

Supplemental material for

**Spatiotemporal Linkage and Transmission of Urban Heat Islands in
the Yangtze River Delta Urban Agglomeration: The Role of Urban
Heat Advection**

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28 **Table S1.** Number of automated weather stations in different regions.

	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	Rural
Number	2	19	12	20	9	45	9	24	3	3	22

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31 **Text S1.** The criteria for demarcating the rural reference area in the model

32 A rectangular rural reference area was delineated based on the locations of automatic weather

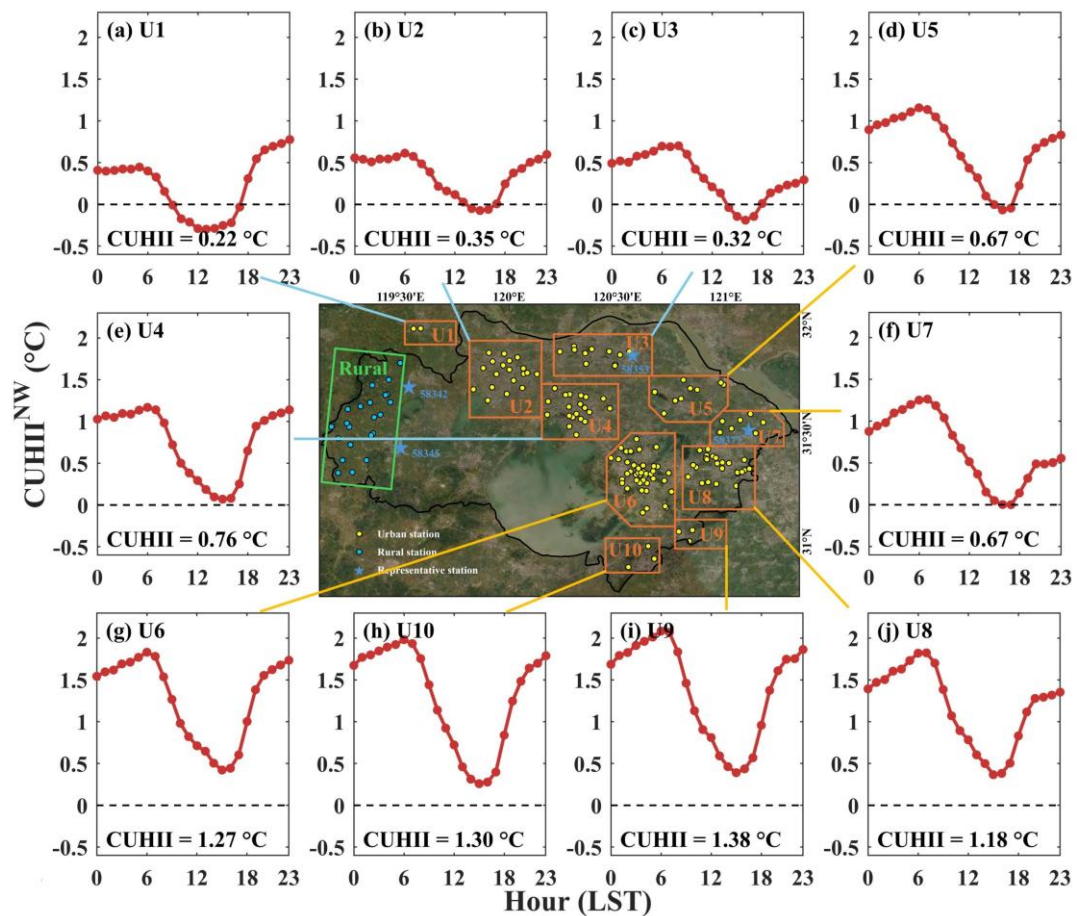
33 stations situated in rural regions. The selected area meets the following criteria: (i) altitudes

34 below 100 m, and (ii) land use/land cover type classified as Savannas, Croplands, or

