Supplemental Material

Supplementary Materials

Performance evaluation of a smart mobile air temperature and humidity sensor for characterizing intra-city thermal environment

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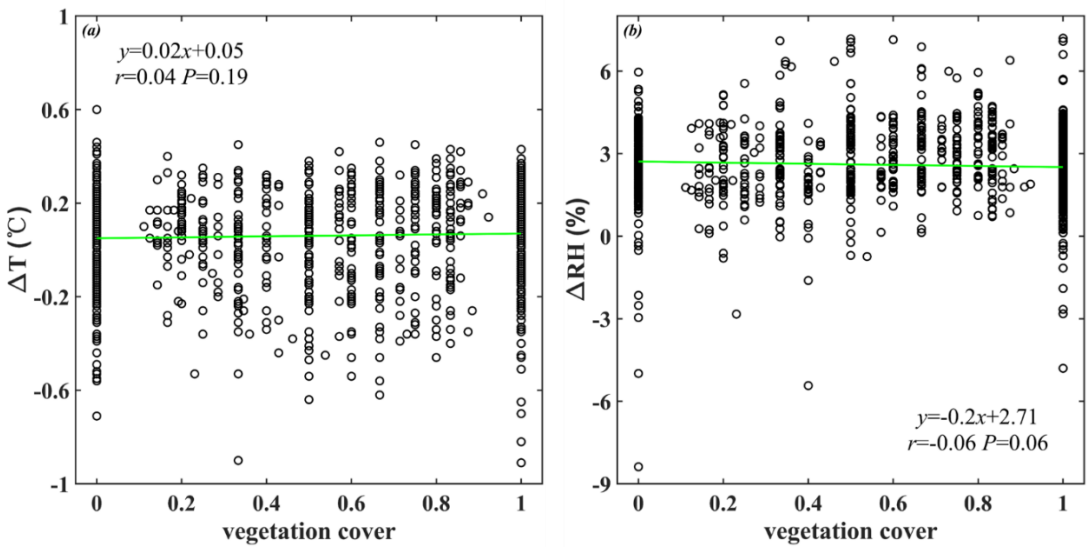

Figure S1. Relationship between vegetation cover fraction (10 m buffer radius) and difference in air temperature (a) and relative humidity (b) between Smart-T and I-Met. Also shown are regression line, regression equation, linear correlation coefficient (*r*) and confidence level (*P*).

