*Supplementary*

Changes in Concurrent Meteorological Extremes of Rainfall and Heat under Divergent Climatic Trajectories in the Guangdong–Hong Kong–Macao Greater Bay Area

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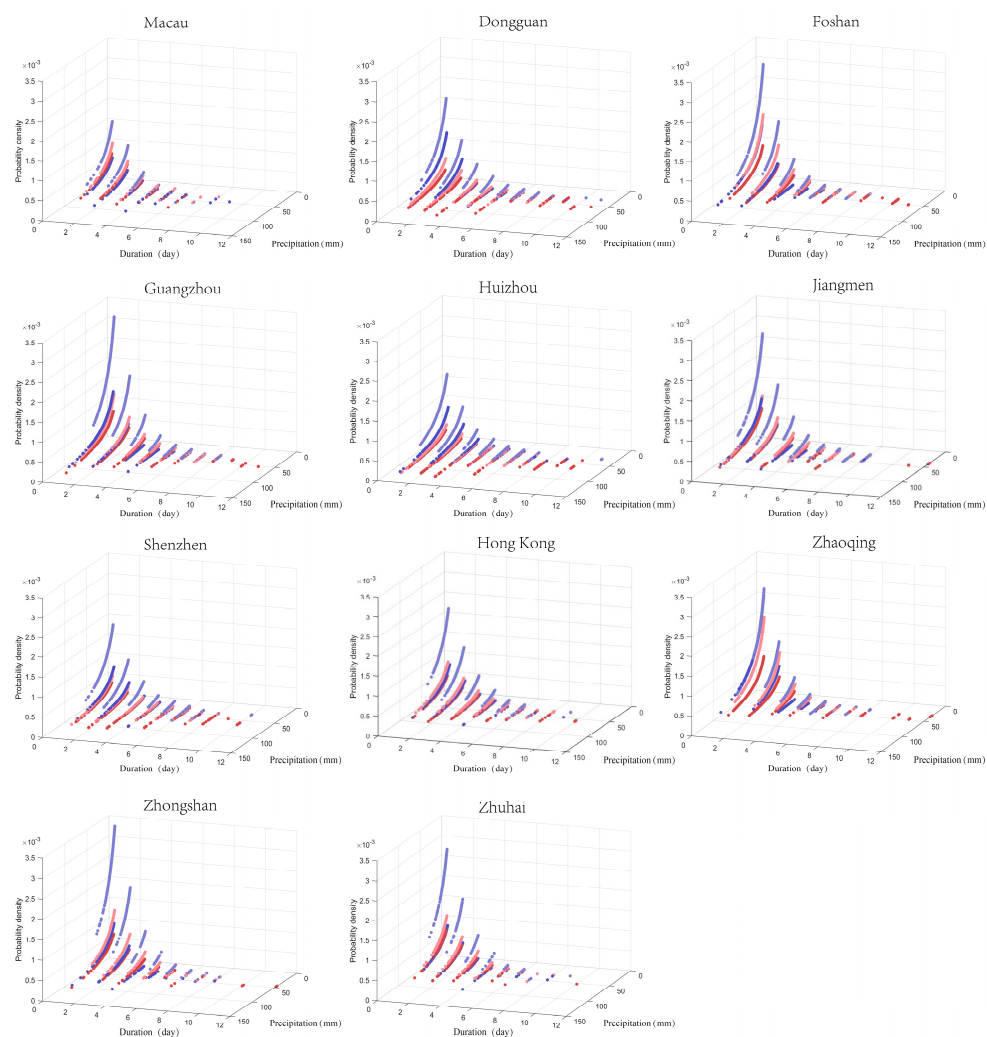
Figure S1. Probability density of UER.
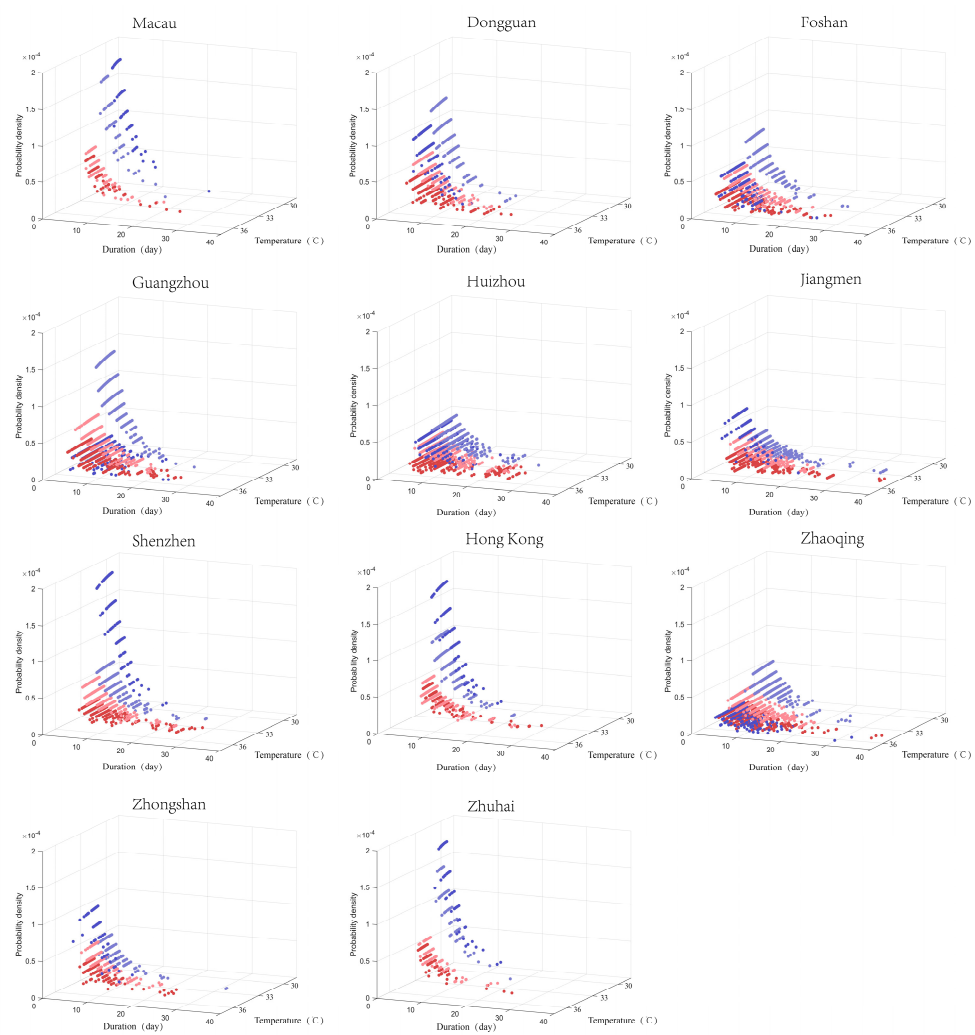
Figure S2. Probability density of UEH.

