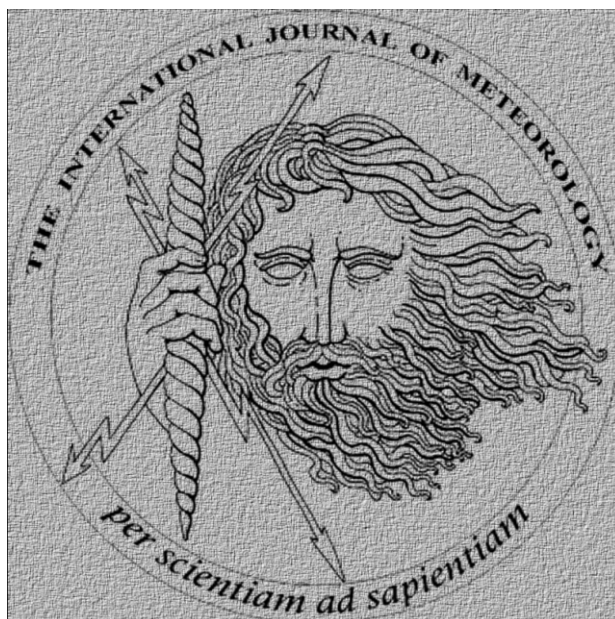


# TORRO

## THUNDERSTORM DIVISION REVIEW FOR BRITAIN AND IRELAND 2024

also incorporating the Thunderstorm Census Organisation  
(TCO) annual survey



Compiled by Jonathan D.C. Webb  
Edited by David Smart

[torro.editorial@gmail.com](mailto:torro.editorial@gmail.com)

Typeset with L<sub>A</sub>T<sub>E</sub>X

Contents

1 Overview 1

2 Reported incidence of overhead storms and lightning damage in 2024 2

3 Severe thunderstorms and damaging hail in 2024 2

4 Historical perspective 4

List of Figures

1 *Thunder heard* days in 2024. Key: black = 15–19 days, grey = 10–14 days, light grey= 5–9 days, white = under 5 days. © TORRO 2025. . . . . 1

2 Mean number of *thunder heard* days 1981–2010. Key: black = 15–19 days, grey = 10–14 days, light grey= 5–9 days, white = under 5 days. © TORRO 2025. . . . . 1

3 Widespread thunder versus lightning incidents 1988–2024. Significant lightning incidents refer to people or animals directly or indirectly struck, houses and other buildings struck, trees struck and damaged, and strikes causing an electricity supply cut over a large area. . . . . 5

4 Cloud to ground lightning over north Devon from high-based cumulonimbus cloud, evening of 11 August 2024, looking north/north-northwest from Waddles Down, near Exeter. © Matt Clark 2024. . . . . 5

List of Tables

1 Thunder days in 2024 at selected locations (sources- see text). . . . . 3

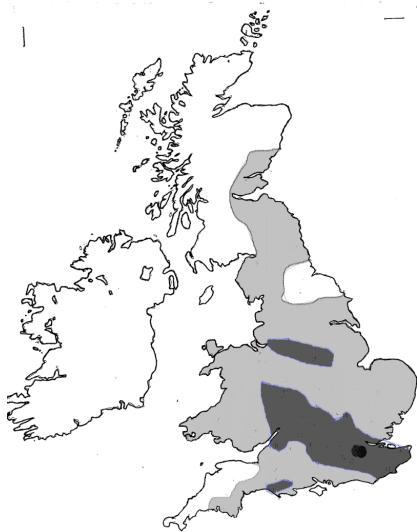
2 Duration of thunder and number of hours of thunder heard, 2024 . . . . . 3

3 Significant hailstorms (H2 intensity and/or hail max 20mm diameter or more) in 2024, United Kingdom, Channel Islands, Ireland. Note: the severity rating and hail swath details are based on current information and may (in the context of TORRO’s ongoing research) be subject to future review. . . . . 4

### **Abstract**

Based on ‘Thunder heard days’, widespread thunderstorm outbreaks and reports of lightning damage, 2024 was another quiet year for thunder. However, some southern areas of the UK had an unusually thundery September.

