Lightning flash report 2025

Europe / Benelux

Discover Meteorage's analysis of thunderstorm and electrical activity over the year.

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Thunderstorms are the silent witnesses of climate change.

Their frequency, intensity and movement are all signals that alert us to the ongoing evolution of our climate.
Understanding these phenomena is no longer an option — it is a necessity in order to anticipate risks and protect our territories.

For nearly 40 years, the lightning detection network operated by Meteorage has been monitoring thunderstorm activity in France, and for more than 10 years at the European scale. This continuity of observation provides a unique data source, enabling long-term trend analysis and the delivery of reliable insights to public and private stakeholders.

The report presented here is based on these observations and highlights the thunderstorm activity recorded in 2025.

Beyond the figures, it illustrates the importance of having high-performance monitoring tools to support the climate transition and strengthen resilience in the face of extreme events. Observe, understand, act: this is the mission we pursue with determination, in the service of people's safety, infrastructure protection and territorial resilience.

I invite you to explore the key characteristics and specific features of the thunderstorm activity observed in 2025 by the Meteorage lightning detection network.

— Stéphane Pedeboy, President, Meteorage

European lightning detection network

100 m
Location accuracy

> 98 %
Detection efficiency

Learn more about our expertise

This report is based on data recorded since 1989 by the Meteorage lightning detection network, which detects more than **98% of cloud-to-ground lightning flashes** with a **location accuracy of around 100 metres.** It covers all cloud-to-ground lightning flashes detected between 1st january and 31st December 2025.

Definitions of the terms used are provided at the end of the report.

2025 stands out as a year with historically few thunderstorms, marked by generally low electrical activity across Europe, but punctuated by locally intense episodes.

A CONTRASTED ACTIVITY WITH SIGNIFICANT LOCALISED RISKS

With around 1.226 million cloud-to-ground lightning flashes detected in Europe, 2025 stands out for its thunderstorm activity below the climate normals, making it the year with the fewest lightning flashes observed to date by our Meteorage records. Although the atmospheric conditions limited the development of thunderstorms, some favourable situations nevertheless gave rise to intense, localised episodes, with more marked activity around the Mediterranean basin and on higher ground.

Beyond this report and the spatial distribution observed in 2025, analyses covering the past twenty years highlight a gradual northward shift of the thunderstorm belt, as well as a lengthening of the thunderstorm season, marked by earlier episodes in spring and later occurrences in autumn. These regional disparities are a reminder that lightning is never uniformly distributed and that, even in years when there is little activity, the issues of prevention, surveillance and lightning risk management remain fully relevant.

2025

KEY FIGURES

Meteorage network & services

1,226 million

cloud-to-ground lightning flashes detected in Europe

The year with the fewest lightning flashes since Meteorage began recording data

12,267

cloud-to-ground lightning flashes detected over the Benelux countries (6,478 in Belgium, 5,095 in the Netherlands, 696 in Luxembourg)

the year with the fewest lightning flashes in the Benelux countries since Meteorage began recording data

284,200

cloud-to-ground lightning flashes detected in Europe

in June, the most active month in Europe.

13 September 2025

1,200 cloud-to-ground lightning flashes detected over the Benelux countries (593 in Belgium, 607 in the Netherlands)

one of the days with the most lightning flashes in the Benelux countries in 2025

64 %

European storm activity

concentrated between June and August

115 597

Meteorage thunderstorm warnings sent in Europe

enabling our customers to take action to secure their activities

more than 20 million people protected from lightning-related risks on every thunderstorm day.

These values contrast with 2024, when more than **1,967,112** cloud-to-ground lightning flashes were detected in Europe, including **39,750** Benelux countries (19,713 in Belgium, 17,884 in the Netherlands and 2,153 in Luxembourg), reflecting activity in line with climate normals.

Whereas 2024 was marked by a number of widespread, structured thunderstorms, 2025 was characterised by more sporadic episodes, but which sometimes proved to be locally intense.

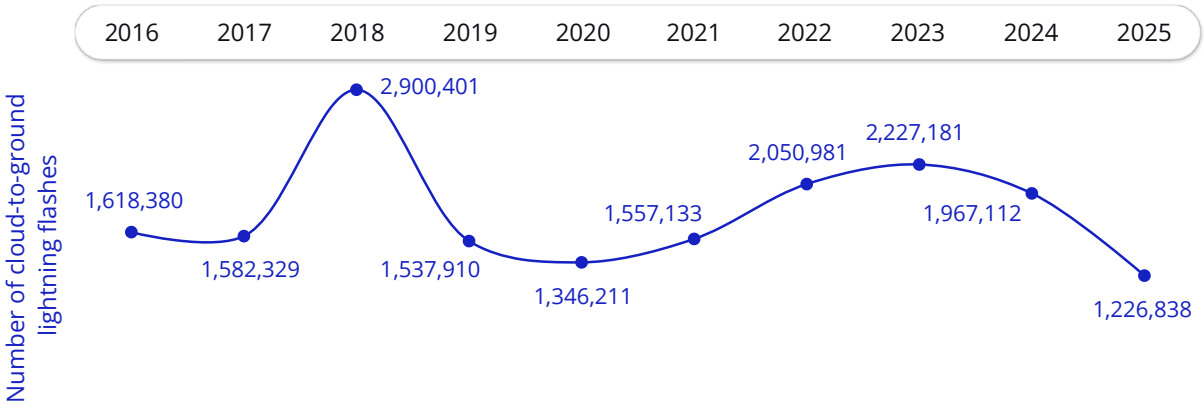
THE EXPERT'S VIEW

The number of lightning flashes from one year to the next does not in itself reflect the level of danger. In 2025, there were fewer thunderstorms in Europe, but they were just as intense in some cases, and the risk to exposed activities could appear at any time.

