The ARM profiling radars have been used to observe cloud systems for over a decade. The cloud profiling radars have provided valuable data sets for the study of clouds. However, the profiling radars were limited to observing cloud properties in a vertical column. Recently, the ARM Climate Research Facility has added scanning cloud and precipitations radars to its facilities. The primary purpose of these radars is for the three-dimensional observation of clouds and spatial-temporal mapping of cloud properties. Cloud systems have been observed at various scales and differing structures. The cloud systems classification is used as a guide (to include the spatial scale and structure of the clouds) to facilitate the design radar scan strategies. The observation of cloud systems in three dimensions has not been done in a 24x7 operational environment.

The first-generation scan strategy is aimed to meet a few base-level objectives of the ARM Facility. The data from the first generation will provide data to evaluate the sampling strategies for the scanning ARM cloud radars (SACRs) and scanning ARM precipitation radars (SAPRs). The first-generation operating modes will provide a framework to build long-term operational scanning modes that are tailored for each of the radar sites, which cover a wide range of climatic regimes.

### ARM Radars

The ARM radars are deployed at four fixed sites and on two mobile facilities (AMF1 and AMF2) for regional climate studies. The four fixed sites are Southern Great Plains (SGP) in Oklahoma, North Slope of Alaska (NSA) in Barrow, Tropical Western Pacific (TWP) Darwin in Australia and TWP Manus Island in Papua New Guinea. These radars will be located with the baseline instrument suites at the ARM sites for comparative measurements.

### ARM Scan Nomenclature

- The radar controls are set to sweep the pencil beam in azimuth and elevation axis with either the azimuth or elevation fixed while scanning
- Scan segments setup based on targeted cloud properties retrievals

### SACR Scan Strategy

- The profile integration time is set to sample at the beam-width of the antenna
- Cloud surveillance scans every 30 minutes: low level PPI sweep at 2 degree elevation and HSRHI scan
- The wind directions is preliminarily selected based on the climatology of the site
- Routine corner reflector calibration scan is planned and will become part of the scan pattern once the calibration procedure is verified
- Data files stored in one cycle (2 hours):
  1) PPI: 4 files
  2) HSRHI: 4 files
  3) CWRHI: 2 files
  4) ALRHI: 2 files
  5) VPT: 1 file
  6) BLRHI: 4 files

### SAPR Scan Strategy

- The profile integration time is set to sample at the beam-width of the antenna
- Data files stored in one cycle (2 hours):
  1) VPT (Bird bath): 1 file
  2) RHI: 3 sweeps over KAZR, 1 file
  3) PPI: 17 tilts, 1 file

- The profile integration time is set to sample at the beam-width of the antenna
- Data files stored in one cycle (10 minutes):
  1) VPT (Bird bath): 1 file
  2) HSRHI: sweeps over KAZR, 1 file
  3) PPI: 23 tilts, 1 file