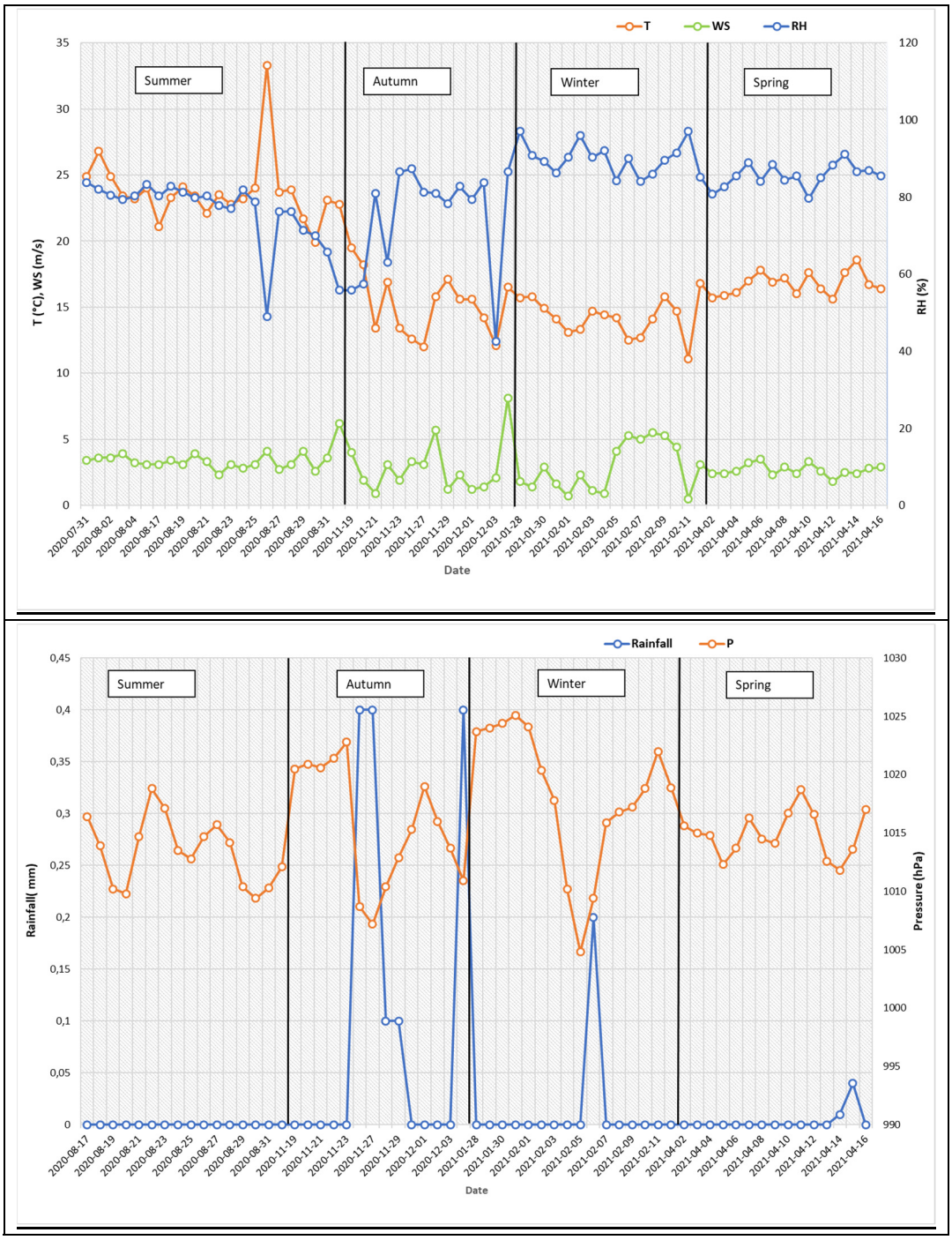

Figure S1. Hourly temperature (°C), rainfall (mm), wind speed (m/s), air pressure (hPa), and relative humidity (percent) time series for Kenitra city from mid-July 2020 to mid-February 2021, retrieved from NOAA Integrated Surface Database (ISD) meteorological data.

