gap winds” by Kaveh Purkiani et al.

Anonymous Referee #2

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This is a study of mesoscale eddies and its effect on abyssal currents in the Northeastern Tropical Pacific (NETP). There are a number of papers on eddy variabilities and the effect of eddies on deep ocean currents, as noted by the authors. This study complements those studies by offering more detailed information about eddy properties and statistics, and identify the relationship between surface eddy activity and bottom current variability by using longer-period measurement. I would support publication given the following suggestions are considered. The revision would require efforts between minor and major revision.

1. Section 3.1, the calculation of EKE is based on SSHA that is the de-

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viation from the long-term mean. I think the “eddy” here is different from mesoscale eddies, as it includes seasonal and interannual variation, as well as mesoscale and submesoscale eddies. For example, there is a strong seasonal cycle in the mean circulations (e.g., Kessler 2006 The circulation of the eastern tropical Pacific: A review, Prog. Oceanogr., 69, 181–217. <https://www.sciencedirect.com/science/article/abs/pii/S0079661106000310>) and the EKE in calculated here includes those signals. Since the focus is on mesoscale eddies, a filter that also removes seasonal cycle and low-frequency variability seems more appropriate (see, e.g., Chelton et al. 2007; Liang et al. 2012). These two papers are in the reference list of the manuscript).

2. Section 3.7, there are two papers (Zamudio et al. 2001 ENSO and Eddies on the Southwest Coast of Mexico. GRL (<https://agupubs.onlinelibrary.wiley.com/doi/pdf/10.1029/2000GL011814>; and Zamudio et al. 2006 Interannual variability of Tehuantepec eddies. JGR-Oceans (<https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2005JC003182>) about the relation between ENSO and eddy activities that were not cited. I would suggest the authors cite the papers and discuss how different the results in this study are from those papers.

3. When presenting statistics, I would suggest the authors add a significance level.

4. Section 4.1, the bottom current <10 cm/s seems to be weaker than previously reported value (>15 cm/s) by Adams et al. 2011 (Surface-Generated Mesoscale Eddies Transport Deep-Sea Products from Hydrothermal Vents). This may deserve some discussions.

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