LINET – A New Lightning Detection Network in Europe

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During the past years a VLF/LF total-lightning detection network (LINET) was developed at the University of Munich which provides data for both research and operational purposes. In particular, five new features are displayed: cloud-to-ground strokes (CG) and cloud lightning (IC) are measured (total lightning), weak events from channel currents below 5 kA are detected, CG and IC are discriminated by means of a 3D-technique, IC emission heights are given, and a locating accuracy of better than $\sim$250 m is obtained. Although the entire performance is highly optimised, the system is relatively simple and easy to install.

In 2005 LINET has been extensively tested in southern Germany. Further scrutinizing was performed during international co-operations where LINET has been deployed in three other continents: South America (area of Bauru, Brazil), Australia (around Darwin), and Central Africa (Benin). Since the features quoted above could be verified, a 60-sensor network was established in Europe and put into service on May 1, 2006. LINET data covers a wide area approximately from longitude –5˚ to 25˚ and latitude 40˚ to 56˚; its data is available for scientific projects and is officially utilized by the German Weather Services for operational purposes. Further addition of sensors and spatial expansions of the network are under way for 2007.

The ability to cover a storm in terms of both CG and IC events without data loss in real time renders LINET a useful tool for a variety of research purposes, ranging from cell-tracking, recognition of severe weather conditions, and study of lightning-induced chemical processes to input data for modelling of convective processes.