Ocean Science
Discussions

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Interactive comment on "Multivariate analysis of extreme storm surges in a semi-enclosed bay" *by* Yao Luo et al.

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Received and published: 22 March 2017

The manuscript 'Multivariate analysis of extreme storm surges in a semi-enclosed bay ' by Luo et al. using a multivariate extreme statistical method to predict extreme storm surge probabilities in the Beibu Bay. Being a semi-enclosed bay in the northwestern South China sea, it is an ideal spot for studying the storm surge. The tidal gauge data at two stations are used in the study. The statistical method has its advantages in the probability prediction and can be applied in the area where the observational data can be obtained. The topic of this study is interesting and deserve further investigation. The ms is in good quality and the analyses is reasonable. I recommend this ms being accepted after revision.

There are several aspects need to be addressed during their revision:

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Discussion paper

1. The description of the methods and its applicability can be improved. The ms need to be reorganized to clarify the methodology and its related physical meaning in the storm surge study. This will lead to a better oceanographic view with the statistic method as a tool.

2. There are only two tidal gauge stations being used in this study. The storm surge usually propagate along the coastline as the typhoon approaching. The comparison is made between simulation and observation at station Beihai in Fig. 5. Which station is used while doing the simulation? Only station Dongfang or both stations? If more stations are available in the future study what can we expected?

3. L137: 'The duration of a typhoon surge in the Beibu Gulf is approximately 100 h'. How to get this specific value of '100 h'? The authors should at least explained how this duration hours are estimated based on how many typhoon events in this area. Will this duration hours affect the final conclusion if someone else get different duration hours?

4. It will be great if the authors can choose a specific period to compare the predicted and observed CP. For example, using the data from 1975 to 1995 to do the statistical analyses and decide the equation, and comparing it with the observed results from 1996-1997. Another question is if the data length can impact the simulation result? This should be indicated in the ms because data samples can be vary at different area.

5.Wording. The ms need to be edited carefully. There are several obviously misspelled and improperly used words in the ms.