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Supplement of

Impacts of orography and urbanization on extreme precipitation event in Beijing during 2023

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Supplementary Information

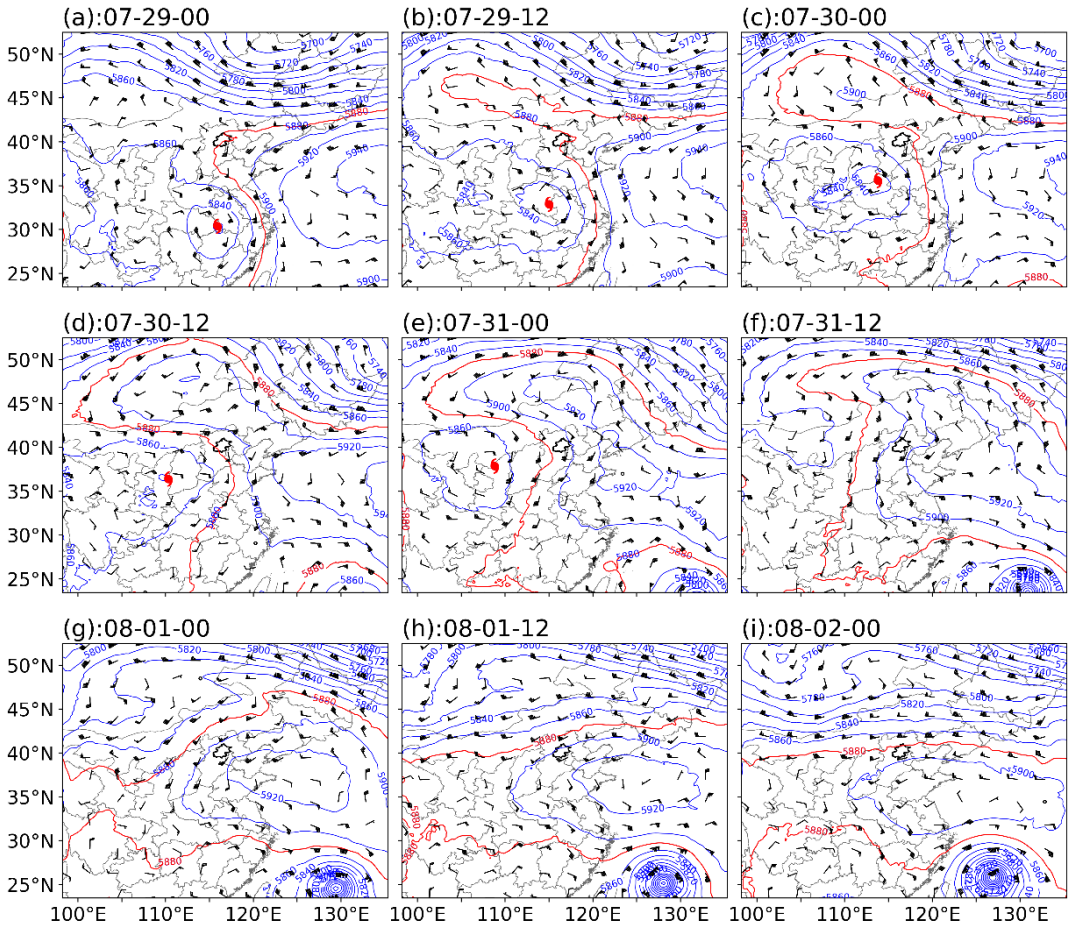

Figure S1: 500 hpa circulation pattern for the precipitation event of LU_2020 from WRF model. The blue solid lines represent geopotential height contours; the red solid contours represent position of subtropical high; the typhoon symbols in (a) - (e) represent residual circulation center of typhoon Doksuri.

