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Urban Signatures in the Spatial Clustering of Precipitation Extremes over Mainland China

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Supplementary Information for

**Urban signatures in the spatial clustering of precipitation extremes over
mainland China**

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Figures S1 to S5

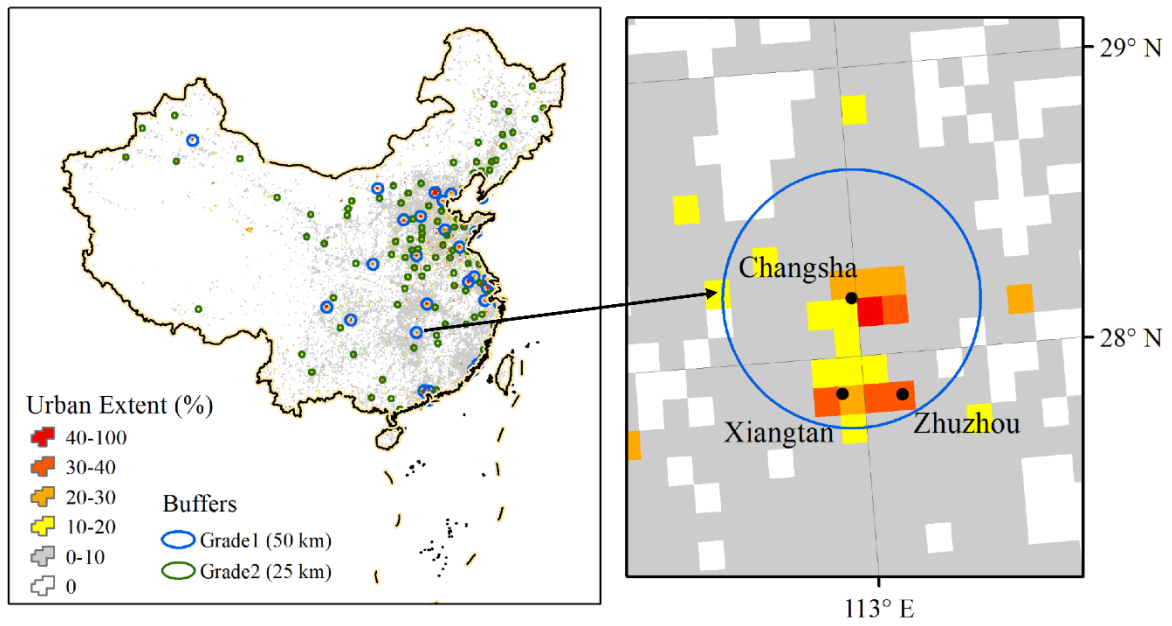


Figure S1. Location and urban extents of the Chang-Zhu-Tan city cluster. Xiangtan city and Zhuzhou city are enclosed by the 50-km circular buffer of Changsha city, and are taken as part of the Changsha UAR and excluded as single UARs in this study.

