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Lightning Activity in the Central and Eastern Mediterranean and its relationship with Cloud Microphysical Characteristics and Radar Reflectivity, measured by Spaceborne Sensors.

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In the present study, the results of the comparison between lightning and measurements by spaceborne sensors are presented. For the analysis, the cloud-to-ground lightning activity recorded by UK Metoffice's ATD (Arrival Time Difference) system, the 85-GHz brightness temperature, radar reflectivity profile and total lightning activity measured by NASA's TRMM sensors TMI (TRMM Microwave Imager), PR (Precipitation Radar) and LIS (Lightning Imaging Sensor) respectively, are used. The statistical analysis aims to identify the relationship between various thresholds of brightness temperature and both cloud-to-ground and intra-cloud lightning activity, in order to use the first as an indicator for intense weather. Also the relationship between radar reflectivity profiles and lightning is studied in order to examine the relationship between reflectivity and probability for lightning occurrence. The comparison is performed over the Central and Eastern Mediterranean for the period of autumn and winter of 2003-2004 and for a large number of events that were characterized by significant lightning activity.