Ocean Science Discussions

Ocean Sci. Discuss., referee comment RC1
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Comment on os-2021-9

Anonymous Referee #1

Referee comment on "Global contributions of mesoscale dynamics to meridional heat transport" by Andrew Delman and Tong Lee, Ocean Sci. Discuss., https://doi.org/10.5194/os-2021-9-RC1, 2021

this paper is interesting and deals with an important subject

it is well written and well analyzed

my main concerns unfortunately pertain to the bases of the methodology

1) it is extremely rate that a high resolution numerical model hasa lower EKE level than AVISO (here 0.1 deg model for 0.25 deg altimetry)

this casts a serious doubt on the results of the paper if the level of mesoscale turbulence is not well represented (then the heat fluxes may have a major bias)

2) using lambda_0 = 10 deg to separate large scale from mesoscale is in my opinion, really large (e.g. compared to the first internal radius of deformation or to the Rhines scale at say 15N) - at 15N-30N this leads to lambda0=800-1000km with lambda0/2=D the eddy diameters = 400-500 km which is really large

therefore I advise to reconsider these two aspects

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