Supplement of Atmos. Chem. Phys., 24, 631–647, 2024
https://doi.org/10.5194/acp-24-631-2024-supplement
© Author(s) 2024. CC BY 4.0 License.

Atmospheric Chemistry and Physics
Open Access
EGU

Supplement of

Impact of urban land use on mean and heavy rainfall during the Indian summer monsoon

Renaud Falga and Chien Wang

Correspondence to: Renaud Falga (renaudfalga@gmail.com)

The copyright of individual parts of the supplement might differ from the article licence.

Supplementary Material

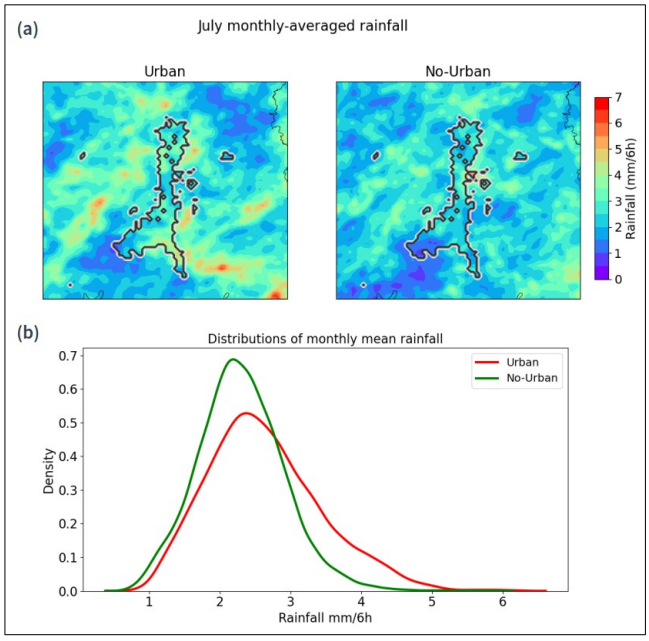

Figure S1 – Characteristics of the monthly mean rainfall. The spatial patterns of the July 2011 mean rainfall around Kolkata are shown in panel (a). The city limits are displayed with the black contour lines. The probability density functions of pixel based monthly-mean 6-hourly accumulated rainfalls corresponding respectively to the Urban and No-Urban run are plotted in panel (b).

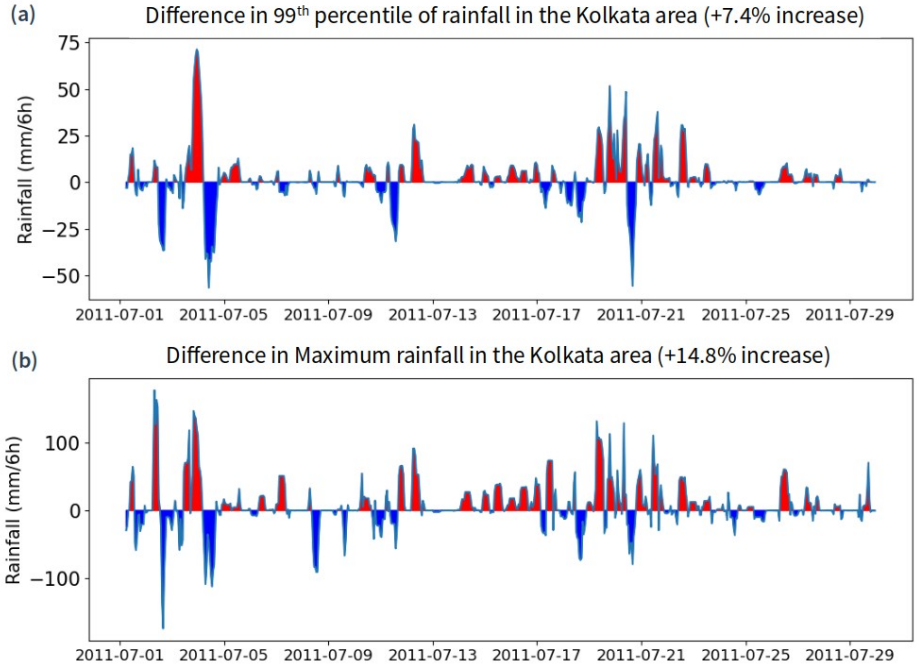

Figure S2 – Time series of extreme rainfall indicators. Top panel (a) displays the hourly 99th percentile of rainfall in the area and bottom panel (b) displays the hourly maximum values.

