

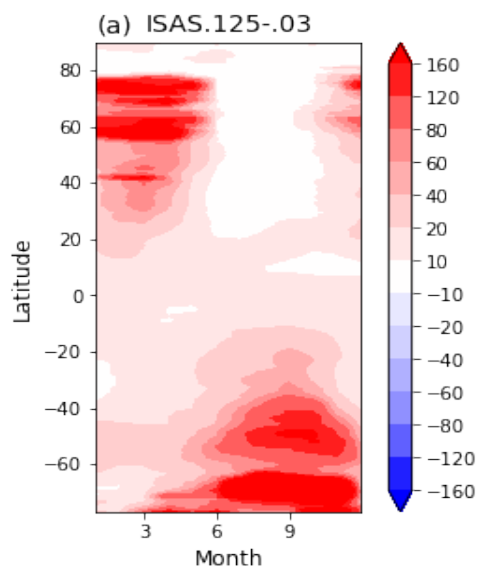
Reply to review comment #2 by George Nurser

We thank you very much for your positive comments on our manuscript.

We did not intend to claim that "the mixed layer depth computed from the monthly averaged T and S is a totally adequate reflection of the monthly-mean of the MLD calculated from observational profiles". Rather, we have found that it was the best possible choice for our model intercomparison, because the MLDs calculated online in the OMIP models are impossible to compare with each other due to the different methods used by the modelling groups (as shown in table 1). We acknowledge that our wording probably failed to convey this meaning. We will clarify this in the revised version of the manuscript.

Your suggestion to use other models for Figure 6 is of course relevant, but we used the two models for which the datasets were accessible. Daily 3D fields of temperature and salinity have been published on ESGF for the IAP-LICOM high resolution model, although the retrieval of these fields is a challenge (which is the reason why only one year, 1998, was used). Daily 3D fields are available for FSU-HYCOM, but not published on ESGF. For Fig.6, Eric Chassignet and Alexandra Bozec have recomputed the MLD from one year of daily output, using the method we have chosen in our paper, in order to enable the comparison.

We agree that the use of a larger density jump when working with monthly model output could make differences such as shown in Fig.6 smaller for any given month, but it is unlikely that a single value of the density jump would effectively reduce the difference at all latitudes and for all months. As an example, the difference in MLD computed with the two density thresholds (0.03 and 0.125) is shown below for the ISAS climatology. Its seasonal cycle differs from the seasonal cycle of the daily-monthly MLD differences shown in our Fig.6. For this reason we do not wish to advocate this approach in our manuscript.



We will make the minor corrections you suggest in the revised version of our manuscript.