35 Cropland/Natural Vegetation Mosaics.

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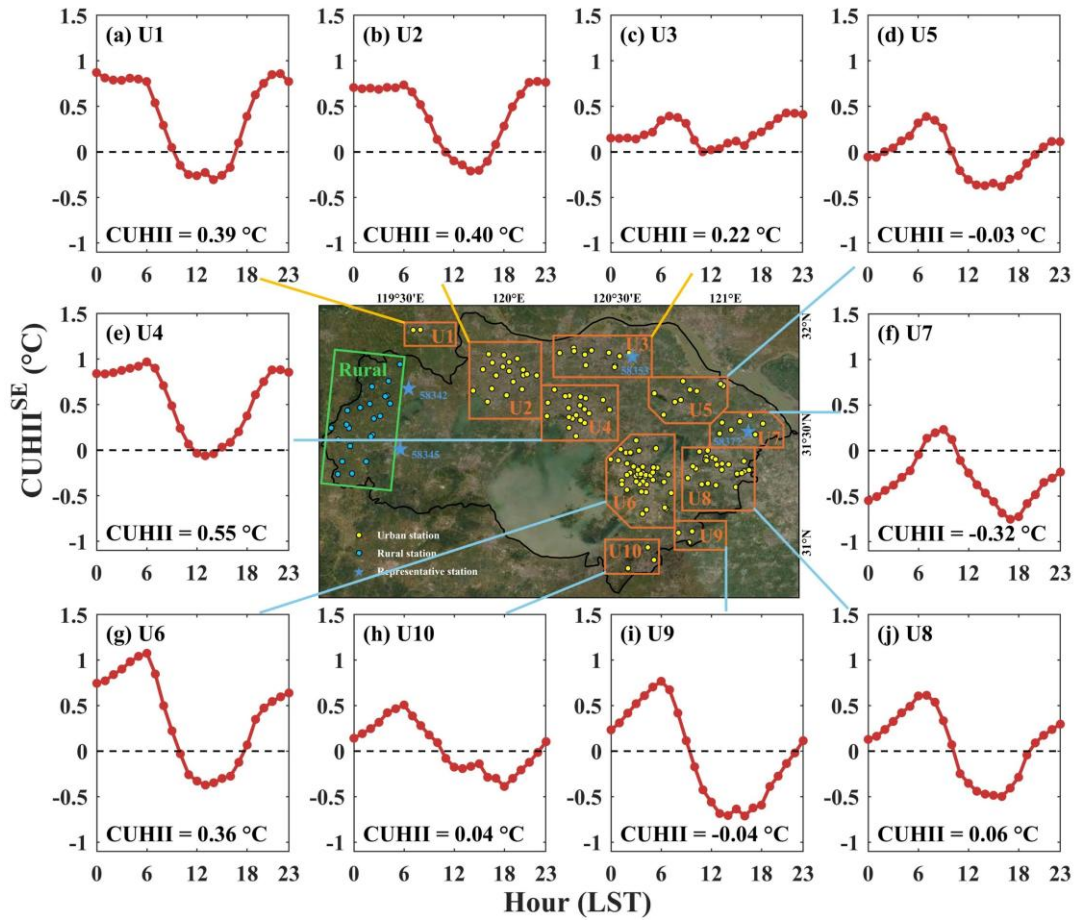
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39 **Figure S1.** Diurnal variation of hourly CUHII across different regions under northwest wind

40 conditions. The numerical values indicate the daily-averaged CUHII for each region.

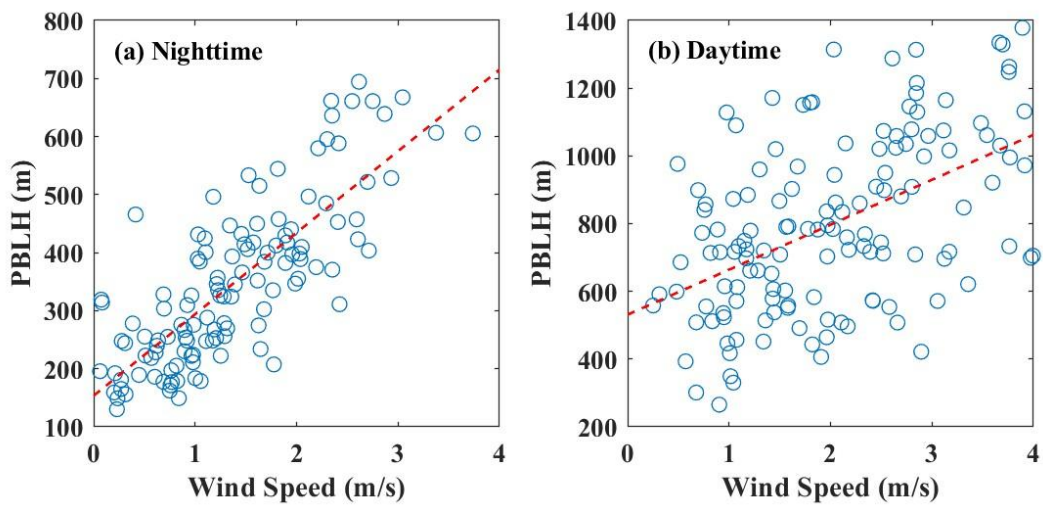


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42 **Figure S2.** Same as Figure S1, but under southeast wind conditions.

