



EGUsphere, referee comment RC1
<https://doi.org/10.5194/egusphere-2022-287-RC1>, 2022
© Author(s) 2022. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on egusphere-2022-287

Anonymous Referee #1

Referee comment on "Past and future climate analysis at regional scale: the case study of the Campania Region, Italy" by Giuseppe Giugliano et al., EGU sphere,
<https://doi.org/10.5194/egusphere-2022-287-RC1>, 2022

Review to manuscript "Past and future climate analysis at regional scale: the case study of the Campania Region, Italy" for NHESS

Reviewers Summary:

This study is investigating temperature and precipitation in a specific region in Italy, the Campania Region. The investigation is based on 2 different data sets, once a 20-year observation of weather stations and climate projections from COSMO and EU-CORDEX. These data sets are investigated regarding extreme climatic indicators per season and as annual average. For the observational data some tests are performed to ensure the station records are homogeneous and gap-free.

The results show higher temperatures in summer and more precipitation in autumn and winter. The spatial distribution show higher temperatures around the coast and flat land. The most precipitation (more consecutive days and higher amount) for recent years is found in the mountain areas.

The climate projections show the highest temperature changes for the RPC8.5 projection in the latest time 2071-2100, annually and in all seasons. But precipitation varies over the Campania region and show some decrease and some increase depending on the projection, time and climatic indicator.

General Feedback

I see a purpose in this study to investigate the impact of climate change in this region. However, I feel this study needs a bit more explanation in this direction. I see also a reason to publish it in NHESS with the background of extreme temperature and precipitation leads to droughts or flooding, but I suggest that this and the novelty of the results need to be more clarified in the whole manuscript. Some more work in the general structure and language of the manuscript is needed which would also help in making the story of the research clear.

Hence, I would suggest major revisions.

Major Points

A) My first major point is the structure of the paper. A general paper structure is there but I think that some parts are not filled with the right content or important parts are missing.

The Introduction is missing of some content in my point of view. Introductions include a literature review or summary of the current research on that field, and this is not included. I would suggest including more paragraphs that answer questions like: why are you doing it, what has been done before, how does this study fit to published studies, what can/will this study add? Same for the conclusion. In my opinion the conclusion also includes some discussion part which is missing. Do these results fit to other research, do they show same or other results than studies for other regions or the same region? Please, add some paragraphs that put your study in connection to the current available literature. I did find a few examples which could fit from the title (didn't read them totally):

De Vita, P., Allocca, V., Manna, F., & Fabbrocino, S. (2012). Coupled decadal variability of the North Atlantic Oscillation, regional rainfall and karst spring discharges in the Campania region (southern Italy). Hydrology and Earth System Sciences, 16(5), 1389-1399.

Ducci, D., & Tranfaglia, G. (2008). Effects of climate change on groundwater resources in Campania (southern Italy). Geological Society, London, Special Publications, 288(1), 25-38.

Mastrocicco, M., Busico, G., & Colombani, N. (2019). Deciphering interannual temperature variations in springs of the Campania region (Italy). Water, 11(2), 288.

Also, there is no Data chapter. I believe starting with a data section before introducing the method would help the reader to understand with what data you are working and maybe what you try to do with it. I believe most of the data description is in the manuscript already but very scattered and not in a good following order. E.g., most of chapter 2.3 is more data than Method. You could also easily use Fig. 1 in the data chapter and describe the region and stations. Also Fig. 1 is not named in the manuscript. Please, check that all figures, tables and references you have been named in the text at least once. Also, when Data is described before Method, all the climatic indicators of temperature and rain could be explained there, and this knowledge would make the method part less theoretical.

B) My second major point is the Method section. This part is very theoretical and described in a complex way. Especially section 2.1.3 and 2.2.3 were not really clear in my opinion while reading it. I would suggest a way shorter description of each test with the respective references and maybe add these additional and more complex descriptions to the supplementary material. These tests are nothing new, developed by you, if I understand correctly, so if people want to use it, they can look them up in the original source. I believe there is not much need for the equations, maybe also something for the supplementary material. In connection to my point A), I was a bit confused what these tests are for, because I didn't really have an overview of the study. I believe have a bit more information in the Introduction and a Data section before could help.

C) Another part is the results chapter. I see the interest in this study, and I believe it can be of relevance, but I think there is more information needed, more background information and more structure to the results. What is the new aspect of the results chapter if most of the results are expected? You connect it 2 or 3 times to floods and droughts, but a bit more discussion in this direction would make it a better fit into NHES.

I would classify Figure 3 as a table. My recommendation would be to give the stations the same number over temperature and precipitation and have this table in the mentioned Data chapter with all stations, their numbers and maybe even altitudes.

For the climate change anomaly results, could you add details about the significance of the anomalies. I believe a simple t-test would be sufficient and could be added into the tables with a symbol like “*”.

A recommendation for all tables with data in it: maybe colour the cells according to their value, so reader can easily see negatives in blue, and positives in red (as example). Maybe even change the shade like the minimum is the strongest blue and the maximum the strongest red per climatic indicator.

D) Please, check the reference for consistence. I found in the reference list some references which are not used in the manuscript. One author has 2 references of the same year, so they need a & b, others had an a on the year but only existed ones in the list, so the a is not needed. Also please stay with a continues references style, best the one the journal recommends.

E) My English is not perfect either, but I have the impression this needs to be reviewed for correct language.

Minor Points:

L11: do you mean “showing” instead of “testing”?

L34 & 37: I believe it is “in regard to” not “as regards”

L53: sentence includes “obtained” twice, maybe find replacement

Is “climate indicators” and “climatic indicators” the same? Please, stay consistent.

L62: do you mean "necessary minimum number"

L63 & L82: Please, make sure you are not plagiarising yourself. I found parts of sentences which are literally identical in different paragraphs.

L79: Maybe finish sentence after "scales" and start new with "In particular,". Some of the sentences are very long and you could separate them instead of using ";", other examples: L95/96, L161. I would suggest checking this in the whole manuscript.

L87-89: this is a direct citation with "", right? Then the reference is missing.

L90: I can see the dilemma with less than 30 years observation time series, but I got a bit confused about if you should use 30 years, but you don't have them or are 20 years fine. Maybe you could clarify.

L106 & 107: get rid of second "is" and "it can take"

L113: I would separate the text more with new paragraphs, e.g., when switching from temperature to precipitation. Other examples e.g., L296

L120: "widely believed" but you only refer to one paper

Please, check that numbers over 10 are written as numbers (e.g., L161 or L307)

L183: "to oscillate"

L189: "used"

L192: "authors"

Table 3: Delete all the dots at the end in the 3rd column, these are no complete sentences, more bullet points

L362: shortly explain what the abbreviations mean when used the first time. At this line for RX1DAY, but also please check for all the others (like R95PTOT or CDD etc.)

L391: stay constituent with nominations like RCP4.5 or RCP45 (same for 8.5)