— Stéphane Schmitt,
Lightning Application Expert
Meteorage

LIGHTNING ACTIVITY IN EUROPE

2025, a calm year, despite marked activity around the Mediterranean



Evolution of cloud-to-ground lightning flashes in Europe (2016–2025)

Although lightning flash activity in 2025 was below historical averages, the high interannual variability of thunderstorm activity does not yet allow a robust statistical trend to be identified.

Most of the storm activity was concentrated between June and August, when unstable conditions were most favourable, with a marked peak in June and almost 284,200 cloud-to-ground lightning flashes recorded across the continent, illustrating a sometimes early thunderstorm season.

Lightning Report – Europe 2025

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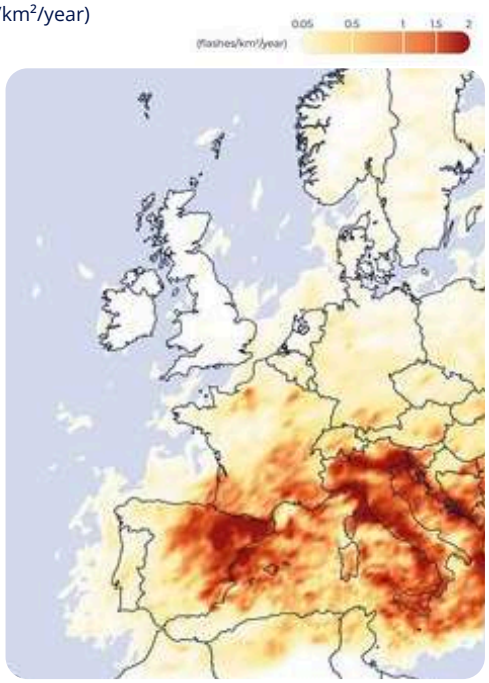
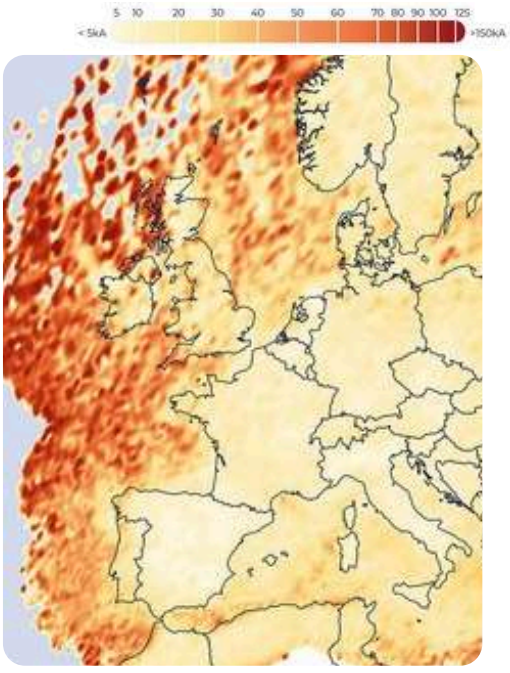
Average CG flash density

