

**New DOW6, DOW7**  
**New mini-COW configuration of the CROW**

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**Updated for 2024**

**NEW For 2024**

**Mini-COW:**  
Configurable Radar On Wheels (CROW): Rapid-Scan DOWs .....adding mini-COW configuration

8' dish: 1.5 degree beam (similar to SMART-Radars)  
Dual-polarization: 45-degree transmit, H and V receive: ZDR, phi-DP, rho-HV  
1 MegaWatt transmitter  
Staggered PRT (while dual-polling): up to 6000 Hz, so any Nyquist you want  
50 degrees/second scanning  
Full time series recording, TITAN, GURU, bistatic compatibility.

On existing CROW (Rapid-Scan, DOW8) platform  
**Ongoing now, to be completed by late winter 2024**

**New DOW6 and DOW7:**  
Old DOWs Commissioned in 2008, before VORTEX2  
Projects: VORTEX2, ROTATE, TWIRL, PECAN, OLYMPX, OWLES, SNOWIE, GRAINEX, RELAMPAGO, Several Hurricanes, LEE, WINTRE-MIX, PERILS, BEST, dozens of educational projects.  
250,000 (hard) miles. Thousands of transmitter, fast-spinning antenna hours, hundreds of TB of data.  
Dozens of towings, 100's of railroad crossings, 100 hours of high speed salt/spray/sand, marooned on mountains until July.  
DOW6 and DOW7: It is time to move to peaceful pastures

**DOW6, DOW7 upgrades:** New trucks, New Transmitters, New Antenna Control, New Computers

Common cabin design (based on 15 years of learning what works best)  
Better ergonomics. Much improved field maintenance, reduced front-sector beam blockage

**Ongoing now, to be completed late winter 2024, in 6 months**

Operators front facing  
Each operator has exit

Both racks have inside and outside easy access

Identical DOW6 DOW7 configuration

**SAME OLD, SAME OLD**

FARM mobile radars go all over the world and study all kinds of weather

Transport, Antenna Lifting, Antenna Assembly, Deployed

Figure 8. COW assembly COW as transported, antenna being assembled, antenna lifted onto pedestal, deployed.

Tornadoes, hurricanes, snowbands, QLCS, wildfires, etc.

Figure 4. Illustrative FARM data images: (a) Tornado hook echo, (b) hurricane boundary layer rolls, (c) interior view of hurricane eye with mesocyclones, (d) lake-effect snow band mesocyclones, (e) integrated radar and in-situ observations of a tornado, (f) integrated radar and in-situ observations in a mesoscale convective system, (g) vertical (800' slice) view of microphysical layering during nor'easter, (h) snow bands/cells caused by cloud seeding.

Basic Specs	DOW 6,7	COW	CROW	CROW	CROW
Tx kW peak	2x 250	2x 3000	100	40	1000
PRF Hz	500-6000 w/stepped				
Pulse Length μs	0.10-1.0	0.1-1.0	0.1-1.0	0.15-1.0	0.15-1.0
Scan rate /s	50	24	50	50	50
Products	ZDR, ZSR, Rho-HV, V-Z, SW, NCF, IQ	LVS, SW, NCF, IQ	ZDR, Rho-HV, V-Z, SW, NCF, IQ	ZDR, Rho-HV, V-Z, SW, NCF, IQ	ZDR, Rho-HV, V-Z, SW, NCF, IQ
Beamwidth °	0.93	1.05	0.93	0.8x0.3	1.5
Gate Length m	1.5-600				
Metereological and Comm Mast	18 m	future mast	14 m	14 m	14 m

**FARM radar specifications**

**In situ, PODNET, POLENET, Mobile Mesonet, Soundings, Disdrometers**

**PodNET**

Figure 10. FARM PODNET units.

**Mobile Mesonet**

Figure 9. FARM Mobile Mesonets (MM).

**PoleNET**

Figure 11. FARM POLENET unit being deployed on power pole during hurricane Delta (2020).

**Mobile Soundings**

Figure 12. FARM MGD sounding being launched from an MM which also carries PODNET units.

	PODNET	POLENET	Mobile Mesonet	Upper Air Soundings	Disdrometers
Number	Up to 20	3-12 (can share)	3	3-12	4
Measurements	1/8th Campbell Scientific E1181; Ultrasonic HC25 + PFT4X Suncor; Anemometers; P/Visula PFB1200; GPS (Garmin 58X-HV); Wind + 2 (IM Young 05103 04212 and Gill WindSonic 75 Ultrasonic)	Wind (IM Young 1781) Campbell Scientific EE181-L + FT4X Suncor; P/Visula PFB1200; GPS (Garmin 58X-HV); Can host others.	Wind (IM Young 05103 04212 and Gill WindSonic 75 Ultrasonic)	Wind (IM Young 05103 04212 and Gill WindSonic 75 Ultrasonic)	Drop Size Distribution
Sampling Rate	Up to 10 Hz	Up to 10 Hz	Up to 10 Hz	1 s	10 s
Real-time Data	yes	yes	yes	yes	yes
Platform	Harmonized steel "T" stand	Attaches to infrastructure	Pick-up truck. Can deploy PodNet and PoleNet (also sounding and light poles, ratings, at user specified heights)	Crane	WooBonic
Height	Configurable (currently 2, 3, 5, 10 m)	Configurable, on 3.5 m	Configurable, on 3.5 m	1-20000 m	1 m
Camera/Video Attachment	yes	yes	yes	no	yes
Comms	Cellular/Internet	Cellular/Internet	Cellular/Internet		
Compatibility	local	local or wireless	local or internet	local	local

**FARM in situ specifications**