**CITE:** Webb, JDC. (2025). TORRO Thunderstorm Division Review For Britain And Ireland: 2024. Supplement to the International Journal of Meteorology (new series), 8, pp 6.



**Figure 1:** *Thunder heard days in 2024.* Key: black = 15–19 days, grey = 10–14 days, light grey = 5–9 days, white = under 5 days. © TORRO 2025.



**Figure 2:** *Mean number of thunder heard days 1981–2010.* Key: black = 15–19 days, grey = 10–14 days, light grey = 5–9 days, white = under 5 days. © TORRO 2025.

## 1 Overview

Annual ‘thunder heard’ day totals in 2024 were mostly below average, maintaining the recent trend for ‘quiet’ years over the UK and Ireland. Longstanding records from Norfolk and North Yorkshire show that 2024 was among the quietest for thunder in 35–40 years of observations. Indeed, had it not been for a thundery September (for some) then it might have ranked among one of the least thundery years on record. September’s storms contributed to ‘close to average’ annual totals of 10 to 15 days of thunder in quite a broad swath from parts of Kent and East Sussex, west-north-westwards across the Thames Valley, south and west Midlands and north Wessex, to the Severn Estuary. There were 16 days of thunder at Claygate, Surrey (albeit still just below the 2005–2023 local average). A few pockets outside this swath, such as in Dorset and the Peak District, also reached or exceeded 10 days, though still barely reaching average incidence.

September was remarkably thundery in a swath

from the Thames Estuary to the Severn Estuary with 5 to 8 days of thunderstorms contributing to an exceptionally wet early-autumn month in these areas; locally, thunder was heard on nine days in the Guildford area. There were multiple outbreaks on some days, like the 8<sup>th</sup> and the 21<sup>st</sup> to the 22<sup>nd</sup>, and moreover some severe storms occurred – such as one cluster that tracked west-northwest from Sussex to Herefordshire on the 20<sup>th</sup> producing large hail and locally extreme short-period rainfalls (also a tornado near Aldershot). However, even September produced very little activity across the northern half of the UK. Thunder could only reasonably be described as widespread over the UK on six days in 2024 (two in May, one each in June and August and two in September) with 12 May and 12 August the most notable (the latter was easily the most significant episode over Scotland). Impressive overnight storms affected South East England on 1–2 May and 7–8 September, while some notable short period rainfalls occurred in storms over central southern England and the southwest Midlands on 1 August. Although an

aside in terms of the year, and affecting limited areas, a seasonally unusual event occurred on 28 March when at least three long-track supercell-type storms deposited large hail, one in a swath from north Wiltshire to western Northamptonshire. Further details of monthly thundery activity can be found in the Climatological Observers Link thunderstorm summaries (Webb, 2024).

Identification of the geographical extent of thunder can be made by using a combination of reports from voluntary observers and the distribution of sferics. The most readily available sferics archive is from Blitzortung.org (Blitzortung.org, 2024). Met Office LEELA sferics data (Met Office, 2025; Elsom et al, 2018), available via *Netweather*, have also been checked for dates referred to below. Days of ‘widespread’ thunder have been identified as occasions when thunder is estimated to have been audible across at least 25% of the UK land area. There will inevitably be some uncertainties and borderline cases. Moreover, some instances will have involved extensive overhead activity (such as with a mesoscale convective system, MCS) whereas other days will have been ‘showery’ in nature, when a considerable proportion of observers hear just distant thunder. Based, broadly, on the aforementioned sources and criteria, the mean annual total of widespread thunder days for the whole UK for the 20 years from 1996 to 2015 was 14 days. This was quite similar to the survey for England and Wales, based on Daily Weather Report data, presented by Prichard (1986).

Thunder was widespread over the UK on only six days in 2024, continuing the conspicuous decline of widespread thunder which has been evident since 2006 (Figure 3) with only 2014 ‘bucking’ the trend (though the 40 years’ data indicate a comparable, albeit shorter, run of ‘quiet’ years from 1986 to 1991).

