Our Night Skies in 2025

A new view of the Norfolk Coast National Landscape at night.

91%

of the landscape has low light levels[1]

0.758

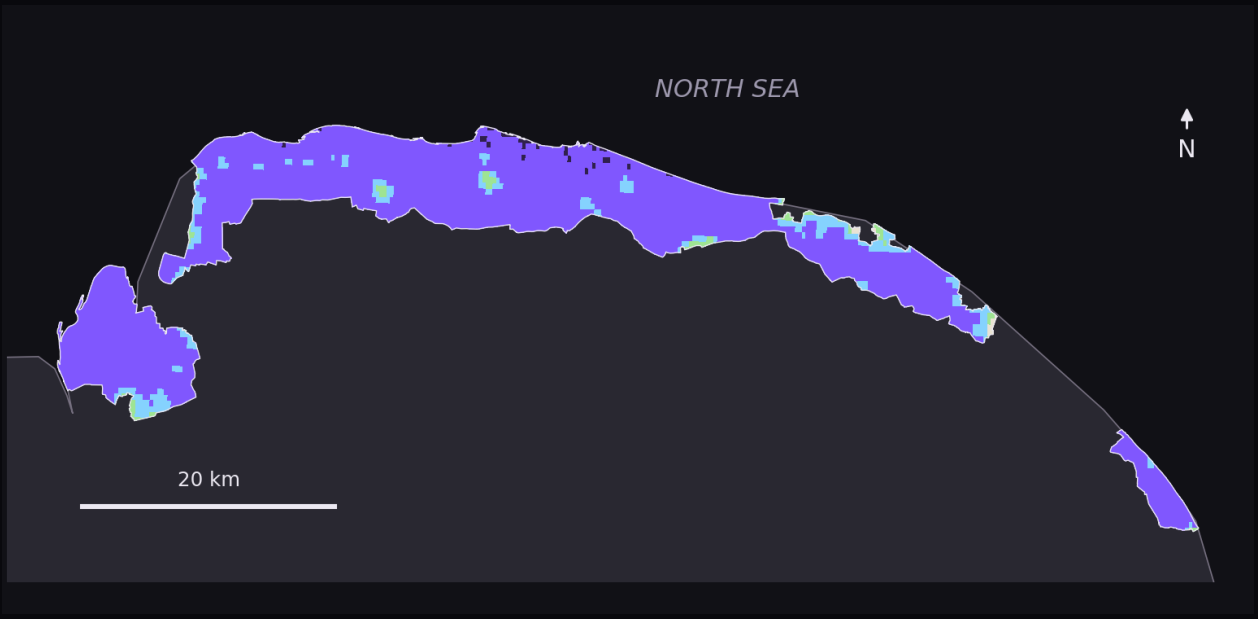
average satellite light reading[2]



1. “Low light levels” means satellite radiance below 1 nW/cm²/sr in the coverage-screened 2025 map.
2. Average radiance in nW/cm²/sr, using each cell’s valid months and weighting by its area within the NCNL.
Satellite readings do not directly measure how dark the sky looks from the ground.

A dark landscape with localised hotspots.

Dark skies are a defining feature of the Norfolk Coast National Landscape. Our assessment shows that around 91% of the area has low radiance readings (below 1 nW/cm²/sr), which is a measure of the amount of light recorded from an area. Just 1.6% of our landscape has readings of 2 nW/cm²/sr or more, with these brighter areas concentrated in relatively small parts of the landscape.



2025 valid-month mean radiance, nW/cm²/sr. Native VIIRS cells clipped to the NCNL boundary; light line shows the boundary. England land and coastline are shown beneath the NCNL for context. “Darker” and “Brighter” refer to lower and higher satellite radiance, not measured sky darkness. Sources: EOG; ONS country boundary (2021).

Most of the area sits in one band

Most of the National Landscape (**90.2%**) has readings between 0.5 and 1 nW/cm²/sr. A few brighter areas raise the overall average to **0.758**, while most places have lower readings.

