

Comments for the revised manuscript “The climate change signal in the Mediterranean Sea in a regionally coupled ocean-atmosphere model”

- The first comment of the Referee#1 touched an important point about a projection run with the ocean driven offline by stand-alone REMO in the coupling area. However, the authors provided the new figure 4 of differences between ROM\_P0 and the stand-alone REMO forced by ERA-Interim. Here we can see a different/opposite behaviour of ROM\_P0 and the stand-alone REMO. For example, for T<sub>2M</sub> in JJA over the Mediterranean Sea, ROM\_P0 is about 1-2°C colder than ERA-Interim (Fig.3d) but about 1.5 – 2°C colder than REMO (Fig.4d). Thus, the stand-alone REMO can be about 0.5°C warmer than ERA-Interim. I suggest the authors redo the figure 3 for the stand-alone REMO. In case the opposite results are found, I think it is interesting to see how the projection for temperature, salinity and sea level height will be when the stand-alone REMO is used over the coupling domain, if these experiments are available. If the authors have not done these experiments yet, I suggest to write a sentence about the planned experiments as an outlook for the future work.

- Abstract: “We assess the climate change signal in the Mediterranean Sea with the regionally coupled model”: Shall it be “provide” or another more suitable word instead of “assess”? The authors can compare the climate change signal obtained from your model results with other previous studies but cannot assess whether the signal is right or wrong because the truth is unavailable.

- Can the authors argue in the manuscript why you used the MPI-EMS\_LR to force ROM instead of MPI-EMS\_MR?

- The reference Somot et al. (2018) is not cited in the manuscript.

- Table 1: time step of REMO is missing.

- Figure 11: please re-plot the figure with a different scale of current velocity (e.g. 0.1 m/s) to make the vectors more visible. Zoom in the figure doesn't help to make the vectors more visible but decrease the quality of the figure.

- Page 2 Line 31: still “RAOCMs”

- Page 3 Line 15: It should be better with “For this work, the ROM climate model (Sein et al. 2015) has been used.”. The current sentence “For this work, the ROM climate model has been used (Sein et al. 2015).” sounds like this current work was already published in Sein et al. (2015).

- Page 3 Line 24: “info” is an informal word. Please use “information”.

- Page 5 Line 29: “For a better ... in the Mediterranean Sea, comparisons ...”: The added “,” would make the sentence easier to understand.

- Page 6 Line 28: “The largest discrepancies for DJF are located” or “... DJF can be seen ...”

- Page 7 Line 1: is summer the very dry season in Mediterranean Sea region? or do you mean a specific very dry summer?

- Page 7 Line 7-9: Please rewrite the sentence: “Over land the simulated fields have a larger dependency on the internal details of the atmospheric component, and the impact of the coupling is dependent on the large-scale circulation and land-sea contrasts.”

- Page 7 Line 12-13: “The large-scale ... offsets the effect ...”: I do not get the meaning of this sentence.

- Page 7 Line 17: “determinate” → “determined”
- Page 7 Line 25-28: sentence is too long and not clear what the authors mean.
- Page 8 Line 10: “near to  $-1^{\circ}\text{C}$ ”: should use “approximately” or “about”
- Page 9 Line 10: “inflow jet runs along the African continental coastline”