



## Case study of severe convective storms over western Bulgaria: flash floods and extreme hail on 08 July 2014

Liliya Bocheva (1), Tsvetelina Dimitrova (2), Atanas Atanasov (3), Rosen Penchev (4), Ilian Gospodinov (1), Petio Simeonov (1), and Stanimir Petkov (2)

(1) National Institute of Meteorology and Hydrology, Meteorology, Sofia, Bulgaria (Lilia.Bocheva@meteo.bg), (2) Hail Suppression Agency, Sofia, Bulgaria (dimitrova\_tsvetelina@abv.bg), (3) Bulgarian air force meteorological center, Sofia, Bulgaria (atanasow75@gmail.com), (4) Bulgarian Air Traffic Services Authority, Sofia, Bulgaria (rosen\_penchev@digicom.bg)

Bulgaria is situated in a geographical area with high frequency and intensity of thunderstorms and hail events. Like in many other countries during the last 10-15 years an evident upward tendency of damages caused by meteorological disasters is observed in Bulgaria also. Much of them are caused by extreme events such as torrential precipitation associated with severe thunderstorms or/and wind storms. The series of flash floods and extreme hail precipitation which hit Bulgaria especially during warm half of the 2014 is the confirmation of this fact.

On 08 July 2014 three supercell storms occurred over western Bulgaria and produced high-impact weather events during the afternoon hours. The extreme hail precipitation in Sofia and Montana were accompanied with strong wind gust (about 100 km/h) and torrential rain. The giant hail stones in Sofia had diameter up to 10 cm size and irregular shape. The severe hail and rain and very strong wind caused huge damages to the infrastructure, buildings, vehicles and agricultures. More than 40 people were injured by hail stones or broken windows. One man was killed by a falling tree. According to the data from the insurance companies only in Sofia the reported damages was for more than 50 million euro.

We present analysis of the evolution of the convective clouds based on the radar data. The Doppler radar data revealed the existence of mesocyclone, microburst, Three Body Scatter Signature (TBSS). The cloud top reached up to 17 km, and maximum radar reflectivity factor is 69-71 dBZ. Analysis of the available radiosounding data, NWP data and synoptic situation are also presented.