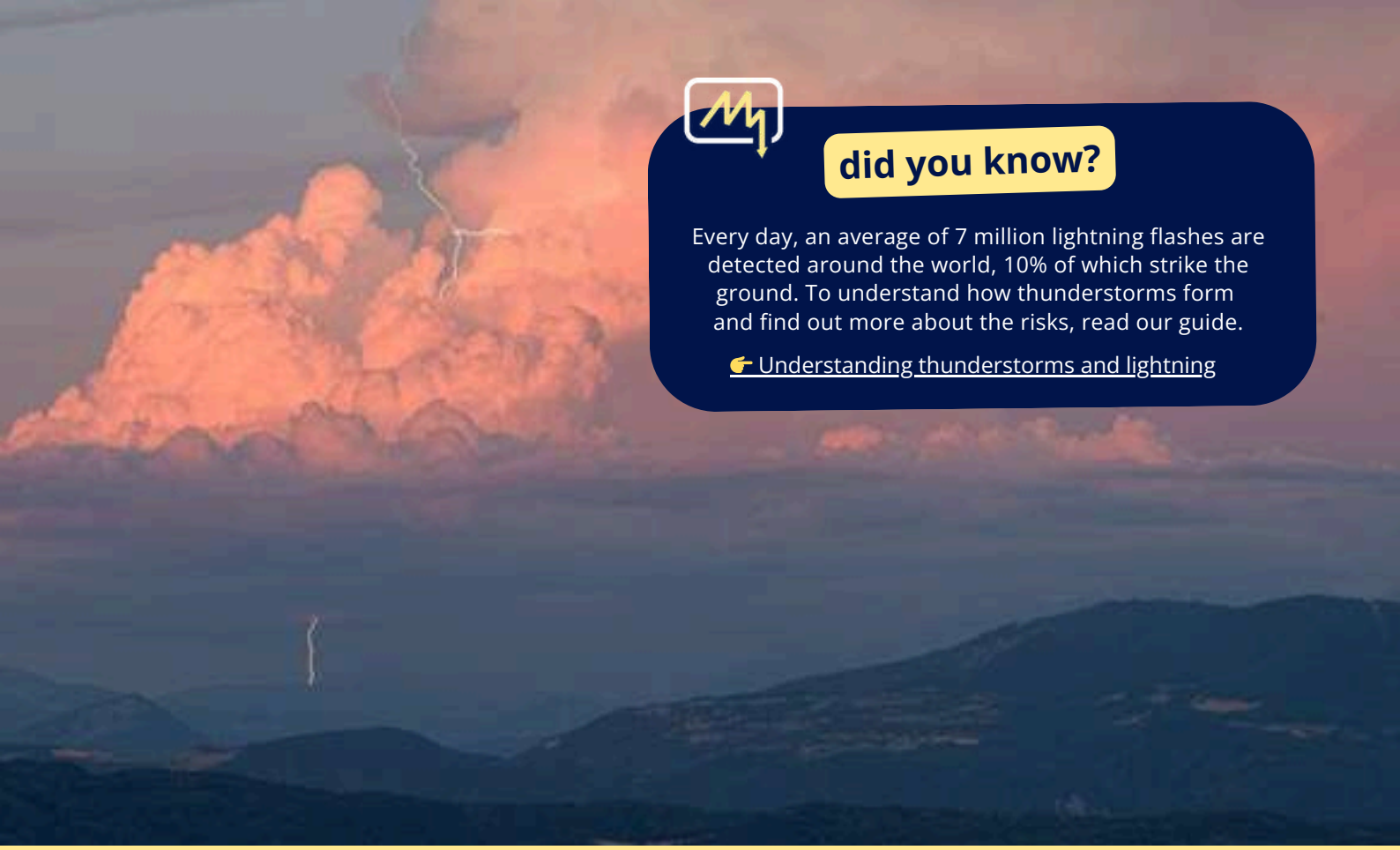
(flashes/km²/year)



Average CG flash peak current

(kA)





did you know?

Every day, an average of 7 million lightning flashes are detected around the world, 10% of which strike the ground. To understand how thunderstorms form and find out more about the risks, read our guide.

👉 Understanding thunderstorms and lightning

SEASONAL ANALYSIS

360 days with thunderstorms

Spring 2025

contrasted activity

The spring season totalled 233,316 cloud-to-ground lightning flashes, with very heterogeneous geographical distribution:
Little activity over the northern half of Europe, which remained largely under the influence of persistent anticyclonic conditions, greatly limiting the development of thunderstorms. Conversely, there was more regular activity in the south of the continent, particularly around the Mediterranean basin

During this period, Spain was the country most affected, with 97,219 cloud-to-ground lightning flashes.

Summer 2025

the period with most thunderstorm activity

Summer saw 775,394 cloud-to-ground lightning flashes, representing more than half of the annual activity.

Although the thunderstorms developed mainly along the classic Spain - France - Germany axis, Italy also saw significant activity, becoming the country most struck by lightning in Europe during this season.

Autumn 2025

activity focused on Mediterranean coastal areas

In the autumn, thunderstorms continued mainly:

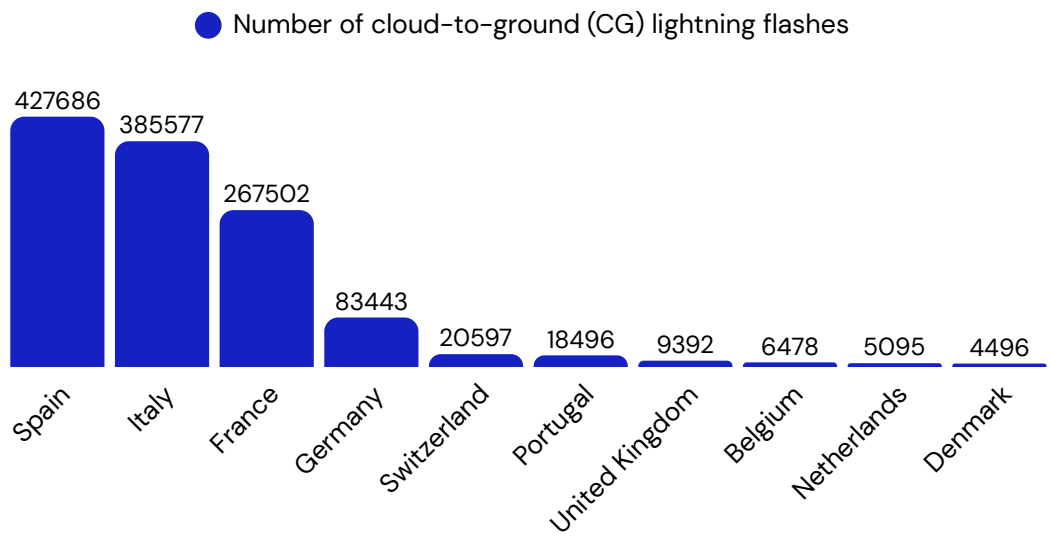
- over the seas,
- over Mediterranean coastal regions (eastern Spain, southern France, Italy).

