

Earth Syst. Dynam. Discuss., community comment CC1
<https://doi.org/10.5194/esd-2022-10-CC1>, 2022
© Author(s) 2022. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on esd-2022-10

Shanlei Sun

Community comment on "A 20-year satellite-reanalysis-based climatology of extreme precipitation characteristics over the Sinai Peninsula" by Mohsen Soltani et al., Earth Syst. Dynam. Discuss., <https://doi.org/10.5194/esd-2022-10-CC1>, 2022

This study with a title of "A 20-year satellite-reanalysis-based climatology of extreme precipitation characteristics over the Sinai Peninsula" has been seriously reviewed. The authors have comprehensively quantify the extreme precipitation characteristics over the Sinai Desert in Egypt, and explored the synoptic systems responsible for the occurrence of precipitation events along with the major tracks of cyclones during the wet and dry periods. This study is of interesting and importance for understanding extreme precipitation events in this region. However, I have several comments and suggestion for this paper before its acceptance, and I would like to give a chance for moderate revision. Please see below for the details.

- Despite that the authors have stated that the GPM data has been evaluated and employed in the Mediterranean region, I do not know whether the GPM has a better performance in the Sinai Peninsula. If the GPM has been assessed in this region, you can cited the literature for proving the capacity of this data. If not, it is better to conduct an evaluation of the GPM performance in the Sinai Peninsula. Because it is foundational for this study about the analyses of the extreme precipitation.
- It is strange to use the observations at three sites to explore the annual and seasonal changes in precipitation trend. Could they indeed represent the whole region for southern, middle and southern parts? I can not believe that, because the precipitation have huge differences regionally. When you finish the GPM evaluation, you can use the regional mean GPM values to study the annual and seasonal changes in precipitation trend.
- In figures 7, and 9, there are so many lines to weaken the readability of the two figures. You can remove the country lines, and remain the boundary for the study region.
- The moisture condition plays a quite important role in (extreme) precipitation events, but the authors seem to omit the analysis of it.

For example, in figure 7, the climatological condition of moisture during wet-period and dry-period should be included.

Line 425-246: The authors said "This provides a suitable condition for moisture transport". But the low-level wind fields do not denote the moisture transport directly. The low-level moisture flux is supposed to be added in Fig 9.

- In section 3.3, the authors only discussed the frequencies of different cyclones that posed various amount precipitation on Sinai Peninsula, but ignoring the tracks and intensities of different cyclones. The detailed characteristics of cyclones that affecting Sinai Peninsula are recommended to be shown in 3.3. Moreover, the characteristics of cyclones under the synoptic patterns and atmospheric circulations during wet or dry period should be analyzed in detail. So, I strongly suggest that the authors can try to analyze the characteristics of the cyclones with negative/positive precipitation. Additionally, in section 3.2, are there links between the cyclones and the anomalous circulation background?

Line 450-451: "This implies that less significant storms have struck the Sinai during wet period." What does the "less significant storms" mean?