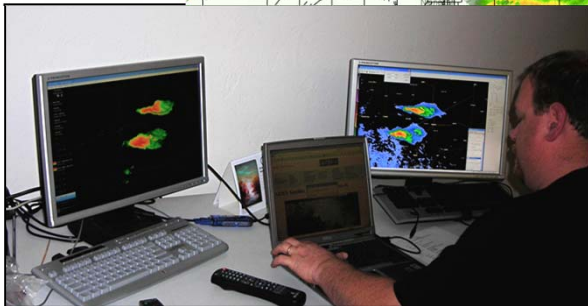
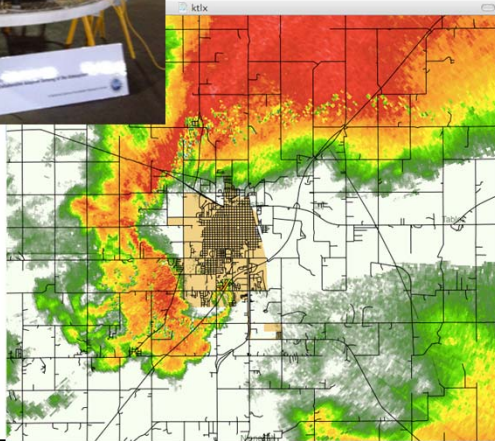


Linking Technology & Human Behavior: Creating a Platform for Real Time Experiments

Brenda Philips
Co-Director, CASA

University of Massachusetts, Amherst

CASA Engineering Research Center: Radar System Innovation



- ❑ 10-year National Science Foundation-funded program
- ❑ UMass, Colorado State U, and U Oklahoma, U. Colorado Colorado Springs, + Industry & Government Partners
- ❑ Test beds in Oklahoma, Puerto Rico...and now North Central Texas
- ❑ CASA transitioning to Phase II seeking new partnerships



Public/Private/Academic Partnership

- ❑ CASA Engineering Research Center and continuation
- ❑ North Central Texas Council of Governments and Emergency Managers, additional local stakeholders
- ❑ National Weather Service Office of Science and Technology, Southern Region Headquarters, Fort Worth Forecast Office



CASA DFW Urban Demonstration Network

- ❑ *Locally-driven* partnership model for acquiring and operating remote sensors.
 - ❖ Public, private, local, national, replicable
- ❑ *Demonstrate stakeholder value for tornado, severe t-storm, and urban flood decision-making for key stakeholders*
- ❑ *Multi-sensor experiments*
- ❑ *Continue research: radars, computer science, meteorology, social science*

