This study provides overview of risk assessments coastal and pluvial compound floods across Semi-arid/sub-tropical climate types, a transitional regime that blends both hot tropical climate regimes of the South and temperate climate zone. The insight driven from the study helps in developing regional resilience to floods as they have claimed the FEMA provides guidelines for coastal-fluvial, tide-surge, surge-riverine interactions related hazards in addition to the coastal hazards solely-based on tide, surge and hurricane-induced flooding events. The study also provides recommendation of the choice of copulas and sensitivity of hazard to sample types.

Although the added value and motivation for the analyses is robust and seeks immediate attention, the analyzed method has several limitations. Therefore, I would recommend for major revisions before acceptance to this venue. I have summarized my comments as below:

A. Major Comments

1. Their definition of compound events are not correct. The sampled AM extremes do not represent the compound event. Since unlike drought, which is a slowly developing phenomena, the occurrence of floods is faster; varies from few hours (*e.g.*, flash flood) up to a week of time scale (considering inundation effects). The authors define AM event to be when the maximum sampling pairs of single largest precipitation and Observed Water Level (OWL) happens within *a year or month*. However, the paired events can only be qualify as ‘compound coastal-pluvial or riverine floods’ when the two drivers occurs coincidently if not successively within a *limited time window*. Based on large-scale climatic pattern this time window is often taken as a within a week of occurrence of the first event. This is because it may take a few days to inundate from rivers as well as coast to know the combined impact, which may not be possible to detect within ± 1-day of occurrence of the event. Secondly, a large watershed may respond within few days of occurrence of the storm event – it may take a few days’ time to reach water to flow to the outlet, when it meet with coastal storms. Therefore, a lag-days to be considered to sample such events, however, it would be based on the time of concentration of the watershed and not the user defined input.

Considering a single largest precipitation observation within a year or month to the largest OWL observation within its 24-hour accumulation period, is the one, which could be categorized as a compound event, per *se*. However, here also the question lies whether the watershed is large/medium sized and the land use pattern of the watershed. For example, in case of a large rural (or agricultural intensive) watershed the time of concentration would depend upon the catchment area and flow path length to travel water from the remote point to the catchment outlet. Therefore, the choice of 24-hr/a day may not be adequate to model dependency between two drivers.

Based on the above two comments I find the definition of compound event sampling adopted in the manuscript is erroneous. Rather, their definition could be categorized to solely a multivariate interpretation of extremes.

Further, for wet season monthly maximum and wet season monthly coinciding method of samples, the sampling methods are not properly described. It is not clear whether these two samples follow the iid behavior. This is because as the sampling was performed only based on wet seasons, if they are sampling large number of events then the method fails to preserve iid assumption for frequency analysis. This would calls for nonstationary method, instead of stationary method adopted here.

For example, in Page 24, Line 309: By sampling entire wet season, you would not be able to sample iid events; also it is not the true representative of rare events.

2. The authors have used the vast array of copulas, based on their simulation they infer that the three families are describing the paired event characteristics sufficiently well. However, they have not shown any formal goodness-of-fit that suggests credibility of selected copulas to fit the multivariate extremes. Neither, they discuss out of the three which copula family performs the best for modelling multivariate extremes.

3. Although they have coined a term “Structural” in the return period concept, but in the discussion or results section, I could not find any dedicated section that distinguishes structural or failure probability concepts.

4. 15. Line 327: 'OR' scenario may not provide an accurate estimate of compounding condition since in this case, only one of the variable is assumed to exceed over the other. The simultaneous or joint exceedance of variables are considered in ‘AND’ scenario case only.

B. Minor comments

5. Page 3, line # 60: Although authors have pointed annual maxima sampling generates a worst case scenario; this has been followed earlier. Moftakhari et al. (2017) modeled failure probability for the extreme scenario aiding disaster response considering concurrence of the largest annual freshwater inflow to the lower estuary and the corresponding largest observed hourly water level within ±1 day.

6. Page 3, line # 65: cold & wet fall season (Ganguli et al., 2019a.b), where authors compare coastal compound floods relative to winter seasonal peak discharge and found larger amplifications upon considering compounding effects than solely accounting for high winter (November-March) discharge over northwestern Europe.

7. Page 3, line # 89: The authors have claimed that in current compound flood literature, the terms tides and storm surges are interchanged; this is not true. Check Devlin et al., (2017); Ganguli and Merz, (2019); Ganguli et al. (2020) as a reference. While in Ganguli and Merz (2019) observed high coastal water level was used that includes tides, storm surges and wave setup, for Ganguli et al. (2020) only meteorologically driven skew surge was considered.

8. Table 1: several references are missing:

a. River discharge and water level: (Ganguli and Merz, 2019a, b).
b. River discharge and storm surge: (Ganguli et al., 2020).
c. River discharge and volume (Reddy and Ganguli, 2012).
d. Rainfall and tide: (Bevacqua et al., 2020).
e. Combination of river discharge, volume and duration (Ganguli and Reddy, 2012).

9. Fig. 2 Captions: Expand each of the terms, AM, AC, WMM, WMC, SM, S, and SD.

10. Page 8: Line #148: separates supercritical vs sub-critical region.

11. In Eqn. 12: it was not shown how individual marginal CDFs were included in the expression to get the Kendall ‘AND’ return period.

12. In Eqn. 13: Are you considering Kendall's return period to define this case? If it is, it should be properly expressed.

13. Page 10: Line 210, the choice of marginal distribution depends on the tail property: if the shape of density function show fast decaying pattern; exponential /Gumbel (GEV-I) distribution would be good; however, for long upper tail, heavier tail distribution is being preferred. Therefore, I would suggest to summarize the basic summary statistics of driver variables, including their skewness and excess kurtosis. Based on that they can make inferences, why certain univariate marginal fits the best.

14. Page 12: line #245, It is not clear if the goodness-of-fit is performed for the choice of copulas? Different copulas behaves differently and one has to select a copula class, which can represent the sample on the basis of their ability to simulate complete vs upper tail dependences. This concern I have also raised as a major comment.

15. Page 18: Line 269, We only consider compounding aspects if they occur within a limited or close time intervals, for example, within a week of occurrence; because of large sized of a catchment, it is physically may not be possible that both events co-occur simultaneously; a lag effect to be considered during event sampling. The response of medium to large sized watershed to a rain event is proportional to the time of concentration of the watershed. This can be utilized to estimate the lag effect.

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