## 2 Reported incidence of overhead storms and lightning damage in 2024

For the purposes of these reviews, ‘overhead’ thunder is defined as electrical activity reported by an

observer to be at a distance of 5km or less, or ‘close’. Observations of overhead thunder and the duration of thunder are given for selected locations in Table 2. The reported significant lightning incidents (assumed to be only a proportion of the total and subject to future review) totalled 56. The tally of reported incidents was well below average (Figure 4) and largely mirrors the graph of widespread thunder, i.e. a conspicuous decline after 2006, interrupted in 2014.

There was only one reported incident of a person being struck by lightning in 2024, this being fortunately an indirect strike (via kitchen taps) in Amesbury, Wiltshire, on the 28<sup>th</sup> of March, the woman only experiencing minor ill-effects.

The 2024 annual count of lightning incidents also included 34 which involved strikes on buildings (mostly domestic homes) and, of these, at least 25 caused appreciable damage and/or started fires.

## 3 Severe thunderstorms and damaging hail in 2024

Severe hail, size 20mm diameter or more and intense enough to cause noticeable plant and crop damage (and at least minor structural damage), was reported on five days in 2024. The incidents are summarised in Table 3. Interestingly, the most significant events occurred in March and September.

**March 28:** An early season supercell storm deposited remarkably large hail in a swath from West Overton, Wiltshire to Church Stowe, Northampton (hail 20mm+). This was the second case of ‘unseasonally’ huge hail within 5 months (following the Jersey tornadic storm associated with *Storm Ciaran* in Nov 2023, see Knightley et al, 2024).

**1-2 May:** This was the most spectacular overnight storm of the year in the south. At midnight a band of intense thunderstorm activity stretched in an arc from the Isle of Wight to Essex and over the next few hours, the storm zone became aligned more east to west, with activity extending west over Berkshire and Wiltshire to reach the Bristol area before 0400 UTC. Several houses were struck and set on fire by lightning over the southeast and the south Midlands.

**Table 1:** Thunder days in 2024 at selected locations (sources- see text).

| STATION               | COUNTY       | 2024 total | Average<br>1981–2010(unless<br>otherwise stated) | Diff +/– |
|-----------------------|--------------|------------|--------------------------------------------------|----------|
| Llansadwrn            | Anglesey     | 6          | 7                                                | –1       |
| Claygate              | Surrey       | 16         | 18 (2005–2014)                                   | –2       |
| Kidwelly, Carmarthen  | Dyfed        | 3          | 11 (2001–2015)                                   | –8       |
| Ebbw Vale             | Gwent        | 5          | 8 (1988–2010)                                    | –3       |
| Guernsey Airport      | Channel Is.  | 2          | 12                                               | –10      |
| Lymington             | Hampshire    | 2          | 9 (1986–2013)                                    | –7       |
| Oxford                | Oxon         | 11         | 11 (1991–2020)                                   | 0        |
| Knockroe, Co Monaghan | Ireland      | 4          | 6 (2006–2015)                                    | –2       |
| Carlton-in-Cleveland  | North Yorks. | 3          | 12 (1984–2023)                                   | –9       |
| Elderslie             | Renfrew      | 3          | 6                                                | –3       |
| Wokingham             | Berkshire    | 12         | 16                                               | –4       |
| Bristol (Stapleton)   | Bristol      | 10         | 10 Fishponds (1950–2010)                         | 0        |
| Calthorpe             | Norfolk      | 7          | 18 (1987–2015)                                   | –11      |
| Woodlands St Mary     | Berkshire    | 10         | 12 (1990–2009)                                   | –2       |