This local intensification is explained by the persistence of warm surface waters, while the lower continental layers cooled more rapidly. This vertical temperature contrast favoured convection, making thunderstorms sometimes intense and very rainy, depending on the passage of low-pressure systems.

LIGHTNING ACTIVITY IN EUROPE

2025, a calm year, despite marked activity around the Mediterranean

TOP 10 MOST LIGHTNING-STRUCK COUNTRIES IN EUROPE IN 2025



THE EXPERT'S VIEW

In 2025, atmospheric circulation at European level favoured a concentration of convective activity around the Mediterranean.

The recurrent presence of high geopotentials over central and northern Europe limited the advance of unstable systems towards the north of the continent.

As a result, low-pressure circulations and dynamic forcing remained at low latitudes, interacting with warmer, more humid air masses around the Mediterranean, creating an environment more favourable to electrical activity.

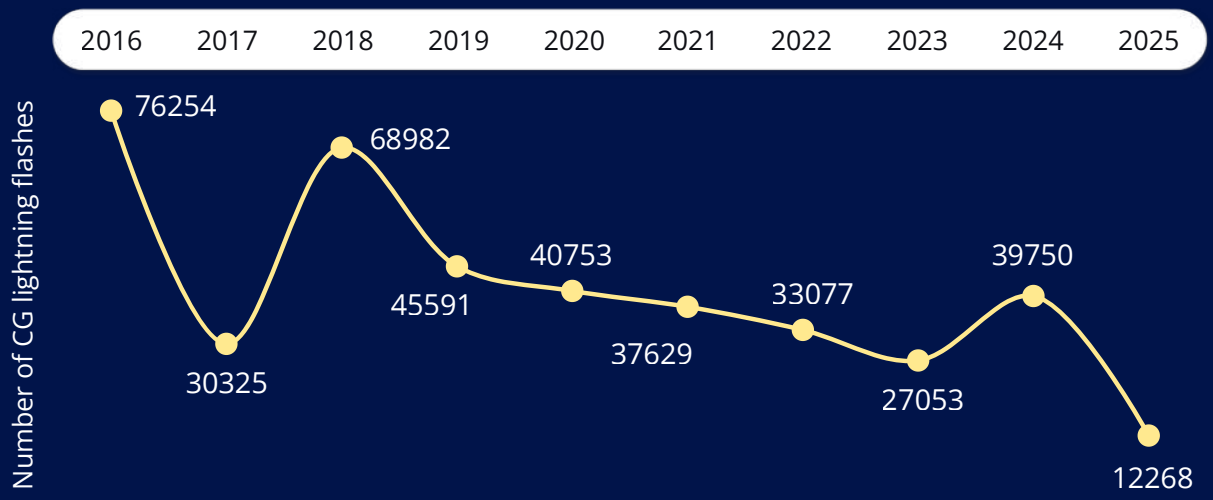
— Joris Royet, Weather Project Manager, Meteorage

LIGHTNING ACTIVITY IN THE BENELUX COUNTRIES

2025, a year with few lightning flashes

In 2025, the Benelux countries recorded 12,267 cloud-to-ground lightning flashes, marking a historically low level of thunderstorm activity and the fewest lightning flashes since Meteorage records began.

This low level of activity reflects the predominance of quite stable air masses and weakly dynamic situations over the whole of the Benelux countries.



Evolution of cloud-to-ground lightning flashes in the Benelux countries (2016–2025)

Lightning Report – Benelux 2025

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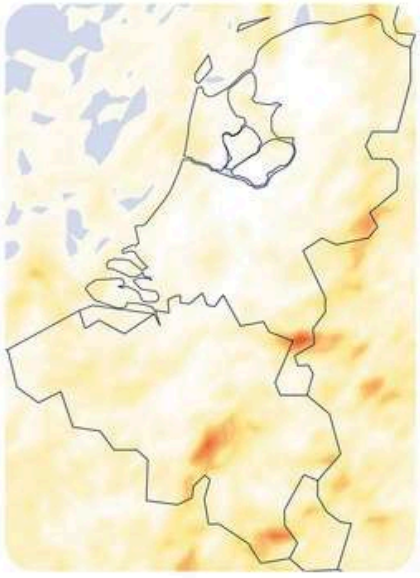
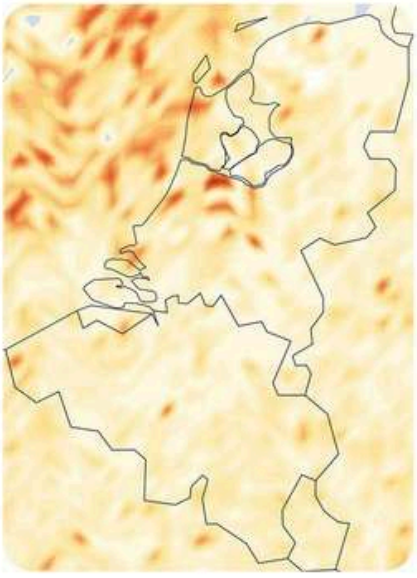
Average CG flash density

(flashes/km²/year)