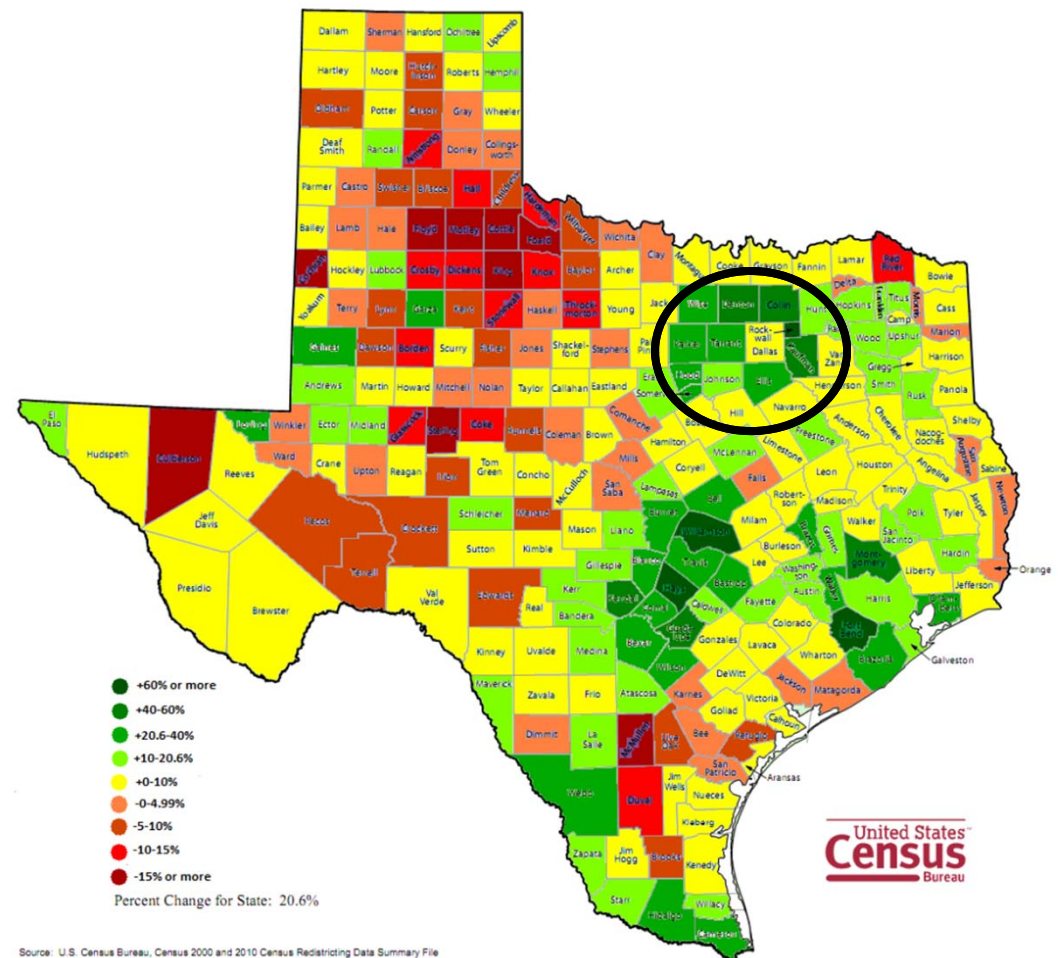


Dallas/Fort Worth – A Vibrant Region

- 6.5 Million People
- Fourth Largest U.S. Metroplex
- 25%+ Population Growth 2000 – 2010
- Second Largest Highway System in US
- Third busiest airport in the world: DFW
- Sixth largest metro economy: Trade, Transportation, Fortune 500 companies