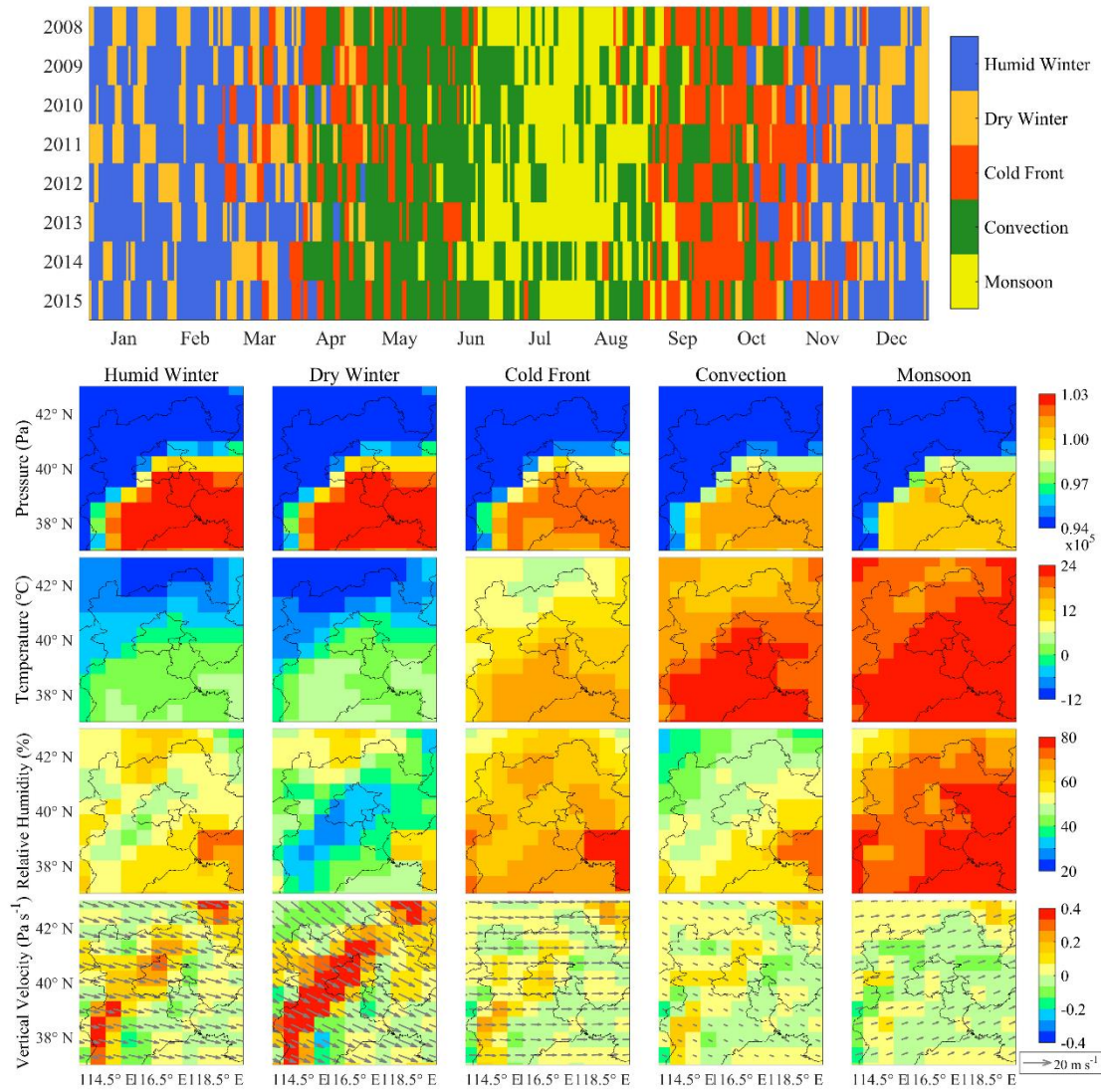


Figure S2. The cluster type of each day during 2008-2015 (top) and the spatial distribution for the mean values of the six climate variables for the five clusters (bottom) derived from the JRA55 data over the $6^\circ \times 6^\circ$ prediction region of Beijing. The wind fields at 500hPa are overlaid on the panels of vertical velocity. The five types are denoted as humid winter, dry winter, cold front, convection and monsoon, respectively, based on their synoptic background and dominant precipitation regime.

