GENERAL COMMENTS

The paper *Medicanes in an ocean–atmosphere coupled regional climate model* investigates simulations of a number of historical cases of medicanes, rare Mediterranean cyclones with tropical-like features, in a coupled ocean-atmosphere regional modeling framework, focusing in particular on the differences with respect to an atmospheric-only RCM. Different model configurations are tested, varying the atmospheric model resolution, and switching spectral nudging on and off. It is concluded that a resolution of the atmospheric model of about 10 km is needed to have a good representation of medicanes, and that coupling with ocean improves the simulation skill

The topic of the paper is original and scientifically relevant, as previous modelling studies on medicanes are conducted employing atmosphere-only models.
The methodology employed to address the objective of the research is scientifically rigorous, and results are presented in a clear way.
The results presented are interesting and convincing. In the following section are suggested a number of minor clarifications that, if it is possible to address, can add some useful information to interpret the results and to compare with other studies.

SPECIFIC COMMENTS

- It would be interesting to see the difference in the spatial and time representation of the sea surface temperature field, between the one prescribed as a boundary condition in the atmosphere-only run and the one obtained dynamically in the coupled run. For example a plot could be added, if possible, for one of the medicane cases, showing a snapshot of SST and/or the time-series of the field around the location of the storm.

- Spectral nudging: on what atmospheric variables is spectral nudging applied? What are the nudging parameters used?

- Are additional criteria, beyond the minimum in mean sea level pressure, used to define a medicane? (Page 2125, lines 23-24: “the criteria for medicanes are not met”)

- Cyclone tracks and length: is a threshold on the sea level pressure or its gradient applied in the tracking procedure? In case it is so, are the thresholds applied the same for the different atmospheric model resolutions and MERRA reanalysis fields?

- In the 0.22° simulations, the coupled simulations tend to have shorter lifetime compared to atmosphere-only, while in the 0.08° simulations the opposite effect is found. The difference in the track length are found in most cases in the final phase of the cyclone evolution, suggesting that coupling with the ocean tends to accelerate the storm deintensification at lower resolution. Based on model results, have the authors identified some mechanism that could explain this behaviour and its dependence on the atmospheric model resolution?

TECHNICAL CORRECTIONS

Page 2120, line10: “orographic” should be “orography”

Page 2121, line 1: “fully regional coupled model” → “fully coupled regional model”

Page 2121, line 13: “a regional…” → “the regional…”

Page 2124, line 9: “friction” should be “fraction”

Page 2128, line 9” “temperate” should be “temperature”