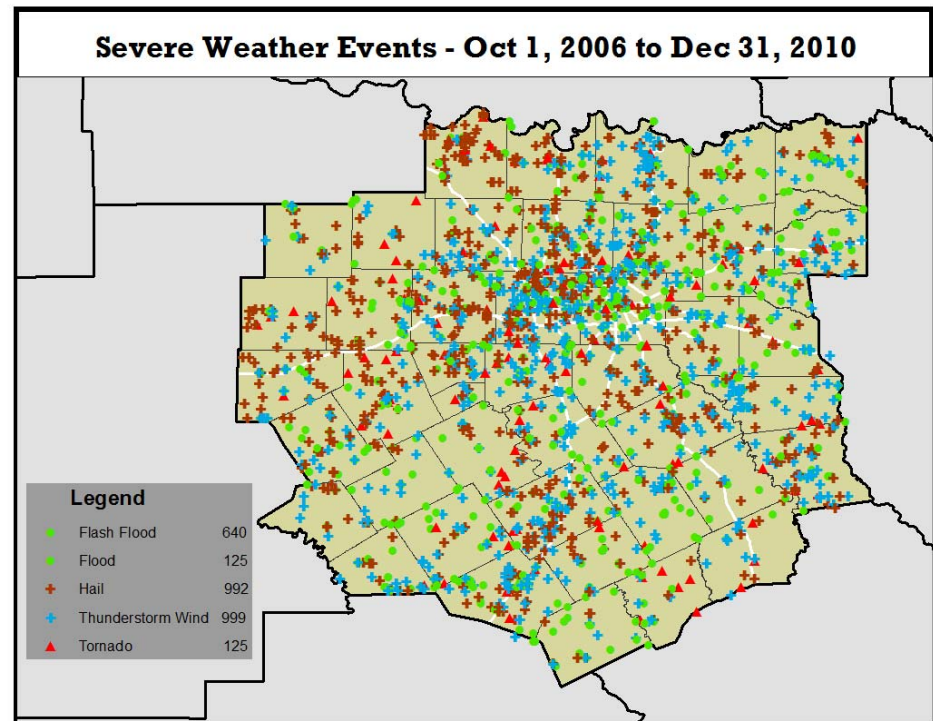
TEXAS - 2010 Census Results

Percent Change in Population by County: 2000 to 2010

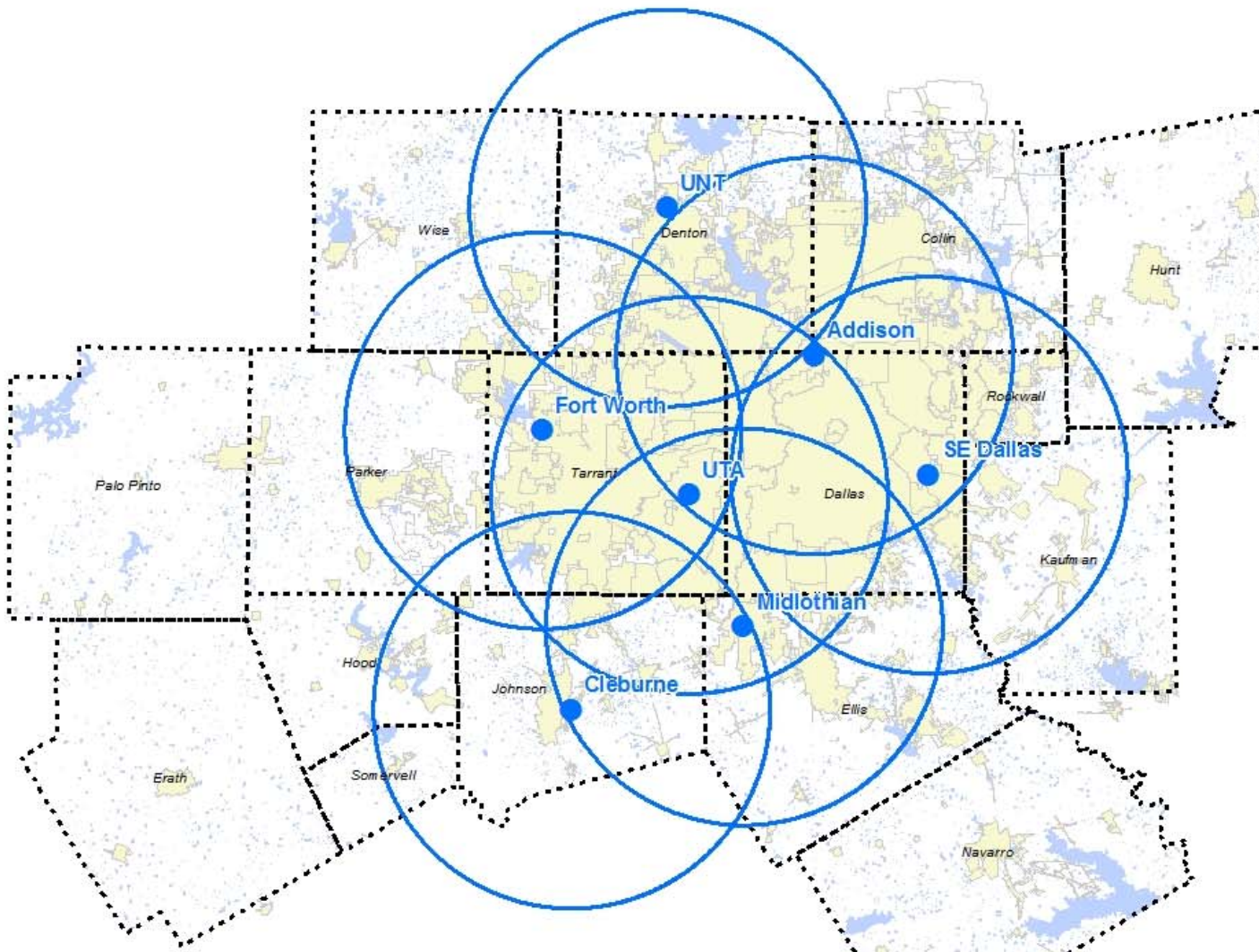


North Texas Weather Threats

- Flash Floods
- Tornadoes
- Damaging Winds
- Hail
- Lightning
- Fire Weather
- Tropical Cyclones