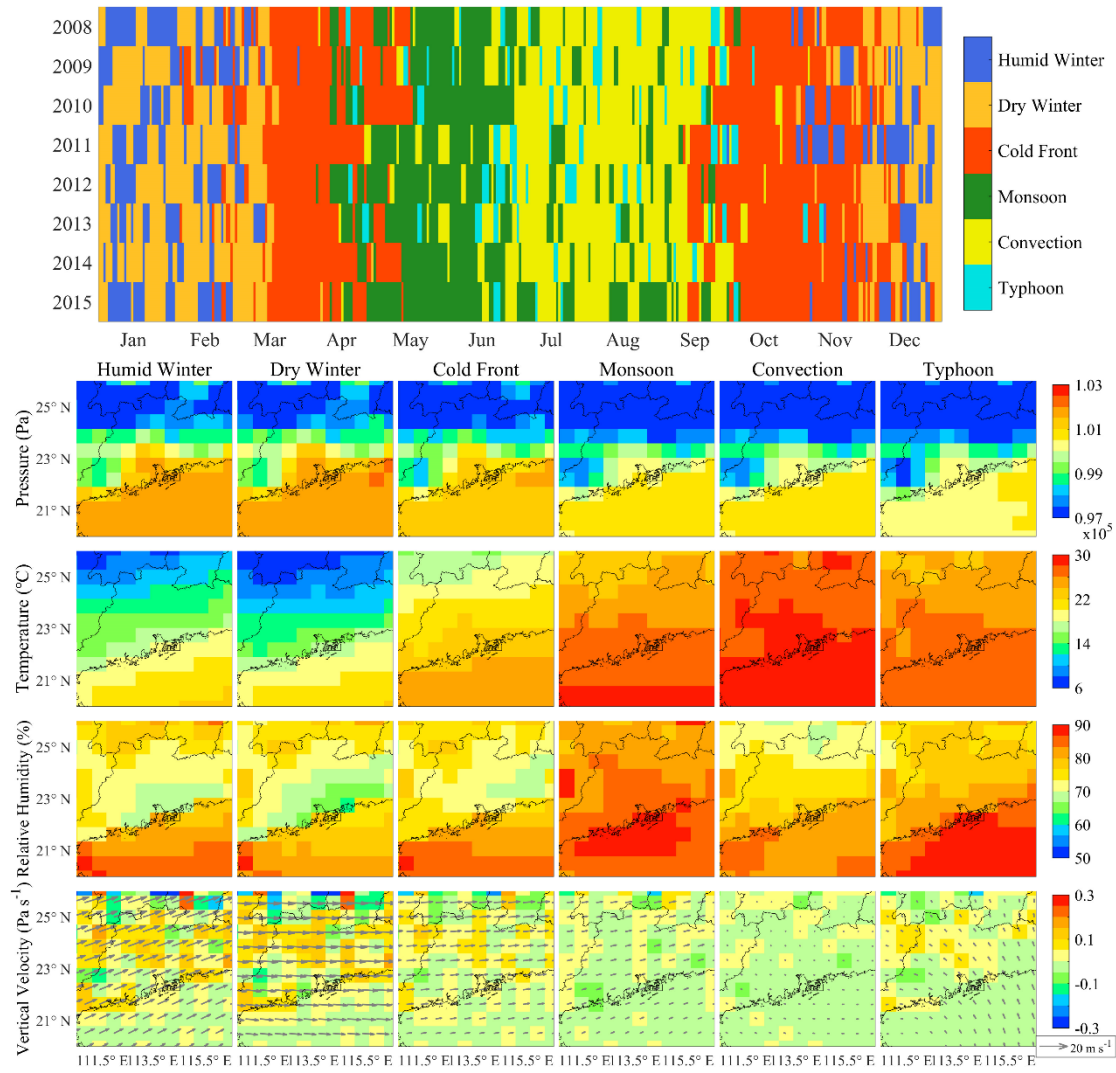


Figure S3. Same as Figure S1, but for the $6^\circ \times 6^\circ$ predictor region of the PRD area. The six types are denoted as humid winter, dry winter, cold front, monsoon, convection and typhoon, respectively, based on their synoptic background and dominate precipitation regime.

