Recent Developments in Weather Radar Educational Opportunities at the University of Oklahoma

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The University of Oklahoma has recently launched a new Strategic Initiative in Weather Radar, which strives to unify and strengthen the various radar and radar related enterprises across campus and within the community. An outgrowth of this program has been the formation of the Atmospheric Radar Research Center (ARRC), which pursues such research and educational interests as radar polarimetry, phased array radar, profiling radar, advanced signal processing, retrieval algorithms, clutter mitigation, severe storm observations and detection, quantitative precipitation estimation, and general studies of atmospheric physics. An integral component of the ARRC's activities is the continuing development of a healthy and vibrant academic radar program for our students. Cognizant of this fact, several of the faculty within the School of Meteorology (SoM) and the School of Electrical and Computer Engineering (ECE) have taken it upon themselves to develop a new cross-disciplinary curriculum targeted at achieving this objective. The result of these efforts is the Weather Radar and Instrumentation Curriculum, which consists of roughly 20 courses at the undergraduate and graduate level in both SoM and ECE. Some of these courses were already in place but nine new courses have been developed specifically for the curriculum and four of the existing courses have been modified in order to better fit within the context of the new curriculum. Considering the relevance of weather radar for many observational studies of atmospheric phenomena, a strong "hands-on" component is essential for the overall success of the program and to better serve the evolving needs of the students. Our curriculum provides a complete theoretical framework with which to understand weather radar theory while also providing access to local weather radar systems. In close collaboration with our NOAA partners at the National Severe Storms Laboratory (NSSL), we have developed laboratory modules for many of the radar courses using the C-band SMART radars, the S-band phased array radar, and the S-band KOUN polarimetric Doppler radar. Many of these modules have been and are being developed as part of a National Science Foundation (NSF) Course Curriculum and Laboratory Improvement (CCLI) grant. Experimental design, operation, data analysis, and interpretation are emphasized. A description of the curriculum development effort including the role of the CCLI support will be provided. Examples of laboratory modules will also be presented, which emphasize the practical aspects of this program.