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## 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 212 accidents related to lightning strikes over the period 2010-2019, spread across 19 European countries.

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

Our study consisted of:

- establishing a typology of accidents (time and places of occurrence, type of the most affected activities, ...)
- trying to understand the decision-making choices of the victims,
- checking the availability of 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 in our latitudes.

They also confirm the existence of inappropriate 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 a state of meteorological vigilance alone would not have allowed the victims to evaluate the danger of the event, more than 80% of the cases had a "yellow vigilance" level in place at the time of the accident 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 detected by the Euclid network before the accident. In addition, the calculated lead time reveals that it would probably have been possible for the victims to have had enough time to shelter in more than 80% of the situations.

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