Reviewer 2 comments:

The current paper focuses on the wet-cold compound events under climate change in Greece. The authors have shown improvement in terms of the text and figures after revision of the last manuscript. However, the current study still has considerate flaws, and major concern on the fidelity of the conclusion. Thus, further revision and enhanced study is needed before this study can be considered for publication. I thus give major revision at this point.

Authors: The authors would like to thank the reviewer for the very constructive comments and recommendations. Here follows a point-by-point reply to the reviewer's questions/suggestions.

Major comments

1. It would be good if the authors could draw the topography elevation along with the stations in the Figure 1 to depict the terrain variability, which appears to be a unique factor in the regions studied and concerns the conclusions. This should be easily retrieved by HGT data in ERA or WRF_5.
   Answer: Figures are corrected and drawn according to the reviewer's suggestion.

2. Creativity issue. The second paragraph in the introduction should add more studies of wet-compound regions over the world, and extensively discuss what they did and how this study is different from the rest. After the discussion, it is commonly followed by a "However,…." to separate the current studies from the rest. I still don't see this kind of discussion in the text, which does not distinguish the current study from the rest.

In terms of regional extreme studies, how would you define the Greece's special traits, and how this would differ it from other hot research regions with complex terrain such as the Himalayas (extreme high elevation interacting with summer monsoon), Andes mountain (extreme high elevation separating the ocean and land), etc (https://www.ipcc.ch/srocc/chapter/chapter-2/). Secondly, how this unique trait contributes to the future change of wet-cold compound events under the climate change.

Answer: The Mediterranean Area is a climate change hotspot (IPCC WGII Sixth Assessment Report Cross-Chapter Paper 4: Mediterranean Region) and thus Greece is a special case of study. Although large parts of the country are at some elevations, the highest peak reaches 2918m and the range of the highest altitudes varies between 2000 and 2500 meters, so a comparison with extremely high elevation areas (greater than 3500m) adjacent to oceans is not considered appropriate and relevant.

3. Fidelity issue. For the WRF_5 data as shown in the following studies have shown a considerate underestimate in temperature and considerate overestimate in rainfall over most of the years.

Politi, N., Vlachogiannis, D., Sfetsos, A. et al. High-resolution dynamical downscaling of ERA-Interim temperature and precipitation using WRF model for Greece. Clim Dyn 57, 799–825 (2021). https://doi.org/10.1007/s00382-021-05741-9

N. Politi, P.T. Nastos, A. Sfetsos, D. Vlachogiannis, N.R. Dalezios, Evaluation of the AWR-WRF model configuration at high resolution over the domain of Greece, Atmospheric Research, 208, 2018, Pages 229-245, ISSN 0169-8095, https://doi.org/10.1016/j.atmosres.2017.10.019.

The conclusion the current studies made is mostly based on the mountainous regions, which for models is commonly to be places of considerable excessive cooler temperature and more rainfall bias. This leads to the still questionable fidelity in the study, as the authors only used sparse observations (for Pindus mountain regions in the northern Greece, maybe only 2 stations) for validation. I understand that observation is commonly sparse in the mountain regions, so one option I recommended is GSOD https://www.ncei.noaa.gov/maps/daily/?layers=0001, it is puzzling for the response since I found 50 stations observations around Greece, with some over the Pindus ranges, which may supplement the HNMS observations the authors used. Also, the cross-validation of several reanalysis used in this study would give an idea of the uncertain range of the model's simulation ability. Note that we shall not overstate the model's ability to project the future without validating and constraining its ability by observation, especially in the complex terrain regions. And this should have a clear discussion in the conclusion part as how potential bias may affect the conclusions drawn in this study.

Answer: As suggested by the reviewer, we have included all the available stations found in the recommended dataset for Greece concerning the time period under investigation. Here follows the list with the stations found and the available observation days compared to the time period examined in the past.

	ID	***NAME***	***YEARS***	***LAT***	***LON***	***HGT***	***VALID_OBS***
1	*16643*	*AKTIO*	*1980-2004*	*38.919*	*20.772*	*2*	*4483*
2	*16682*	*ANDRAVIDA*	*1980-2004*	*37.920*	*21.293*	*10*	*4510*
3	*16675*	*LAMIA*	*1980-2004*	*38.883*	*22.433*	*12*	*4403*
4	*16718*	*ELEFSIS*	*1980-2000*	*38.064*	*23.556*	*20*	*3788*
5	*16689*	*PATRAS*	*1980-1999*	*38.250*	*21.733*	*2*	*3447*
6	*16613*	*FLORINA*	*1980-2002*	*40.78*	*21.43*	*619*	*4045*
7	*16665*	*ANCHIALOS*	*1980-2000*	*39.217*	*22.8*	*19*	*3807*
8	*16699*	*TANAGRA*	*1980-2000*	*38.317*	*23.533*	*140*	*3807*
9	*16706*	*CHIOS*	*1980-2000*	*38.333*	*26.133*	*5*	*3807*

From the list above, the only mountainous station with enough observational data is Florina. Of course, all the stations have been included after a careful removal of missing data since

HNMS does not have yet homogenized the data timeseries of these stations. Moreover, all of the models as seen by the validation mostly underestimate the extreme precipitation events examined in this study. Overestimation or underestimation of precipitation from WRF is limited by the fact that model orography is simulated in the range of (0,2200) meters compared to the real orography with peaks reaching 2500-3000 meters

4. Enhanced analysis is needed. It is not enough just to make simple comparison of the model with "observation" and give a projection without tell readers why. While it is easy to attribute the difference between present and future to climate change, the authors did not mention in what mechanism that is responsible. Whether it's thermodynamic (changes in temperature or rainfall) or thermodynamic (changes in circulation), there should be a mechanism difference for the RCP4.5 and RCP8.5 relative to the historical simulations that is responsible for the change in wet-cold compound events. And this should be further analyzed using the simulation data.

Answer: The Mediterranean Basin as a climate change hotspot (Ali et al., 2022) *is expected to experience a rise of temperature as seen also in the supplementary material and mentioned in the text. Near-term future changes in atmospheric circulation are difficult to be modeled and there is low confidence in near-term projections of the position and strength of NH storm tracks. Natural variations are larger than the projected impact of GHGs in the near term* (Qin et al., 2013). *We have added in the text studies that connect wet and cold conditions in the Balkans with teleconnection patterns and possible changes in near future that may affect these conditions.*

Minor

1. Figure 8 Please use 1-6 rather than the a1-3 and b1-3, this does not conform to each other, and would easily puzzle the readers.

Answer: The format changed according to the recommendations.

2. The format between the figures are also not consistent, for instance, Figure 10 use (a)(b)(c), while Figure 12, 13 uses A, B.

Answer: The format changed according to the recommendations.

3. Line 305 Conclusion add number.

Answer: Number added and chapter changed to Discussion and conclusions.

4. Line 317-319, the conclusion is too strong, and I would recommend more conservative discussion rather than conclusions without support of more fundamental facts, especially in the complex terrain region.

Answer: Thank you for the recommendation. The sentence is altered in the text to a less strong conclusion, although, again we refer to the need to trust our results due to reasons explained in the text.