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 quantified 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.

We appreciate your time and consideration. The respected reviewer's comments/recommendations are clarified and addressed below.

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 cite 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.

Response: To the best of our knowledge, the GPM data has not used over the Sinai Desert to date. We appreciate the reviewer's suggestion; however, it is not feasible for us to evaluate the GPM performance in the Sinai Peninsula. This is because, there are a very-limited number of weather stations in the Sinai Desert; yet, we do not have access to those limited *in-situ* data (such as precipitation) measured at the ground stations. Therefore, for our analysis in the Sinai, we relied on the satellite remote-sensing GPM precipitation data (among other global RS-Prec dataset such as CHIRPS and TRMM), as its performance has been already acknowledged by other studies over the surrounding-areas in the eastern Mediterranean region (e.g., Retalis *et al.,* 2018; Petracca *et al.,* 2018; Caracciolo *et al.,* 2018; Cinzia Marra *et al.,* 2019; Hourngir *et al.,* 2021).

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 cannot 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.

Response: The reviewer has a point. However, the site-scale annual/seasonal trends analysis in climate data (e.g., precipitation) is not unusual, and numerous studies exist in the literature (e.g., Aguilar et al. 2005; Alexander et al. 2006; Choi et al. 2009; Dos Santos et al. 2010; Soltani et al. 2016). Accordingly, for this anomaly analysis (which, is now moved to the supplement data: Fig. S8), we selected three sites in the north, south and middle of the Sinai area as good representatives for those regions. We believe that it is a meaningful analysis, as the climatology average precipitation map (2001-2020) (Fig. 4a: now Fig. 2a in the revised manuscript) over the Sinai clearly indicates that the highest, lowest and average amounts of precipitation are received in the north, south and middle regions, respectively. Unlike the heterogeneous/mountain areas with complex climate mechanisms where the precipitation varies greatly in a short distance horizontally -or vertically (such as Alpine/pre-Alpine regions), in dry regions like the Sinai Desert, this is not much the case where the precipitation almost smoothly increases from south to north -- this is true not only in the climatology map (Fig. 2a), but also in the monthly -and daily events as shown in Figs. 2b-c. Thus, it makes sense to use site observations to explore the climatology trends of precipitation in different parts of the Sinai Desert.

However, since we now applied EOF-based analysis that considers both spatial -and temporal changes in a given variable (e.g. precipitation) for both annual and biannual (Fig. 4 in the revised manuscript, *annual-scale map shown below*), as suggested by the other respected reviewer, we decided to move the temporal site-scale anomaly-based analysis into the supplement data (Fig. S8). It is good mentioning that, the results of the site-scale anomaly-based analysis are in good agreement with those of the grid-scale EOF-based spatiotemporal analysis across the Sinai.

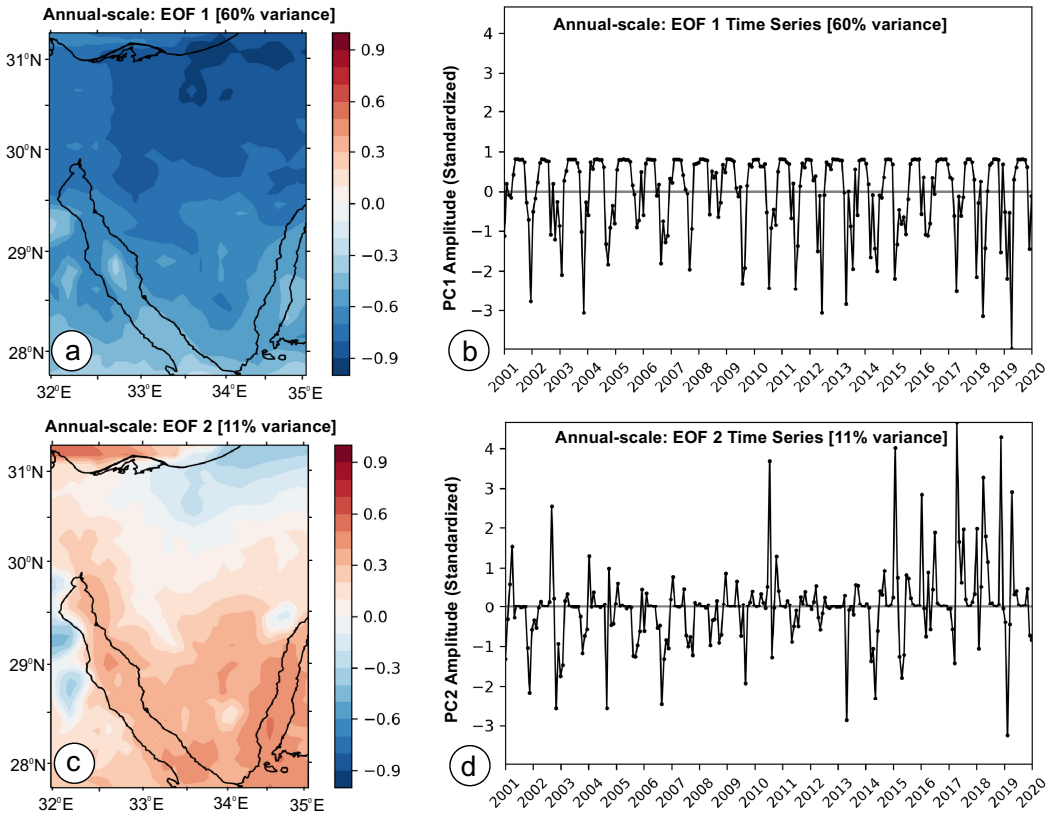

Figure 4. The two leading EOF spatial patterns (a and c) and the associated timeseries (b and d) of the monthly mean precipitation dataset (**at annual scale**) for the period of 2001-2020 (240 months) in the Sinai Peninsula. The values of EOFs (a and c) are expressed as correlation coefficients.