Text S1. Methodology of Sensitivity analysis.

The potential alterations in the hazards associated with compound UER and UEH phenomena within the GBA are predominantly modulated by fluctuations in extreme precipitation and thermal events, as well as their intricate interplay. To discern the relative contributions of these salient determinants to the evolutions in CME hazards, a triadic experimental framework was instituted, drawing inspiration from the methodologies delineated by Bevacqua et al. [58]. Using the 35-year Recurrence Period (RP35) as an example, we firstly estimate the 35-year Recurrence Period during the historical period based on Equations (3) and (4) for each grid. In experiment (a): we fix the marginals of UEHs and the dependence between UEHs and UERs in the historical period (keep the fitted copula for the historical period) and use the marginals of UERs in the future period to calculate the updated 35-year Recurrence Period (RP_flood), using the historical 35-year UER and UEH as inputs. We attribute differences between RP_flood and RP35 to changes in UERs. In experiment (b): as experiment (a), but employing the marginals of UEHs in the future period to obtain the updated 35-year Recurrence Period (RP_hot). We attribute differences between RP_hot and RP35 to changes in UEHs. In experiment (c): we keep the marginals of both UEHs and UERs and only exchange the dependence between both hazards (employ the fitted copula for the future scenarios) to compute the updated 35-year Recurrence Period (RP_dependence). We attribute differences between RP_dependence and RP35 to changes in dependences between UERs and UEHs.