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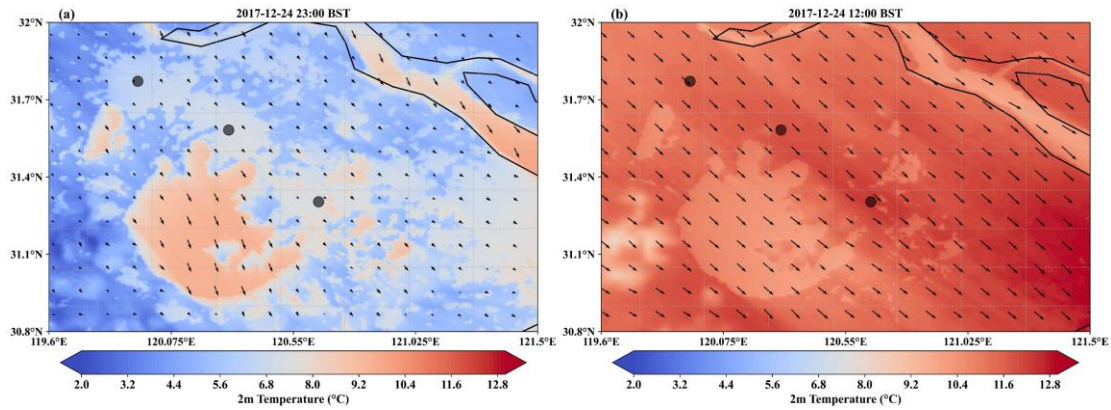
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46 **Figure S3.** (a) Nocturnal and (b) diurnal scatter diagrams of wind speed and PBLH. The red

47 dotted lines indicate linear fits.

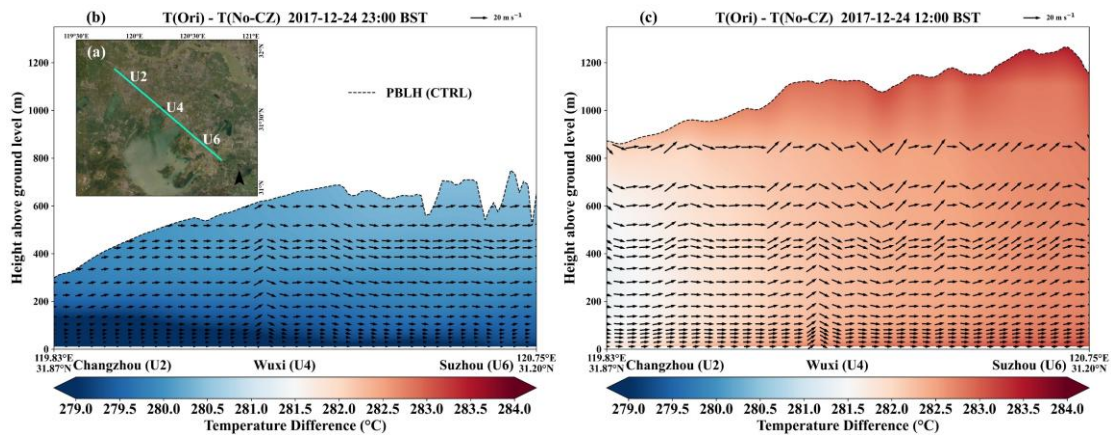


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49 **Figure S4.** (a) Nocturnal and (b) diurnal 2-meter temperature and 10-meter wind field of the
 50 control simulation at (a) 23:00 BST and (b) 12:00 BST. The three marked locations from
 51 northwest to southeast correspond to downtown areas of Changzhou (U2), Wuxi (U4), and
 52 Suzhou (U6), respectively.

