General comments on Figures : Please consider improving the readiness of your figures (add grid, no need for bold labels, font sans serif)

Major comments :
- There is no description of the NIW trapping mechanisms in anticyclones, nor introduction of the concept of effective Coriolis frequency. This could help interpreting some of the results (eg Fig 6), as well as simplifying some of the analytical equations of the slab model [as done by Jing et al. (2017)]. Vorticity estimates should be normalised by f in order to understand better how mesoscale and NIC interact.
- l329 The change in sign of vorticity does not seem to be caused by a velocity reversal (fig 4), but rather the relative importance of the two terms of vorticity in cylindrical coordinates : dv/dr and v/r. Would it be interesting to simulate stations in the opposite vorticity ring around the eddy core?
- l373 and for all the diagnostics : why considering the sum of the 9 simulated stations and not the average and spread ?
- Figure 6 : What is happening at -f? Since it does not seem to be part of the sensitivity test (l417). How does the effective Coriolis frequency influence the results? Would it be possible to run more cases in order to have a better resolution of the peaks around +/-f? Section 5.3 is very descriptive and does not provide any mechanisms to explain the important discrepancies between cyclonic and anticyclonic winds.
- l491/500 Can you be sure that the parameter alpha is peaking at 11cm/s by providing a single point for larger translation speed? How does it compare with the maximum rotation speed of the eddy?
- What is the relationship between epsilon and vorticity and strain separately? It would be useful to color the marker with their experiment letter.

Specific minor comments :
- title : Note sure Parameter is needed in the title
- l34 please check the chronological order of citation and make it consistent.
- l38-52 : The description of NIW trapping in mesoscale eddies should be expanded here [eg Fer et al. (2018), Lelong et al. (2020)], as well as the definition of the effective frequency.
- l90 providing the depth of the moorings could be useful.
- L94 Isn’t ERA5 resolution 0.25° ?
- ECMWF being an distributor of the geostrophic currents of Copernicus, I am not sure it is useful to mention it here.
- l103 0.125 sigma units is not really a classical threshold for MLD calculation.
- Figure 1 : What is the mean circulation of the area ? For the nonspecialist reader, could you add arrow of the main circulation features of the study area, or a field of mean dynamic topography. Lon/lat ratio seems to be equal rather than respecting, for instance, a flat projection.
- 3.2 : For how long do you integrate the slab model ? Do you perform your analysis on a steady state ?
- l127 under nearly steady winds
- l133 8 days-1 seems rather arbitrary. How does it compare with other studies ? (same comment in line 239)
- l135 ERA5’s 10-m winds
- l166 Why is the smoothing necessary ?
- l167 NICs amplitude ?
- l178 There is no description in the method section of how NICs are calculated with observations.
- l190 I found the date number axis confusing… especially because you also describe seasonal cycle afterward.
- l206 How does vorticity compare with f ?
- l211 You could look at the atlas of mesoscale eddies (eg https://www.aviso.altimetry.fr/en/data/products/value-added-products/global-mesoscale-eddy-trajectory-product/meta3-2-dt.html) to describe eddies passing by the mooring.
- Figure 3 : The days chosen are so far apart that it becomes difficult to

follow structures in the maps. Please highlight the trajectory of eddies you describe.
- l280 The frequency band is different than the one of line 166.
- l281 No window size provided.
- l320 What is the Rossby number of the eddy considered here ? How does it compare with the observed eddy ?
- 5.1 and 5.2 are more method sections than results.
- l377+l385 : increases linearly with cyclonic wind stress (ie quadratic response to wind intensity)
- l403-404 : « The energy generation by the Okubo-Weiss parameter » This sentence is not supported by a Figure. This is the first time the Okubo Weiss parameter is mentioned in the result section.
- In line 402, you mention an increase at the eddy edge. Wouldn’t it be interesting to have more stations in the rim of the idealised eddy?
- Why is the response in Fig 5b not symmetric regarding to the eddy center?
- Figure 5b : distance to center normalised by eddy radius could be more useful x-axis station number.
- l505 and other caption: it should be mentioned in the method section that the eddy considered move westward.
- Are the Dirac functions necessary in equation 32/33/34/35?
- l615 : value with positive relative vorticity

References :
- Fer, I., Bosse, A., Ferron, B., & Bouruet-Aubertot, P. (2018). The dissipation of kinetic energy in the Lofoten Basin Eddy. *Journal of Physical Oceanography*, *48*(6), 1299-1316.
- Jing, Z., Wu, L., & Ma, X. (2017). Energy exchange between the mesoscale oceanic eddies and wind-forced near-inertial oscillations. *Journal of Physical Oceanography*, *47*(3), 721-733.
- Lelong, M. P., Cuypers, Y., & Bouruet-Aubertot, P. (2020). Near-inertial energy propagation inside a Mediterranean anticyclonic eddy. *Journal of Physical Oceanography*, *50*(8), 2271-2288.