

Activities Report - NSSL

Presentation
for the

MPAR WG Meeting 2010-02



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Technology Assessment Program (TAP)

- OFCM, FAA & NSSL – Continued work – Completed SOW
- Supported by GTRI and BCI
- Goals:
 - Determine challenges and risks for MPAR
 - Determine Path to minimize the risks
 - Implement risk reduction
- Areas of concern
 - Dual Polarization
 - Multi-frequency operations
 - Cost
 - Concept of operations

Current Work - 2010

- Task 5 – BCI support Contract
 - Design of Dual-Polarization Elements appear achievable
- Signal Processing
 - Adaptive range oversampling
 - Additional automatic calibration routines
- Adaptive Scanning
 - ADAPTS enhancements
 - i.e. Elevation-prioritized scanning
 - Manual schedule-based scanning
 - Modify scanning strategies and change acquisition parameters on the fly

Current Work - 2010

- Adaptive Scanning (continued)
 - Automatic schedule-based scanning
 - Remove from RTC and provided by Signal Processor
- Infrastructure:
 - Data formats – support NetCDF
 - Communication – Moving toward generic data formats

Current Work - 2010

- Infrastructure (continued)
 - User Interface
 - Added new dual-quad core machine to cluster as the 5th node.
- Spring Data Collection & PARISE
 - Support for VORTEX-2
- Additional Work by OU Collaborators

New Adaptive Scanning Capability

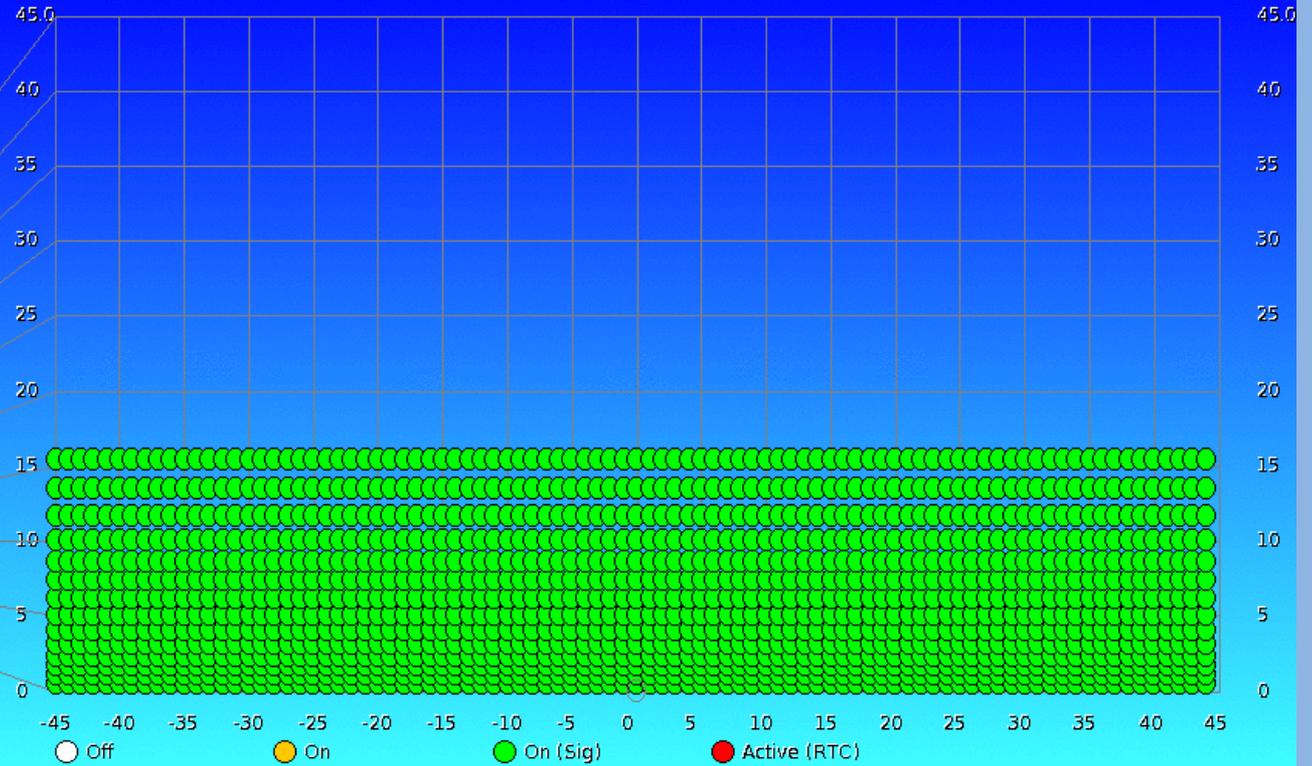
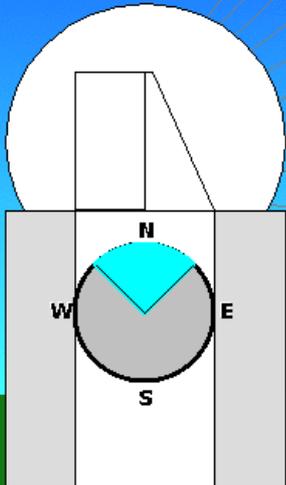
Mon Apr 06 12:53:42 CDT 2009

