

MONITORING REPORT · INTERIM RESULTS, CAMPAIGN ONGOING

Light Pollution

Zaragoza · Plan-B project

Period analysed	2026-09-16 — 2026-10-22
Total measurements	19,062
Participants	16
Generated on	2026-10-23

Executive summary

Light pollution measured by citizens in Zaragoza and surroundings (up to 30 km)

MEASUREMENTS

19,062

points recorded

MEDIAN LUX

17.0

lux, night readings

MEDIAN CCT

2,458

K (colour temperature)

OVER 30 LUX

29 %

of night readings

PARTICIPANTS

16

people

ROUTES

87

tracks

DISTANCE COVERED

253

km

NIGHTS

26

different nights

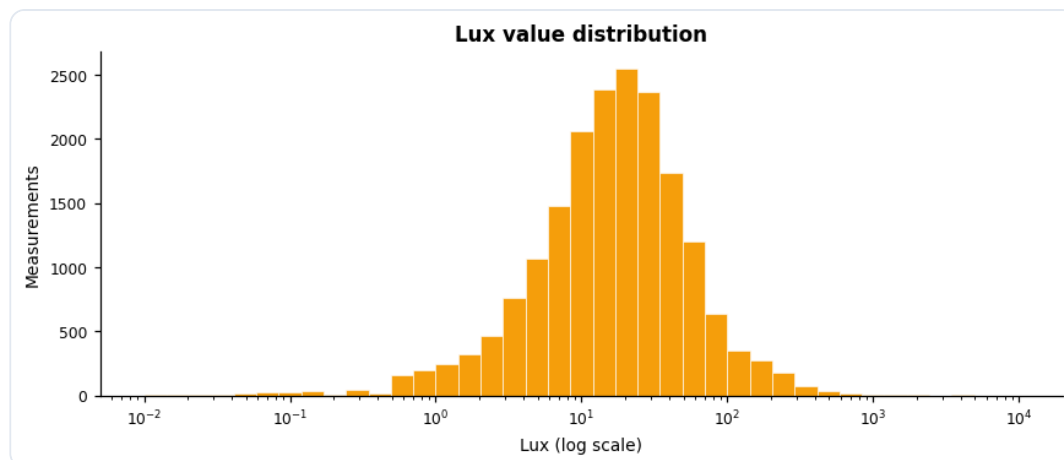
Between 16 September and 22 October 2026, 16 people went out at night with handheld lux meters (illuminance and colour-temperature sensors with GPS) lent by the project. All readings are geolocated and openly available at map.open-red.es. Only aggregated data is shown here. The campaign is still open, so results are provisional.

How much light is there in Zaragoza

Statistics on the 18,920 readings taken at night, after the end of civil twilight (sun below -6°). Readings with residual daylight are discarded so they do not inflate the values.

Ground illuminance: median 17.0 lux (half of the readings between 7.8 and 33.4 lux)

< 2 lux		6.6 %
2 – 5 lux		9.5 %
5 – 10 lux		15.7 %
10 – 15 lux		13.7 %
15 – 30 lux		26.0 %
> 30 lux		28.6 %

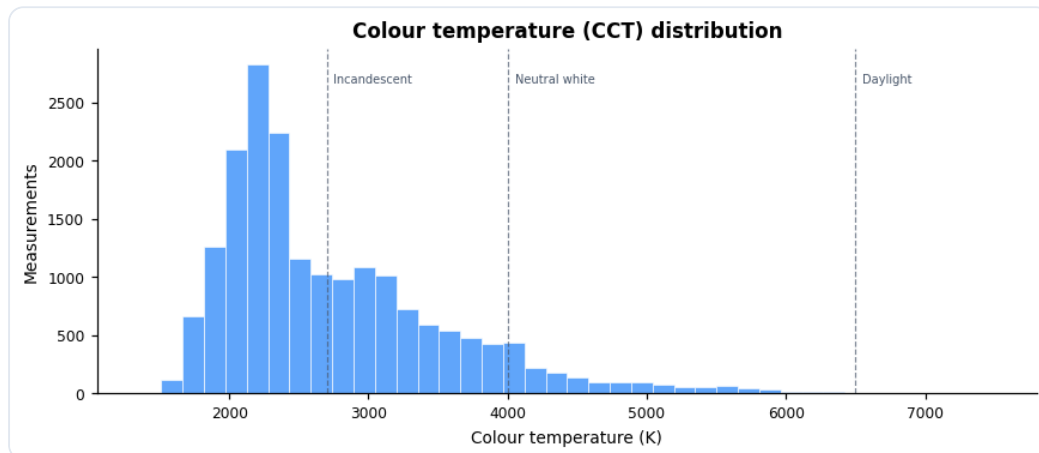


For reference, the European lighting standard (EN 13201-2) and the Spanish regulation (RD 1890/2008) call for an average of **2 to 15 lux** in pedestrian streets depending on traffic. **29 %** of the readings exceed 30 lux.

