Masters Theses May 2014-current

Deployment and Monitoring of an X-Band Dual-Polarization Phased Array Weather Radar

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Document Type
Open Access Thesis

Degree Program
Electrical & Computer Engineering

Degree Type
Master of Science in Electrical and Computer Engineering (M.S.E.C.E.)

Year Degree Awarded
2014

Month Degree Awarded
September

Keywords
Phased array, Weather radar

Abstract
This thesis describes the deployment of MIRSL's X-band dual-polarization Phase-Tilt Weather Radar (PTWR) at the University of Texas at Arlington during spring 2014. While this radar has been used to observe weather in Western Massachusetts, more observations of severe weather were required to determine the limits of its abilities in sensing more rapidly evolving weather systems. This site was chosen also for its proximity to the Dallas-Fort Worth Urban Testbed Network set up by the Center for Collaborative Adaptive Sensing of the Atmosphere (CASA), which provided the ability to compare and calibrate the PTWR data against another well-documented X-band weather radar. A data processing pipeline was developed for converting raw PTWR data to NetCDF format, which allows for easy sharing and mapping of weather data. Finally, this is the first in-depth documentation of the PTWR system and specifically the roof-mounted setup utilized for this deployment.