The authors investigated the variations of dense water formation (DWF) in the Eastern Mediterranean (EMed) through the twenty-first century under the RCP8.5 emission scenario for understanding the impacts of climate changes on the Mediterranean overturning circulation. Their results indicated that the dominant source of Eastern Mediterranean Deep Water (EMDM) shifts from the Adriatic Sea to the Aegean Sea during the 2005-2040 period. By the end of the century, DWF for the Adriatic Sea, the Aegean Sean, and the Levantine Sea all perform a pronounced decrease by 75%, 84%, and 83%, respectively, which is a result of hydrographic changes of surface and intermediate water and the associated strengthening water column stratification under the RCP8.5 emission scenario. The results shown are impressive and, as was pointed out in the manuscript, also fill in the gap of the DWF study in the EMed providing a more quantitative assessment than previous studies. The manuscript was also well-written and easy to follow. But some improvements may be needed before the publication.

1) The coverages of the Adriatic Sea, the Aegean, and the Levantine Sea should be specified and shown in a figure as results and discussions of this study focus on the DWF from these regions. Thus, it is important to provide the spatial extent of these basins, which can also help readers to understand the studied area better. In addition, as it was stated that the horizontal resolution of the model varies from 7 km to 25 km (which is a big difference, I think), it is better to show the computational grid as well.

2) Statistics analysis and parameters are needed. Firstly, the authors may need to provide *p* values for every correlation coefficient as they are important to illustrate the significance. Secondly, the 2040s was regarded as a time point around which sharp changes in SI and DWF (Figure 3) were observed. However, the author may need to provide a more convincing way to address this time point not just by the naked eye but using some statistical tools, like the non-parametric change-point Pettitt test (Pettitt, A.N. A non-parametric approach to the change-point problem. Appl. Stat. 1979, 28, 126–135).

3) Could you double-check the unit “Sv yr” which first appears on Line 113? If my understanding of the unit “Sv” is correct, Line 113 should be rewritten as:

During 1981-1999, ROM_P0 produces a total of 5.45 Sv of newly waters denser than 29.0 kg/m3 corresponding to an annual formation rate of 0.29 Sv…

4) Lines 202-211. Although the authors provided descriptions of SI for different periods, I am still not quite sure how the authors calculated the percentage contributions of different water bodies to the temporal changes in SI. Could you please provide some descriptions or equations to further address the calculation?

5) Lines 268-270. It may be a jump to conclude that the increasing potential density is caused by the increasing salinity over the upper 100 m, as the authors only compared the salinity changes and density changes (Figure S7) but ignored the contributions of temperature changes. As shown in Figure 4 subsurface (0-100 m) temperature seemly performs an increase in the ADR (Figure 4a) from the period of 2006-2020 to the period of 2020-2040 but fluctuates in the AEG (Figure 4c) and LEV (Figure 4e). Thus, the author may need to quantify both contributions of the changes in temperature and salinity to the changes in density.

6) Lines 270-271. The authors may need to provide more evidence in addressing the causes of the changes in the upper ocean circulation, like correlations between changes in salinity or temperature and changes in circulation patterns. Or to provide some mechanistic explanations on how the changes in salinity or temperature would lead to changes in circulation. Or to provide results of previous studies here that may have such discussions.