

Supplementary material

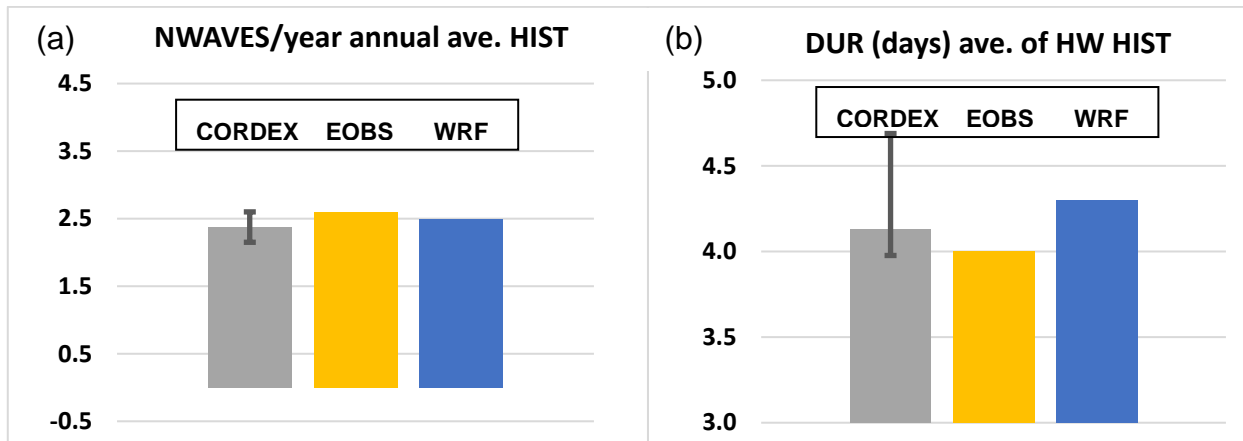


Figure S1. – Annual average of (a) NWAVES and (b) DUR for EOBS, WRF CORDEX average, maximum and minimum (vertical bar) for HIST BC.

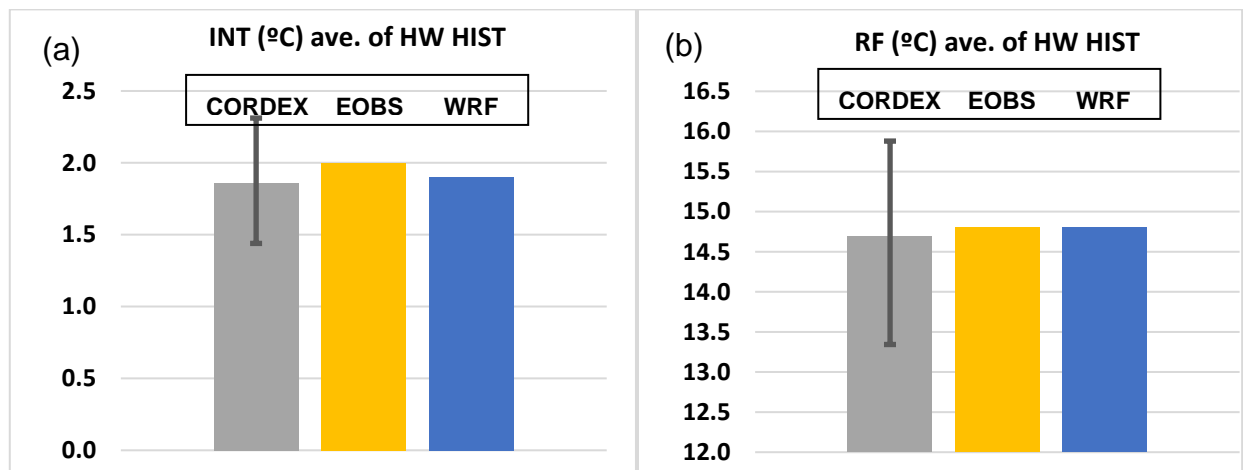


Figure S2. – (a) INT and (b) RF average of HW for EOBS, WRF CORDEX average, maximum and minimum (vertical bar) for HIST BC.