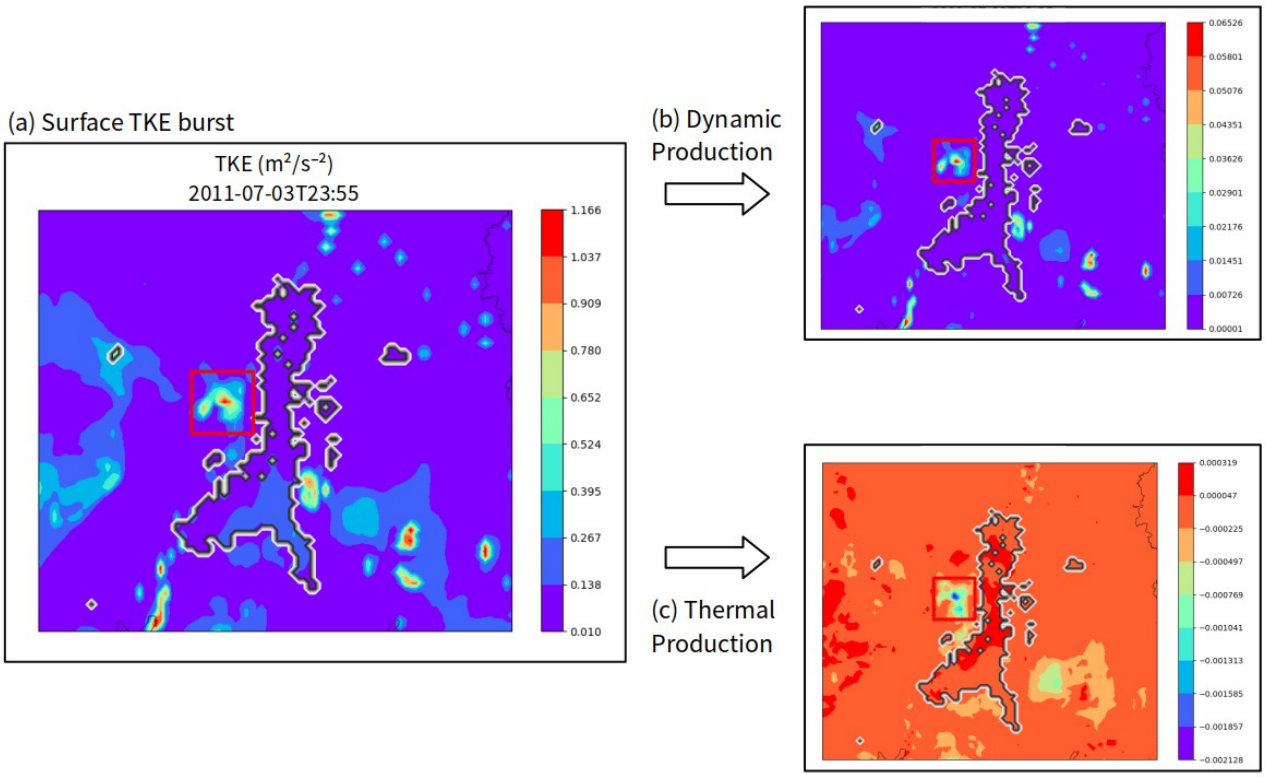

Figure S3 – TKE Burst at the surface of Kolkata in the Urban run (a), and both dynamical (b) and thermal (c) production of TKE at this time step. The dynamic production pattern correspond to the burst of TKE when the flow reaches the city. The thermodynamical contribution at this location is negative.

