



Characteristics and Performance of Lightning Location with LINET in Europe

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The lightning location network LINET, developed by the group 'Atmospheric Research' at the University of Munich and operated by nowcast GmbH, has been expanded into 22 countries in Europe and utilizes some 120 sensors to cover more than 10 million km². In central areas very high detection efficiency is achieved for both CG (cloud-to-ground) strokes and cloud lightning (IC). It is discussed that a substantial fraction of cloud flashes produce fast pulses that can be termed IC-strokes, though the production mechanism is different from the one for CG. Significant detection and locating of IC strokes facilitates the recognition of severe weather. It is shown that the IC rate increases markedly during such conditions, while the CG rate is hardly indicative.

A comfortable algorithm for storm cell recognition has been developed, which allows storm tracking in the entire European network, independent of the number of developing cells. Individual strokes can be displayed, filtered according to selectable lightning parameters such as polarity, CG or IC, current, IC emission height. Alternatively, averaged densities can be shown. Displacements of the cells can be visualized as a function of time, and some efforts have been undertaken with respect to nowcasting in the range of up to about 1 h. For many storms quite reliable short-term prediction are possible. Accordingly, an alarm module has been developed, which helps to predict periods of thunderstorm hazards in specific areas.