SuperStim: VCP12_90deg_sector_far.sup

Last Scan: 0 seconds

Reset = 5 minutes

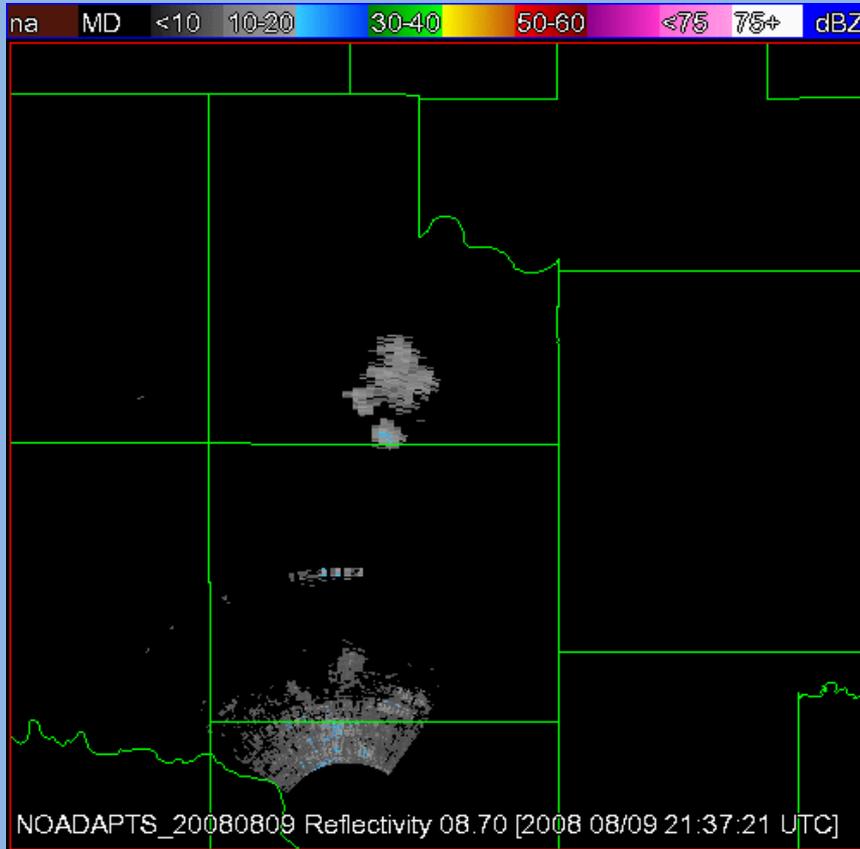
Down



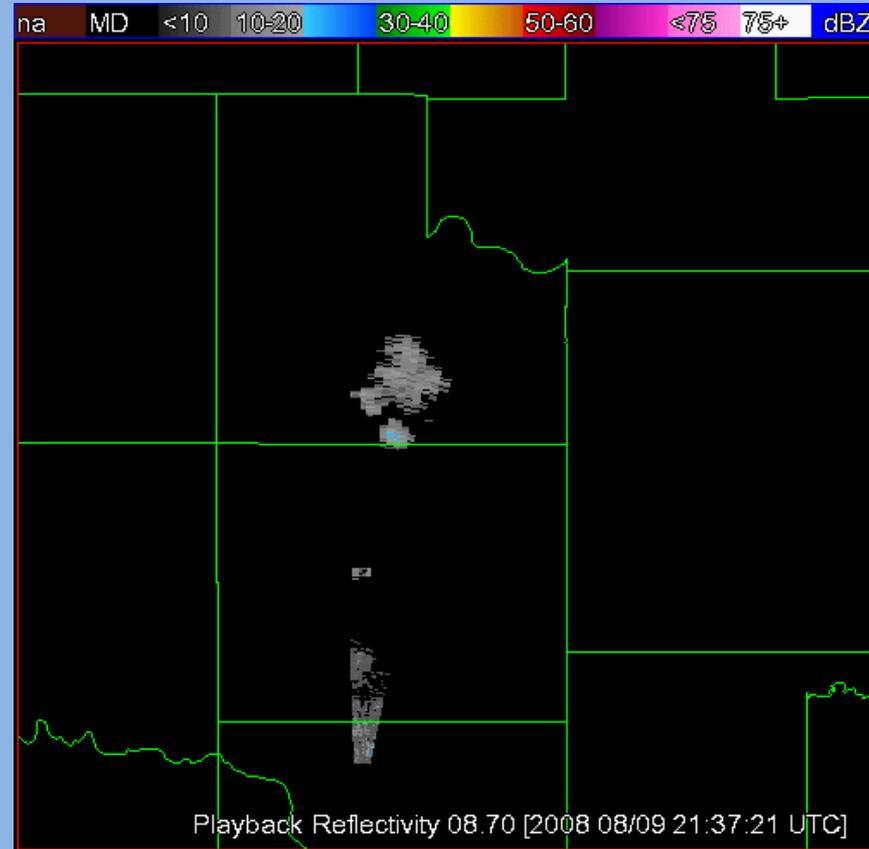