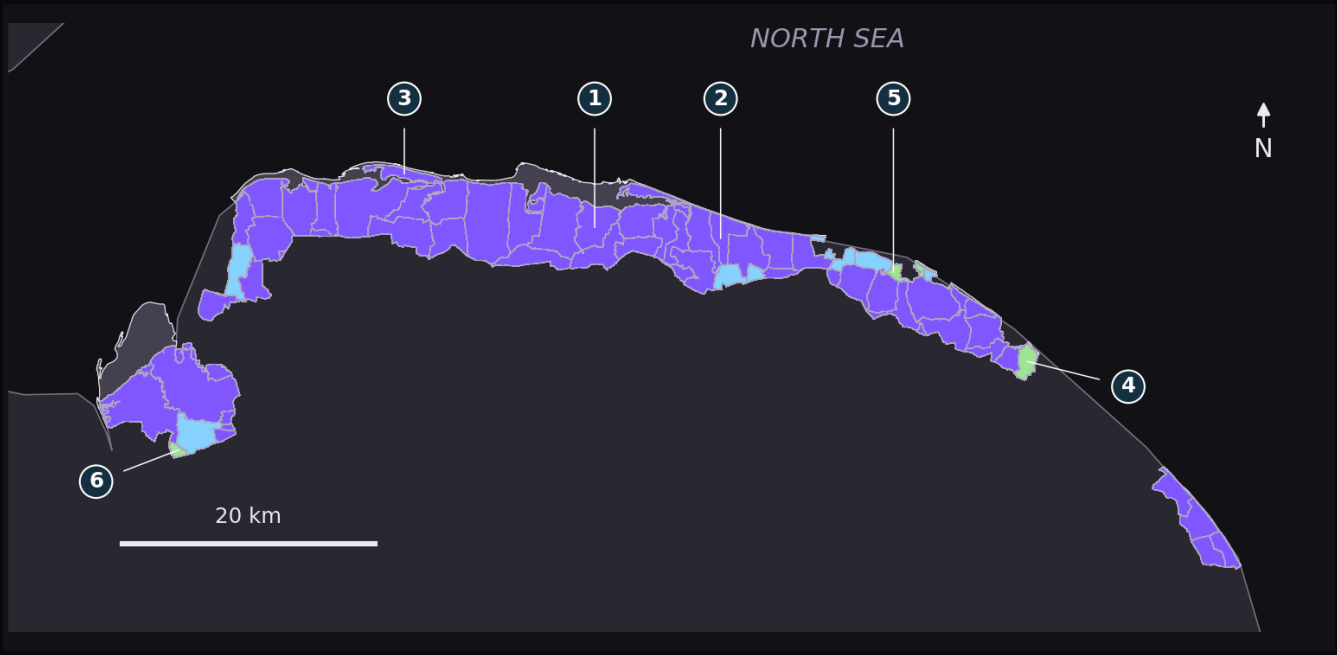
The reporting boundary covers **445.7 km²**. Percentages account for the part of each satellite cell inside the NCNL.

Radiance band (nW/cm²/sr)	Area
Below 0.5	0.8%
0.5 to <1	90.2%
1 to <2	7.4%
2 to <5	1.4%
5 or more	0.2%

How dark is below 1? This covers the three lowest-radiance bands in CPRE’s national mapping, which placed about **68% of England** below 1 nW/cm²/sr in September 2015.[4] The NCNL records **91%** in this 2025 assessment. Our assessment uses new processes and methods, so it is not directly comparable with CPRE’s study of light levels in 2015.

The parish picture.

Stiffkey has the lowest mean radiance among all the parishes in the National Landscape, indicating very low levels of light pollution. At the opposite end of the scale is Paston, which has the highest mean radiance in the National Landscape. This high radiance reading suggests that light pollution is likely the most pronounced in Paston.



Darker Below 0.5 | 0.5 to <1 | 1 to <2 | 2 to <5 | 5 or more **Brighter**

Parish mean radiance, nW/cm²/sr, within the NCNL. Grey areas inside the NCNL boundary have no parish due to the NCNL extending to mean low water. Numbers identify the ranked parishes below; colours show all mapped parish means. Simplified boundaries are used for display; statistics use the original boundaries.