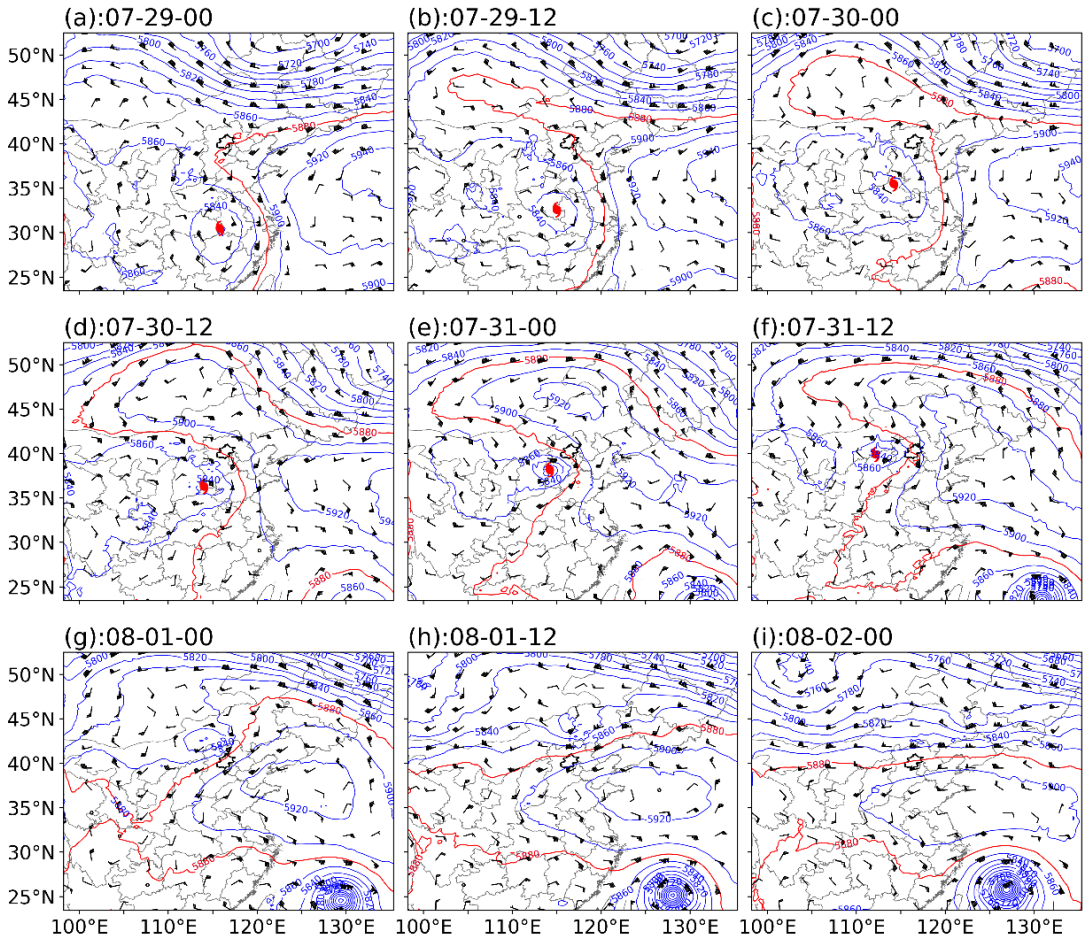

Figure S2: 500 hpa circulation pattern for the precipitation event of LU_nohgt from WRF model. The blue solid lines represent geopotential height contours; the red solid contours represent position of subtropical high; the typhoon symbols in (a) - (e) represent residual circulation center of typhoon Doksuri.