Average CG flash peak current

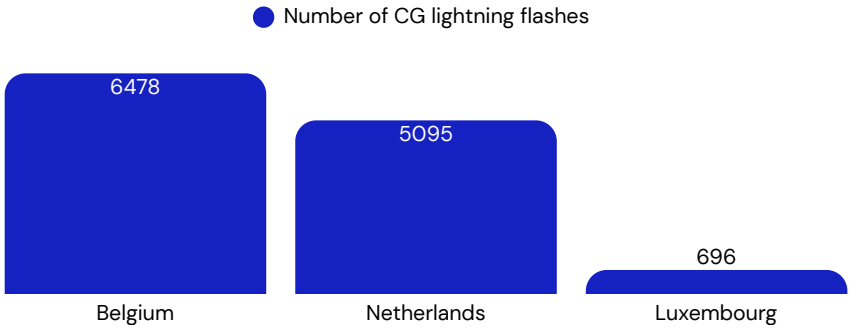
(kA)



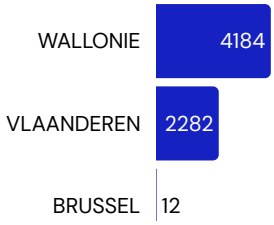
LIGHTNING ACTIVITY IN THE BENELUX COUNTRIES

2025, a year with few lightning flashes

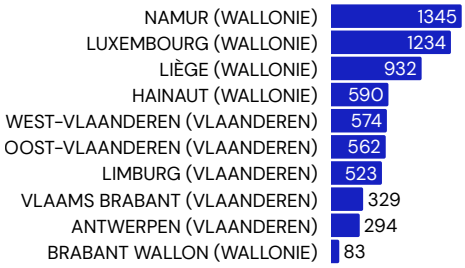
COUNTRIES WITH THE MOST LIGHTNING FLASHES IN BENELUX IN 2025



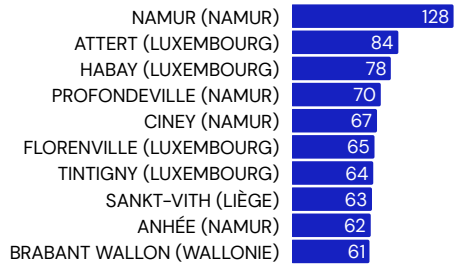
BELGIUM



GEWEST WITH THE MOST LIGHTNING FLASHES IN 2025

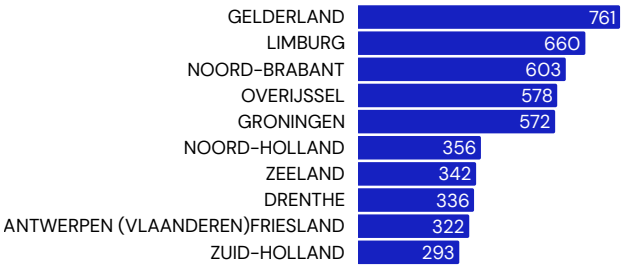


PROVINCIE WITH THE MOST LIGHTNING FLASHES IN 2025

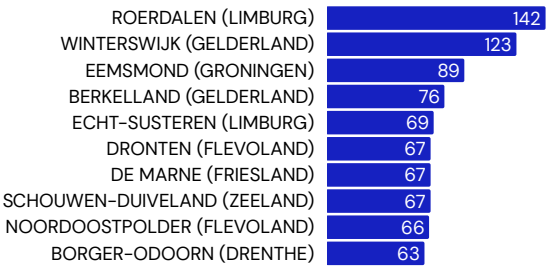


GEMEENTE WITH THE MOST LIGHTNING FLASHES IN 2025

NETHERLANDS

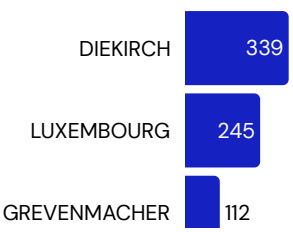


PROVINCIE WITH THE MOST LIGHTNING FLASHES IN 2025

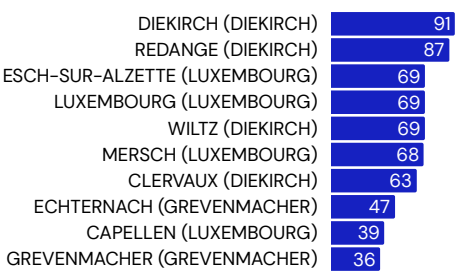


GEMEENTE WITH THE MOST LIGHTNING FLASHES IN 2025

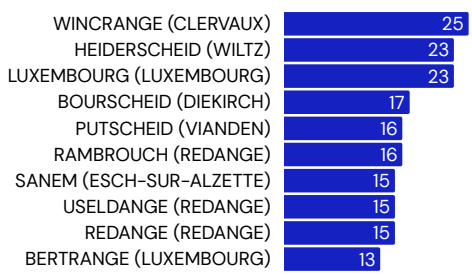
LUXEMBOURG



DISTRICT WITH THE MOST LIGHTNING FLASHES IN 2025



CANTON WITH THE MOST LIGHTNING FLASHES IN 2025



COMMUNE WITH THE MOST LIGHTNING FLASHES IN 2025

Spring 2025
very quiet activity

From the meteorological spring onwards (March to May), the trend became more pronounced, with just 2,531 cloud-to-ground lightning flashes, a figure which puts the season among the least active in the last 25 years.