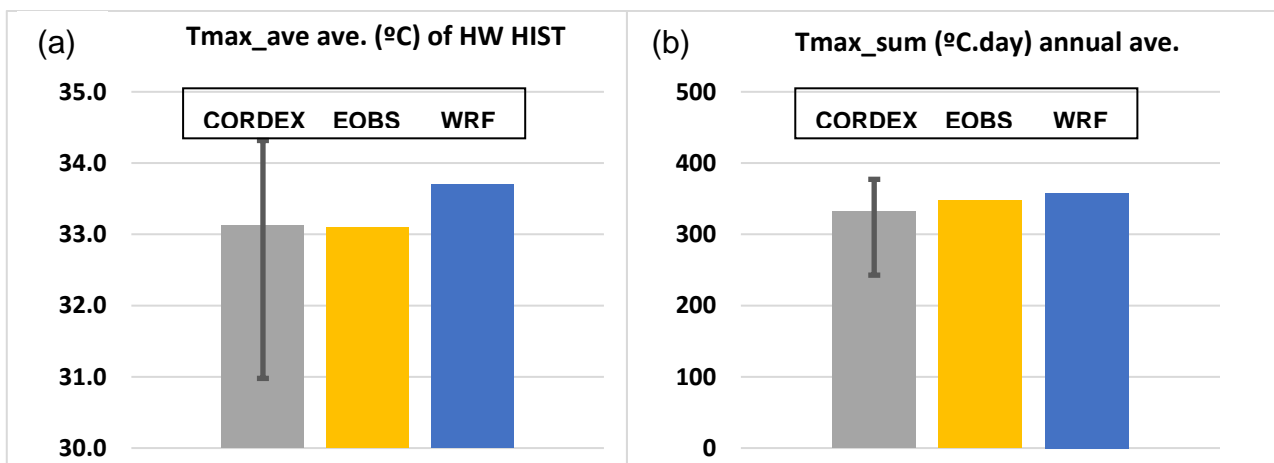


Figure S3. – (a) Tmax_ave average of HW and (b) Annual average of Tmax_sum for EOBS, WRF CORDEX average, maximum and minimum (vertical bar) for HIST BC.