Colour of the light

Colour temperature: median 2,458 K

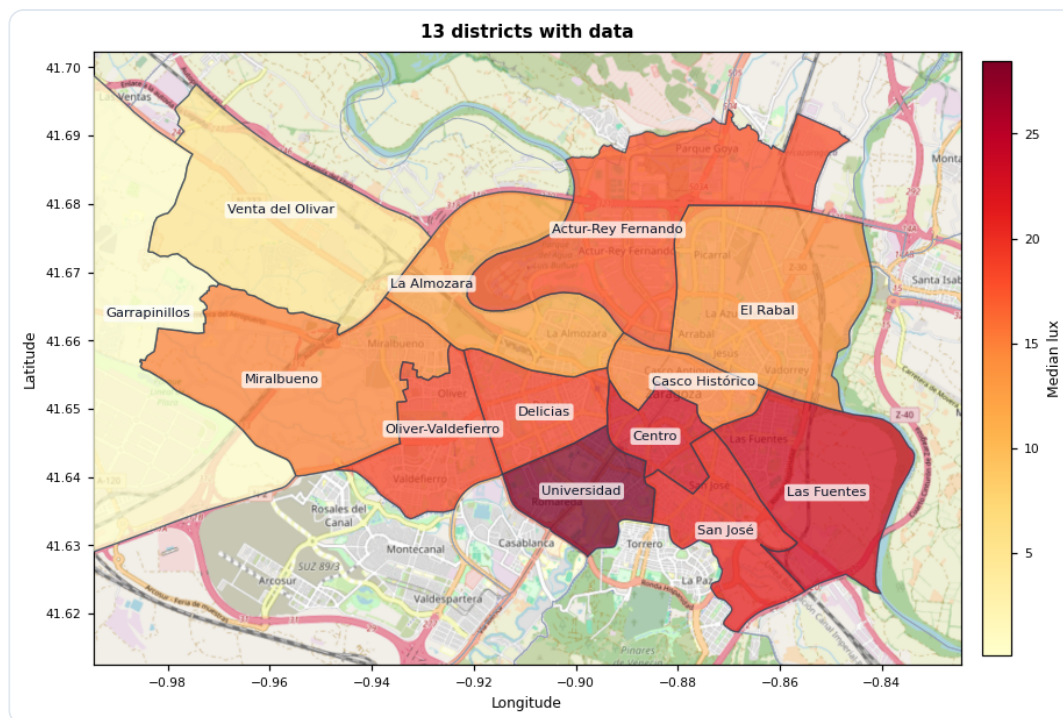
≤ 2,700 K		58.8 %
2,700 – 3,000 K		10.8 %
3,000 – 4,000 K		22.1 %
> 4,000 K		8.3 %



DarkSky International recommends not exceeding **3,000 K**, and France requires it by law in urban areas since 2018 (2,400 K in protected spaces). **70 %** of the readings are below 3,000 K: warm light, less harmful to wildlife and the night sky.

By district

Zaragoza's municipal districts with at least 100 night readings. "People" is how many measured there: with a single person, the figure depends heavily on the streets they chose.



DISTRICT	READINGS	PEOPLE	MEDIAN LUX	MEDIAN K	> 30 LUX
Delicias	2,765	6	18.9	2,512	31 %
La Almozara	2,238	4	12.7	2,325	22 %

