Geophysical Research Abstracts
Vol. 15, EGU2013-6351-1, 2013
EGU General Assembly 2013

The CASA Dallas Fort Worth Remote Sensing Network ICT for Urban Disaster Mitigation

Venkatachalam Chandrasekar (1), Haonan Chen (1), Brenda Philips (2), Dong-jun Seo (3), Francesc Junyent (1), Apoorva Bajaj (2), Mike Zink (2), John Mcenery (3), Zubin Sukheswalla (4), Amy Cannon (5), Eric Lyons (2), and David Westbrook (2)

(1) Colorado State University, Fort Collins, Colorado, USA 80523, (2) University of Massachusetts, Amherst, Massachusetts, USA 01003, (3) The University of Texas Arlington, Arlington, Texas, USA 76019, (4) AECOM, 16000 Dallas Parkway, Suite 350, Dallas, Texas, USA 75248, (5) Department of Transportation and Public Works, City of Fort Worth, Texas, USA 76102

The dual-polarization X-band radar network developed by the U.S. National Science Foundation Engineering Center for Collaborative Adaptive Sensing of the Atmosphere (CASA) has shown great advantages for observing and prediction of hazardous weather events in the lower atmosphere (1-3 km above ground level). The network is operating though a scanning methodology called DCAS, distributed collaborative adaptive sensing, which is designed to focus on particular interesting regions of the atmosphere and disseminate information for decision-making to multiple end-users, such as emergency managers and policy analysts. Since spring 2012, CASA and the North Central Texas Council of Governments (NCTCOG) have embarked the development of Dallas Fort Worth (DFW) urban remote sensing network, including 8-node of dual-polarization X-band radars, in the populous DFW Metroplex (pop. 6.3 million in 2010).

The main goal of CASA DFW urban demonstration network is to protect the safety and prosperity of humans and ecosystems through research activities that include: 1) to demonstrate the DCAS operation paradigm developed by CASA; 2) to create high-resolution, three-dimensional mapping of the meteorological conditions; 3) to help the local emergency managers issue impacts-based warnings and forecasts for severe wind, tornado, hail, and flash flood hazards. The products of this radar network will include single and multi-radar data, vector wind retrieval, quantitative precipitation estimation and nowcasting, and numerical weather predictions. In addition, the high spatial and temporal resolution rainfall products from CASA can serve as a reliable data input for distributed hydrological models in urban area.

This paper presents the information and communication link between radars, rainfall product generation, hydrologic model link and end user community in the Dallas Fort Worth Urban Network. Specific details of the Information and Communication Technologies (ICT) between the various subsystems are presented.