**Table 2:** Duration of thunder and number of hours of thunder heard, 2024

| Station (County)               | Thunder days/<br>(overhead thunder<br>days) | Storm<br>hours<br>2024 |
|--------------------------------|---------------------------------------------|------------------------|
| Oxford (Oxon)                  | 11 (3)                                      | 18                     |
| Bristol (Stapleton)            | 10 (4)                                      | 12                     |
| Kidwelly (Carmarthen)          | 5 (2)                                       | 12                     |
| Knockroe, Monaghan (Ireland)   | 4 (3)                                       | 6                      |
| Carlton-in-Cleveland (N Yorks) | 3 (3)                                       | 3                      |
| Elderslie (Renfrew)            | 3 (1)                                       | 5                      |

**Table 3:** Significant hailstorms (H2 intensity and/or hail max 20mm diameter or more) in 2024, United Kingdom, Channel Islands, Ireland. Note: the severity rating and hail swath details are based on current information and may (in the context of TORRO’s ongoing research) be subject to future review.

| Date              | Max. Diam<br>mm. | Severity rating<br>(Severe, H3+, in bold) | Locations<br>affected                                         |
|-------------------|------------------|-------------------------------------------|---------------------------------------------------------------|
| 28 March 2024     | 50               | <b>H4</b>                                 | West Overton<br>(Wilts) to Flore<br>(Northants) 105km         |
| 28 March 2024     | 15–20            | H2                                        | Coventry (West<br>Midlands)                                   |
| 12 May 2024       | 20–25            | <b>H2–3</b>                               | Newport (Gwent)                                               |
| 12 August 2024    | 15–20            | H2                                        | St Cyrus<br>(Aberdeenshire)                                   |
| 20 September 2024 | 20–30            | <b>H3</b>                                 | Westwell (Oxon) to<br>Bishops Cleeve<br>(Gloucs)              |
| 21 September 2024 | 20–30            | <b>H3</b>                                 | Lichfield,<br>Shareshill,<br>Wolverhampton<br>(West Midlands) |

**August 1:** Slow moving storms with torrential downpours, featured on the last day of a hot spell. In the Basingstoke area, where there was flash flooding, an official site recorded 70mm of rain in four hours. Godstone, Surrey recorded 54mm with 45mm falling in one hour during the evening. There was also notable flash flooding around Winchester.

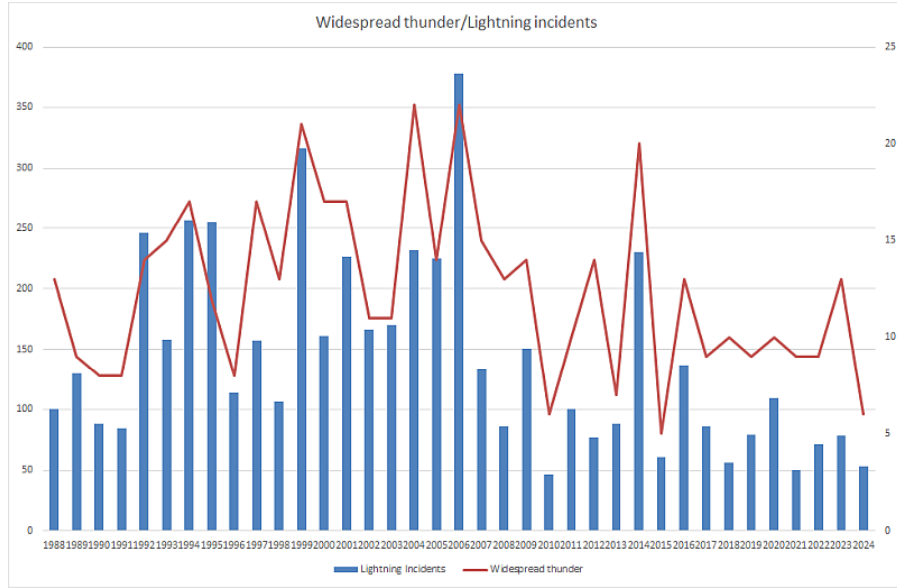
**August 11-12:** This was the second significant overnight event of 2024 (Figure 4)– this time in the west and north, with Ireland and Scotland experiencing their most widespread storms of the year. Several incidences of lightning damage occurred in both western Ireland and in Inverness-shire and Aberdeenshire.

