2.28 USE OF POLARIMETRIC DATA FOR BETTER ANALYSES OF CONVECTIVE STORM CHARACTERISTICS

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In 2015 the Czech weather radar network (CZRAD), consisting of two radar sites, was significantly modernized by the new dual-polarization C-band radars. This fact allows us to use polarimetric radar data for many purposes including a better correction for attenuation which can give us a better data of precipitation estimations, better erasing of ground clutters and WLAN interferences or a better detection of hailstorms. Use of polarimetric data also should allow us to identify updrafts of convective storm cells based on the detection of so called ZDR-columns. These are column-like features with positive ZDR values which can reach altitudes up to a few kilometers above the freezing level because of presence of liquid water droplets in the warmer updraft air and also their ability to stay in supercooled state for some time in a rapidly rising air parcel. This study sets the starting point in investigation of potencial of polarimetric data use for a better estimation of storm cores behaviour, especially their tendency to get stronger or weaker in the next 5 to 15 minutes based on the detection of ZDR-columns. Such knowledge could notably help to forecasters with issuing of the severe weather warnings, especially in cases of flash floods and severe hailstorms. In the present analysis we focused on several selected situations with isolated hail producing supercells, heavy rain producing multicellular systems and also derecho producing MCS′s which occurred during the storm seasons of 2016 and 2017. We studied the ability of data from ZDR-column detection (its area, vertical development, integrated spatial volume and also their temporal variations) to predict intensity of the convective storm and its accompanied phenomena in the next tens of minutes.