Lower mean radiance

Parish (area within the NCNL)	Mean
1. Stiffkey	0.603
2. Salthouse	0.615
3. Burnham Norton	0.616

Higher mean radiance

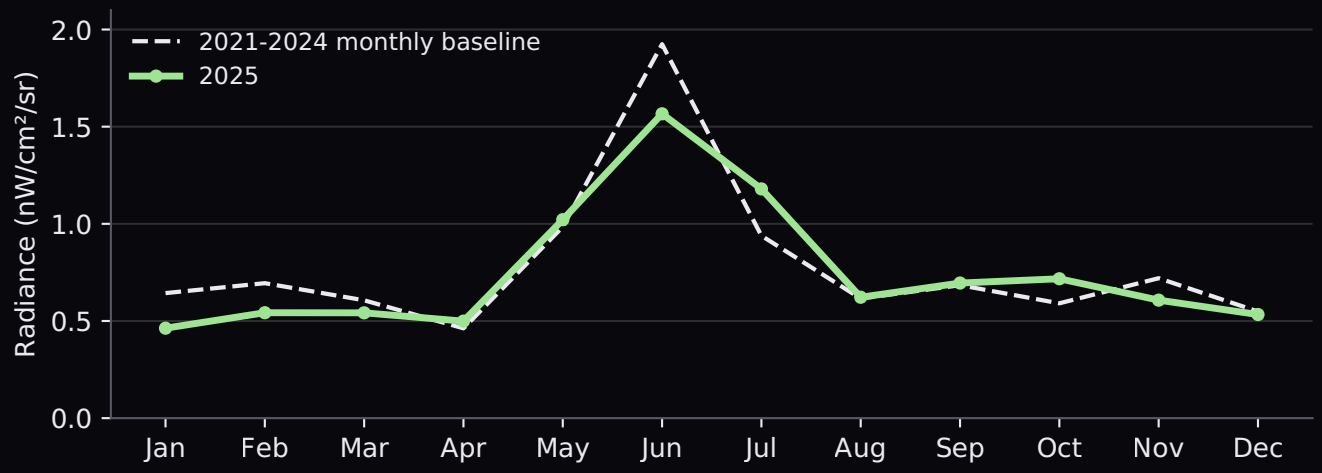
Parish (area within the NCNL)	Mean
4. Paston	3.344
5. Cromer	2.976
6. South Wootton	2.250

Mean = area-weighted average of coverage-screened 2025 cell values. Rankings include **58 parishes** with at least **1 km² inside the NCNL**, reducing the influence of very small boundary fragments. The map includes all 74 intersecting parish areas.

Paston and the Bacton Gas Terminal. Paston's higher radiance is likely influenced by its proximity to the gas terminal complex, one of the brightest locations in Norfolk. Parish rankings describe recorded light, not visible sky quality.

The year in review

Radiance in 2025 was above the baseline for the same month in six months and below it in six. June had the highest average reading of the year, but was below the baseline for June.



Area-weighted monthly means. For each month, 2025 and the 2021-2024 baseline use the same cells with positive 2025 cloud-free coverage. The area represented changes where observations are missing.

A cautious comparison

Across the landscape, the average satellite light reading in 2025 was **3.7% lower** than the 2021-2024 baseline. We compared the same months in each location to allow for seasonal differences.

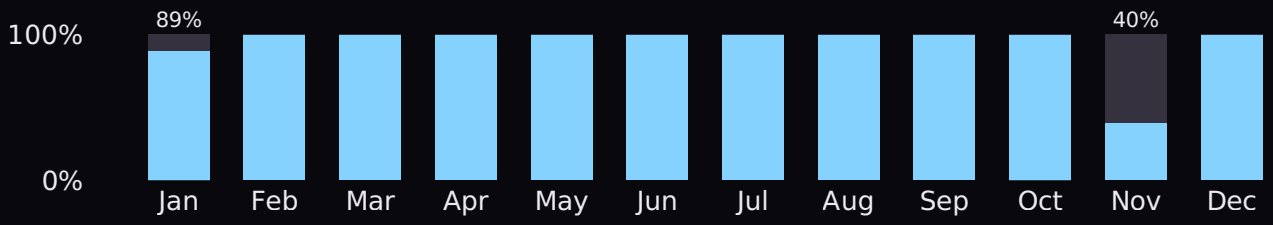
This is an early indication, rather than evidence of a lasting fall in light levels. More years of monitoring will help us see whether a clear pattern emerges.

October stood out

October's mean was **21% above** its matched baseline. About **39%** of the assessed area had a seasonal Z-score of at least 2.

We cannot yet explain the increase. Future years will clarify monthly and seasonal patterns, helping distinguish a one-off anomaly from a sustained trend. Small baseline variation can also produce large Z-scores.