Radar Network Layout





Midlothian, TX



U. North Texas



Addison, TX



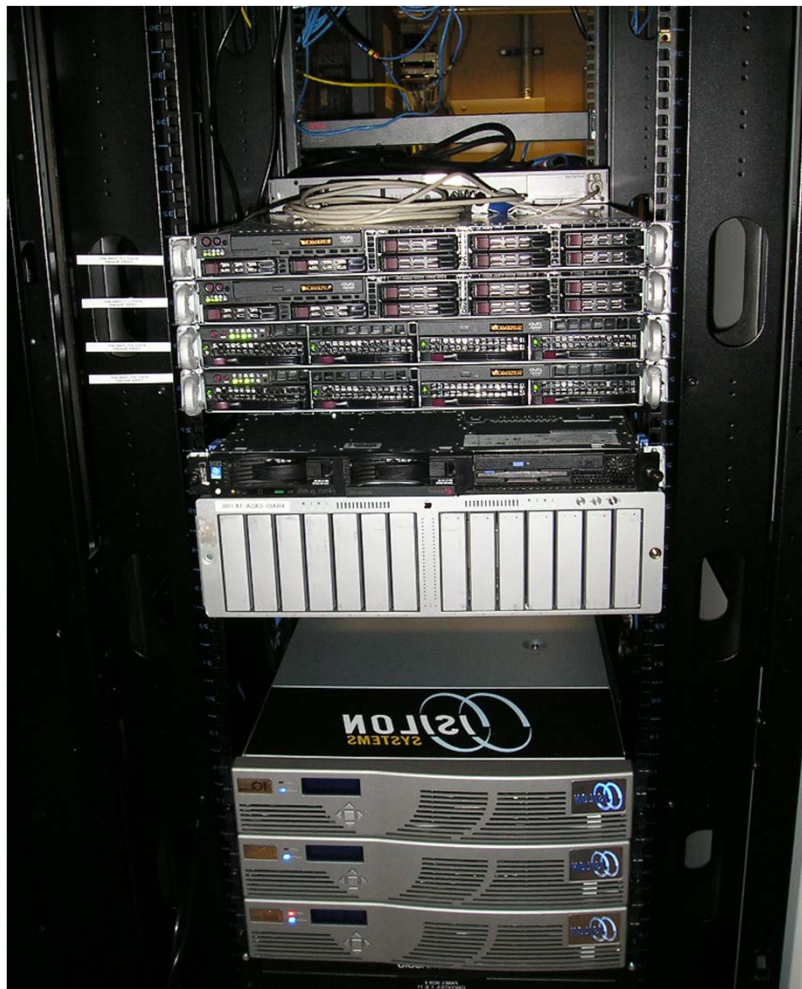
UT-Arlington





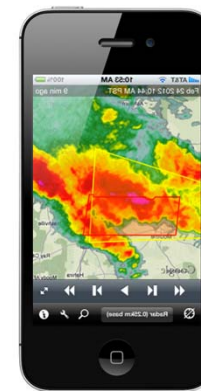
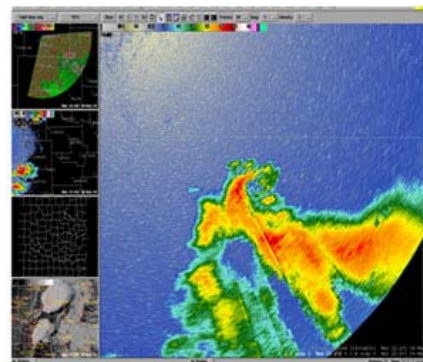
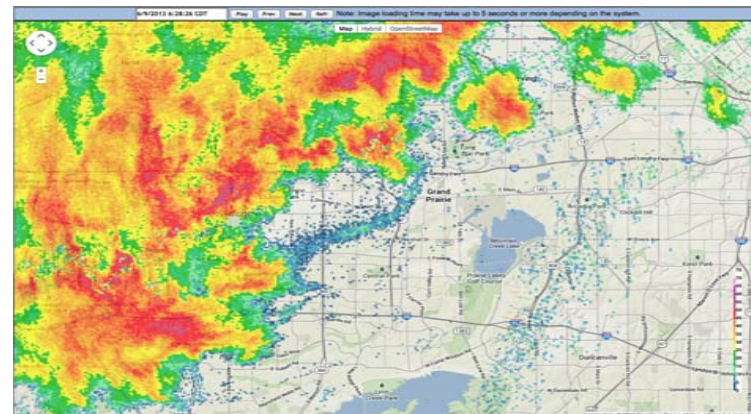
Compute Cluster

NWS Southern Region Headquarters, Ft. Worth



Data Dissemination

Password Protected Web Site
AWIPS-II
Mobile Devices



casa

Concept of Operations

- ❑ CASA radar system operates when precipitation enters the radar network
- ❑ National Weather Service uses data for decision making
- ❑ N. Texas jurisdictions access password protected web site
- ❑ Private companies access password protected web site or get direct feeds.
- ❑ Researchers support network operations through grants.



