

Electronic Supplemental Material

A1. The location and characteristics of the measurement points and instrumentation

The research was conducted within six green areas in Warsaw (Poland): three big historical parks of at least 20 ha (Skaryszewski Park, Łazienki Park, Królikarnia Park), Zoological Garden and two small (<10 ha) local parks, in the middle of housing estates (Przy Bażantarni Park and Malickiego Park). The meteorological measurements were carried out during six warm, sunny days in August 2022, from 8:00 am to 6:00 pm (Tab. A1.1).

Table A1.1. The location and characteristics of the measurement points on green areas in Warsaw

date	name	location	SVF	type of vegetation
03.08.2022	Skaryszewski Park	52°14'37"N 21°03'50"E	0.983	meadow
04.08.2022	Łazienki Park	52°12'40"N 21°02'03"E	0.96	lawn
05.08.2022	ZOO	52°15'34"N 21°18'04"E	0.793	lawn
09.08.2022	Przy Bażantarni Park	52°08'11"N 21°03'50"E	0.888	lawn, single small deciduous trees
10.08.2022	Królikarnia Park	52°11'21"N 21°01'38"E	0.847	lawn
11.08.2022	Malickiego Park	52°12'14"N 20°58'39"E	0.905	lawn



Figure A1.2. Full instrument set up containing HOBOT micro station equipped with thermohygrometer (S-THC-M002), pyranometer (S-LIB-M003) and cup anemometer (S-WSB-M003), Delta OHM weather station equipped with omni-directional hot-wire probe (AP3203) and 15-cm black globe thermometer (TP3275), custom build 4-cm black acrylic globe thermometer.

A2. Meteorological conditions during the field studies in Warsaw

Meteorological measurements were carried out on 6 warm and sunny summer days, with mean air temperature between 8:00 am and 8:00 pm over 20°C and total solar radiation on average exceeding 470 W/m². The wind speed was very low, especially measured with cup anemometer (0.23 m/s on average) (Tab. A2.1). The distribution of average 5-minute wind speeds shows that according to cup anemometer measurements, a significant number of cases were situations with no wind, while the measurements recorded by hot-wire probe do not confirm that and rather indicate the predominance of wind with a speed of approx. 1 m/s during the tests (Fig. A2.2).

Table A2.1. Meteorological conditions during field campaigns from 8:00 am to 8:00 pm – mean values of air temperature (Ta), relative humidity (RH), total solar radiation (Kglob), wind speed measured with the cup anemometer (va_{cup anemometer}) and with a hot-wire probe (va_{hot-wire}).

park	Ta (°C)	RH (%)	Kglob (W/m ²)	va _{cup anemometer} (m/s)	va _{hot-wire} (m/s)
Skaryszewski Park	26.2	57.6	430.7	0.13	0.75
Łazienki Park	28.5	43.4	577.4	0.39	1.29
ZOO	30.3	44.7	589.2	0.42	1.39
Przy Bążantarni Park	22.9	50.6	367.1	0.06	0.76
Królikarnia Park	22.7	54.2	392.6	0.15	0.94
Malickiego Park	24.5	46.2	462.5	0.20	1.11
Mean	25.8	49.5	470.1	0.23	1.04

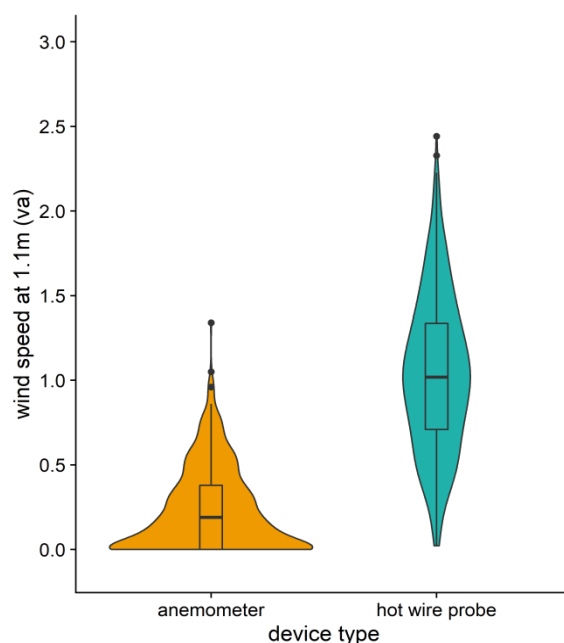


Figure A2.2. Distribution of 5-min averages of wind speed measured at 1.1m above ground with cup anemometer and hot-wire probe.

A3. Statistical assessment of differences in MRT and UTCI values depending on the wind speed sensor applied

Statistical evaluation of differences in MRT and UTCI values obtained using the two different wind measurement methods was conducted based on the Mean bias error (MBE) and the Root mean square error (RMSE) calculated as follow:

$$MBE = \frac{\sum x_{vhw} - x_{vca}}{n} \quad (A1)$$

$$RMSE = \sqrt{\frac{\sum (x_{vhw} - x_{vca})^2}{n}} \quad (A2)$$

where x_{vhw} and x_{vca} are MRT and UTCI values estimated based on hot-wire probe (v_{hw}) or cup anemometer (v_{ca}) measurements, and n is the total number of records ($n = 708$). All calculations were performed with R software (version 4.0.3).

Table. A3.1. Statistical evaluation of the differences in the MRT and UTCI values determined from two different wind speed measuring devices – hot-wire probe (v_{hw}) and cup anemometer (v_{ca}). RMSE (%) is the percent of the mean of two variables analysed.

Tg type	Index ($x_{vhw} - x_{vca}$)	MBE (°C)	RMSE (°C)	RMSE (%)
15 cm SGT	MRT	10.4	11.7	26.4
	UTCI	1.9	2.2	7.2
4 cm AGT	MRT	9.6	10.8	28.8
	UTCI	1.8	2.1	7.3