# S-Pol Scanning Strategy and Fixed Radar Mosaics


# S-Pol at PECAN


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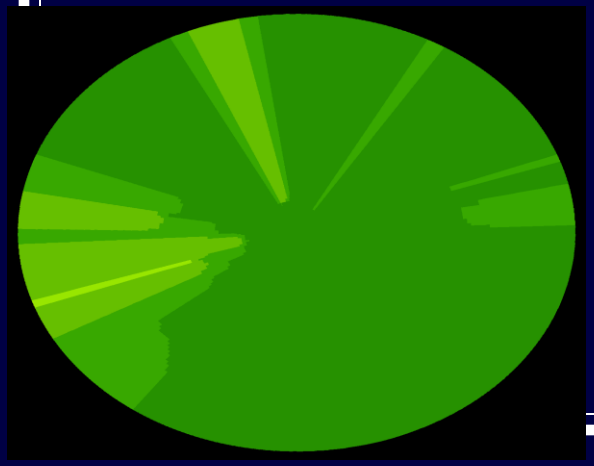
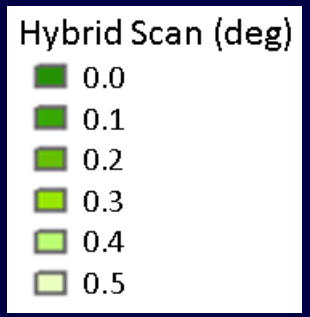
# S-Pol Panorama


- Horizon of -0.05-0.14° except for two small hills blocking to 0.3° to NNW and 0.38° to SW

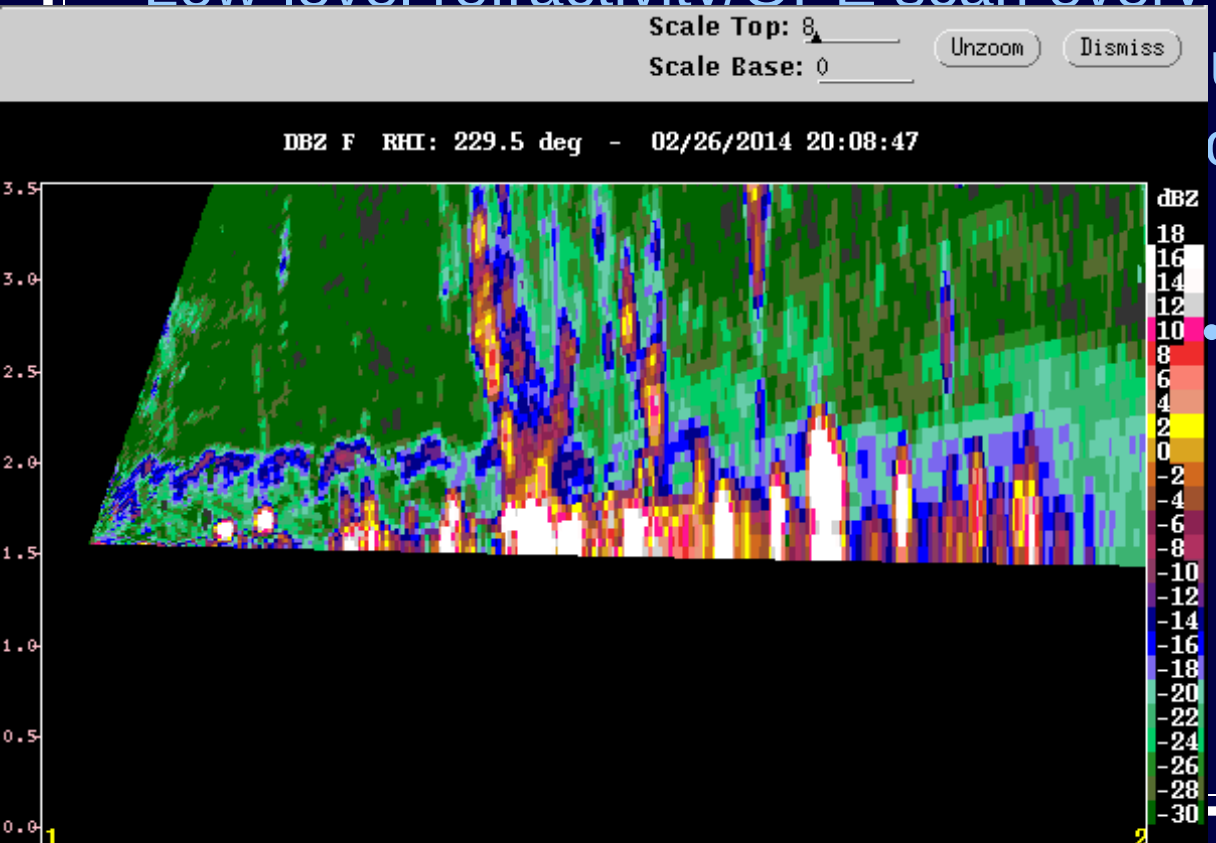





- Consistent with Conrad Ziegler/Ami Arthur scan occultation run

# S-Pol Scanning Strategies - Proposed

- Continuous 24/7 ops except for periodic daytime maintenance
- 1.5 μs pulse to enhance sensitivity by ~3 dB
- Oversampling to process gates at 150 m
- Low-level refractivity/OPE scan every 5/10 min