Integrated Warning System Testbed



***NSF Hazards SEES
Next Generation Warning Systems
for Tornadoes and Flash Floods***

- ❑ University of Massachusetts
- ❑ Disaster Research Center, University of Delaware
- ❑ Colorado State University
- ❑ Laboratoire d'étude des Transferts en Hydrologie et Environnement

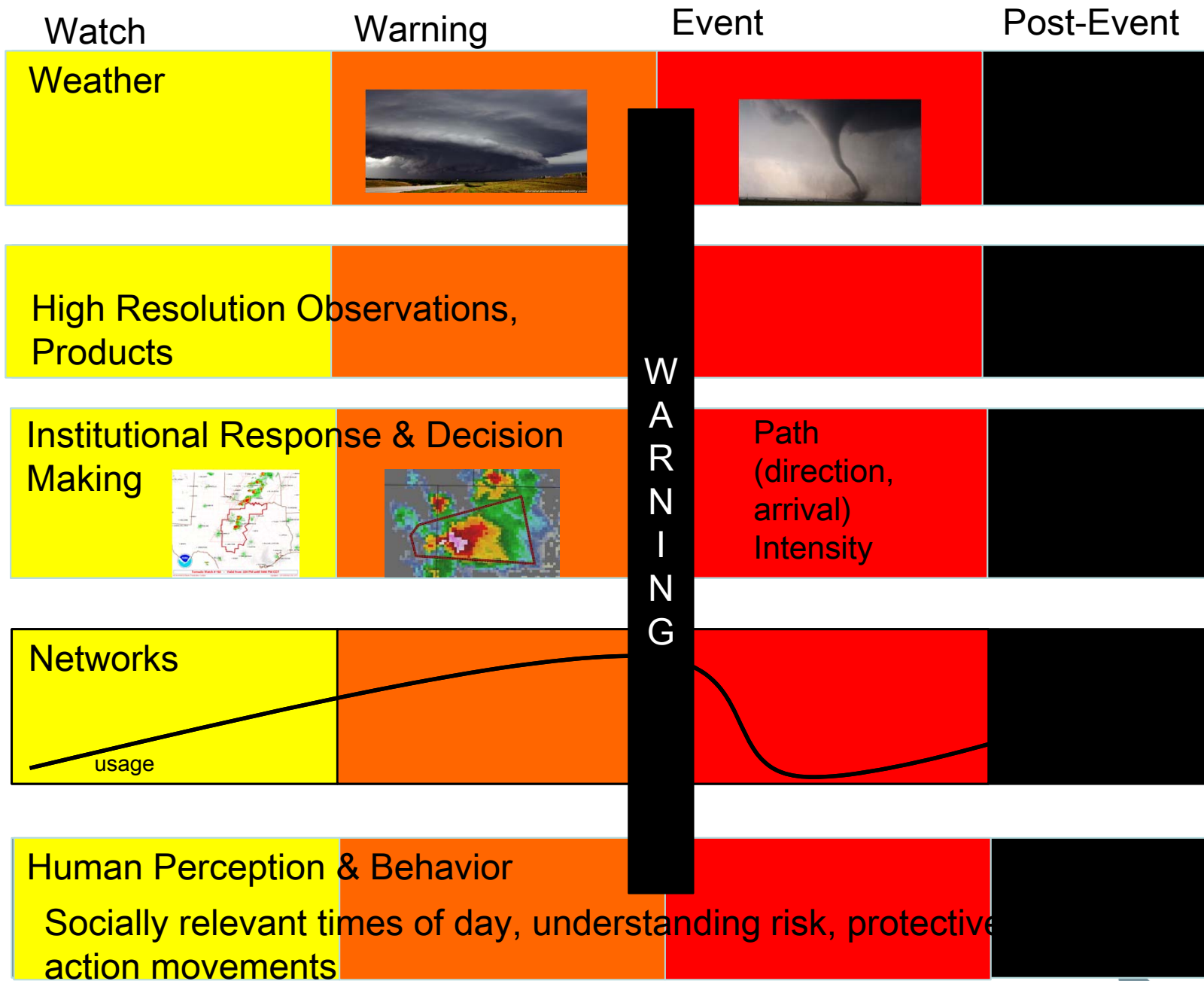


Goals

- ❑ Use high spatiotemporal observations/forecasts and a resilient communication/computation infrastructure to deliver user-centric, context-aware warnings resulting in improvements to public response.
- ❑ Develop links across the different parts of the warning system components based on time, space and risk considerations.
- ❑ Advance knowledge in human response to hazards; high spatial-temporal nowcasts; mobile communications/computation.



Space, Time and Risk



W
A
R
N
I
N
G