ADAPTS Performance

Qualitative Evaluation

ADAPTS is OFF

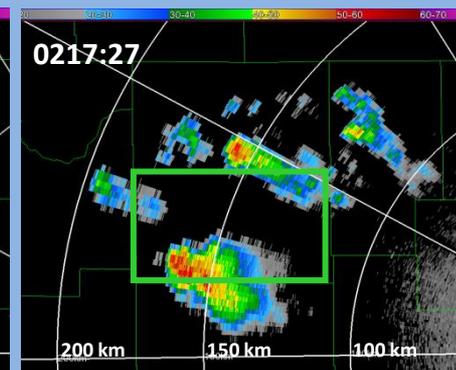
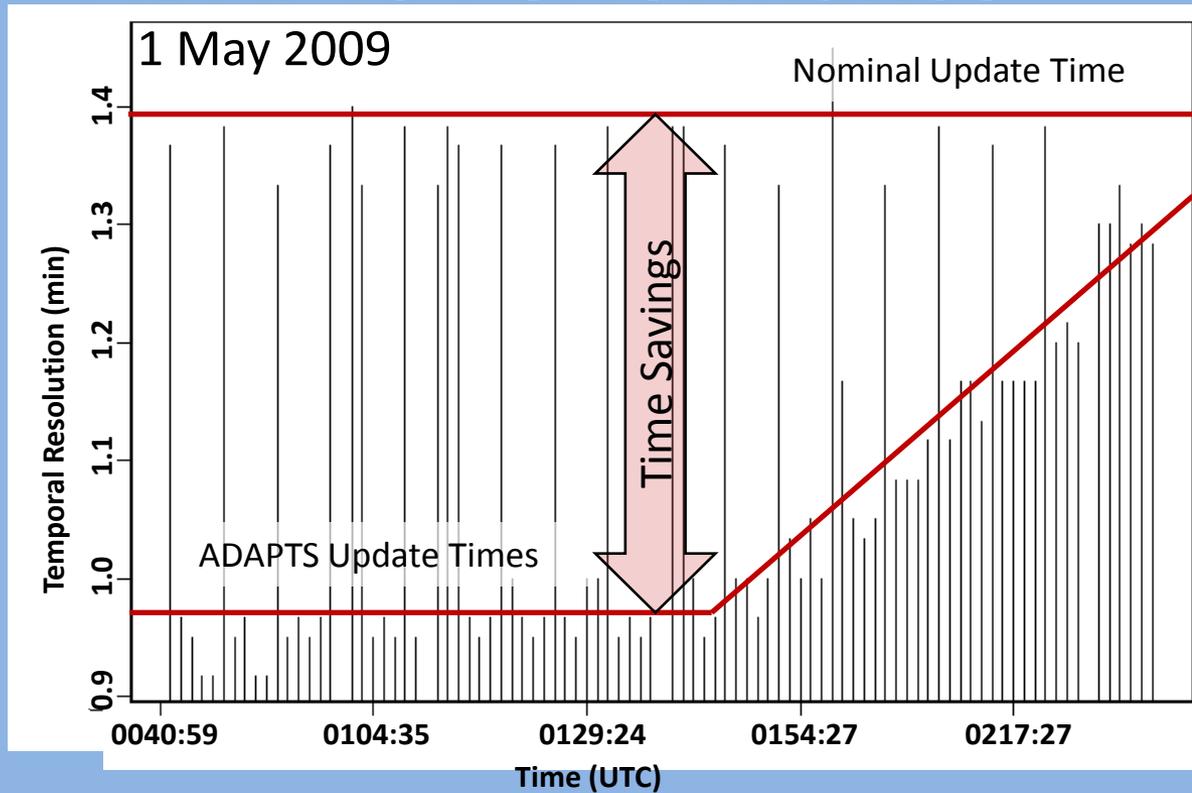


