

P.31 Real-Time High Resolution Analysis and Short-Term Forecast System for Severe Weather in the Dallas/Fort Worth Testbed

Keith A. Brewster, Kevin W. Thomas, Jerald A. Brotzge and Frederick H. Carr

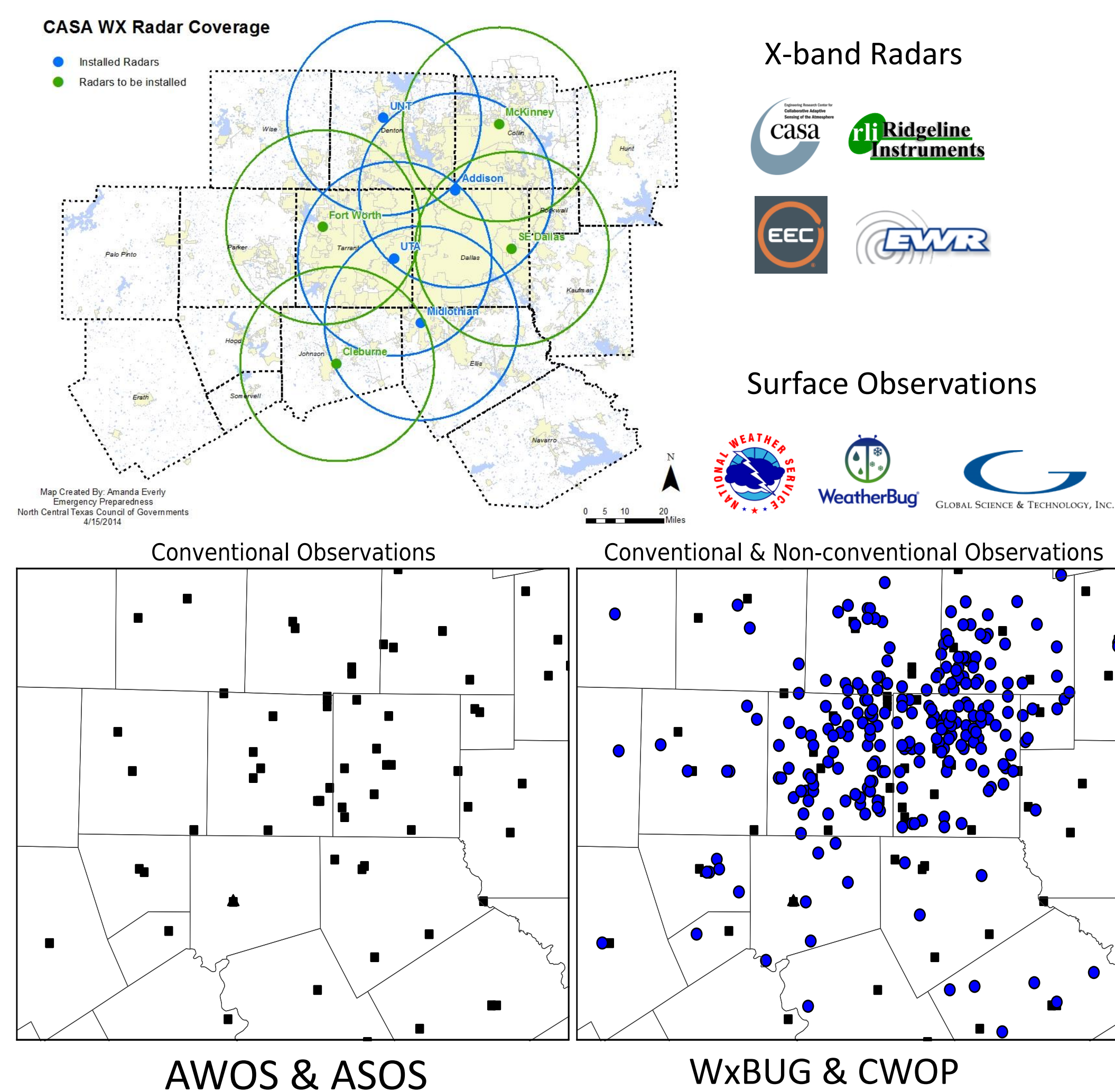
Center for Analysis and Prediction of Storms
University of Oklahoma, Norman, OK
kbrewster@ou.edu



Background

The Dallas/Ft Worth Testbed has been established as a region for testing real-time data analysis and short-term forecasting over an urban area. A number of high-density observing networks are being tested in the region, namely X-band Doppler radars, including those from the Collaborative Adaptive Sensing of the Atmosphere (CASA) project and private companies, citizen weather observations, truck-mounted mobile sensors, and ground based profilers. CAPS is been involved in site selection for the radars, performing real-time high resolution analysis and prediction, case studies of convection initiation and storm morphology, and analysis of impact of novel new data in the Network of Networks framework.

