Doppler on Wheels

The Center for Severe Weather Research's (CSWR) Doppler on Wheels (DOW) radars are truck-borne Doppler radars, frequently deployed in a multiple-doppler network. The network is able to deploy close to meteorological phenomena such as tornadoes, hurricanes, microbursts, and dust devils to get fine-scale spatial and temporal observations, and also to observe close to the ground.

CSWR’s DOW network consists of three mobile Doppler radar trucks, DOW 6, DOW 7 and the Rapid-Scan DOW (DOW 8). The DOW 6 and DOW 7 radars have dual-polarization and dual-frequency capability with several tens of kilometers of clear air sensitivity. The Rapid-Scan DOW is a multi-beam, multi-frequency system capable of very rapid 3D scanning; volumetric data can be obtained in 7 to 14 seconds. Any of the DOWs can remain on station indefinitely to collect uninterrupted volumetric data during prolonged events. The DOWs can operate in hostile environments, such as tropical cyclones, blizzards and severe convection.
**DOW SCIENCE & RESEARCH**

The Doppler of Wheels network provides targeted fine-scale rapid-update multiple-Doppler and dual-polarization observations. They are used to study 3D wind and precipitation in many different types of weather events such as tornadoes, hurricanes, wildfires, and winter storms in order to better understand how these storms form and evolve, and to gain insight into their small-scale structure.

**TYPICAL RESEARCH APPLICATIONS**

The DOW radars are rapidly deployable platforms that can be used to quickly target fast-evolving phenomena in different locations or can be used as semi-permanent radars to collect data in a specific, sometimes remote, location over a long period of time. The DOWs have been used to study a wide variety of weather phenomena including, tornadogenesis and low-level wind structure, hurricane boundary layer structure, the microphysics of convective and wintertime precipitation, convective initiation, turbulence, monsoon rains, mountain weather, and fire weather. The DOWs are particularly well-suited for education deployments, as they can be requested with little lead time for periods of two to four weeks in support of radar classes and other project-based education.

**DOW 6 & 7 SPECIFICATIONS**

- Dual-Pol: 2 modes possible (Fast-45 & LDR+45)
- Transmitters: 2 x 250 kW magnetron transmitters
- PRF: 500-6000 Hz (stagger)
- Gate lengths: 15 - 600 m
- Data format: Full time series, DORADE, CFRadial

**DOW 8 (RAPID-SCAN) SPECIFICATIONS**

- Multi-beam (6, upgradable to 12) system, capable of 7-second volumes
- Transmitter: 1 40 kW TWT transmitter
- Gate lengths: 25-600 m
- PRF: 800-10000 Hz (stagger)
- Data Format: Piraq, DORADE

**REQUEST THE DOW FOR HANDS-ON EXPERIENTIAL EDUCATION**

The DOWs can be requested to aid in any level of education, however it is typically used for undergraduate and graduate education. A DOW can be deployed on location for about three weeks in support of a class with students designing experiments, operating the DOW, and analyzing the collected data. For more information on requesting facilities for educational deployments:

http://www.eol.ucar.edu/ed-requests

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**REQUEST THE DOPPLER ON WHEELS**

http://www.eol.ucar.edu/requestfacilities