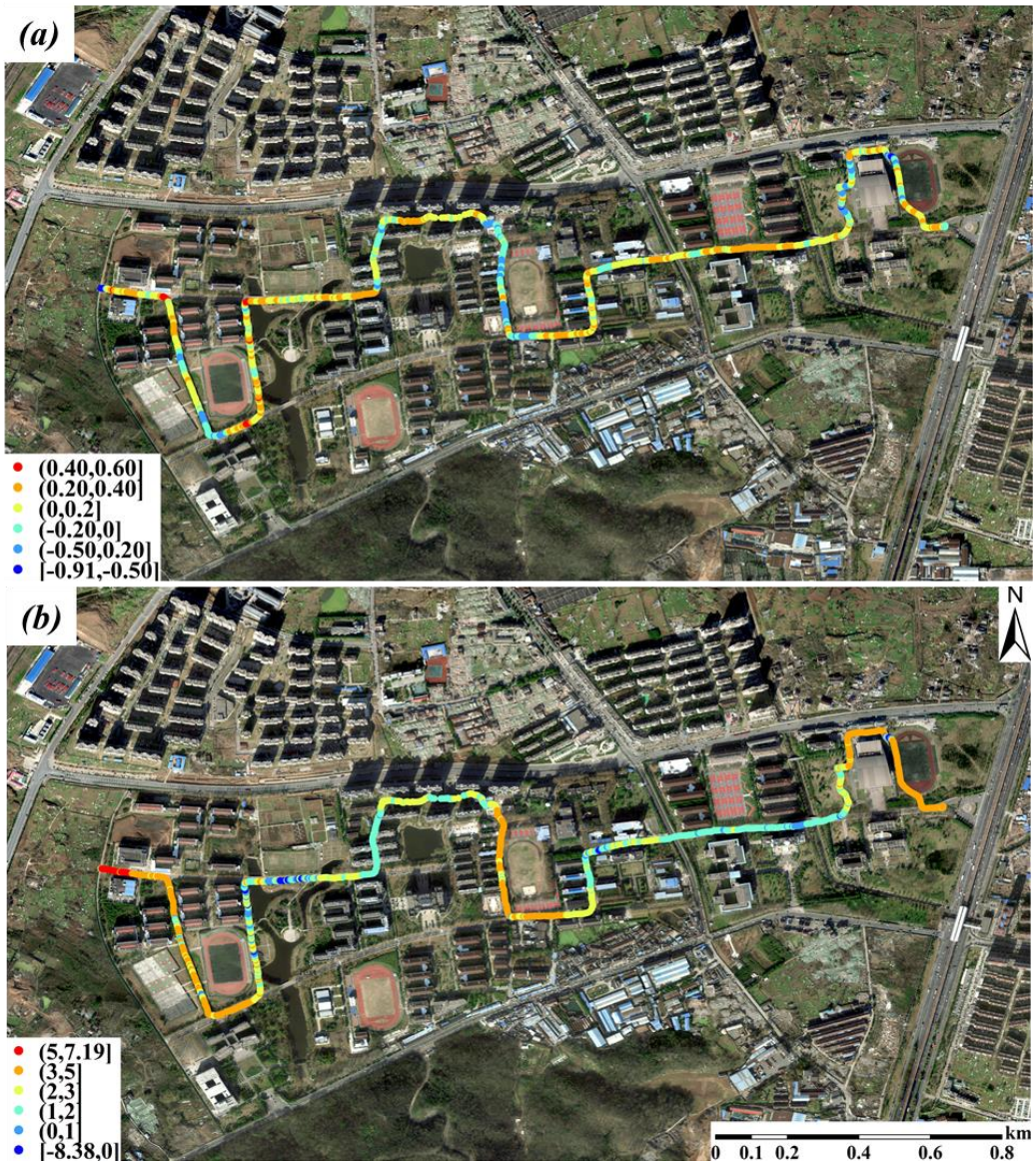

Figure S2. Spatial pattern of difference in air temperature (a) and relative humidity (b) between Smart-T and I-Met.