An Implementation of Network of Networks Concepts



Conventional Observations	Non-Conventional Observations
ASOS	EarthNetworks (WxBug)
AWOS	CWOP
West Texas Mesonet	GST MoPED
Oklahoma Mesonet	
S-band WSR-88D Radars	X-band Radars
	C-band TDWR Radars
Radiosondes	SODAR
	Radiometers

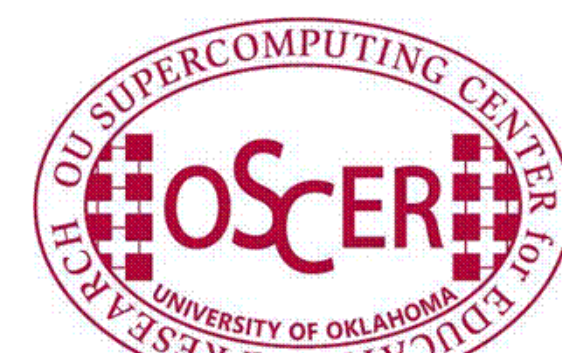
Real-Time Analyses, Assimilation and Forecast System DFW Testbed

3DVAR Analyses

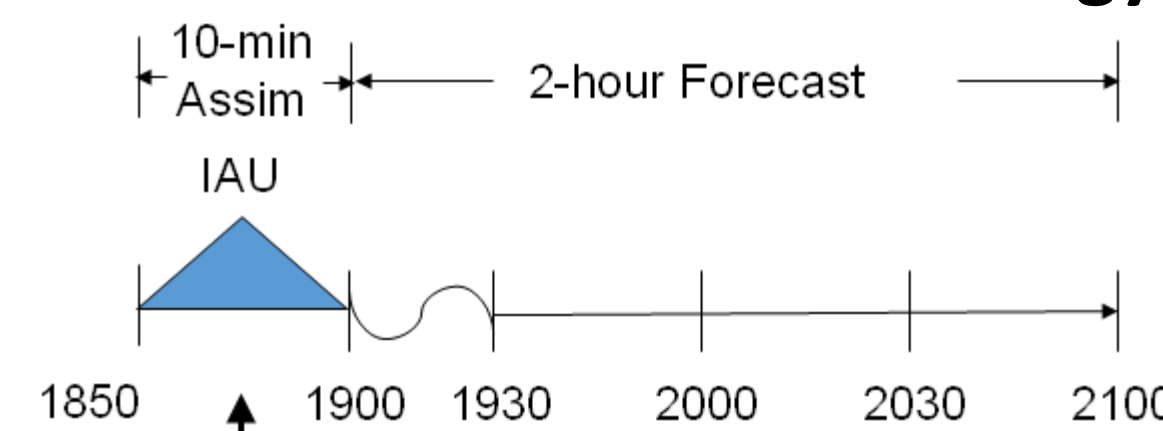
3DVAR & Cloud Analysis
32 Processors MPI
5-minute Interval
400-m grid spacing
Radar Wind and Reflectivity
Surface Data
Run Continuously

Assimilation/Forecasts

3DVAR & Cloud Analysis into ARPS
192 processors MPI
15 minute interval
1-km grid spacing
360x320x53 domain
Wind and Reflectivity & Sfc Data
2 cycles with IAU Assimilation
2-hour forward forecast
5-minute Output
Run when precip is expected or occurring



