

## Report Released on R&D Plans for Multi-Function Phased Array Radars

The Office of the Federal Coordinator for Meteorological Services and Supporting Research (OFCM) released a report entitled "Federal Research and Development Needs and Priorities for Phased Array Radar." This report examines whether a single network of multifunction phased array radar (MPAR) units could provide next-generation expansion of our current weather surveillance network, replace the Nation's aging air traffic surveillance radars, meet homeland security and defense requirements for identifying and tracking non-cooperative craft, and become an integral part of achieving National goals set for the Global Earth Observation System of Systems (GEOSS). In addition, this report documents the current and future Federal agency needs that can be met with domestic surveillance radar systems, details potential benefits that may be realized from this technology, and proposes an R&D plan to evaluate an MPAR option to meet these needs and realize the benefits.

During the past several decades, a new generation of military radars has matured. These electronically-scanning, phased array radars with no moving parts (i.e., rotating antennas) were originally developed to track multiple airborne objects such as aircraft and missiles simultaneously. The unique beam agility, increased resolution, and faster full-volume scan rate of phased array radar can enable a single radar unit to perform multiple weather and atmospheric surveillance tasks and, at the same time, track multiple airborne craft. The National Severe Storms Laboratory (NSSL) and the University of Oklahoma are leading an effort to perform R&D using a phased array radar that is on loan from the U.S. Navy and is part of the National Weather Radar Testbed (NVRT) located at NSSL. One finding of the report is that the "MPAR will enable continued improvement of the Nation's severe weather warning system. It can provide adaptive sensing for warnings and nowcasts related to severe convective storms and the locally destructive effects of hurricanes (tropical cyclones) after they make landfall. Among the storm phenomena that could be tracked are tornadoes, strong wind gusts, hail, and locally heavy rains responsible for flash floods and mudslides. The result: more timely and accurate high-impact warnings for our nation's populace."

Prior to initiating a program to install such systems, further research is required to determine the cost effectiveness of replacing the Nation's entire, varied radar installations with a single uniform network of multifunction radars. Such an analysis would have to consider the impact of other prospective radar system developments that agencies are currently funding and planning to implement. These include upgrading the NEXRAD network to dual-polarization capability and the possible use of "gap-filler" mini-radars currently being investigated by the Center for Collaborative Adaptive Sensing of the Atmosphere (CASA).

This OFCM report can be found at <http://www.ofcm.gov/r25-mpar/fcm-r25.htm>.

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