

# ***Interactive comment on “Impacts of spatial resolutions on projected changes in precipitation extremes: from site- to grid-scales” by Jianfeng Li et al.***

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1) From the reader’s point of view, in the current version of the paper, the authors’ thoughts are scattered. The introduction of the paper needs to be re-structured. The paragraphs are not well inked to convey the need of the research. For example, the first paragraph of the introduction is ended with the C-C relationship. However, the ending of the first paragraph does not lead to the content of the second paragraph.

2) With warmer temperature, the saturated vapor pressure is increased. Consequently, the air will have more capacity to hold more water vapor. However, from the reader’s point of view, although the water vapor is the main striking factor that determines the

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formation of precipitation, it is not the only factor that defines the formation of precipitation. In other words, there are many vital factors that need to be considered. Therefore, considering the slope (see page-7) as the defining criteria may not comprehensively unveil the outcome of the research.

3) As per the authors, changes in extreme climate can lead to significant impacts on the occurrence and severity of natural disasters which will result in changes in risk of failure for urban infrastructures (see line 1-2 in page-2). However, the introduction of the manuscript does not clearly outline the reason(s) for considering the precipitation extreme as the extreme climate. From the reader's point of view, precipitation (or precipitation extreme) is a subset of many interrelated factors that determine the extreme climate.

4) From the reader's point of view, the last paragraph does not fit the section (i.e., introduction).

5) From the reader's point of view, in the current version of the paper, some of the terminologies (e.g., extreme precipitation) are not well defined. What is meant by extreme precipitation? Are the authors referring to the indices (see Table 2)?

6) From the reader's point of view, some of the methodologies adopted need to be explained in detail. Without knowing the exact methodology(s), evaluating the outcome of the research may not be fruitful. Therefore, simple example(s) to illustrate some of the methodologies is expected to enhance the readability.

7) As per the authors, although most previous studies agreed on projected increases in future precipitation extremes, they hardly made agreements on the changing rates because they were based on either different GCMs or resolutions (see line 13-14 in page-2). From the reader's point of view, the authors' statement is not well understood. What is meant by changing rates? What is meant by they hardly made agreements? What is the current status of the literature? Has this topic (i.e., changing rates) already been researched by other researchers?

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8) From the reader's point of view, the title of the manuscript does not reflect the content (see line 25-29 in page-3) of the manuscript.

9) As per the authors, datasets of precipitation extremes at various spatial resolutions from the site scale to the  $40 \times 40$  gridded scale are constructed by aggregating daily precipitation of stations (see line 25-26 in page-5). What is the site scale? Why did not the authors use one of the existing interpolation methods (see line 6 in page-4)?

10) What is the unit of SDII (see line 26 in page-6)?

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