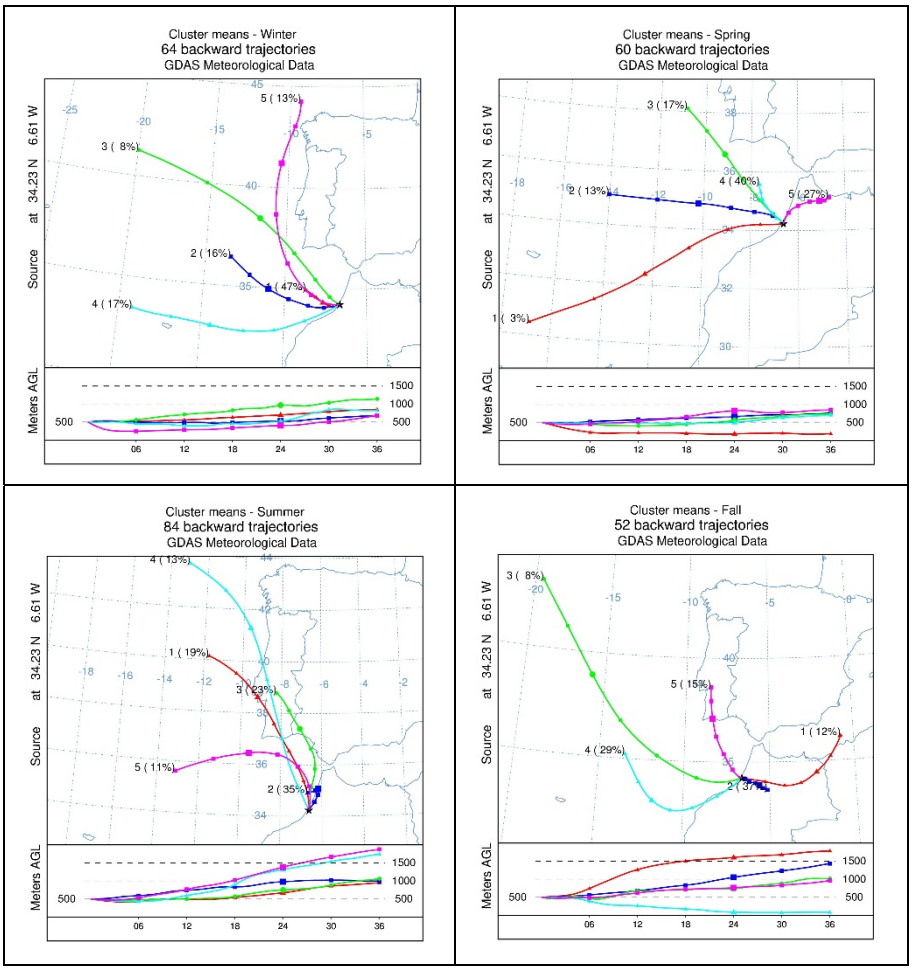

Figure S2. Typical back-trajectories arriving at Kenitra from mid-August 2020 to mid-February 2021 are characterized into six backward trajectory clusters and categorized by season: (a) winter (January - mid-February), (b) spring (April), (c) summer (mid-August - September), and (d) autumn (mid-November -December).