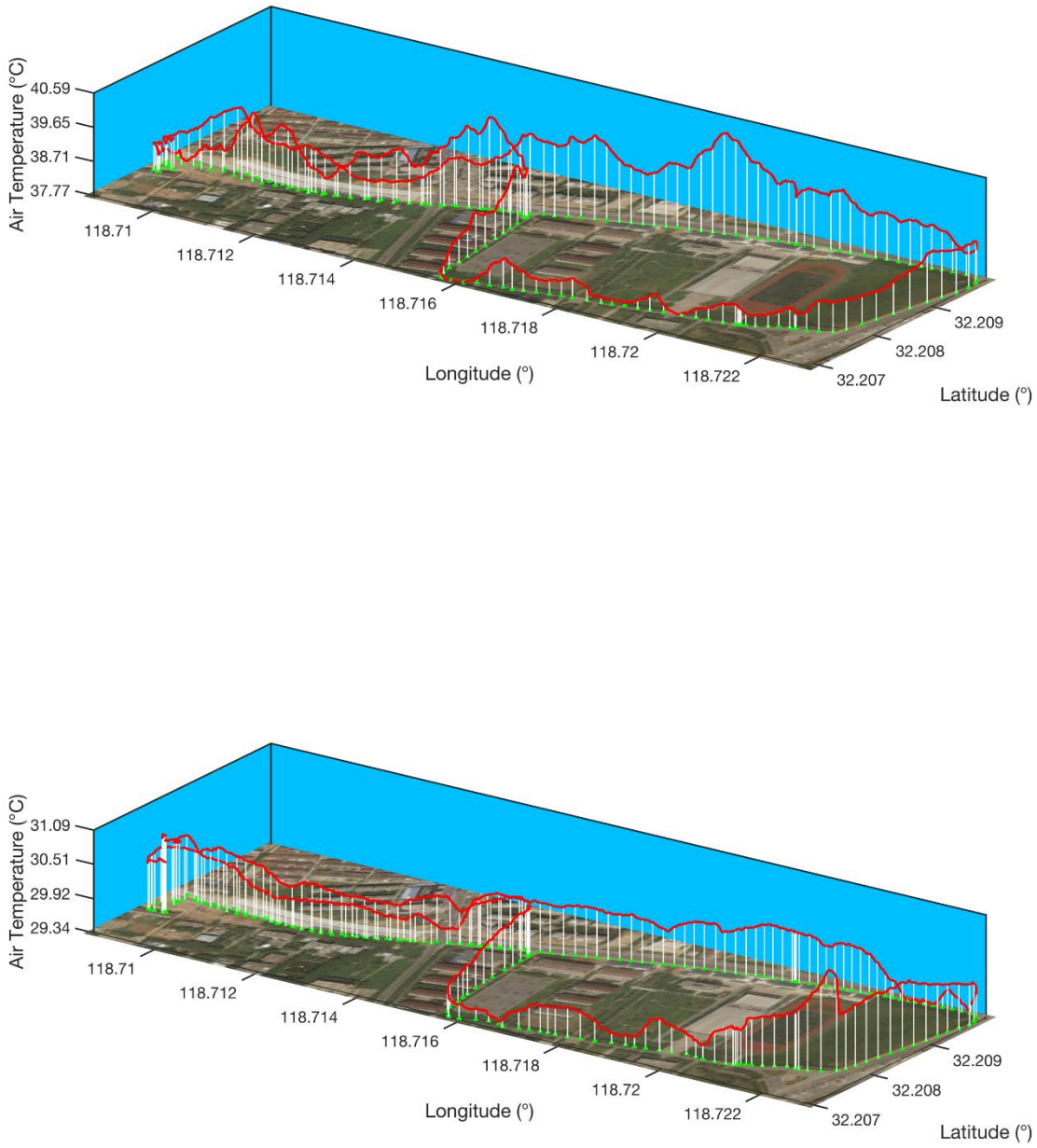

Figure S3. Three-dimensional visualization of the temperature transect data: top panel, 14:00 July 31; bottom panel, 22:00 July 31.