ADAPTS is ON



09 AUG 2008 – Reflectivity - 8.7 deg

ADAPTS Performance



User Interface – Adaptive Scanning

NWRT PAR Radar Status/Control Client (Admin User: Test/Controlling)

File System Scan Data Help Client: 1 -- User: Dave.Priegnitz Host: krusty.protect.nssl Security Level: 1 -- Auto Boot RTC ON

System Scan Antenna/Pedestal Transmitter History Scheduler ADAPT DSP Status

Scan Strategy Table

ID	Type	Scan Strategy Name	Repeat	Ant(Pos)	Azi(S)	Azi(E)	Ele(#)	Ele(L)	Ele(H)	PMode	PFlag	SOV	EOV	Time
1	W	Oversampled_VCP_within_120km_on...	1	0	-45	45	22	0.0	52.9399...	0	0	Yes	Yes	40
2	W	Oversampled_VCP.sup	1	0	-45	45	22	0.0	52.9399...	0	0	Yes	Yes	118
3	W	Tornado_4_cut_near.sup	2	0	-45	45	4	0.0	1.54	0	0	Yes	Yes	37
4		Undefined	0	-1	0	0	0	0.0	0.0	0	0	No	No	0
5		Undefined	0	-1	0	0	0	0.0	0.0	0	0	No	No	0
6		Undefined	0	-1	0	0	0	0.0	0.0	0	0	No	No	0
7		Undefined	0	-1	0	0	0	0.0	0.0	0	0	No	No	0
8		Undefined	0	-1	0	0	0	0.0	0.0	0	0	No	No	0
9		Undefined	0	-1	0	0	0	0.0	0.0	0	0	No	No	0

Scan Control:

Table Control: Repeat List:

■ Edit Mode: Scan 2 of 4

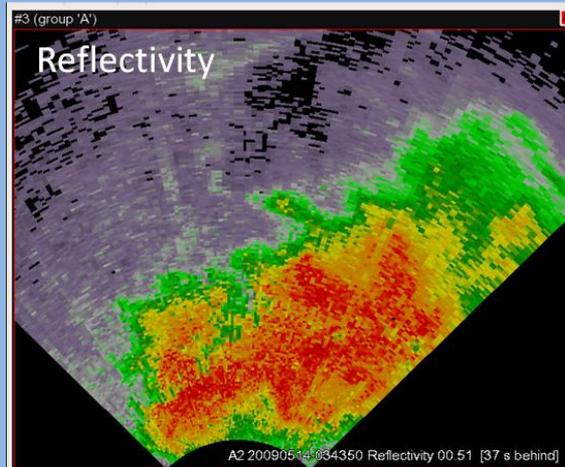
Transmitter STOP Scan Control STOP ADAPT-1 Processing STOP

