Response to Editor's Comments and Suggestions

1. Consider adding the reference to the Section number (e.g., "2.1") in the figure where the processes are described.

Response: Thank you for your suggestions. We add the references of different method section numbers in the Figure 1 where the processes described. The updated figure as follows:
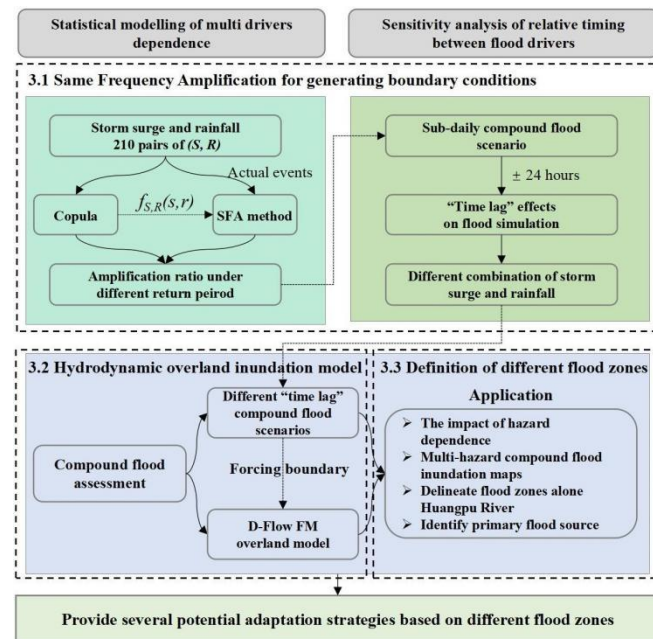

Figure 1: Flowchart of this study.

2. Two points here:- Maybe explain in a sentence why the SFA is needed to begin with. - The way the equation is presented, I would expect A to linearly multiply V0 in time, resulting in a constant shift of the value of interest. But this is not what is visitable in Figure 3. So I assume A is not a linear constant multiplication?

Response: Thank you for your valuable comments. To clarify the Same Frequency Amplification (SFA) method, we added the followings: "The SFA enables the consistent amplification of input variables across different frequency bands, ensuring that the derived signals maintain their original characteristics while enhancing their magnitudes for more accurate modeling and analysis." We agree with your comments and in the revised manuscript, we clarified that A is a constant factor that influences the value of storm surge and rainfall in a linear manner. We included a more detailed explanation in the manuscript as follows: "A represents a constant amplification factor that interacts with $v_0(t)$ in a linear manner. It is the ratio between the potential designed value calculated by the Copula model and the observed values from the 9711 compound flooding events (Figure 3)."

3. I couldn't find information on the copula model in the manuscript. Which copula is used? How was it set? variables, uncertainty... Some further information is needed.

Response: Thank you for your insightful comment about the Copula model. We built the Copula model via 210 compound flooding events caused by storm surge and rainfall in Shanghai local. In the manuscript, we described how the copula was set up, including the process of selecting the appropriate copula type and estimating its parameters. The revised manuscript is "We employed the Gaussian Copula, which is well-suited (Maximum Likelihood Estimation) for capturing the dependency via 210 compound flooding events caused by storm surge and rainfall in Shanghai area. These design values derived from the probabilistic dependence model presented in Xu et al., 2022. Readers are referred to (Xu et al., 2022) for details on the selection of the severity and magnitude of the event of interest."

References:
Xu, H., Tian, Z., Sun, L., Ye, Q., Ragno, E., Bricker, J., Mao, G., Tan, J., Wang, J., and Ke, Q.: Compound flood impact of water level and rainfall during tropical cyclone periods in a coastal city: the case of Shanghai, *Nat. Hazards Earth Syst. Sci.*, 22(7), 2347-2358, doi:10.5194/nhess-22-2347-2022, 2022.

4. I couldn't find any reference to figure 8 in the text. Either refer to it or remove the figure.

Response: Thank you for pointing out missing reference for Figure 8. We revised the manuscript to include a reference to Figure 8 at the end of second paragraph in section 5.

5. To meet with FAIR, and for the benefits of the readers, I would suggest having your copula-SFA model available (with an example) online, via Zenodo or other archive platform. This is not a most but highly suggested.

Response: Thank you for your valuable suggestion regarding the availability of our Copula-SFA model. We provide the model along with example on 4TU (https://data.4tu.nl/datasets/4ff14dc0-a290-4ffd-985f-3d68b9c25644/1). Thank you once again for your constructive suggestion.