73 days with thunderstorms in Belgium

90 days with thunderstorms in the Netherlands

34 days with thunderstorms in Luxembourg

Summer 2025
historically low thunderstorm activity

The summer season accentuated this deficit: 7,009 cloud-to-ground lightning flashes were detected by Meteorage sensors between June and August, the lowest level since the beginning of the 21st century. The persistence of anticyclone synoptic weather conditions over north-western Europe reduced instability, limiting the formation of storm systems over much of the northern part of the continent.

Autumn 2025
gradual return to instability

In autumn, thermal contrasts gradually increased between the lower layers and the higher altitudes, allowing a return to more pronounced atmospheric instability. Over the period September-November, 2,644 cloud-to-ground lightning flashes were detected, a value in line with seasonal averages for this transition period.

13 September 2025

a stormy day marked by a supercell over the Benelux countries

1200 cloud-to-ground lightning events were detected in the Benelux countries. The combination of moderate instability, marked frontal forcing and sufficient shearing led to the formation of a supercell of French origin which crossed Belgium, generating significant hail (up to 3-4 cm in diameter).

Most of the damage was localised due to the rapid nature of the cell. Nevertheless, the event illustrates that situations with a CAPE of ~1000 J/kg can produce organised thunderstorms if the frontal dynamics and shearing are favourable.

An occluded front causing a rainstorm moved from west to east, driven by a vast low-pressure area to the north-west of Europe.

- The air mass upstream was moderately unstable **(CAPE of the order of ~1,000 J/kg locally)** with sufficient vertical shear to organise certain cells.
- The altitude forcing associated with the passage of the front favoured the development of convective lines and nuclei over the Benelux countries.

However, electrical activity remained moderate, both in terms of density and intensity, with generally higher amplitudes over maritime areas.

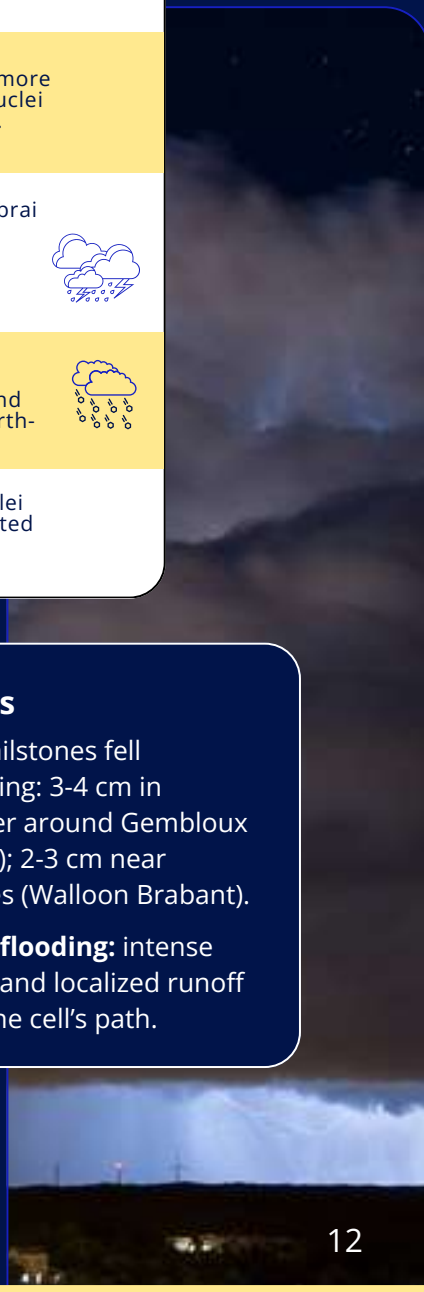
Timeline

Early afternoon: the front became more structured and several convective nuclei formed along the convergence zone.

Mid-afternoon: a cell from the Cambrai region (France) acquired supercell characteristics; it deviated from the mean wind and entered Belgium by the province of Hainaut.

Late afternoon: the supercell thunderstorm crossed sectors to the north-east of Charleroi, Gembloux and Ramillies as it continued to move north-eastwards.

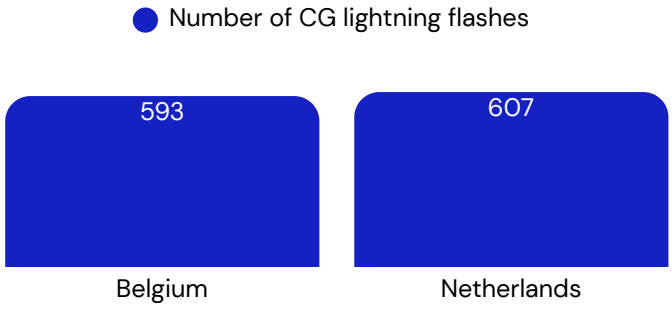
Evening: most of the convective nuclei dissipated. A few residual foci persisted before general attenuation.