ust provide a scientist
on duty): 10 min
30°

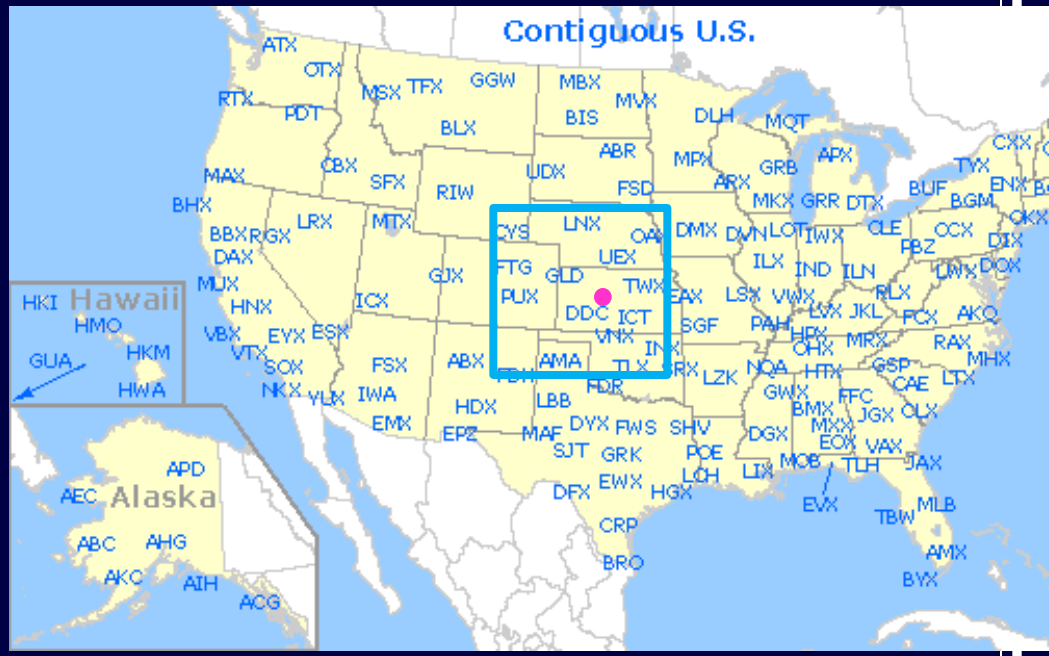
- Maximize potential to observe waves in BSLs (e.g., Davison et al. (2013a,b,c)

# S-Pol Scanning Strategies - Proposed

- *Surveillance mode*: Same as Unattended mode (10 min/7 slow SURs + 11 RHIs) but PECAN scientist is on duty and free to make desired changes based on observations
- *CI + MCS modes*: Unattended mode until CI/MCS features of interest detected/expected. Then switch to 5 min cycle with 7 fast SURs (12°/s) + 9 RHIs to focus on vertical structure. If sector can be identified, perform 12 PPI scans within ~120° sector, followed by 9 RHIs.
- *Bore mode*: Unattended mode until bore expected/observed, then switch to 5 min cycle with 7 fast SURs + 9 RHIs to focus on bore vertical structure
- *LLJ mode*: Unattended mode until LLJ mode is called with 5 min cycle of 7 fast SURs + 9 RHIs to focus on axis of LLJ
- Table in PECAN Ops Plan online

# PECAN Radar Mosaics

- Created in real-time, including Level II data from:
  - Cheyenne, WY (CYS)
  - Denver, CO (FTG)
  - Pueblo, CO (PUX)
  - North Platte, NE (LNX)
  - Goodland, KS (GLD)
  - Dodge City, KS (DDC)
  - Amarillo, TX (AMA)
  - Omaha, NE (OAX)
  - Hastings, NE (UEX)
  - Topeka, KS (TWX)
  - Wichita, KS (ICT)
  - Vance AFB, OK (VNX)
  - Tulsa, OK (INX)
  - OK City, OK (TLX)
  - S-Pol



# PECAN Radar Mosaics

- *2-D Mosaics with Δx=Δy=250 m*
  - Reflectivity (Z), radial velocity (V), spectrum width (SW), differential reflectivity (ZDR) and correlation coefficient (Rho_hv)
  - Optimal for clear-air, pre-convective observations to monitor bores and surface boundaries
  - Viewable in CIDD/Jazz and Field Catalog
- *2-D Mosaic with Δx=Δy=500 m*
  - QPE
  - Viewable in CIDD/Jazz and Field Catalog
- *3-D Mosaics with Δx=Δy=Δy=500 m*
  - Reflectivity (Z), spectrum width (SW), differential reflectivity (ZDR) and correlation coefficient (Rho_hv), differential phase (KDP), particle identification (PID) and QPE; no radial velocity (V)
  - Viewable in CIDD/Jazz and Field Catalog

# PECAN Radar Mosaics

- *3-D polar fields from individual radars; not a mosaic*
  - Reflectivity (Z), radial velocity (V), spectrum width (SW), differential reflectivity (ZDR) and correlation coefficient (Rho_hv), differential phase (KDP), particle identification (PID) and QPE
  - Viewable in CIDD/Jazz and Field Catalog
- *NOAA mosaic on mrms.ou.edu*
  - Larger domain
  - 2-D clear-air products
  - 3-D QC'd (thresholded) products
  - Viewable from browser

***Questions or Comments?***