**September:** There were nine days with thunder in the Guildford area with 5 to 8 days of thunder in a swath from the Thames Estuary to the Severn Estuary, contributing to an exceptionally wet early Autumn month in these areas. This month also featured thunder from a variety of synoptic situations. Intense

activity affected various parts of the Midlands from the 20<sup>th</sup> to the 22<sup>nd</sup>. On the 20th, appreciable accumulations of hail occurred at numerous places in a swath from East Sussex to Gloucestershire. The 21<sup>st</sup> of September 2024 saw widespread and very active storms –in the morning over southern England (especially Cornwall), and in the afternoon across central England and Wales. Ten lightning damage incidents were reported on this day, the most in one day in 2024 (with only 56 reported during year). Hail 20–30mm diameter fell in the West Midlands.

## 4 Historical perspective

2024 was another ‘quiet’ year for thunderstorms, based on ‘Thunder heard’ days, thunderstorm hours (based on more limited data), widespread thunder and reports of lightning damage.



**Figure 3:** Widespread thunder versus lightning incidents 1988–2024. Significant lightning incidents refer to people or animals directly or indirectly struck, houses and other buildings struck, trees struck and damaged, and strikes causing an electricity supply cut over a large area.



**Figure 4:** Cloud to ground lightning over north Devon from high-based cumulonimbus cloud, evening of 11 August 2024, looking north/north-northwest from Waddles Down, near Exeter. © Matt Clark 2024.



## Data sources and acknowledgements

Sources include the TORRO forum and Facebook page, the Climatological Observers Link (COL), the Weather Observers Network (WON), and the Met Office Land Stations Database (MIDAS) via the Centre for Atmospheric Data Analysis (CEDA). Special thanks are due to all TORRO and other (e.g. COL, WON, other weather forum) observers who have contributed information on thunderstorms and associated severe weather in 2024. New thunderstorm observers are always welcome. Further details of reporting are available from the TORRO web site: [www.torro.org.uk](http://www.torro.org.uk).

## References

- [1] Blitzortung (2024). Network for Lightning and Thunderstorms in Real Time. Historical Data available at: [http://en.blitzortung.org/archive\\_data.php?map=12](http://en.blitzortung.org/archive_data.php?map=12) (accessed 5 March 2025).
- [2] Elsom D M, Enno S, Horseman A and Webb J D C. (2018). Compiling lightning counts for the UK land area and an assessment of the lightning risk facing UK inhabitants. *Weather* 73, 171–179.
- [3] Elsom D M, Webb J D C. (2017). Lightning deaths in the UK: a 30-year analysis of the factors contributing to people being struck and killed. *Int J Meteorology* 42: 8–26.
- [4] Knightley, P., Horton, S., Clark, M. and Winter, M. (2024), The Jersey tornado and hailstorm of 1–2 November 2023. *Weather*, 79: 81–84.
- [5] Met Office (2025). Detecting lightning. Available at: <https://www.metoffice.gov.uk/learning/storms/thunder-and-lightning/lightning> (accessed 20 June 2025).
- [6] Prichard R J. (1985). The spatial and temporal distribution of British Thunderstorms. *J. Meteorology UK* 10: 227–230.
- [7] Prichard, R. J. (1986). The incidence of outbreaks of widespread thunderstorms in England and Wales: 1946–1985. *J. Meteorology UK* 12: 83–86.
- [8] Webb J D C. (2016). Epic Thunderstorms in Britain and Ireland, in: *Forty years of the Tornado and Storm Research Organisation (TORRO)*, Doe, R. K, Editor, John Wiley and Sons Ltd, Chichester, UK.
- [9] Webb J (2024). Thunder Events January to December 2024. Climatological Observers Link (COL) Bulletins 645–646. Note: issues also available 6 months after publication at: <https://www.torro.org.uk/research/thunderstorm-observer> (accessed 21 July 2025)