Electrical report

1200

cloud-to-ground lightning flashes detected over the Benelux countries



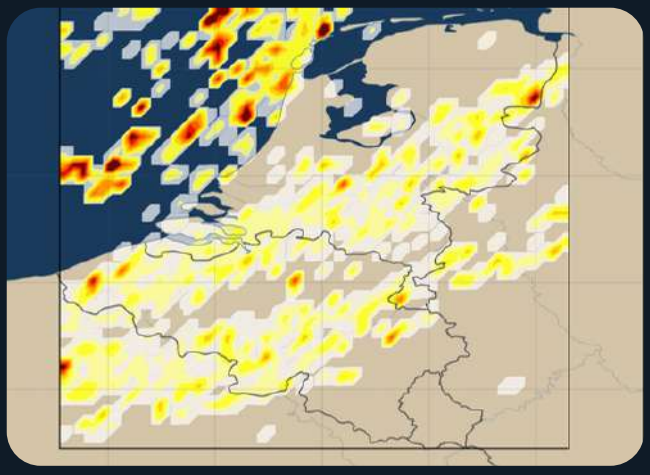
Key events

- **Hail:** hailstones fell measuring: 3-4 cm in diameter around Gembloux (Namur); 2-3 cm near Ramillies (Walloon Brabant).
- **Rain & flooding:** intense rainfall and localized runoff along the cell's path.

AVERAGE CG FLASH DENSITY
13 September 2025 - Benelux countries

METEORAGE

AVERAGE CG FLASH PEAK CURRENT
13 September 2025 - Benelux countries



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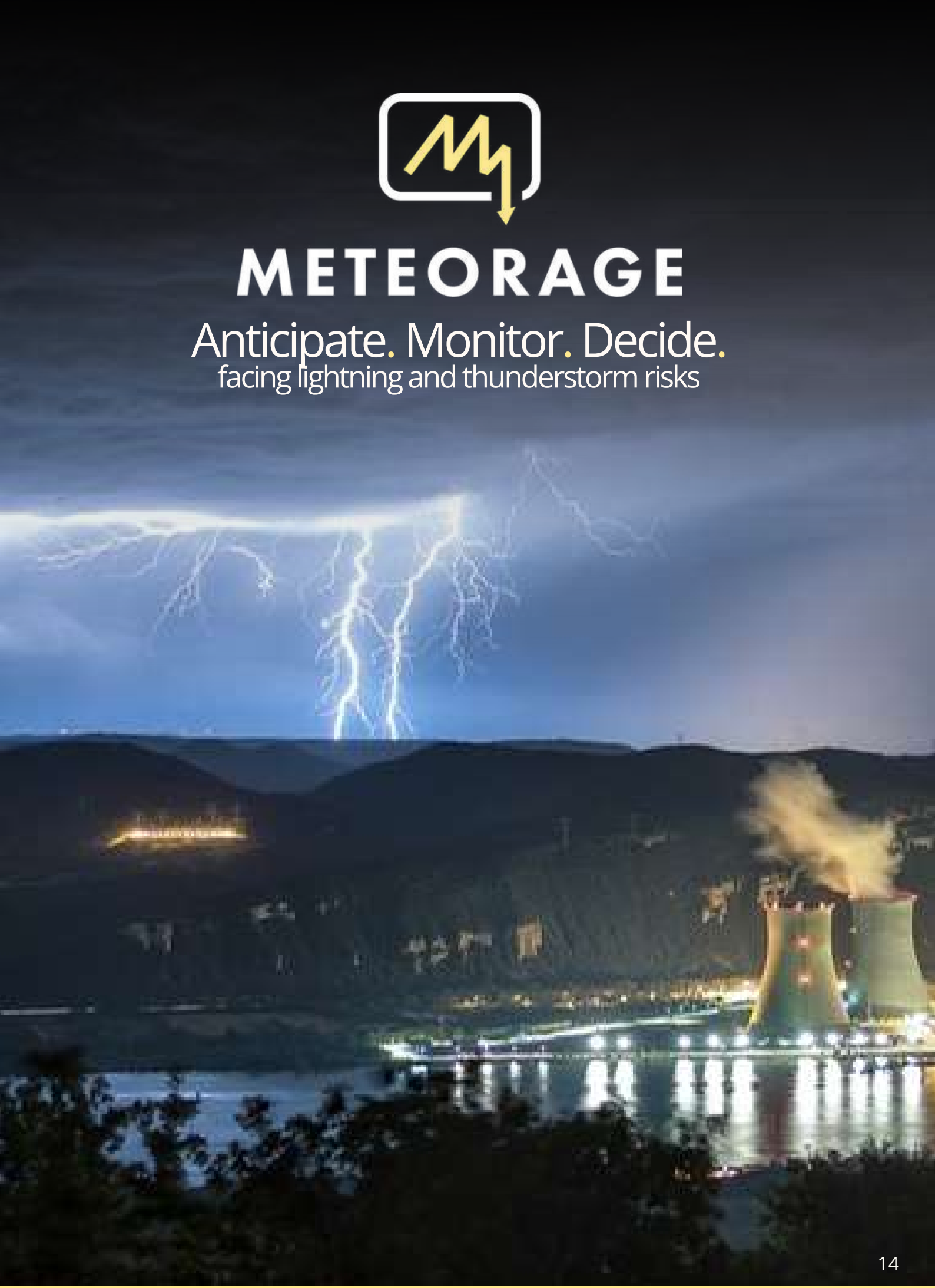
Anticipate. Monitor. Decide.

facing lightning and thunderstorm risks



2025, A QUIET YEAR, BUT REAL IMPACTS.

LOW ACTIVITY ≠ LOW RISK

Although 2025 was less stormy than normal at European level, the risk from lightning remained very real. The fall in the total number of lightning flashes does not automatically reduce exposure, which affects many sectors of activity.