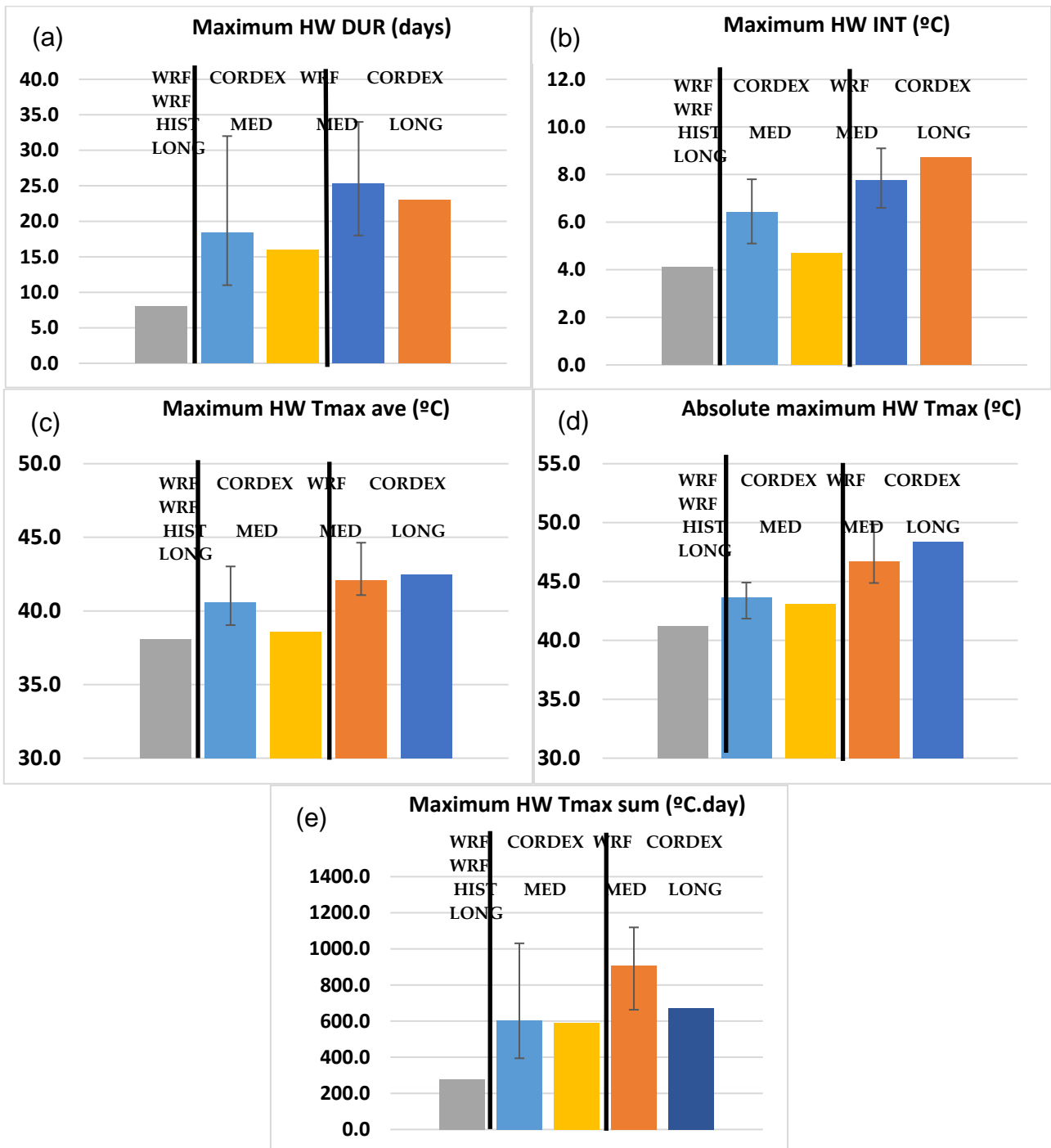
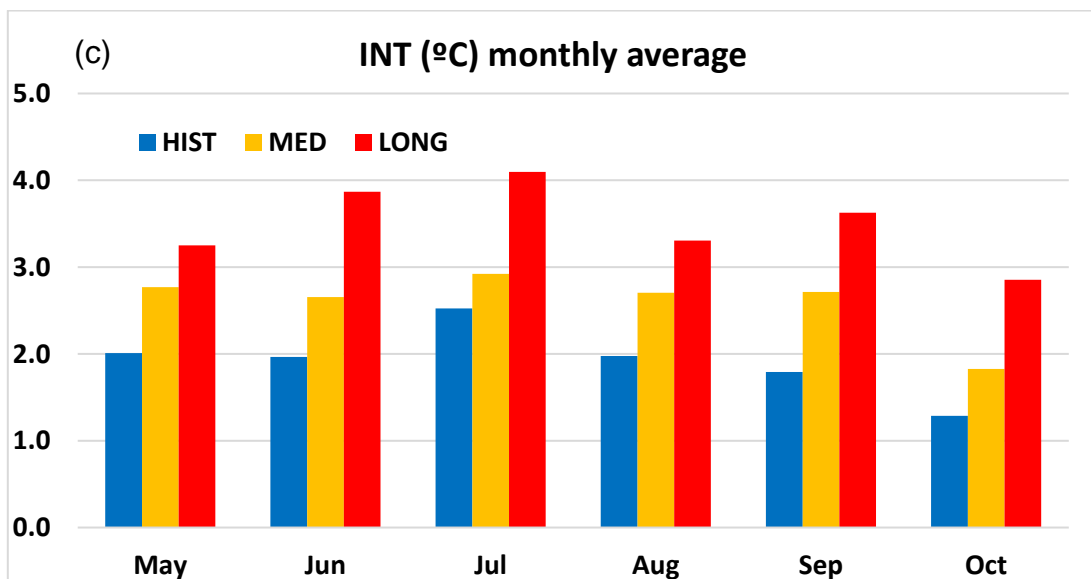