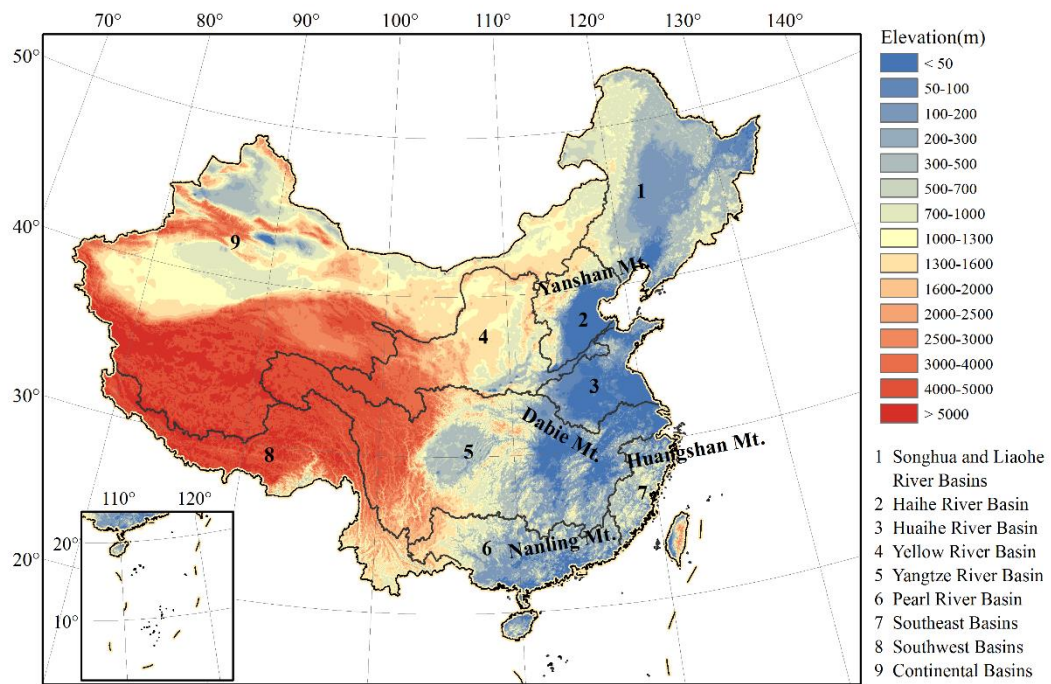


Figure S4. Topography over China and the division of nine main river basins.

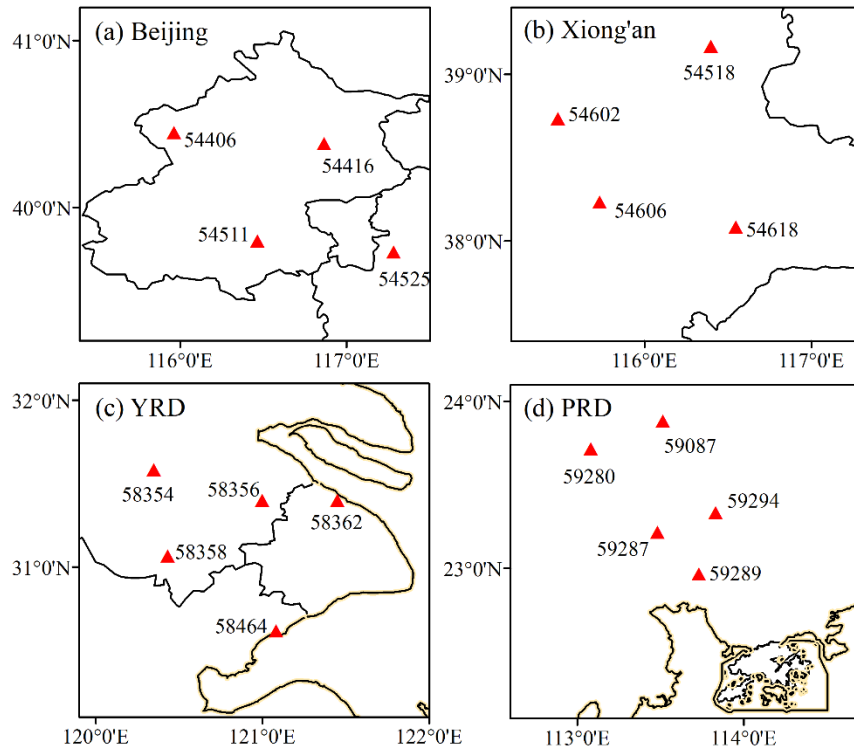


Figure S5. Locations of the meteorological stations over (a) Beijing metropolitan region, (b) Xiong'an new area, (c) YRD, and (d) PRD.