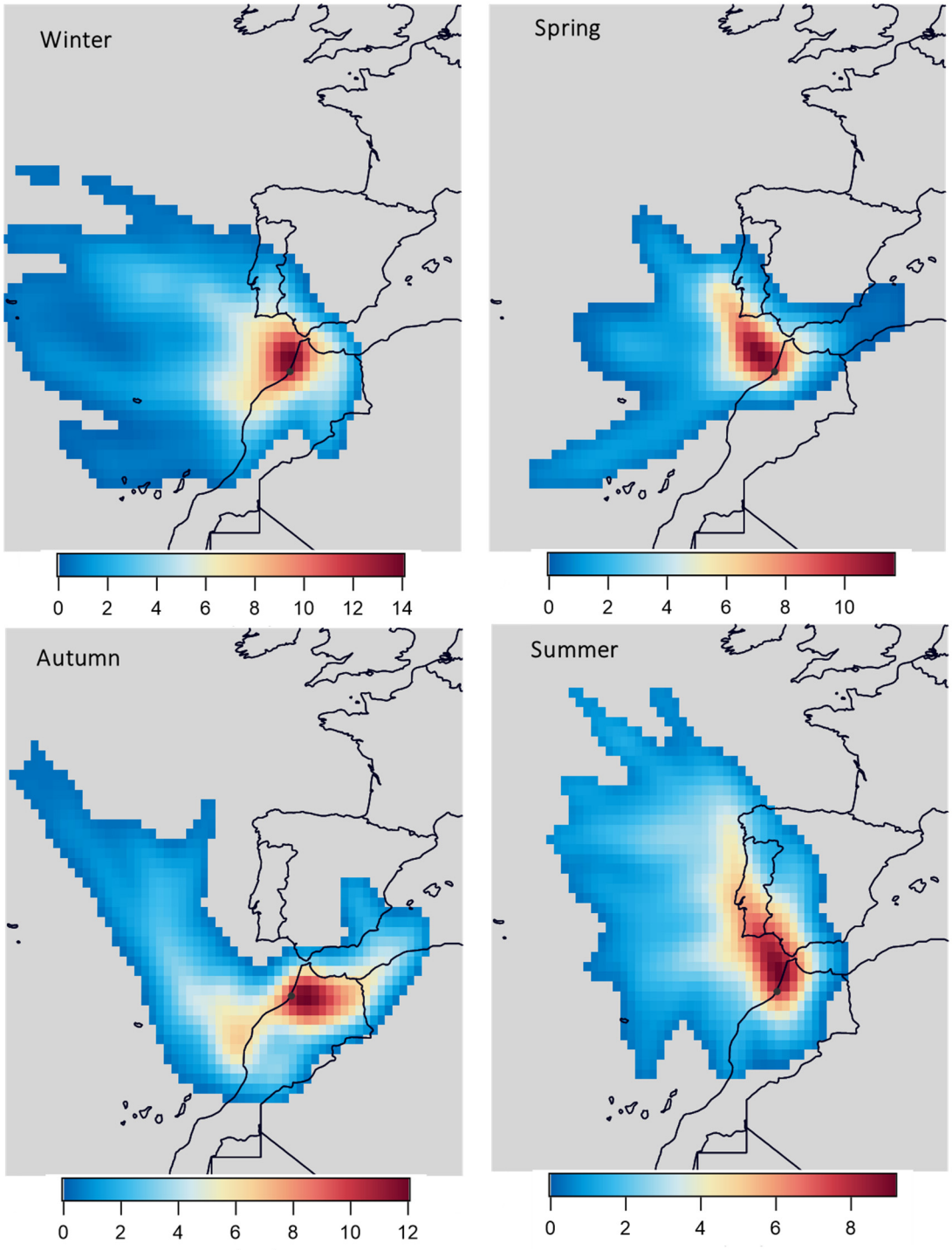

Figure S3: CWT maps for spring, summer, autumn and winter at Kenitra. The red areas represent mainly potential sources-areas affecting $PM_{2.5}$ concentrations. Scales are in $\mu g/m^3$.

