OST/NSSL MOU

Greg Cate/Mike Jain

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OST/NSSL MOU TASKS

- Oversampling and Whitening
- Benchmark Time Series Data Sets
- Full Power Spectrum Processing
- X-Band Dual Polarization Radar System
- Dual Polarization
- High Resolution (½ degree, ¼ km Refl)

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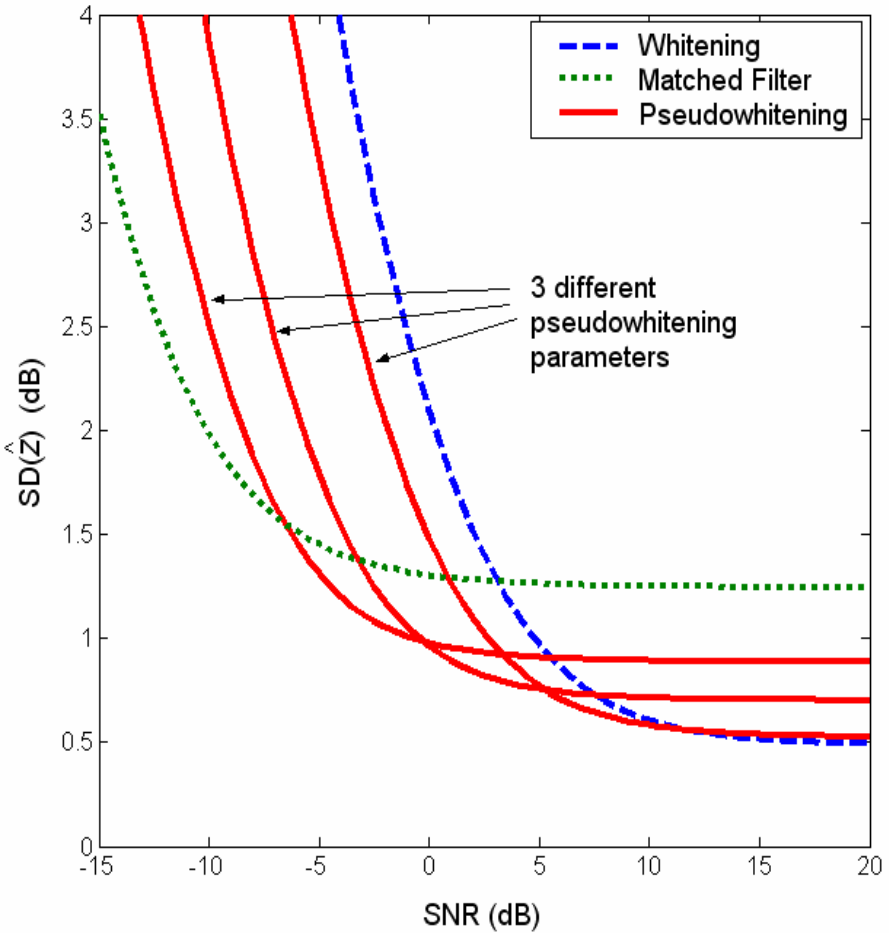
- **Oversampling and Whitening**
  - Continue Researching Pseudowhitening Schemes
    - Allow control of variance reduction vs. noise enhancement trade-off
    - Parameter controls performance between whitening and matched filter
    - More suitable for an operational environment



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- **Benchmark Time Series Data Sets**
  - Continue collection of time series data to support development, assessment, testing, and implementation of WSR-88D processing techniques
  - Currently Time Series data are available for recording on the KOUN RRDA (capable of full volume archive)
  - Preliminary work toward Level I recorder integration with the KOUN Sigmet RVP-8
  - Completed integration of digital receiver with the KOUN RRDA
    - Capability to collect single polarization time series data with oversampling factors of 5 or 10
    - Capability to collect dual polarization time series data with oversampling factor of 5

