A climatological analysis of thunderstorms in the Carpatian Basin using radar data

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The space-time distribution of the severe convective storms in the Carpatian Basin is investigated using Doppler radar data in the three year period 2003-2005. An objective thunderstorm identification procedure based on the TITAN (Thunderstorm Identfication, Tracking, Analysis and Nowcasting) method is developed and applied for obtaining so-called thunderstorm statistic maps for Hungary, for analyzing the time distribution of the so-called stormy days and for analyzing the thunderstorm frequency distribution according to macrocirculation patterns. Macrocirculation patterns are classified after Péczely which seems to be most representative for Hungary. We found that most of the severe thunderstorms formed in the east, north-east and in the south-west parts of Hungary in prefrontal situations of cold fronts. The results are useful for predicting severe convective phenomena and flash flood events in the mountain regions.