On Space-Time Distribution of Tornado Events in Bulgaria (1956-2010): Analyses of Two Severe Tornadic Storms

Simeonov Petio, Gospodinov Ilian, Bocheva Lilia

Petio.Simeonov@meteo.bg, Ilian.Gospodinov@meteo.bg, Lilia.Bocheva@meteo.bg

In Bulgaria the tornado events conjunction with severe convective storms (SCS) usually occurs over crossed mountainous or hilled terrain or over the Black Sea on waterspouts. Only a few tornadoes events are well documented in Bulgaria. There are also very few works dealing with analysis of tornado events (Bojkov and Martinov, 1956; Simeonov and Georgiev, 2001; Simeonov and Georgiev, 2003; Latini, 2006). Sometimes the damage caused by a downburst or a squall is taken for one done by a spatel. In order to see whether it is a spatel (tornado) and to determine its intensity, it is important to know the pattern of the damages, not only the physical, temporal and spatial characteristics of a given event.

The monthly and seasonal distribution (FIG.3) gives that 95% of all 54 cases are observed within the warm half of the year (the maximum is in June). There are three unusual events that occurred in cold months and these are the cases of 15 February 2005, 24 March 2004, and 2 December 2010 in south Bulgaria. The highest value of the dynamic index $\Delta v_{37} (=28 m/s)$ is also in tornadic storm 1. The surface $V_{max}$ is higher for tornadoes No.2 and 3 (located near Hayredin 43°36’40”N, 23°38’46”E and Tarnava 43°30’11”N, 23°52’57”E). The monthly and seasonal distribution (FIG.3) gives that 95% of all 54 cases are observed within the warm half of the year (the maximum is in June). There are three unusual events that occurred in cold months and these are the cases of 15 February 2005, 24 March 2004, and 2 December 2010 in south Bulgaria. The highest value of the dynamic index $\Delta v_{37} (=28 m/s)$ is also in tornadic storm 1. The surface $V_{max}$ is higher for tornadoes No.2 and 3 (located near Hayredin 43°36’40”N, 23°38’46”E and Tarnava 43°30’11”N, 23°52’57”E). The monthly and seasonal distribution (FIG.3) gives that 95% of all 54 cases are observed within the warm half of the year (the maximum is in June). There are three unusual events that occurred in cold months and these are the cases of 15 February 2005, 24 March 2004, and 2 December 2010 in south Bulgaria. The highest value of the dynamic index $\Delta v_{37} (=28 m/s)$ is also in tornadic storm 1. The surface $V_{max}$ is higher for tornadoes No.2 and 3 (located near Hayredin 43°36’40”N, 23°38’46”E and Tarnava 43°30’11”N, 23°52’57”E).

The monthly and seasonal distribution (FIG.3) gives that 95% of all 54 cases are observed within the warm half of the year (the maximum is in June). There are three unusual events that occurred in cold months and these are the cases of 15 February 2005, 24 March 2004, and 2 December 2010 in south Bulgaria. The highest value of the dynamic index $\Delta v_{37} (=28 m/s)$ is also in tornadic storm 1. The surface $V_{max}$ is higher for tornadoes No.2 and 3 (located near Hayredin 43°36’40”N, 23°38’46”E and Tarnava 43°30’11”N, 23°52’57”E).