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Relationships between lightning and rainfall for selected events over Cyprus

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Lightning location systems have been in operation over Europe and the Mediterranean since the middle of the past century, then better known as “spherics”. The ZEUS lightning system is a modern network of land stations of lightning detectors. One of these land stations is in operation at Larnaka Meteorological station, on the southeast coast of Cyprus. ZEUS has a very good coverage of the area of the east Mediterranean; the system is administrated and the data are archived by the National Observatory of Athens (NOA), in Greece. For the purpose of identifying possible relationships between lightning and precipitation, lightning data for 28 rain days in Cyprus (provided by NOA) were spatially and statistically related to respective rainfall measurements from the rain gauge network of the Cyprus Meteorological Service. For the purpose of the above task, an area around the island of Cyprus (bounded by 32.0 and 34.5 degrees E, and 34.4 and 35.2 degrees N) was divided into 18 rectangles, each having dimensions of 0.2 degree on the south - north direction and 0.5 degree on the west - east direction. For each rain day, calculations were performed concerning the rainfall intensity, the mean and maximum of the daily rainfall, the lightning intensity and the daily number of the lightning counts corresponding to each rectangle. An attempt was made to reveal relations between the maximum values, the duration and the phase differences of the lightning and rainfall parameters. The study was undertaken within the framework of project “FLASH” which is funded by the European Union (Sixth Framework Programme, Contract No. 036852).