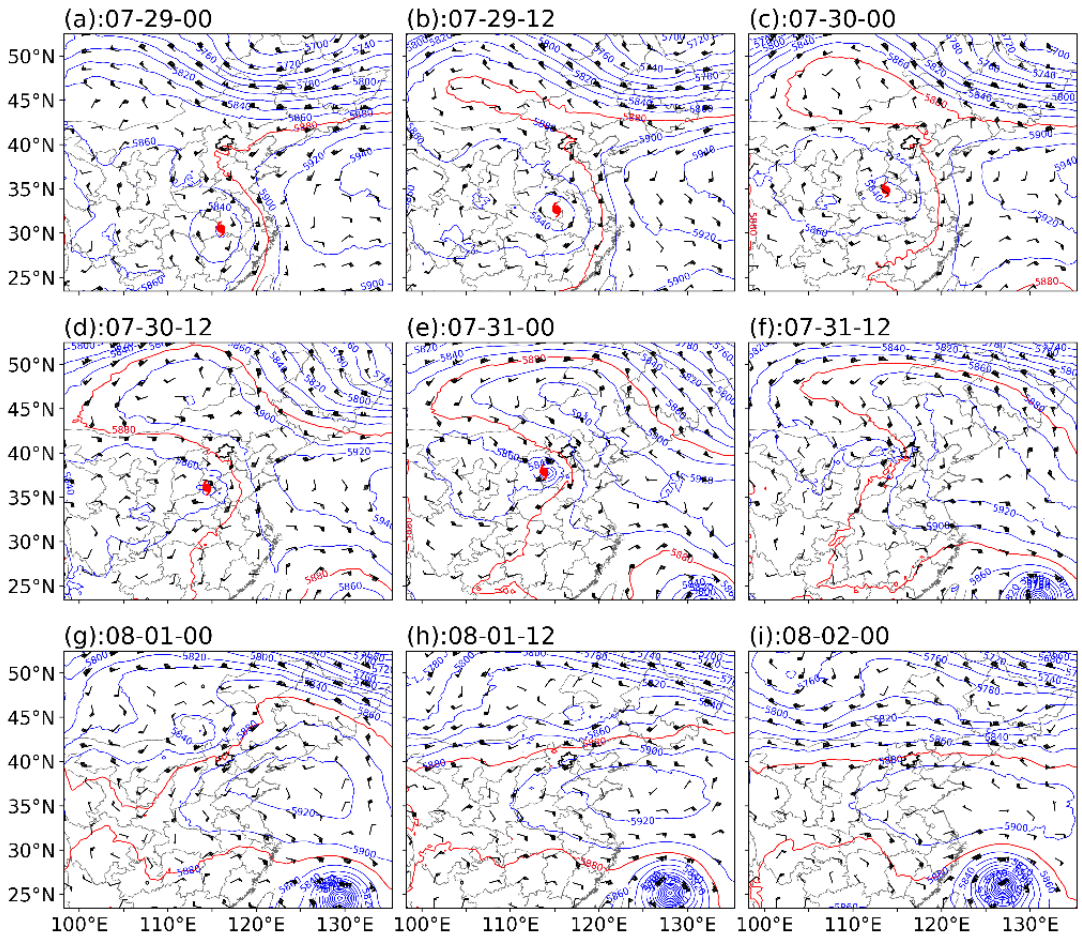

Figure S3: 500 hpa circulation pattern for the precipitation event of LU_nourb from WRF model. The blue solid lines represent geopotential height contours; the red solid contours represent position of subtropical high; the typhoon symbols in (a) - (e) represent residual circulation center of typhoon Doksuri.

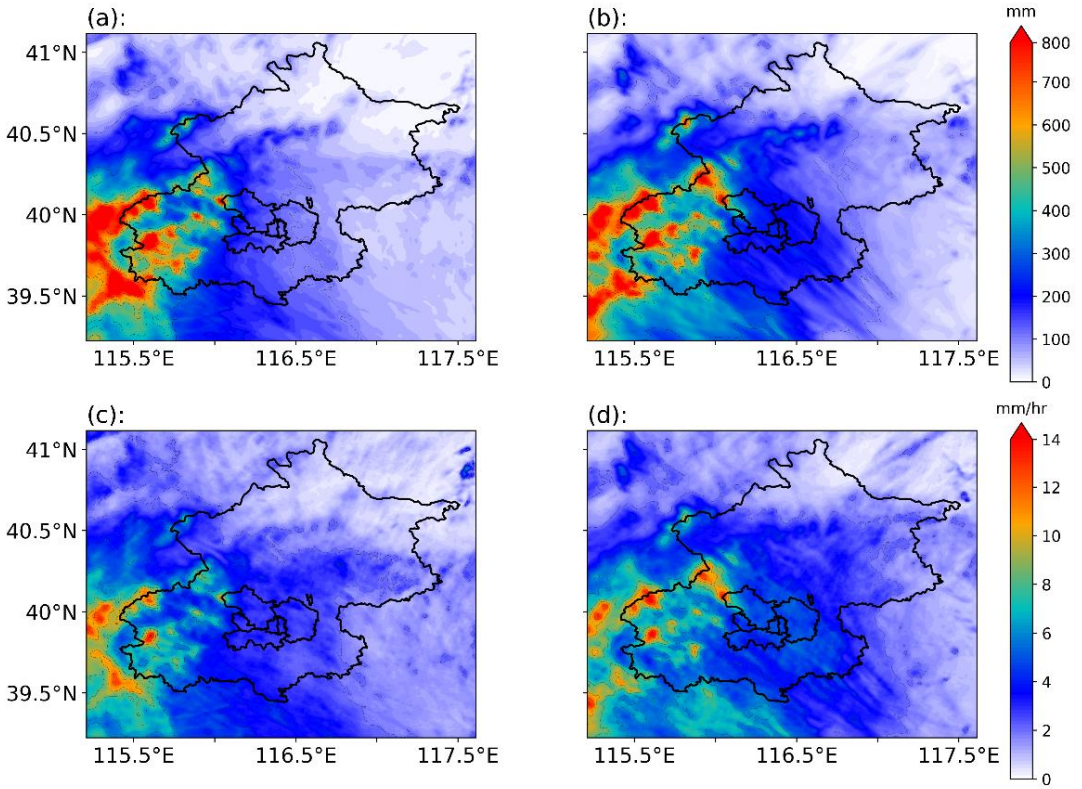

Figure S4: Comparison between simulated results of the events. (a), (b) represents the accumulated precipitation amount of LU_2020 experiment and 10 members ensemble mean, while (c), (d) represents the corresponding intensity simulation, respectively.