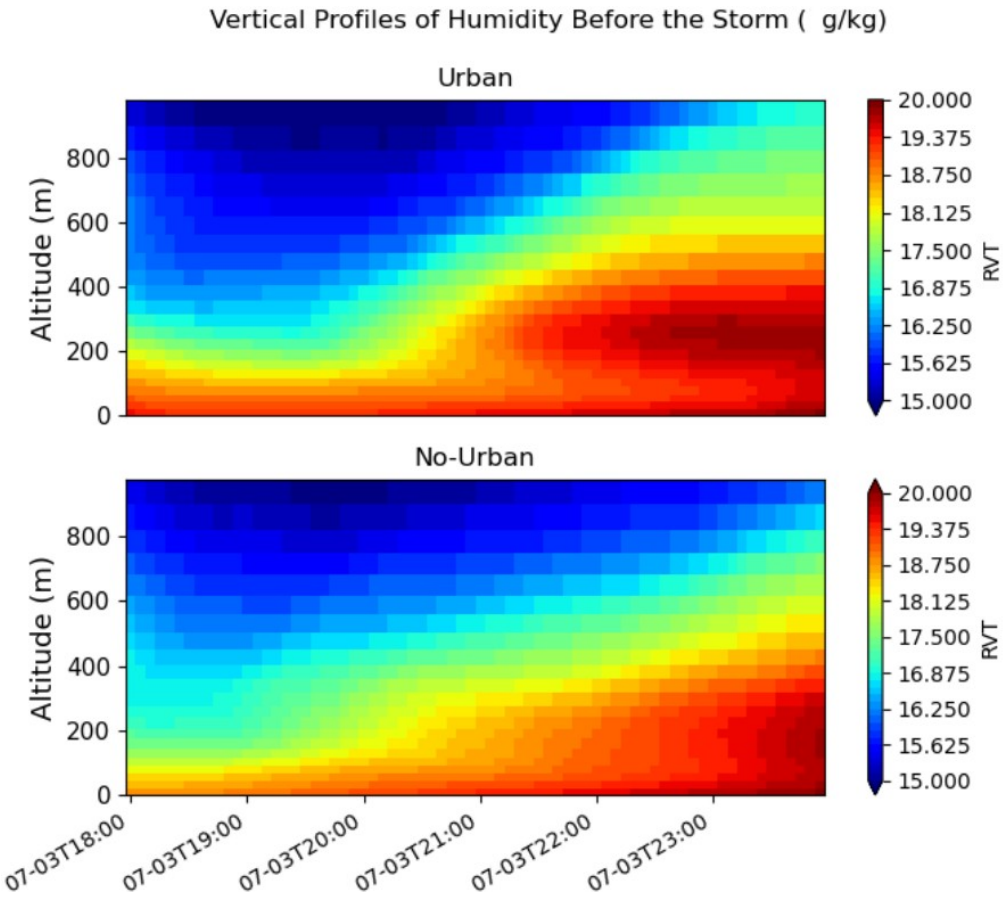

Figure S4 – Vertical profiles of water vapor mixing ratios averaged in the Kolkata area, the few hours preceding the storm

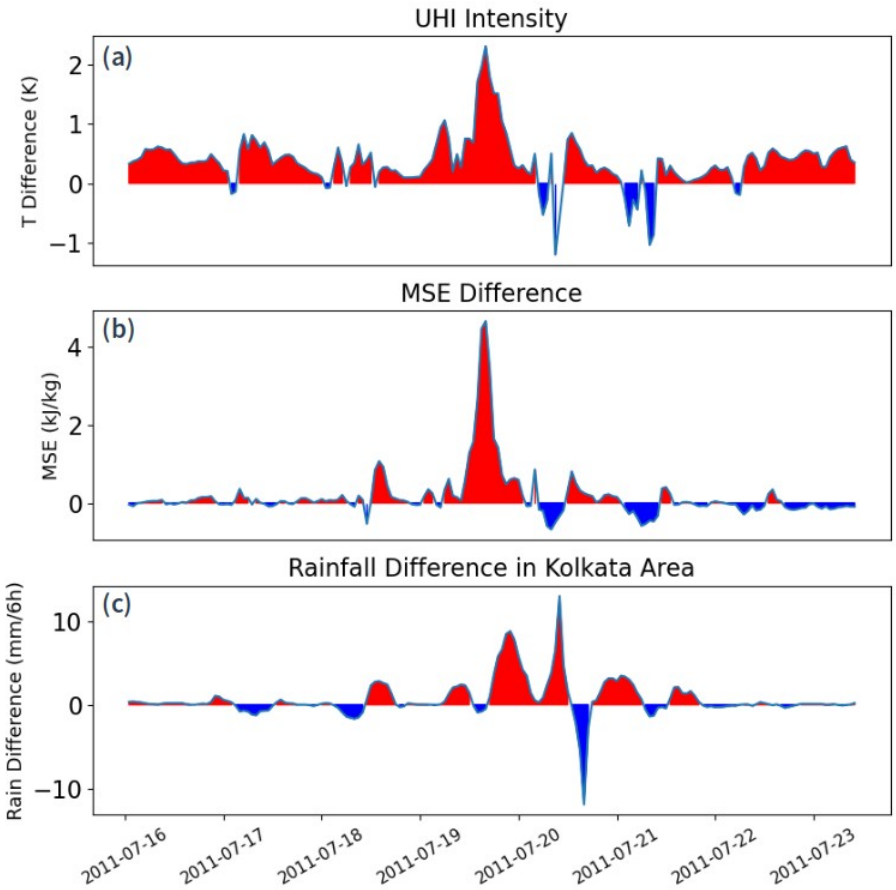

Figure S5 – Evolution of UHI intensity (a), defined as the difference in 2-meter temperature between Urban and No-Urban over Kolkata, as well as the difference (Urban – No-Urban) in surface MSE (b) along with the differences in rainfall (c). The latter two are both calculated in the Kolkata area.