Adaptive Storm-based Scanning at the National Weather Radar Testbed Phased Array Radar

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Volume Coverage Patterns (VCPs) used by operational weather radars contain fixed sets of elevation angles for scanning the vertical structure of weather. Typically, these VCPs oversample in elevation at lower elevations and undersample in elevation at higher elevations, leaving gaps in the vertical coverage of storms near the radar. Both oversampling at lower elevations and undersampling at higher elevations are maximized when storms are located near the radar.

A new automated VCP algorithm is described that creates VCPs with vertical coverage tailored to a storm's range. Incorporated into the adaptive storm scheduling function at the National Weather Radar Testbed (NWRT) Phased Array Radar (PAR), this algorithm is applied to storm clusters chosen for focused scanning by the user. PAR data collected with the VCP algorithm and operational VCPs are used to compare impacts of these sampling methods on the resolved vertical storm structure.