



On the world lightning distribution as inferred from WWLLN and LINET

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The global distribution of lightning is an important parameter for studies of global climate. The role of NO_x production by lightning for the budget of NO_x and ozone in the atmosphere has been in the focus of interest of a series of international field campaigns in recent years with the LINET (Lightning detection NETWORK) being involved. The EU TROCCINOX (Tropical convection, cirrus and nitrogen oxides experiment) project in Brazil during Jan/Feb 05, the tropical EU SCOUT-O3 (Stratospheric-Climatic Links with Emphasis on the Upper Troposphere and Lower Stratosphere) and TWP-ICE (Tropical Warm Pool International Cloud Experiment) campaigns in Darwin/Australia during the rainy season 05/06 and the AMMA (African Monsoon Multidisciplinary Analysis) special observing period in W-Africa during summer 06.

LINET (Lightning detection NETWORK) is a system of sensors for lightning detection operating at VLF/LF range. The system has been designed by the University of Munich and is operating now in a Europe-wide network. A deployable network is operated by DLR as part of several international field campaigns. The WWLLN (World Wide Lightning Location Network) globally detects lightning using VLF sferics detection at a number of stations distributed around the world.

From the measurements obtained in different regions with LINET it is now possible to compare the two ground based systems with each other, to draw some conclusions on WWLLN detection efficiency and to assess the global occurrence of lightning. As LINET is able to discriminate between intra-cloud (IC) and cloud-to-ground (CG) strokes one can draw some conclusions about the IC contribution to the total WWLLN detected signals. Case studies for specific convective days show WWLLN's ability for

storm detection as is demonstrated further by ground based radar measurements. The overall WWLLN detection efficiency is quite different for the different regions considered with the best performance for the Australian region. The global statistics for one year (2005) show similarities with that obtained from LIS satellite measurements for the same period.