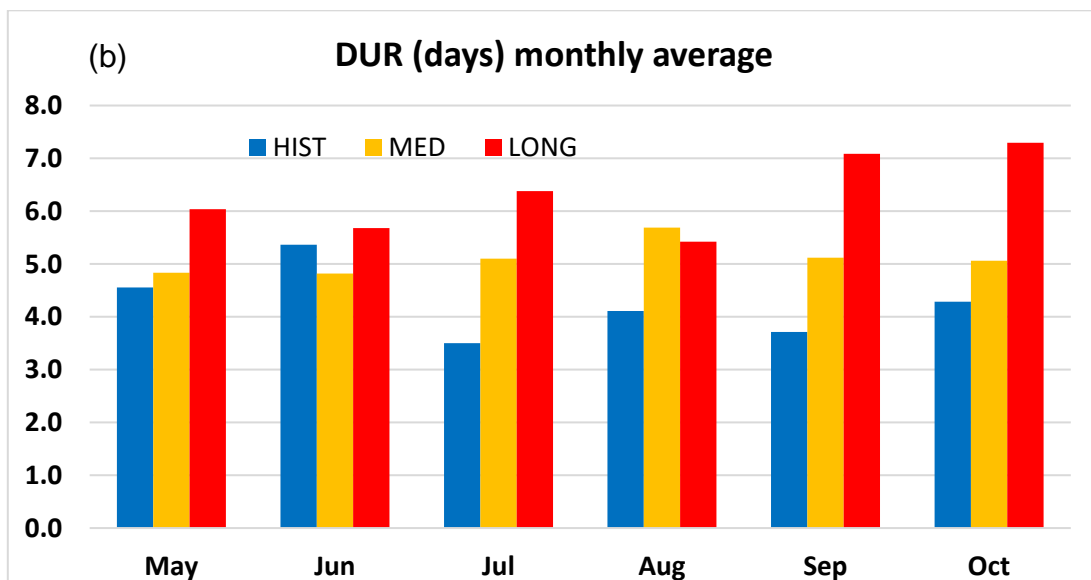
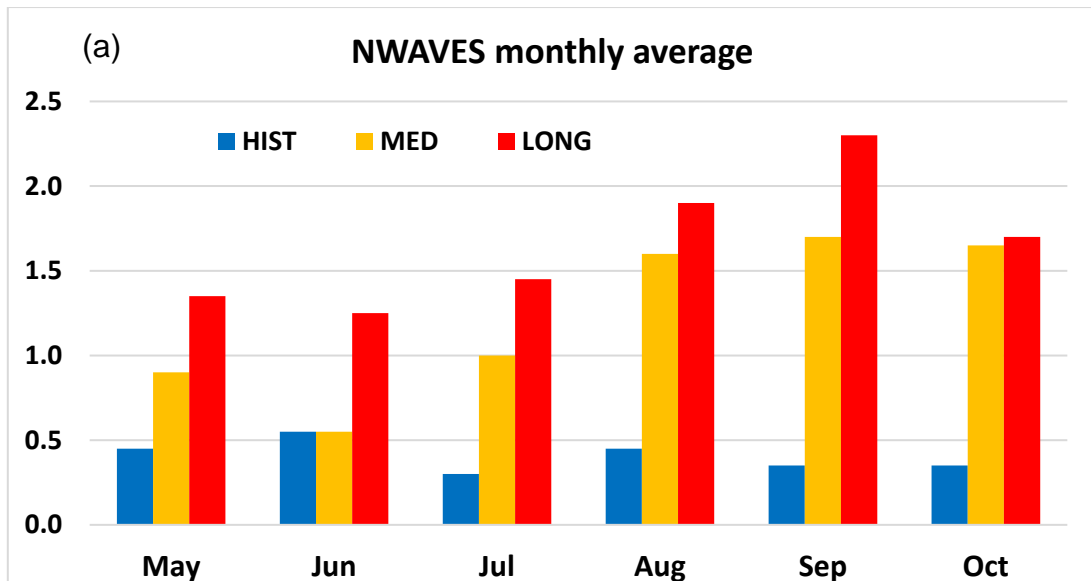


