



First observations from the Greek HNMS lightning monitoring network

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The Hellenic National Meteorological Service (HNMS) has successfully installed the first operational lightning monitoring network with high spatial and temporal resolution observational capabilities over the Greek peninsula and surrounding waters. The network consists of 8 Precision Lightning Sensors (PLS - TOA Systems Inc, URL://www.toasystems.com).

The system consists of an external component (antenna, GPS) and the post-processing unit (the PLS receiver). The main database terminal is located at the HNMS headquarters (Athens-Greece). The post-processing (retrieval) method is based on the widely used Time Of Arrival (TOA) method while both Cloud-to-Ground (CG) and Cloud-to-Cloud (CC) location along with their peak currents are routinely recorded. The distinct advantage offered by the employed technology is that the received-processed signal does not depend on any electromagnetic anomalies (e.g. near by power lines) that may introduce erroneous retrievals. In addition, the sensor's sensitivity allows detection efficiencies for both CG and CC higher than 95% with nominal spatial error <250m (<http://www.toasystems.com/sensors.html>). Currently, HNMS delivers lightning observations in both operational (e.g. aviation safety) and off-line/experimental (e.g. nowcasting, severe weather monitoring etc. in collaboration with HCMR) modes. The network has been operational since January 14th 2008. This study will encompass 3 years of continuous lightning observations (2008-present) and highlight basic climatological/seasonal characteristics of lightning discharges, flash multiplicity and diurnal analysis of flash/peak current density spatial distribution.