Real-time Assimilation Strategy



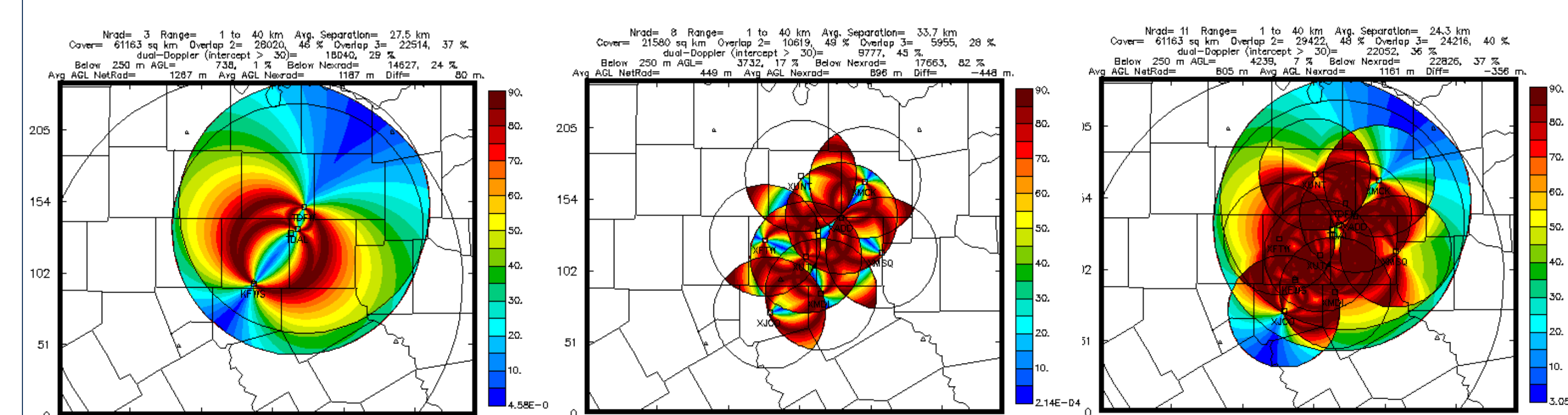
CAPS Forecasts Online
<http://forecast.ou.edu>



Building the Radar Network

NEXRAD, TWDR & X-band Dual-Doppler Angle Analysis

Dual-Doppler Crossing Angle and Beam Height AGL Analyses for Network Planning



Dallas-Fort Worth Federal Radars
NEXRAD: KFWS
TDWR: TDAL, TDFW

CASA Dallas-Fort Worth X-band
X-Band Network: 8 Radars

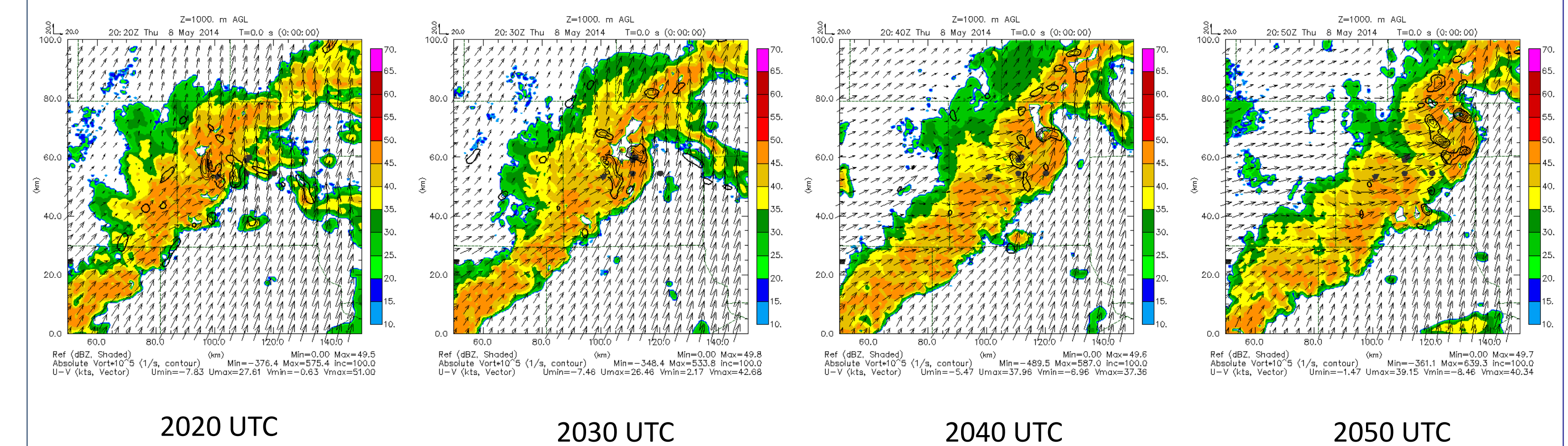
Combined Network
NEXRAD: KFWS
TDWR: TDAL, TDFW
X-Band Network: 8 Radars