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.
Response: Following your suggestion, these figures (now Figs. 6, 9 and 10) are modified in the revised manuscript.

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.
Response: Thanks for a good suggestion. In the revised manuscript, we now added Figure 8 (also shown below) to explore the climatology (2001-2020) moisture condition and wind structure at multiple-levels of the atmosphere during the wet -and dry periods over the Sinai region -and in the nearby areas.

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.
Response: Basically, when the low-level streams blowing over large waterbodies such as Mediterranean Sea and Red Sea, it is assumed that a considerable amount of water-vapor is transferred towards the target regions ahead. However, to avoid the guesstimate, we also did estimate the wind streams along with the moisture content condition (see below) in the revised manuscript.

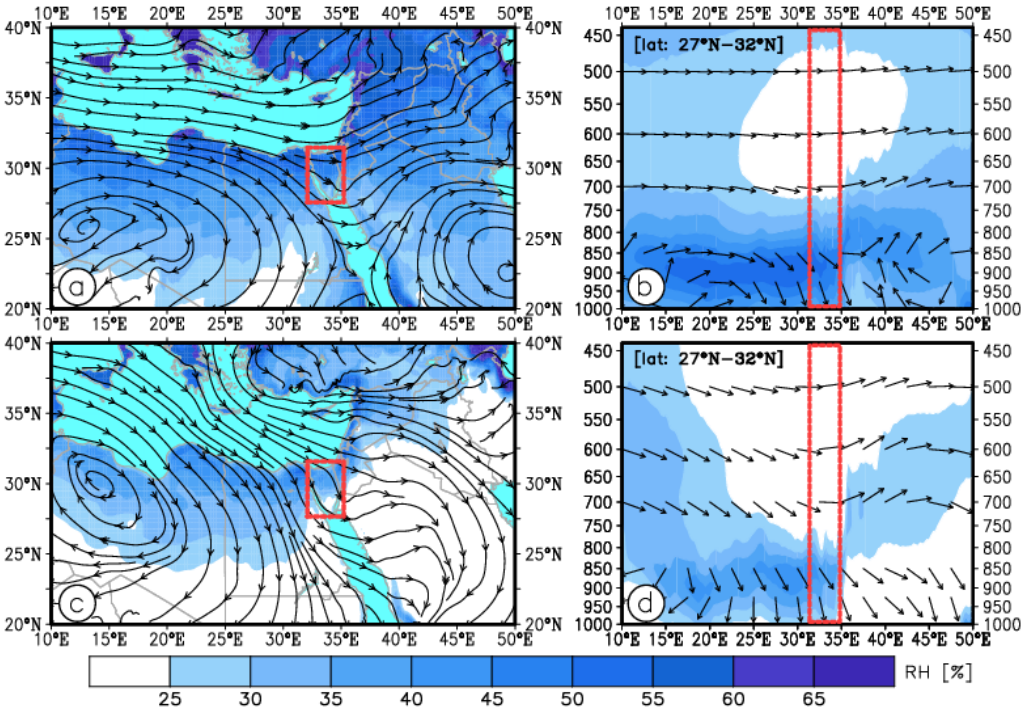

Figure 8. Climatology moisture condition (2001-2020) during wet period (a, b) and dry period (c, d): panels a and c indicate 850-hPa relative humidity (RH) and wind streams; panels b and d indicate the vertical cross-sections of RH and wind profiles averaged for the latitudes 27°N-32°N. Red box in the panels indicates the location of the Sinai Peninsula.

The low-level moisture flux is supposed to be added in Fig 9.

It is believed that estimating the correlation between the rainfall and moisture (-or relative humidity) is not necessary (-or even does not make much sense). Because in order to have condensation process and precipitation event, the maximum moisture content (~100%) must be available at the lower atmospheric PBL.

However, the other way around may not be necessarily true meaning that despite a considerable moisture content to be present in the atmospheric layers, it may not rain – which, could be due to the synoptic-dynamical condition (moisture availability in the Sinai's dry-period is a good example – see the figure above). So, indeed the relationship between precipitation occurrence and atmospheric moisture content availability is already obvious.

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?

Response: In Sect. 3.3, the major cyclone-tracking results are explained briefly, as it was aimed to keep it concise. However, to avoid repetition there, additional details and characteristics associated with the different cyclones are further discussed in Sect. 4 (Discussion).

Thank you for the suggestion. However, these are out of the scope of this study, -and would be a very lengthy-paper to consider and provide all the details on the types of cyclones under different atmospheric and anomalous conditions. We believe that, these additional investigations/analyses could be conducted in the separate studies. Nevertheless, we have already provided further details of the cyclones (monthly

frequencies, intensity classifications, etc.,) in the Discussion section of the manuscript together with the characteristics related to cyclone-tracking given in Table 2. What is more, there are some related studies focused only on these topics in the literature of the eastern Mediterranean basin (e.g., Alpert and Shay, 1994; Flocas *et al.,* 2010; Almazroui *et al.,* 2014; Nastos et al. 2018; Lionello et al. 2019; Hochman *et al.,* 2020), as stated in the manuscript.

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

Response: Since, 75% of the cyclones precipitated over the Sinai fall in 1 and 2 categories (out of 5) indicating insignificant rainy-systems, according to table 2; thus, the remaining categories of 3, 4 and 5 (25% all together) are considered as strong -and significant storms due to a higher potential for making flashfloods over the region damaging the society and environment. However, as stated, mostly (75%) insignificant / less significant storms have struck the Sinai during the wet season for a 20-year period from 2001 to 2020.