Behind the lower overall statistics, each thunderstorm episode continued to have a tangible, sometimes major, impact on critical infrastructures, economic activities, the environment and personal safety.

Every thunderstorm day, decisions made with Meteorage help protect over 20 million people across Europe.

Any thunderstorm, even a moderate one, can cause major and sometimes unexpected damage, including business stoppages, damage to sensitive equipment, economic losses or human risks.

Lightning remains a hazard with a high impact potential which is often underestimated when storm activity appears low.

A PERMANENT RISK, WITHOUT BORDERS OR SEASONS

An analysis of the accidents which occurred in 2025 confirms that the consequences of lightning are not limited to extreme situations or to the summer period alone. The events recorded are spread throughout the year, demonstrating that the risk is permanent, even for phenomena considered minor. It is crucial to remember that the majority of serious accidents occur on days with a yellow weather warning, or even without any particular warning.

The accident at La Barben zoo (France) which occurred on a stormy but far from exceptional day, is a striking illustration of this. This underlines the need for constant vigilance, even during episodes described as “moderate”.

Major accidents in 2025

- **Energy** : wind turbines damaged or destroyed by lightning in the Netherlands, Spain and France, causing fires and major economic losses.
- **Transport** : delays and interruptions to air travel (Orly and CDG airports) and rail travel in France, Germany and the UK following strikes on signalling systems.
- **Industry :** business stoppages and damage to property following direct strikes on industrial sites (distillery in Charente, workshops in Eure) and leisure infrastructures (cable car in Italy).
- **Agriculture :** mortality of sometimes entire herds in Spain and Ireland
- **Environment:** at least two major forest fires were started by lightning, in Switzerland (Ticino) and Portugal (Coimbra district)

PREVENTION FOR BETTER PROTECTION

In response to this widespread risk, adopting appropriate preventive measures is essential with regard to raising awareness, the organisation of outdoor activities, protecting infrastructures and disseminating best practice to exposed teams.

With this in mind, Meteorage helps its customers and partners to protect themselves better, with training, lightning data, and warning, analysis and decision-making services.

This expertise is also part of a wider mission to disseminate a risk culture through our commitment to standardisation, our international studies and publications,

as well as educational initiatives and prevention messages accessible to all.

METEORAGE

At Meteorage, experts in lightning detection for nearly 40 years and operators of a European reference network, we help our customers anticipate, monitor and manage thunderstorm risks with solutions tailored to each sector of activity.

Every day, our data enables our customers to schedule planned stoppages, protect their on-site teams, ensure continuity of service and secure their priority operations.

By transforming the measurements from our sensors into concrete operational decisions, we help decision-makers turn lightning into a tool for action and prevention.

THE EXPERT'S VIEW

Lightning is a risk that is often underestimated - even a seemingly harmless storm can cause serious accidents. The danger lies in thinking that there is no risk because the situation does not seem exceptional, or in assuming that the risk is limited to the summer period. By understanding and anticipating this risk, you can better protect yourself and significantly reduce disruption and downtime in your business.

Keep this message in mind in your daily life too, and share it with those around you: When you hear a storm, don't stick around!

— Stéphane Schmitt, Lightning Application Expert, Meteorage

OUR THUNDERSTORM WARNINGS IN EUROPE

- every thunderstorm detected in real time enables you to react more effectively to the risk.

Thunderstorms and lightning flashes can threaten your teams and disrupt operations. Our real-time alerts help you anticipate risk and ensure continuity.

Alerts tailored to your activities

Whether for one or multiple sites, construction sites, mobile teams, or one-off events, wherever they are, our warning systems help you: protect, pause, restart, secure, and make fast decisions.

– Switch to backup generators
– Stop a production line
– Evacuate an outdoor area
– Secure a team
– Protect sensitive equipment
...

4,000 subscribers
to our lightning services in Europe

115,597 warnings
sent in Europe in 2025

GLOSSARY

Lightning flash

All the current discharges and electrical impulses during a thunderstorm. Lightning flash can occur within a cloud (intra-cloud flash), between a cloud and the ground (CG - cloud-to-ground flash) or between clouds.
Lightning can consist of one or more strokes, which are current impulses.

Cloud-to-ground lightning flash (CG) Current discharge of a certain intensity circulating between a cloud and the ground. CG stands for Cloud-to-Ground.

Lightning density The best current representation of storm activity is lightning density, which is the number of cloud-to-ground (CG) lightning flashes per km² per year.

CAPE (Convective Available Potential Energy): amount of energy available to accelerate a parcel of air warmer than its surroundings, reflecting thunderstorm potential and intensity.

Supercellule: convective structure associated with strong vertical wind shear, often linked to severe phenomena (hail, gusts, tornadoes).

Cold drop: isolated upper-level cold depression.

Thalweg: extension of a depression, not isolated.

Thunderstorm day: Day on which at least one lightning flash was detected in the area under consideration.

Wind shear: variation in wind speed and/or direction with altitude, playing a key role in storm organization, lifespan, and severity.

METEORAGE

Technopole Hélioparc
Immeuble Marie Curie
11 boulevard Lucien Favre
64000 Pau, France

Any questions? Specific needs?

Our teams are here to support you.
👉 Contact us

www.meteorage.com