Figure S4. – (a) Maximum HW DUR, (b) Maximum HW INT, (c) Maximum HW Tmax ave, (d) Absolute maximum HW Tmax and (e) Maximum Tmax sum, for WRF HIST, MED and LONG, and CORDEX average, maximum and minimum for MED and LONG.



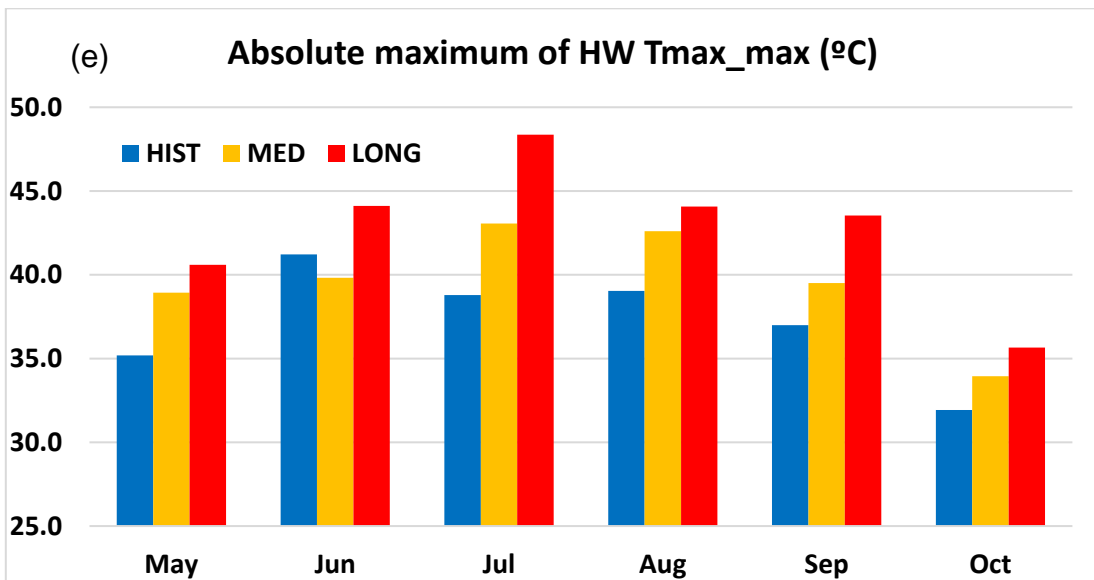
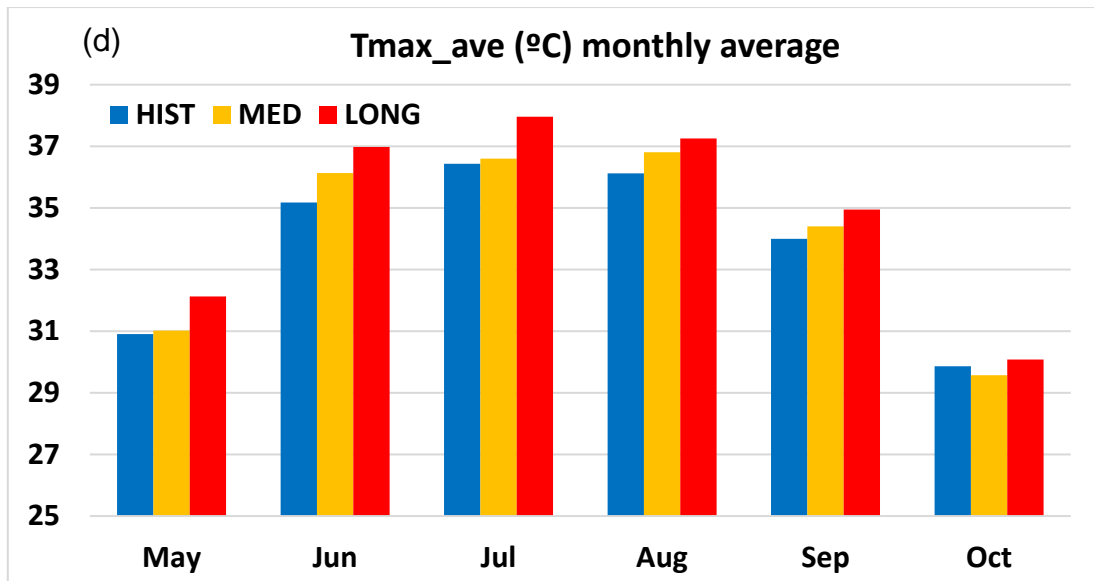


Figure S5. – Monthly average of (a) NWAIVES, (b) DUR, (c) INT and (d) Tmax_ave and (e) Absolute maximum of Tmax for HIST, MED and LONG simulated by WRF.