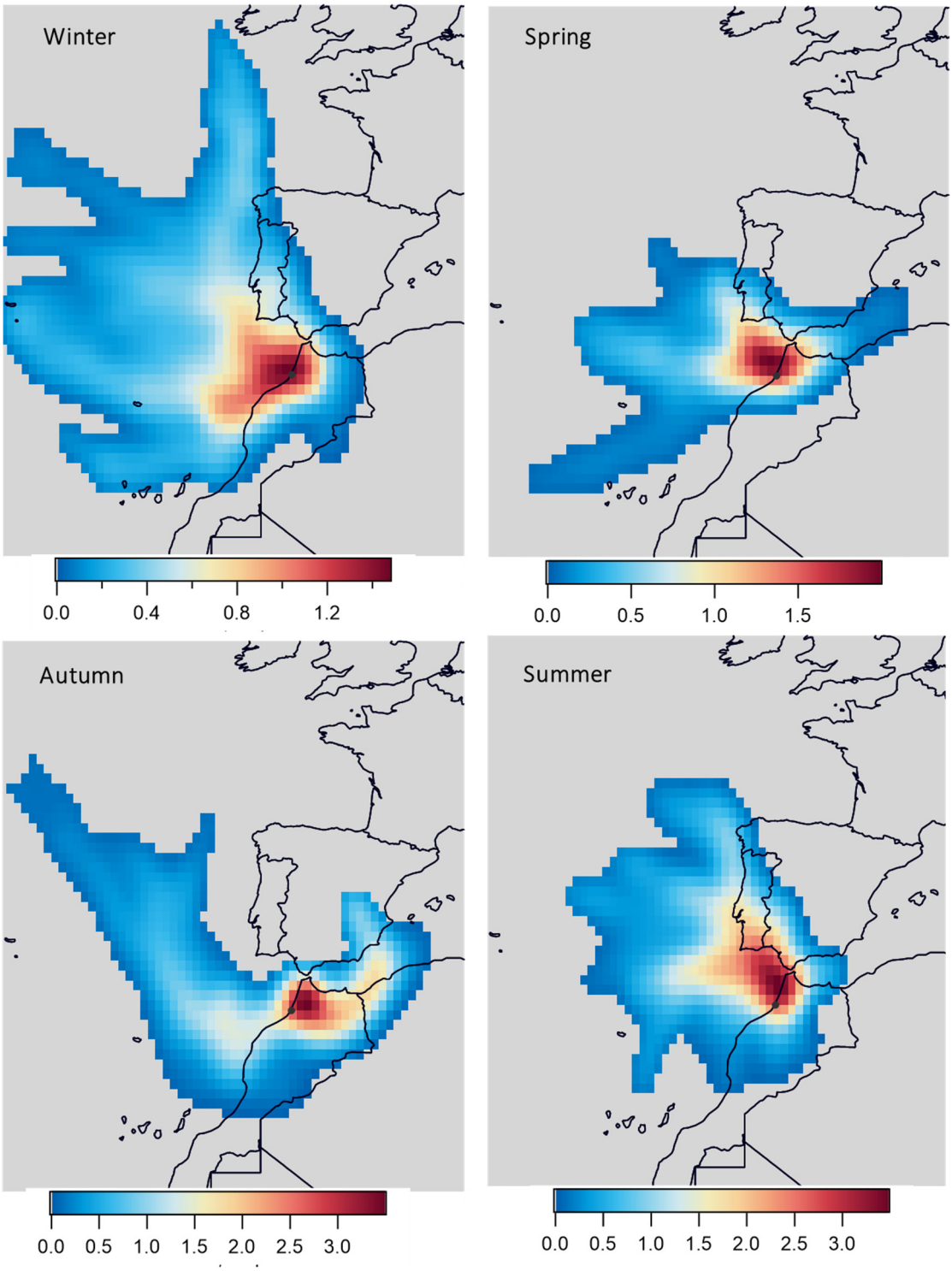

Figure S4: CWT maps for spring, summer, autumn and winter at Kenitra. The red areas represent mainly potential sources-areas affecting BC concentrations. Scales are in μg/m³.

Table S1. PM_{10}, $PM_{2.5}$, and BC values recorded in Kenitra compared to those reported in other locations, with an emphasis on urban-impacted areas. The table is ordered according to PM_{10} mass concentration. *Calculated from reported $PM_{2.5}$ and PM_{10} values; - data unavailable.

Location	Type of location	Study period	PM measurement techniques	BC measurement techniques	BC, mass range, μg/m³	$PM_{2.5}$, mass range, μg/m³	PM_{10}, mass range, μg/m³	$PM_{2.5}/PM_{10}$	Reference

