

Winter hailstorms signatures by C-band polarimetric radar at Delhi

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Abstract: In the northern region of India, hailstorms are common phenomena during winter. Four cases of hailstorms around Delhi ($28^{\circ} 58' 75''$ N, $77^{\circ} 22' 195''$ E) region during winter have been analyzed in the present study. It is mainly based on the observations of polarimetric radar variables (ZH and ZDR), as observed by Delhi C-band Doppler weather radar and supplementary thermodynamic variables (CAPE, CIN, wind shear). The thermodynamic properties of the atmosphere during the hailstorm events have been studied using radiosonde observations. The hailstorms over the study region are classified into two types with and without large CAPE. Although ZH is higher for all events, the ZDR differs for the two categories. The events with small CAPE and strong shear produce storms with larger ZDR (rain mixed with small hail), while those with large CAPE and weak shear produce smaller ZDR (strong hail).