Coverage can change the story.



Share of the NCNL with positive cloud-free observation counts in each month. Blue = observed; muted grey = no observations. All cells have at least nine usable months; only 37.8% of the area has all twelve.

The bar chart shows how much of the landscape had usable satellite observations each month. November stands out: readings were available for only about **40%** of the area. Lower coverage means fewer places had usable cloud-free observations. Cloud and other observing conditions can limit what the satellite records. November's average therefore describes a smaller part of the landscape, so it needs extra care when compared with other months. Gaps in the observations do not mean those places were dark.[2]

A foundation for future reporting.

What is VIIRS?

The **Visible Infrared Imaging Radiometer Suite** is a satellite instrument. Its low-light-sensitive Day/Night Band observes the Earth at night, allowing patterns of artificial lighting to be monitored over large areas.[1] We have used Earth Observation Group (EOG) monthly composites on their native 15-arc-second grid and processed these through our own light pollution monitoring software to build a picture of the levels of light (radiance) within the NCNL.[2]

Radiance is reported in **nanowatts per square centimetre per steradian (nW/cm²/sr)**: this measures the amount of light reaching the satellite's sensor, taking account of the area and angle it observes. It includes light shining upwards and light reflected from the ground. It does not directly measure how bright the ground or night sky looks to us.

How this report was calculated

1. We processed the data. We brought the monthly light readings into our monitoring software and selected the area within the NCNL. We removed records where there were no usable cloud-free observations.

2. We analysed the data. We calculated average light levels across the landscape and within parishes. We also compared the months recorded in 2025 with the same months in our 2021-2024 baseline to look for changes.

3. We interpreted the data. We used maps and charts to show where light levels were lowest and highest, and how they varied through the year. We considered gaps in the observations and treated changes as early signals to follow up in future years.



Protecting darkness through better lighting

We should use lighting for a clear purpose, with lights shielded and properly directed towards the places that need them. Keeping brightness to the level needed, using timers or dimmers, and choosing warmer light where appropriate can help protect our night skies. These approaches follow the DarkSky/Illuminating Engineering Society principles.[3]

Read the Norfolk Coast Dark Skies Planning Guidance (PDF).

Sources and credits

Data: the NCNL VIIRS v5.0.4, 2021-2025 outputs; ONS December 2021 England outline; May 2025 parish boundaries. Parish means cover the NCNL portions only; areas without parish assignments are not ranked.

1. NASA LAADS DAAC, VIIRS instrument overview.
2. Earth Observation Group, VIIRS Nighttime Light: monthly composites and coverage guidance.
3. DarkSky International / IES, Five Principles for Responsible Outdoor Lighting.
4. CPRE, Night Blight (2016), figures 1 and 4: England's three lowest-radiance bands total 68.1%; September 2015 observations.

What do the terms mean?

Radiance

The amount of light reaching the satellite from a particular direction. A higher reading means a stronger light signal. It includes light emitted upwards and light reflected from surfaces.

nW/cm²/sr

nW is a nanowatt, one billionth of a watt. **cm²** means per square centimetre. **sr** is a steradian, a unit describing viewing angle. Together they express the strength of light reaching the sensor.

Mean and median

The **mean** is the average. The **median** is the middle value: half the assessed area lies below it and half above. A small bright area can pull the mean above the median.

Cloud-free coverage

The number of usable cloud-free observations contributing to a monthly cell value. Zero coverage means no observations, not no light. A positive count may still represent only a few observations.

Area-weighted

Each reading contributes according to how much of its cell lies inside the NCNL. A cell clipped by the boundary counts only for the part within the National Landscape.

Z-score

How far a reading sits from its baseline, relative to the baseline's usual variation. A score of **+2** is two standard deviations above the mean. It does not mean twice as bright.

Baseline

The reference used for comparison. Here, the system uses 2021-2024. A **same-calendar-month baseline** compares June 2025 with earlier Junes, rather than with winter months.

Native grid and valid month

The native grid is the original set of satellite-data cells, retained without creating finer spatial detail. In this report a valid month has a radiance reading and positive cloud-free coverage.

Reading the map key

0.5 to <1 means at least 0.5 but less than 1 nW/cm²/sr. "Darker" indicates lower recorded radiance; "Brighter" indicates higher radiance. These are relative light levels, not a rating of the stars visible overhead.