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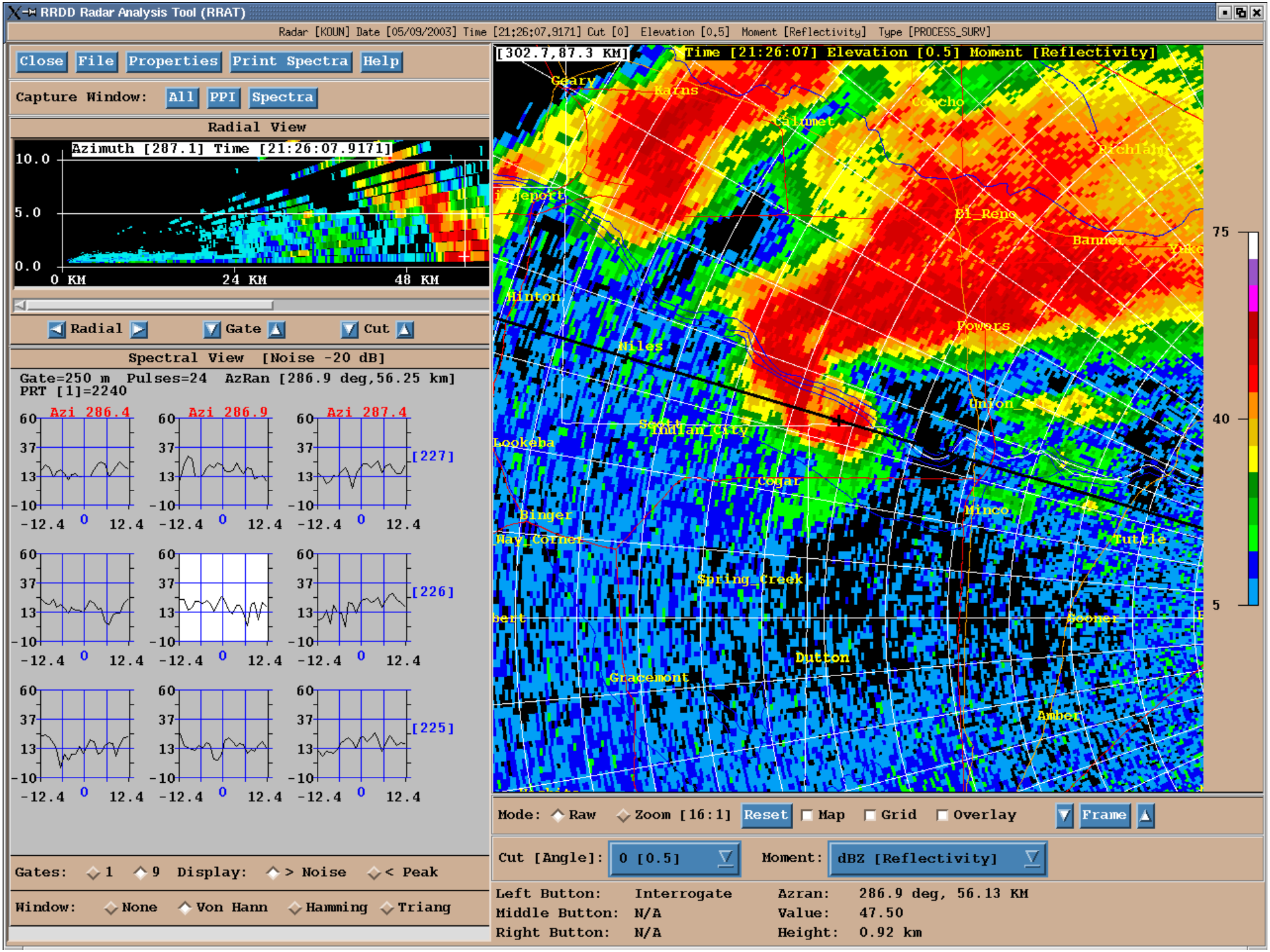
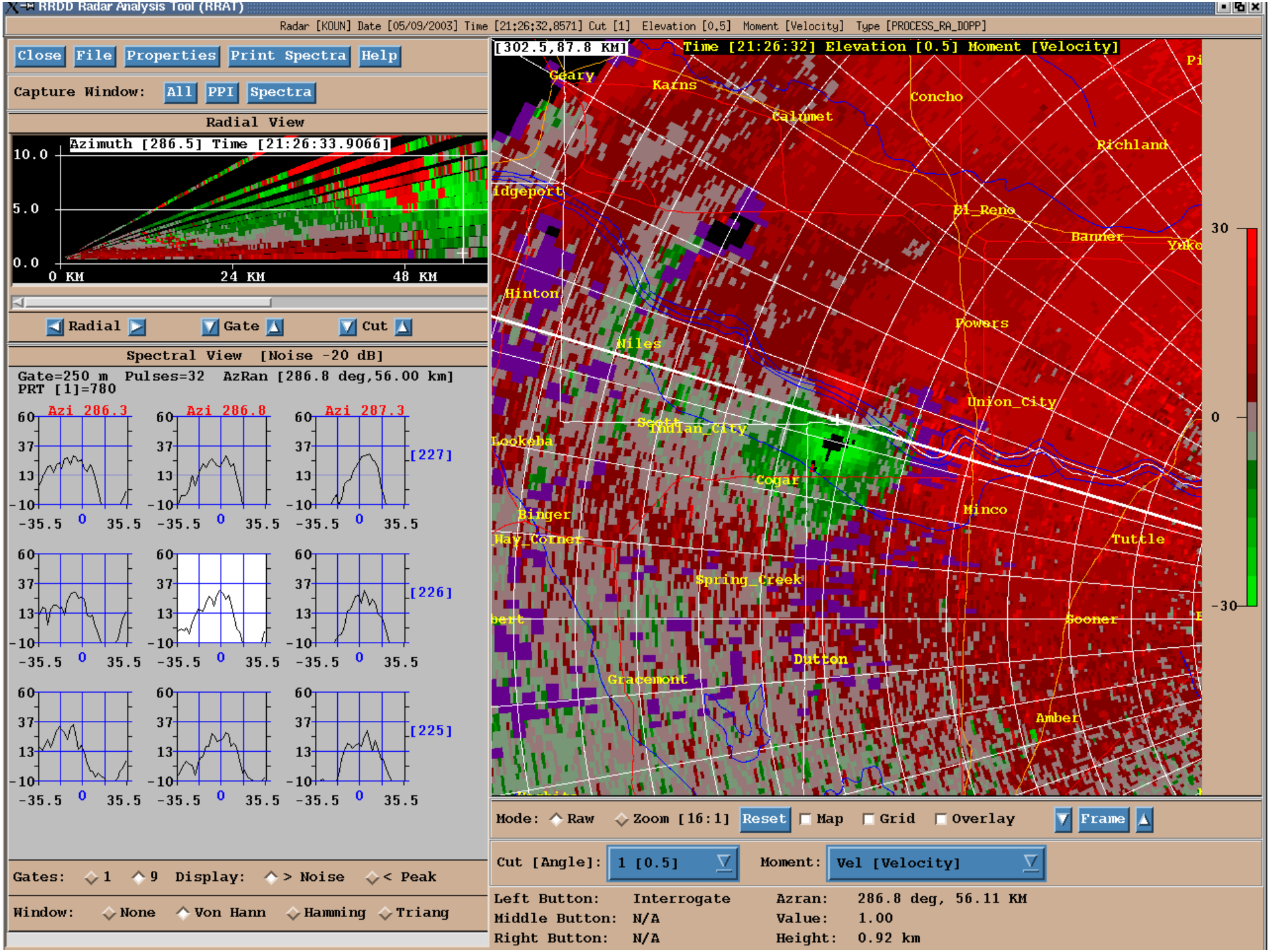
- **Full Power Spectrum Processing**
  - Continue development of prototype spectral analysis display
  - Collaborating with University of Oklahoma scientists on detecting tornadic signatures in the spectral data
  - Identifying in Doppler spectra non-meteorological scatters

