

Catalonia's hottest summer on record was decided at night

The official figures describe a summer that no longer cools down, even before dawn.

On 2 September, the Catalan Meteorological Service published its advance climate bulletin for the summer. The conclusion leaves little room for nuance: the summer of 2026 was the hottest ever measured in Catalonia, ahead of 2022 and 2003, the two hottest summers until now. The temperature anomaly was 3 degrees or more above the 1991-2020 climate average across almost 85% of the territory. In the western Pyrenees, the plain of Vic and scattered inland areas it exceeded 4 degrees.

The scale of the record is easiest to see in the long series. Of the twenty or so Catalan climate series with seventy-five years of data or more, every one of them ranks 2026 as its hottest summer. Among them are the Fabra Observatory in Barcelona, with one hundred and thirteen years of records, and the Ebro Observatory in Roquetes, with one hundred and twenty-two. And among the stations of XEMA, the Meteocat network of automatic weather stations, with more than twenty years of data, 95% recorded their hottest summer.

Those figures made the headlines this week. The one that barely surfaced is different, and it is the one that changes the conversation about housing.

Fifty-nine nights that never dropped below twenty-five degrees

The Can Bruixa observation point, in the Les Corts district of Barcelona, recorded **fifty-nine nights on which the temperature never fell below 25 degrees**, what Catalan meteorologists call torrid nights. Ten in June, twenty-five in July and twenty-four in August. The previous record was fifty-one nights in 2003, with 2022 completing the podium at forty-seven. Put another way: on almost two out of three summer nights in Barcelona, the air outside never got cool enough for a house to cool down without machinery.

Day and night are not the same problem. An extreme day can be managed: blinds, louvres, shade, cooling during peak hours. The night, by contrast, was the recovery mechanism. For decades the Mediterranean strategy has been to close up during the day and ventilate at night, let the building discharge before dawn and start again. With fifty-nine nights above 25 degrees, that strategy loses the one thing that made it work: cool air outside.

It is also the part of the summer that is hardest to compensate for. Those with air conditioning run it at night and the bill shows it; those without have no alternative. Nor does the building help: conventional construction, heavy on mass and light on insulation, behaves like a storage heater, taking in heat during the day and releasing it indoors precisely before dawn.

Twenty days of forty degrees and an air mass that would not shift

Daytime heat also broke its own record. Over the summer there were **twenty days** on which at least one XEMA station reached 40 degrees or more, the highest figure in the series. Most of the stations that crossed that threshold are in Segrià and Ribera d'Ebre. Forty degrees was also reached at points in the pre-coastal range, in Central Catalonia and inland in the north-eastern quadrant. The last year in which no Catalan station reached 40 degrees at all was 2014.

There is a less visible figure that explains why the nights were what they were. The Barcelona radiosonde measures temperature at 850 hectopascals, around 1,500 metres up, above the asphalt and above the effect of the city. This summer the average at that level was 19.8 degrees, the highest value in the thirty-year series. That is 3.2 degrees above the 1997-2025 average, and ahead of the summers of 2022 (18.9) and 2003 (18.6). When the entire air mass sits three degrees above where it should for weeks on end, the night has nowhere to draw cool air from. This is not only the urban heat island: it is the whole volume of air overhead.

July put it on the bill

A summer like this also leaves a trace in the electricity system. According to Red Eléctrica, national demand in July 2026 reached 25,144 gigawatt hours (GWh), 6.9% up on the previous July and the highest monthly volume since January 2008. Once the effect of temperature and working days is corrected for, the increase comes down to 3.5%. Almost half of that rise, therefore, is not extra activity: it is heat. Renewable generation hit its monthly maximum, at 14,699 GWh and 54.1% of the total, with photovoltaics the largest single source at 7,696 GWh. The system held. Household bills did not.

What decides whether a house is fit to sleep in

At this point the useful question is not which machine to install, but how much heat the building let in before night fell. We have already explained on this blog [how a passive house behaves with forty degrees outside](#). Continuous insulation on facades, roof and ground slab; no thermal bridges; airtightness verified through the Blower Door test, with an n50 at or below 0.6 air changes per hour; external solar shading sized by orientation; and mechanical ventilation with heat recovery and a summer bypass.

What the summer of 2026 tests is the last link in that chain. The summer bypass exists to make use of night air for as long as that air is still worth moving. When the outside temperature does not drop below 25 degrees, there is nothing cool left to move, and the only thing still in play is the heat the house has accumulated during the day. A conventional dwelling arrives at night fully loaded and has no way to discharge. A passive envelope arrives roughly as it started the day, which is why the night stops being the problem. The difference is not won before dawn: it is won at midday, and above all it is won in the design.

That is also the correct order of decisions in a Mediterranean climate, the one behind cooling-first design, which puts summer performance ahead of everything else: orientation and shade first, then the envelope, then airtightness and ventilation with heat recovery, and only at the end the cooling equipment, which in a well-resolved house ends up being small. A project that trusts the summer to the power of the machine arrives late for August and pays for it every month.

Design is running behind the climate

The bulletin published by the Catalan Meteorological Service is an advance edition, and the service will expand the information in the definitive version from October onwards. But what it already contains is enough for anyone deciding how to build: the three hottest summers measured in Catalonia are 2026, 2022 and 2003, and two of those three fall within the last five years.

A home designed today will be in use for decades. Sizing it for the climate of the year 2000 is a decision, not an oversight. PAPIK Group has been building in Catalonia for thirty years, and the conversation that ten years ago revolved around heating today revolves around August nights. Anyone considering building or retrofitting has only one real window to decide how the house will behave in August 2040, and that window is the design stage.