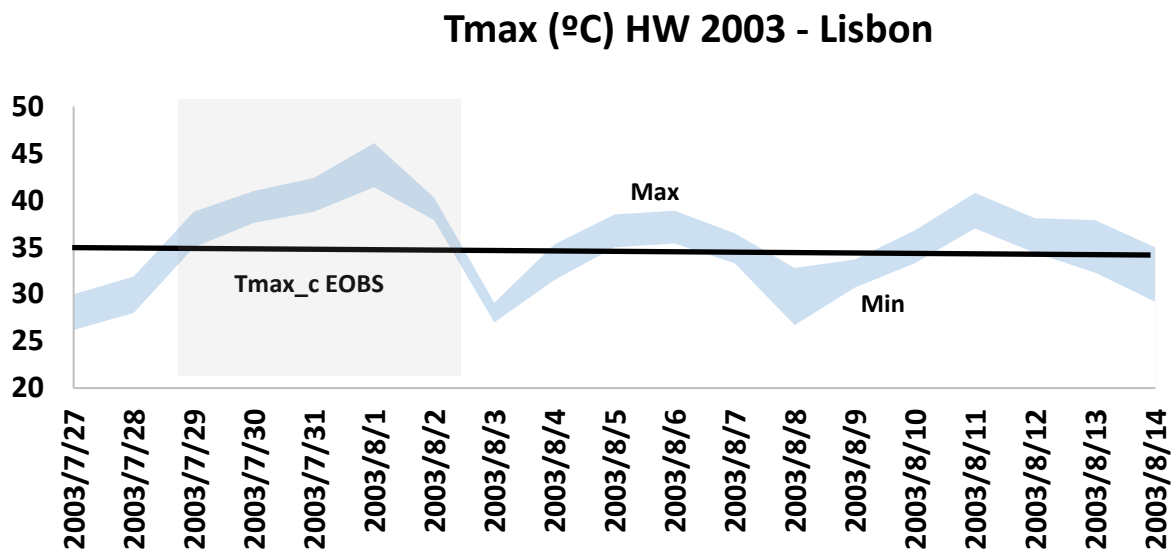


Figure S6. – Tmax during the 2003 extended HW (i.e. 19 days) in Lisbon. The ‘envelope’ shows maximum and minimum Tmax recorded by the nine meteorological stations. The grey period represents the 5-day HW identified using the criteria used in this study. The black line is Tmax_c from EOBS.

Table S1. – Meteorological stations operated by IPMA and respective ID and coordinates for the Lisbon area.

Station name	ID	Latitude (°)	Longitude (°)	Altitude (m)
Lisboa/Geofísico	01200535	38,71907778	-9,14972222	77
Lisboa/Gago Coutinho	01200579	38,76620278	-9,12749444	104
Amadora	01240935	38,75757778	-9,24244167	143
Cascais/Cabo Raso	01210765	38,70903056	-9,48541667	9
Lisboa/Alvalade	01240921	38,75614722	-9,14462778	90
Lisboa/Estefânia	01240924	38,72952222	-9,14332222	79
Lisboa/Baixa	01240925	38,71093333	-9,13405556	8
Lisboa/Benfica	01240931	38,74885278	9,19946944	75
Cacém	01240936	38,76960833	-9,29948611	124

Table S2 – HW measures of the 2003 HW for the 19 days. ‘ave’ and ‘max’ suffixes are average and maximum values across all nine stations.

Tmax_sum ave	673	
Tmax_sum max	695	Estefânia
Tmax_ave ave	35,4	
Tmax_max ave	43,5	
Tmax_max max	46,1	Cacém 01-08-2003
RF ave	13,7	
RF max	16,1	Benfica

Table S3. – The same as Table S4 but considering only the 5 days identified by the application of the HW criteria.

Tmax_sum ave	200	
Tmax_sum max	207	Estefânia
Tmax_ave	39,9	
Tmax_max ave	43,5	
Tmax_max max	46,1	Cacém 01-08-2003
RF ave	17,2	
RF max	20,6	Benfica