Hoisting the X-band Radars

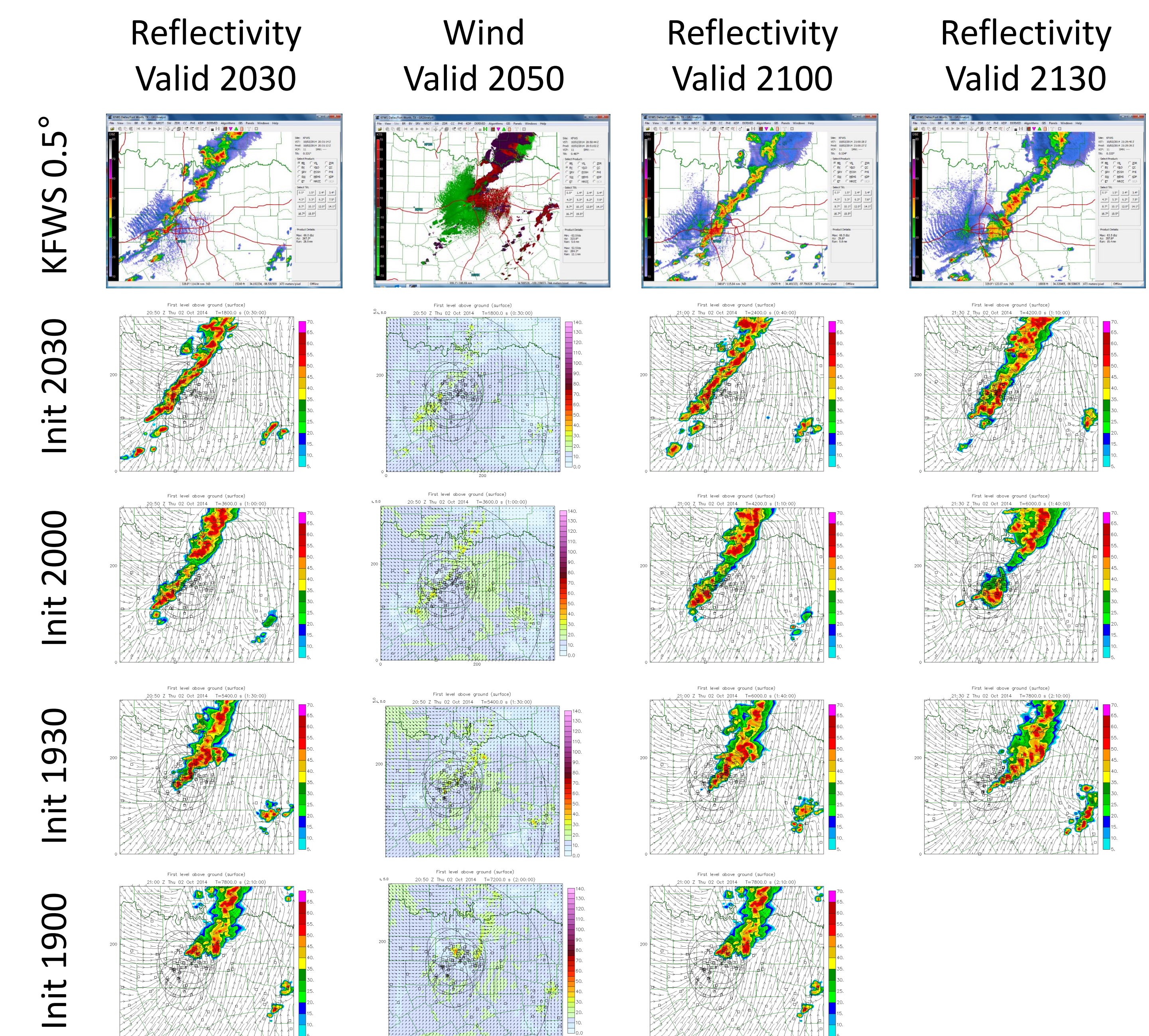


Recent Cases

Analyses MCV 8 May 2014



Forecasts 2 Oct 2014 Squall-line Wind Event



Ongoing and Future Plans

- Complete Installation of X-band Radar Network
- Implement hybrid Bratseth Surface & 3DVAR radar wind
 - Based on results of Matt Stalley (OU MS Thesis work)
- Verification of Storm and Tornado Tracks
 - Derick Stratman Poster Tuesday P.54
- Impact Testing of GST and other non-conventional surface data



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