The National Weather Radar Testbed (NWRT) Phased Array Radar (PAR), located in Norman, Oklahoma, consists of a single antenna array capable of electronically scanning a 90-degree azimuthal sector at any given moment. The antenna, mounted on a pedestal that can be commanded to move to any azimuthal position, allows operators to select the center of the best electronically scanned 90-degree sector to follow areas of interesting weather. At the previous IIPS conference, we presented an adaptive pedestal-control algorithm that automates the process of tracking an operator-defined weather feature. The algorithm provides feedback to the radar control software to adjust the antenna pedestal position in order to continuously keep the weather feature in the field of view. In its original version, the tracking was based on the reflectivity field at the lowest elevation angle. Since then, the algorithm has been enhanced in two ways. First, a 3-D option has been added to utilize the reflectivity field from all available tilts making the tracking more robust. New capabilities have been implemented to identify storm clusters and to adaptively change the pulse-repetition-time (PRT) to minimize the occurrence of range folding within the storm-tracking region. This paper describes these new capabilities and illustrates the performance improvements that adaptive scanning can provide on the NWRT PAR.

**Figure 1:**
- **Scan Scheduling:** Operator selects a cluster to track. Sector scan containing cluster is scheduled. PRT is adjusted to minimize obscuration in cluster sector. Full scan is run periodically to scan lower priority weather. Antenna is adjusted to keep cluster sector in field of view. ADAPTS is active for all scan types to minimize update times.
- **Moment Data Processor:**
  - **ClusterID:**
    - This new feature allows real-time profiling of Doppler velocity and intensity.
  - **WxTrack:**
    - Tracks a tornadic supercell with the WxTrack algorithm.
  - **AutoPRT:**
    - Minimizes range folding with the AutoPRT algorithm.
  - **ADAPTS:**
    - The ADAPTS algorithm determines which pass positions are best to use at each scan. This information is passed to the Real Time Comparator, where final data is processed.

**Figure 2:**
- **Tracking a Tornadic Supercell with the WxTrack Algorithm:**
  - **Base reflectivity:**
    - Define watersheds (>= 35 dBZ)
  - **Define clusters (>= 100 km²):**
    - Define cluster boundaries
  - **Tracking sector:**
    - The operator selects a cluster to track. The process is automated to a new position to keep the clusters in the field of view. The sector is flattened and transformed in azimuth and elevation. The ADAPTS positions and ADAPTS are active for all scan types to minimize update times.

**Figure 3:**
- **Minimizing Range Folding with the AutoPRT Algorithm:**
  - The AutoPRT algorithm determines which pass positions are best to use at each scan. This information is passed to the Real Time Comparator, where final data is processed.

**Figure 4:**
- **ClusterID Algorithm:**
  - Define watersheds (>= 35 dBZ)
  - Define clusters (>= 100 km²)
  - Define cluster boundaries

**Figure 5:**
- **Evolution of the Algorithm for Phased-Array Radar Time Scans (ADAPTS):**
  - ADAPTS-1 (periodic full scan)
  - ADAPTS-2 (surveillance)
  - ADAPTS-2 (spatial surveillance)
  - ADAPTS-3 (detection scan)