Hail detection algorithm derived from weather radar products

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Hail events are among the most severe weather phenomena, with disastrous effects, especially in agriculture. These severe weather events are frequently in Romania in warm part of year and consequence, the study and forecast of hail presents a major interest. Our work is focused on the criteria for estimating hail events using radar products as: radar reflectivity, height of the maximum reflectivity, vertically integrated liquid water and hail probability. These data were supplied by C-band weather radar located at Bucharest. In addition, 0°C isotherm height extracted from the Bucharest radio-sounding vertical profile and hail stones sizes from observational data were used. The results indicate that the hail events frequency is around 50% when the 0 °C isotherm is between 3000 and 4000 m.a.s.l. and around 20% when maximum reflectivity appears at heights between 7000 and 8000 m.a.s.l. In the area covered by Bucharest's weather Radar, the highest events' frequencies were detected in northeast zone. The study also emphasized that the convection phenomena generating of the cumulonimbus clouds is responsible for the hail events.