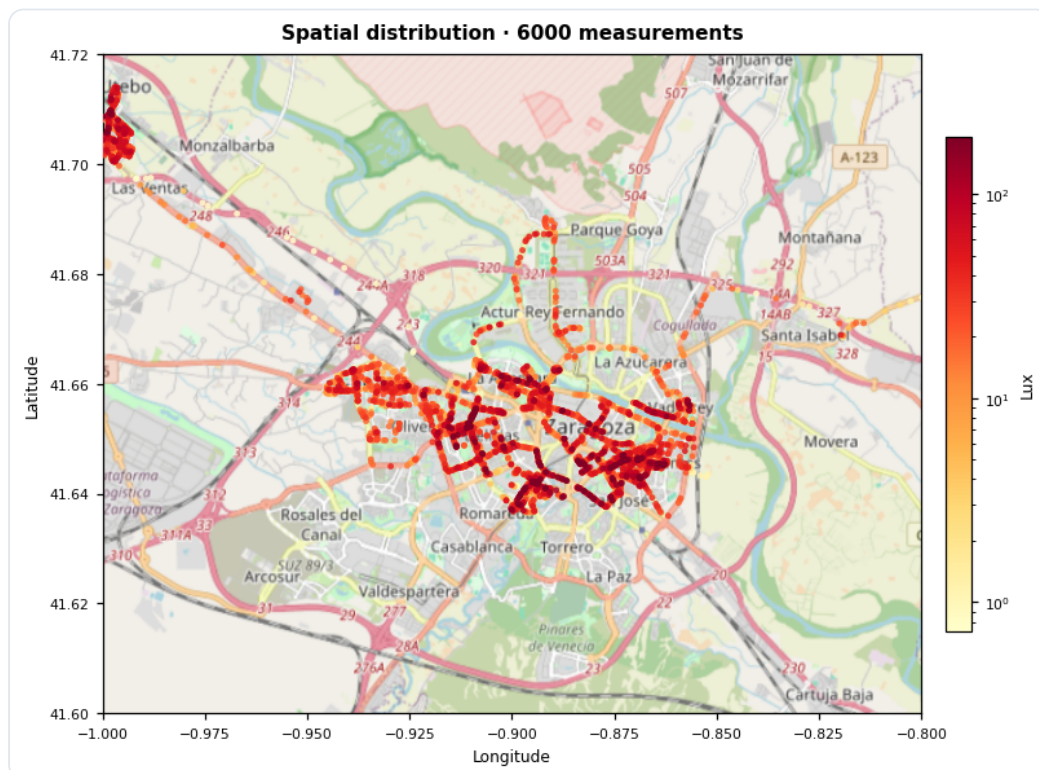
Las Fuentes	1,779	1	23.2	2,568	39 %
Miralbueno	1,727	1	14.7	2,310	19 %
Universidad	1,530	8	28.5	2,659	47 %
Casco Histórico	1,426	2	15.1	2,361	23 %
Centro	1,218	3	22.7	2,572	40 %
San José	863	1	21.1	3,052	34 %
El Rabal	766	3	14.2	2,394	20 %
Actur-Rey Fernando	502	3	17.8	2,346	22 %
Oliver-Valdefierro	223	3	18.4	2,251	13 %
Garrapinillos	187	2	0.1	3,193	10 %
Venta del Olivar	103	1	4.6	3,181	6 %

By distance to the centre

DISTANCE	READINGS	MEDIAN LUX	MEDIAN K	> 30 LUX
Centre (up to 2 km)	9,932	19.6	2,557	34 %
City (2–6 km)	5,181	15.3	2,328	22 %
Outskirts (over 6 km)	3,807	13.2	2,819	24 %

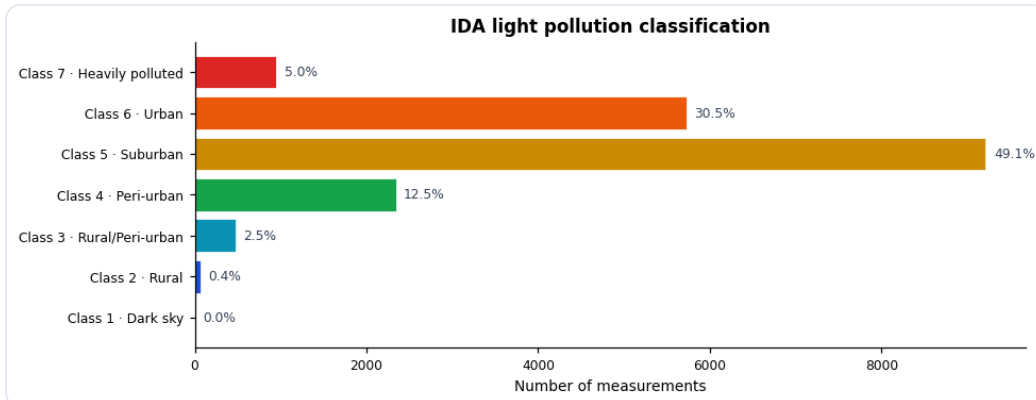
Where the light is: individual measurements

Each point is a night reading, coloured by lux on a logarithmic scale (highest values drawn last so hot spots stay visible).