Patna, India	Urban	Jan. to Dec. 2017	$PM_{2.5}$, and PM_{10} were recorded at five-minute intervals by using portable scattering Nephelometer (pDR-1500).	Micro-aethalometer (Model AE-42) and portable scattering Nephelometer (pDR-1500)	21.9	111.1	148.1	0.75*	[1]
Dhaka, Bangladesh	Urban	Aug. 2010 - Jul. 2012	PM_{10} and PM_{coarse} samples were collected on 37-mm diameter Teflon filters using Thermo Andersen dichotomous sampler.	Two-wavelength transmissometer, measuring the optical absorption of the ambient PM sample at 880 nm (BC) and 370 nm (UVBC).	7.2	65.1	130	0.50	[2]
Khulna, Bangladesh		Sept.2010 - Feb. 2012			5.8	64.7	112	0.58	
Kenitra, Morocco	Urban	May 2007 - May 2008	PM_{10} and PM_{coarse} samples were collected on 37-mm diameter Zefluor (Pall®) filters using Dichotomous Sampler (Model 241, Graseby Andersen).		-	50.7	161.1	0.32	[3]
Meknes, Morocco	Urban	March 2007 - April 2008	PM_{10} and PM_{coarse} samples were collected on 47-mm diameter Polycarbonate filters using Gent Sampler.		-	28.5	75.4	0.39	[4]
Barcelona, Spain	Urban	Jul. - Nov. 2007	PM_{10} and $PM_{2.5}$ were continuously measured (hourly basis) using optical particle counters GRIMM 1107 and 1108. PM data were corrected with 24 h gravimetric samples using high volume samplers (MCV).	Multi-Angle Absorption Photometer (MAAP, Thermo ESM Andersen Instruments)	3.6	28	40	0.7*	[5]
Istanbul, Turkey	Urban traffic	May 2016 - Dec. 2018	$PM_{2.5}$ and PM_{10} were measured using the MP101M Beta Gauge instrument (Environment SA, France).	BC was measured using the MAAP instrument (Multi-Angle Absorption Photometer, Thermo-Scientific model 5012).	6.5 ± 3.5	26.8 ± 19.0	53.6 ± 31.5	0.5*	[6]
Bern, Switzerland	Urban	2017	$PM_{2.5}$ and PM_{10} samples were collected on 150-mm diameter quartz fiber filters using high-volume samplers Digitel DA80.	Coulometric carbon analysis: elemental carbon and total carbon are determined according to the VDI method.	4.2	24.6	40.2	0.61	[7]
Ashaiman, Ghana	Semi-urban	Feb. - May 2008	PM_{10} and PM_{coarse} samples were collected on 47-mm diameter Teflon filters using Gent Sampler.	Black smoke method using an EEL 43D Smoke Stain Reflectometer.	2.8	23.3	96.6	0.3	[8]
Krakow, Poland	Urban background	Feb. 2020 - March 2021	$PM_{2.5}$ samples were collected on Teflon filters using a low-volume sampler (Sequential 47/50-CD with Peltier 78 cooler, Sven Leckel GmbH, Berlin, Germany).	BC was measured using a Multi-wavelength absorption black carbon instrument (MABI).	3.5	18.2	-	-	[9]

Kenitra, Morocco	Urban	Jul. 2020 - Feb. 2021	PM_{10} and PM_{coarse} samples were collected on 37-mm diameter Polycarbonate filters using Dichotomous Sampler (Model 241, Graseby Andersen).	Offline measurement using multi-wavelength absorption black carbon instrument (MABI) in PM2.5 aerosol size.	3.7	17.2	50.1	0.34	This work
Tetouan, Morocco	Urban	May 2011 - Apr. 2012	PM_{10} and $PM_{2.5}$ were collected on 47-mm diameter Teflon filters using PM cut-off cyclone manufactured by URG (model 2000-30ENB).	A two-step combustion method.	3.01 - 3.22	13.7 - 18.6	25.6 - 31.1	-	[10]

Table S2. Monthly summary of the mean, standard deviation (sd), median, minimum (Min), and maximum (Max) concentrations of 6-hour meteorological parameters (T (temperature), P (pressure), RH (relative humidity), WS (wind speed) and Rainfall) between mid-July 2020 to mid-February 2021. Only the month with a number of records up to 10 valid days was used. N stands for the number of total datasets used.

Parameter	Season	N	Mean	sd	Median	Max	Min
T (°C)							
	February	12	13.95	1.53	14.15	16.80	11.10
	April	15	16.77	0.87	16.70	18.60	15.60
	August	20	23.77	2.65	23.40	33.30	19.90
	November	10	15.45	2.52	15.70	19.50	12.00
P (hPa)							
	February	12	1016.36	5.59	1017.50	1024.10	1004.80
	April	15	1014.89	1.95	1014.80	1018.70	1011.80
	August	20	1013.61	2.91	1014.05	1018.80	1009.40
	November	10	1016.07	5.90	1017.90	1022.80	1007.20
WS (m/s)							
	February	12	3.18	1.99	3.60	5.50	0.50
	April	15	2.67	0.44	2.60	3.50	1.80
	August	20	3.29	0.49	3.15	4.10	2.30
	November	10	2.74	1.43	2.70	5.70	0.90
RH (%)							
	February	12	89.68	4.24	90.15	97.00	84.00
	April	15	85.54	3.07	85.40	91.10	79.60
	August	20	76.69	7.92	79.55	83.30	49.00
	November	10	75.45	11.94	81.00	87.30	55.80
Rainfall (mm)							
	February	12	0.02	0.06	0.00	0.20	0.00
	April	15	0.00	0.01	0.00	0.04	0.00
	August	20	0.00	0.00	0.00	0.00	0.00
	November	10	0.10	0.16	0.00	0.40	0.00

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