Display Collection: Mode Type

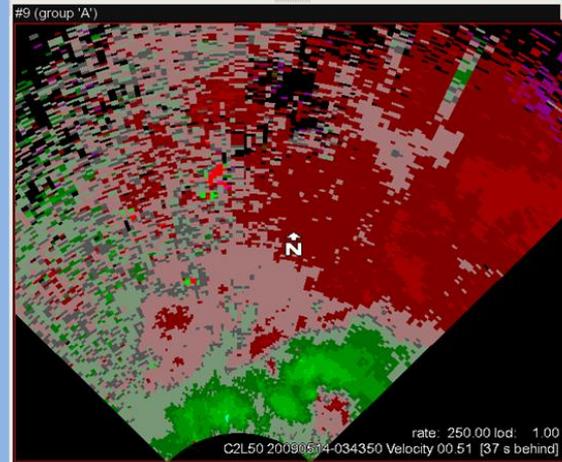
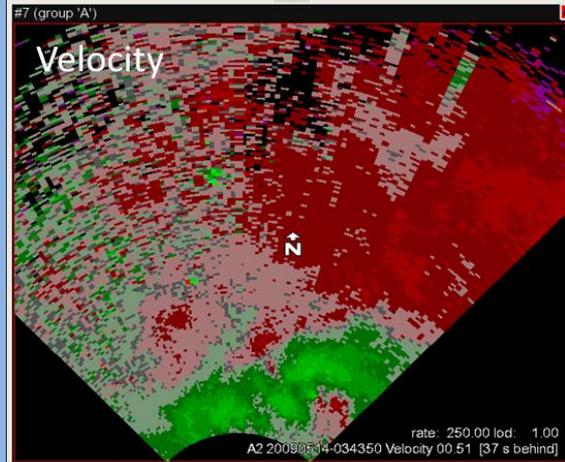
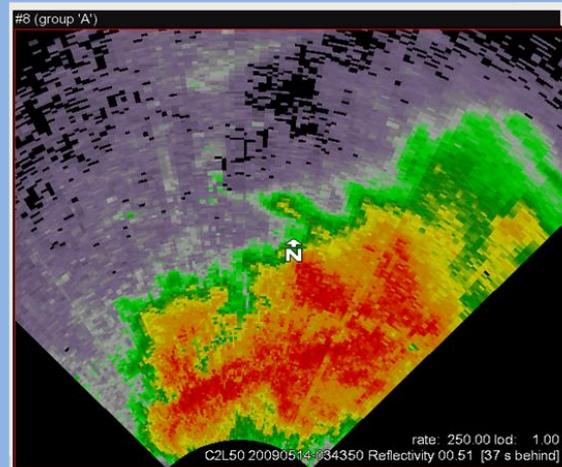
Beam Display Options: Active All

Range Oversampling

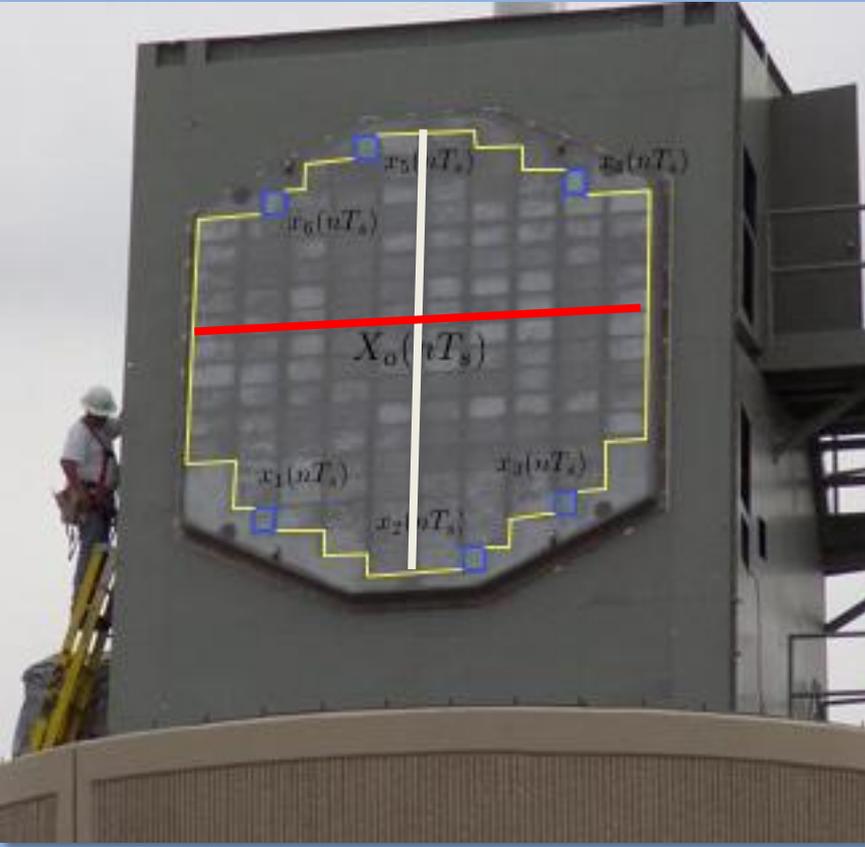
Standard Processing



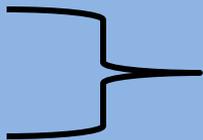
Range Oversampling Processing
with 50% observation time



Multi- Receiver System



1 - Az Diff
1 - El Diff



Monopulse

6 - Clutter Channels



eight LNA's



eight downconverters



Installed rack w/ digital receivers

Courtesy of Mark Yeary