

Dual Polarization Radar, rainfall forecasting and other applications

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Dual Polarization is the latest innovation in the field of radar meteorology. It has the potential to greatly improve rainfall and flood nowcasting in three ways. First of all, rain rate and QPE estimates will be greatly improved when they are derived from the polarimetric parameter K_{dp} instead of the reflectivity factor Z , which is subject to attenuation. Another problem with rain estimation in a thunderstorm environment using conventional radar is the possibility that hail is present. Dual polarization provides the capability to distinguish between heavy rain and hail echoes. And finally, supercells have many characteristics that are apparent only in dual polarization images, such as the K_{dp} foot, the Z_{dr} arc and the ρ_{hv} minima associated with the tornado debris field.