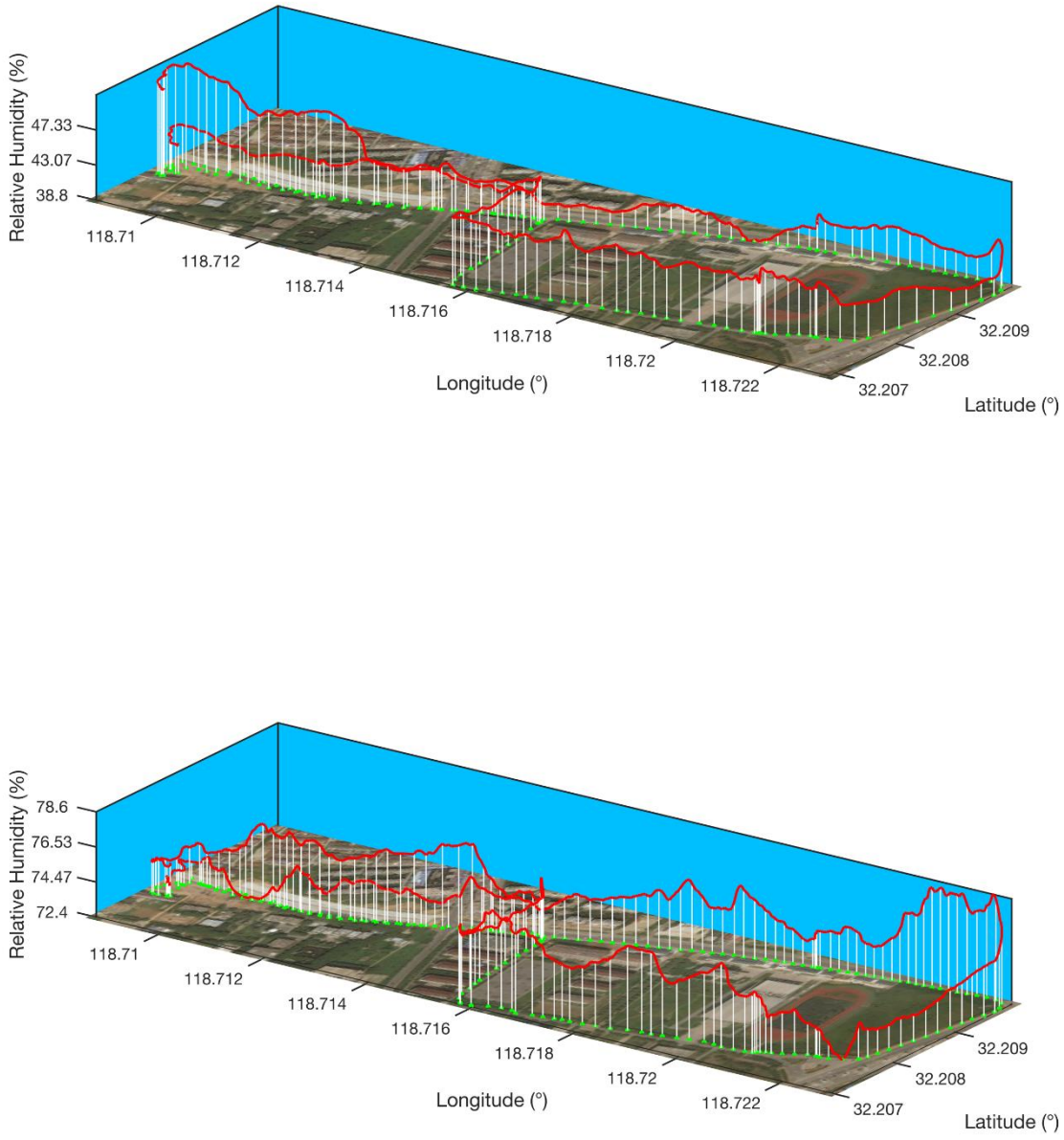

Figure S4. Three-dimensional visualization of the relative humidity transect data: top panel, 14:00 July 31; bottom panel, 22:00 July 31.

Table S1. Accuracy of sensors used in published mobile and (stationary) distributed measurements.

Sensor type	Temperature (°C)	RH (%)	Reference
Bicycle-mounted			
Smart-T	-0.01 to 0.23 (>29 °C); 0.23 to 0.48 (-20 to 29 °C)	-1.4 to 1.9	This study
Campbell Scientific 109SS	±0.1	/	Ziter et al., 2019
HOBO U23-002	±0.21	±2.5	Liu et al., 2017
Campbell Scientific CS215L	0.4	2.0 (10-90) 4 (<10 or >90)	Heusinkveld et al., 2014
Ecolog TH1 combisensor of temperature and humidity	±0.2	±1.5	Brandsma and Wolters, 2012
Platinum resistance	±0.15	/	Yokoyama et al., 2018
Car-mounted			
TESTO™ 480 thermometer & humidity and temperature probe Ø 12mm	±0.3	±2	Shi et al., 2018
PT 100 sensor	±0.2	/	Leconte et al., 2017
Type T fine-wire thermocouple	±0.5	/	Makido et al., 2016; Voelkel and Shandas, 2017; Shandas et al., 2019
TR-72U	±0.21	-	Qaid et al., 2016
Thermo-hygrometer	±0.1	±1.5 (5-95) ±2 (<5 or >95)	Noro et al., 2015
PT 100	±0.2	/	Leconte et al., 2015
TR-72U Thermo Recorder	±0.3	±5	Sun et al., 2009 & 2011
Ceramic wound resistance temperature detector	±0.15	/	Hart and Sailor, 2009
Carried by pedestrians			
Thermochron iButton	±1	/	Kuras et al., 2015; Sugg et al., 2018; Runkle et al., 2019
BME280	±0.5	±3	Pigliautile and Pisello, 2018
Met One 064-2 temperature sensor	±0.1	/	Tsin et al., 2016
Q-Trak 8552 (TSI Inc.)	±0.6	±3.0	Schwarz et al., 2012
Spatially-distributed			
Thermo-hygrometer	±0.3	±2.5	Yokoyama et al., 2018
HOBO Pro v2 temp/RH	±0.3	±5	Qaid et al., 2016
OPUS10 TIC	±0.3	±2.5	Schwarz et al., 2012
Aginova Sentinel Micro (ASM) air temperature sensors	±0.22	/	Young et al., 2014; Warren et al., 2016
iButton thermometer/hygrometer	0.5	5.0	Scott et al., 2017

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