- **X-Band Dual Polarization Radar System**
  - Compliments CASA Project by examining dual pol capabilities
  - Explore feasibility of a small hydrological radar (for mountain valleys and small watersheds)
  - Preliminary engineering stage
  - Identified hardware components, procured some components


RRDD Radar Analysis Tool (RRAT)
Radar [KOUN] Date [05/09/2003] Time [21:26:07.9171] Cut [0] Elevation [0.5] Moment [Reflectivity] Type [PROCESS_SURV]
Close
File
Properties
Print Spectra
Help
Capture Window:
All
PPI
Spectra
Radial View
Azimuth [287.1] Time [21:26:07.9171]
10.0
5.0
0.0
0 KM
24 KM
48 KM
Radial
Gate
Cut
Spectral View [Noise -20 dB]
Gate=250 m Pulses=24 AzRan [286.9 deg,56.25 km]
PRT [1]=2240
Azi 286.4
Azi 286.9
Azi 287.4
[227]
[226]
[225]
60
37
13
-10
-12.4
0
12.4
Gates:
1
9
Display:
> Noise
< Peak
Window:
None
Von Hann
Hamming
Triang
[302.7,87.3 KM]
Time [21:26:07] Elevation [0.5] Moment [Reflectivity]
Geary
Kiefns
Calumet
Concho
Bi_Reno
Hinton
Powers
Union
Lookeba
Cogar
Minco
Binger
Spring_Creek
Dutton
Gracemont
Tuttle
Amber
75
40
5
Mode:
Raw
Zoom [16:1]
Reset
Map
Grid
Overlay
Frame
Cut [Angle]:
0 [0.5]
Moment:
dBZ [Reflectivity]
Left Button: Interrogate
Middle Button: N/A
Right Button: N/A
Azran: 286.9 deg, 56.13 KM
Value: 47.50
Height: 0.92 km


RRDD Radar Analysis Tool (RRAT)
Radar [KOUN] Date [05/09/2003] Time [21:26:32.8571] Cut [1] Elevation [0.5] Moment [Velocity] Type [PROCESS_RA_DOPP]
Close
File
Properties
Print Spectra
Help
Capture Window:
All
PPI
Spectra
Radial View
Azimuth [286.5] Time [21:26:33.9066]
10.0
5.0
0.0
0 KM
24 KM
48 KM
Radial
Gate
Cut
Spectral View [Noise -20 dB]
Gate=250 m Pulses=32 AzRan [286.8 deg,56.00 km]
PRT [1]=780
Azi 286.3
Azi 286.8
Azi 287.3
[227]
[226]
[225]
60
37
13
-10
-35.5
0
35.5
Gates:
1
9
Display:
> Noise
< Peak
Window:
None
Von Hann
Hamming
Triang
[302.5,87.8 KM]
Time [21:26:32] Elevation [0.5] Moment [Velocity]
Geary
Karns
Calumet
Concho
Richland
El_Reno
Banner
Yukon
Hinton
Powers
Niles
Union_City
Indian_City
Lookeba
Cogar
Binger
Minco
Tuttle
Spring_Creek
Sooner
Dutton
Gracemont
Amber
30
0
-30
Mode:
Raw
Zoom [16:1]
Reset
Map
Grid
Overlay
Frame
Cut [Angle]:
1 [0.5]
Moment:
Vel [Velocity]
Left Button: Interrogate
Middle Button: N/A
Right Button: N/A
Azran: 286.8 deg, 56.11 KM
Value: 1.00
Height: 0.92 km

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- **Dual Polarization**
  - Provided scientific and engineering support for developing NEXRAD decision briefing
  - Continue to provide scientific and engineering investigation and development directed toward integration of polarimetric capabilities into the WSR-88D system (VCP, Clutter Filter, R/V Mitigation)
  - Continue to improve the Rainfall Estimation and Hydroclassification Algorithms
  - Developing a prototype Dual Pol ORPG with currently available polarimetric algorithms