

Interactive comment on “Risk assessment of meteorological drought in China under RCP scenarios from 2016 to 2050” by Kuo Li and Jie Pan

Anonymous Referee #2

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General comments

This manuscript performs an extensive assessment of the progression of risk linked to the evolution of droughts in different climate change scenarios in China from 2016 to 2050. The paper has remarkable scientific novelty and the topic meets the scope of NHESS. I would like to highlight the interest of the exhaustive compilation of factors linked to the computation of risk in China, the thorough spatial data coverage, the careful analysis of the evolution of the index of drought hazard for the next decades, and the estimation of risk change until 2050 in different climate change scenarios.

However, the paper has many problems and, as a result, its message lacks the ro-

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business needed for acceptance. Although I recommend rejecting the paper, I would advise the authors to keep on ameliorating the document and try a re-submission when the existing issues are fully resolved.

Specific comments

In the following lines I will present, in order of appearance, some of the main problems,

- The overall level of the English used needs improvement because the paper has many grammatical and syntax errors that often affect the clarity of the message conveyed. Thus, it would be good if a native speaker could revise and correct the manuscript.
- **Lines 27-29.** Repeating the exact same sentence in the abstract and other parts of the document is not very palatable from a reader point of view. Please avoid this practice.
- **Line 57.** I am wondering which are these 'human activities' that mainly affect the socio-economical drought. Please add the references accordingly.
- **Lines 66-68.** In these lines various drought indexes are stated to be better depending on each drought situation. Each allocation should be justified and include the corresponding references.
- **Lines 119-121.** Why do you use HadGEM2-ES? Please, explain your decision (adding references if needed).
- **Lines 144-150.** This paragraph lacks references.

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- **Line 153.** ‘...fitted to a probability distribution’. Which distribution? Which are the more common? Is the SPI computation method suited for any kind of distribution? Although the reasons for choosing the SPI can be drawn from what you say in this paragraph, please state them more clearly.
- **Line 159.** ‘...the SPI Values table’. After ‘table’ should be the explicit reference to the table.
- **Line 160.** From the table I would guess that a meteorological drought event would be triggered when the SPI is below -0.5 (not -1.0).
- **Line 168.** The origin of the weighting factors is not explained. Why are they 0.1 or 0.4 and not 0.03 and 0.12?
- **Line 169-170.** The shape parameter and scale parameter of which distribution?
- **Line 178-180.** Have you developed the Integrated Index of Drought Hazard (IIDH)? Where it comes from? Please add references or state clearly the novelty of the method. In case it is an index developed by you then explain it comprehensively.
- **Lines 195-196.** ‘Most of researchers have accepted the vulnerability evaluation model’. Add references to this statement.
- **Line 201.** Where does the vulnerability model come from? Please add references and explain the position of the different parameters in the mathematical expression.
- **Lines 202-204.** These statements need references to support them.
- **Lines 206-216.** Why 15 and not 20 or 10? Could you explain the process of selection? How do you rank them? How do you verify their performance? How

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do you verify that are independent of each other? On what aspects do you rely to take your decisions? Please explain and add references when necessary.

- **Line 227.** The figure is too small and the 'y' label is not correct.
- **Line 237.** Please justify the inclusion of the different parameters in the expression and, also, the structure of the expression.
- **Line 240-242.** These data would be more readable if it was summarised in a table.
- **Lines 250-253.** Why do you choose six parameters? Please explain the reasons. Add references when necessary.
- **Line 255.** The figure is too small and the 'y' label is not correct.
- **Line 265.** Why does the model have this structure? Explain.
- **Lines 268-270.** These data would be more readable if it was summarised in a table.
- **Lines 274-282.** Please add references to the assertions made in this paragraph.
- **Line 284.** The figure is too small and the 'y' label is not correct.
- **Line 296.** Justify the inclusion of the different parameters in the expression and, also, the structure of the expression.
- **Line 297-301.** These data would be more readable if it was summarised in a table.
- **Lines 304-306.** This statement needs reference support.

- **Lines 316-317.** Justify why do you choose these scenarios. Are there only those?
- **Lines 345-361.** Please summarise all these data in a table.
- **Lines 362-373.** These lines are a bit cumbersome. Please simplify and clarify the text.
- **Line 385.** In this caption there is an excess of one parenthesis: '((picture c))'
- **Lines 417-431.** Please summarise all these data into a table.
- **Line 434.** 'The disasters become much more serious'. Please add a reference for this statement.
- **Line 437-438.** 'In summary, there are several conclusions of this study which need to be discussed'. This line can be removed.
- **Line 449.** Which are these 'more threatened' regions?
- **Lines 465-466.** Source of this statement?
- **Lines 475-476.** 'The 15 factors are independent...'. How do you know? Explain accordingly in the methodology section.

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