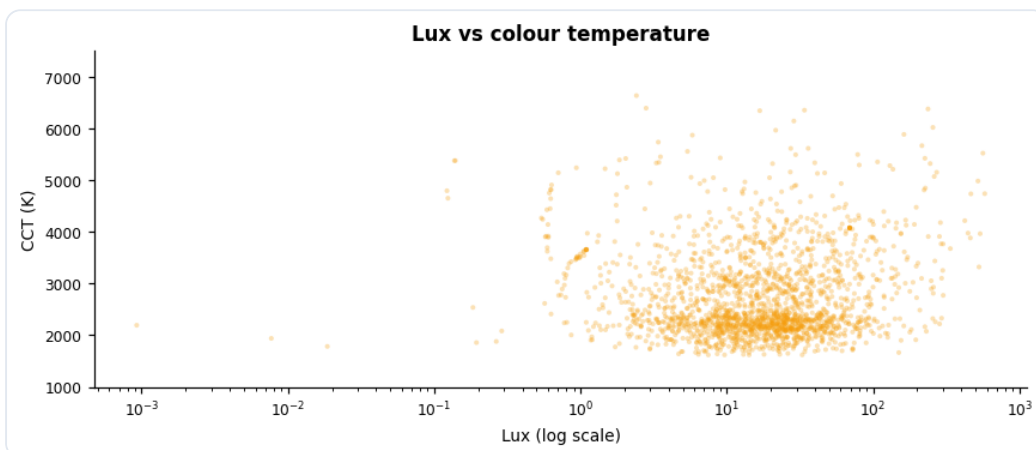
IDA light pollution classification

Distribution of the night readings across the International Dark-Sky Association pollution classes (approximate ground-level lux thresholds: Class 1 < 0.01 lux, Class 5 suburban 5–25 lux, Class 6 urban 25–100 lux, Class 7 heavily polluted > 100 lux).



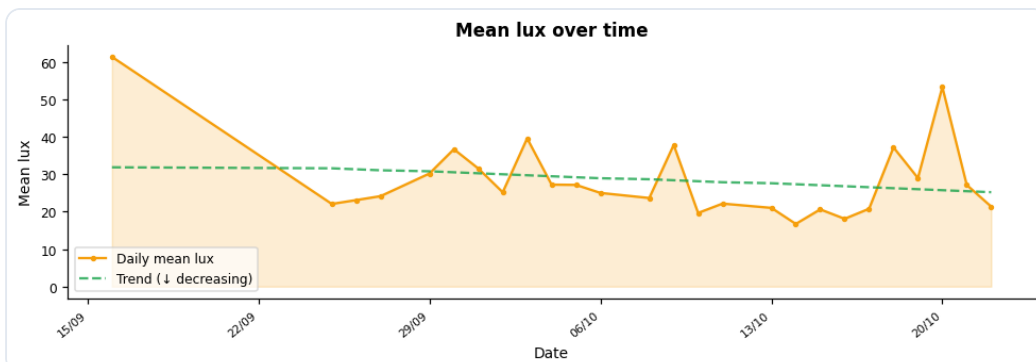
Light intensity and colour

Each dot is a night reading. Very low-lux readings (the darkest places) are noisier, so their colour temperature is less reliable.



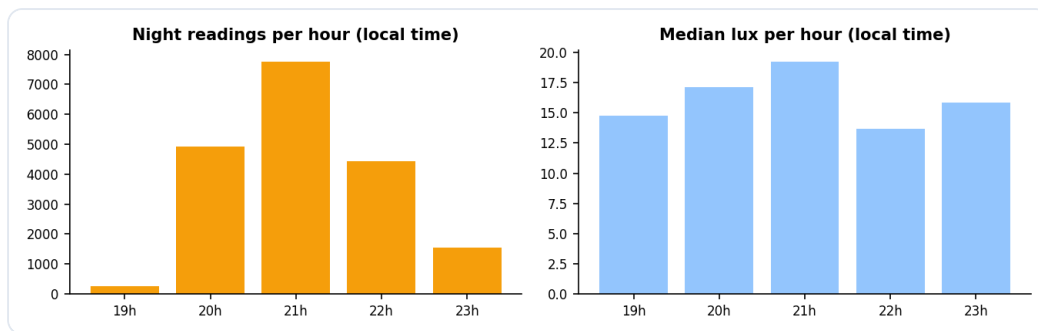
Evolution over the campaign

Daily mean lux of the night readings, with the linear trend. Day-to-day changes mostly reflect which neighbourhoods were walked, not changes in street lighting.



Hour of the night

Most measurements were taken between 20:00 and 23:00 local time, so this shows mainly when participants went out.



Weather during the measurements

Average **20.5 °C**, humidity 59 %, cloud cover 50 % and wind 14.7 km/h.

Compared with the rest of OpenRed, zone by zone

Each reading carries its zone type according to the European degree-of-urbanisation grid (GHS-SMOD, European Commission), so we compare city with city and countryside with countryside. Only places with at least 300 night readings and two routes are included from the rest of OpenRed.

ZONE TYPE	ZARAGOZA		REST OF OPENRED		
	LUX	K	LUX	K	PLACES
City (urban centre) 12,249 readings · 9,894 elsewhere	18.2	2,447	13.2	3,114	9
Town / suburb 2,799 readings · 1,580 elsewhere	15.5	2,618	14.0	3,157	7
Rural 752 readings · 4,906 elsewhere	0.8	3,594	3.1	3,835	8

Values are median lux and median colour temperature. The comparison is indicative: each person walks different streets and the sensor measures the light reaching the ground where they pass.

OpenRed – a project by Ibercivis · Plan-B · <https://map.open-red.es> · District boundaries: Ayuntamiento de Zaragoza open data, CC BY 4.0