



Learning lessons from deaths and injuries due to lightning in Western Europe

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Based on press articles and the European Severe Weather database (eswd.eu), we analyzed around 150 accidents related to lightning strikes over the period 2010-2019, spread across 13 European countries.

Our main purpose was to obtain qualified information, in order to improve awareness campaigns, while trying to determine the level of predictability of those accidents.

Our study consisted in:

- establishing a typology of accidents (time and places of occurrence, type of the most affected activities, ...)
- figuring out the decision-making choices of the victims,
- checking the availability of an adapted weather information before the occurrence of the accident.

The results make it possible to get a more precise idea of the most frequent cases of accidents due to thunderstorms under our latitudes, showing specificities in terms of accidentology compared to the USA or Africa, in particular on the types of most affected human activities.

They also confirm the existence of many unsuitable behavior during a storm and the obvious underestimation of risk in many situations.

The correlation with the observed weather information available before the occurrence of the accidents, tends to confirm that the sole meteorological vigilance would not have allowed the victims to evaluate the dangerousness of the event, more than 80% of the cases had a "yellow vigilance" level in the case of France.

These elements then prompted us to evaluate the effectiveness of nowcasting tools, in particular the contribution of Lightning Locating Systems.

The results show that more than 90% of the storms were well detected by the Euclid network before the accident. In addition, the calculated lead time reveals that it would have probably been possible for the victims to have enough time to shelter in more than 80% of the situations.

As a conclusion, reducing by a factor of 3 the number of accidents is conceivable. Still, there are some others existing complex issues to considerate (telecom capabilities, access to the lightning information,...)