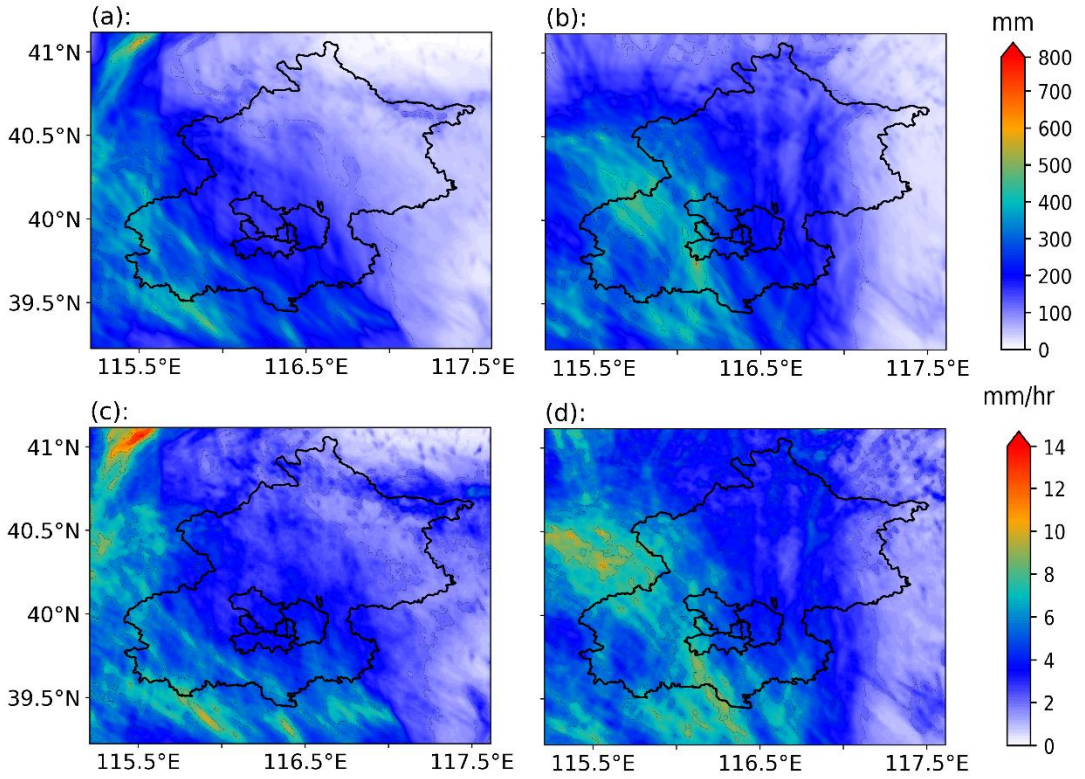

Figure S5: Accumulated precipitation and intensity distribution of the simulated results. (a), (b) represents the accumulated precipitation amount of 100 m removal experiment and 0 m removal experiment, while (c), (d) represents the corresponding precipitation intensity, respectively.

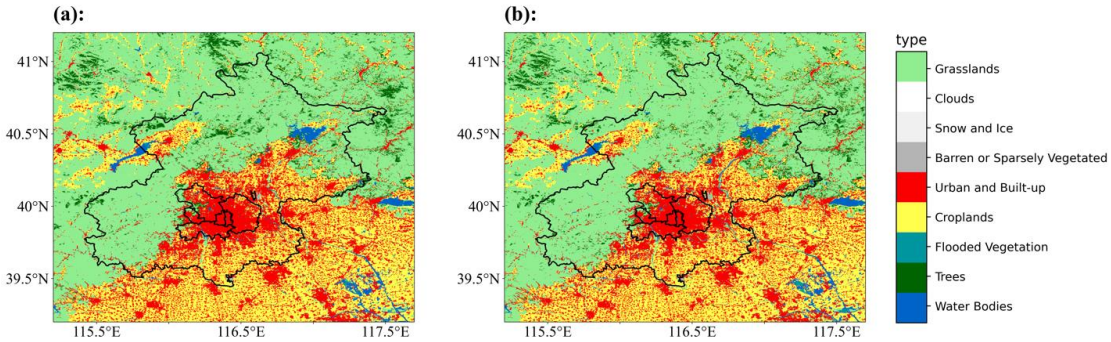

Figure S6: Comparison between land cover type in 2020 (a) and 2023 (b) in Beijing region from Sentinel-2.