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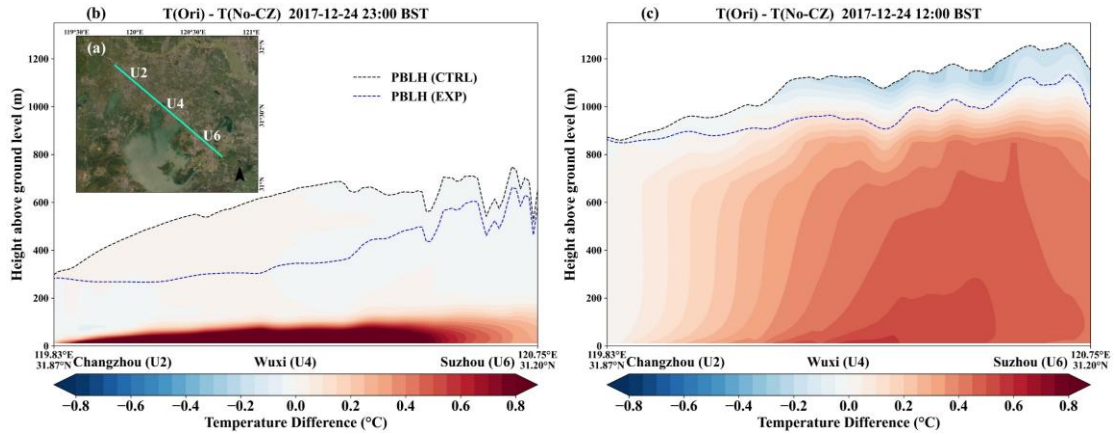
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56 **Figure S5.** (a) Geographical location of the vertical cross-section. (b, c) Vertical cross-sections
 57 of the potential temperature of the control simulation (CTRL) at (b) 23:00 BST and (c) 12:00
 58 BST. The black solid lines denote the PBLH in the CTRL, respectively.

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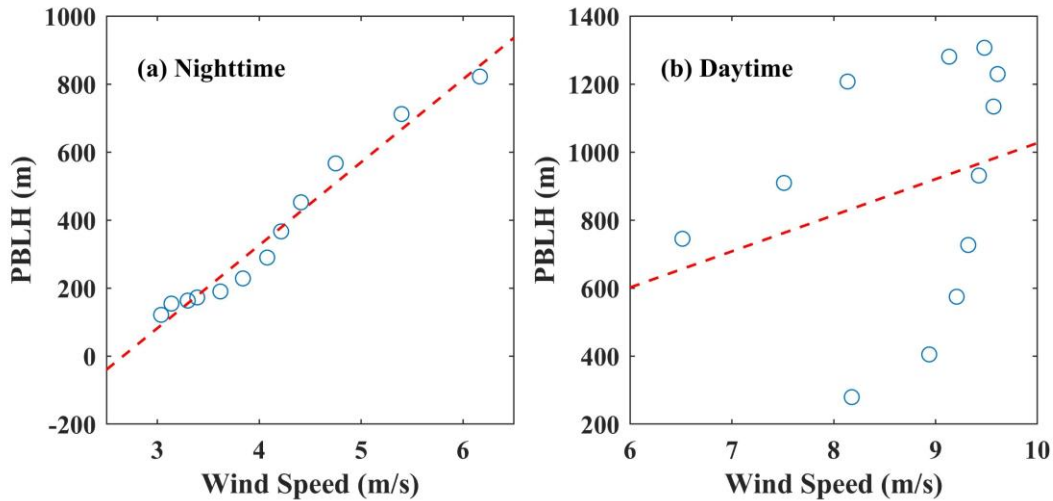
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63 **Figure S6.** (a) Geographical location of the vertical cross-section. (b, c) Vertical cross-sections
 64 of the potential temperature differences between the control simulation and the sensitivity
 65 experiment (CTRL minus EXP) at (b) 23:00 BST and (c) 12:00 BST. The black and blue solid
 66 lines denote the PBLH in the CTRL and EXP simulations, respectively. Note that in addition to
 67 Changzhou (U2), LULC in Wuxi (U4) was also replaced by croplands in the sensitivity
 68 experiment.

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71 **Figure S7.** Same as Figure S3, but for the 24-hour continuous WRF simulation results within the
 72 ROI, spanning from 08:00 (BST) on 24 December 2017 to 07:00 (BST) on 25 December 2017.

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