

8.6 WEATHER OBSERVATIONS WITH A PHASED ARRAY RADAR

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The authors evaluate suitability of Phased Array Radar (PAR) for weather observations. The evaluation is based on actual data obtained with a couple of PARs in the USA. One of these has single polarization and its beam steering in azimuth is achieved by commutating the beam positions. The stability of the receivers was tested in pure noise region. The fields of reflectivity, Doppler velocity, and spectrum width were analyzed and compared with the nearby WSR-88D. After examination of these fields, we concluded that this particular PAR can be used for quantitative weather observation. The other PAR has dual polarization capability and its beam is steered by changing the phase of the radiating elements. As of this writing the polarimetric variables are being evaluated. Calibration of these is a challenge and we are evaluating pulse to pulse corrections and corrections of the second temporal moments of the horizontally polarized and vertically polarized components (i.e., powers and correlations of the time series data).