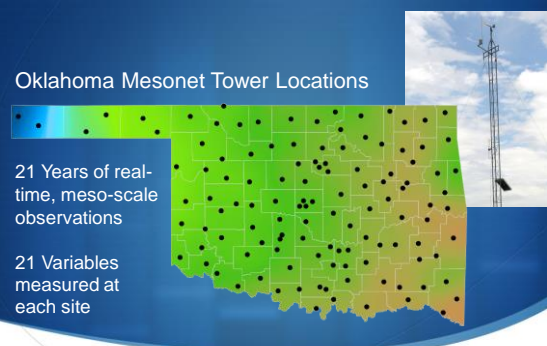


Oklahoma Mesonet Tower Locations



21 Years of real-time, meso-scale observations

21 Variables measured at each site



New Challenges Everyday

- Every new activity we undertake without new long-term funding increases our technical debt
- Currently have 60+ servers running ingest, processing, quality assurance, websites, models (cattle comfort, fire danger). Now also have Android and iPhone apps that have to be updated with each OS update.
- About 4,000 sensors deployed across the state: all requiring periodic calibration... and the calibration systems need periodic calibration (our Thunder Scientific RH Calibration chamber costs \$10,000 every other year for certification)



More Products and Services with Less Funds

- Continued financial support requires continuous marketing, providing new products to new sectors, telling the Legislature about new accomplishments
- Core funding from the State today is 10% less than 8 years ago. Requires new grants and contracts which compete with maintaining existing core operations



Choosing the right instruments, sensors, platforms

- Vaisala HMP45 RH sensor used since 1998 is no longer manufactured
- Vaisala PTB202 barometer used since 1992 no longer manufactured
- Campbell CR23X datalogger used since 1998 no longer manufactured
- Bare Bead Temperature used since 2003 in need of upgrade
- Plus, pyranometers, wind monitors, and rain gauges that are still manufactured have exceeded their life expectancy and qty 120 of anything is expensive!



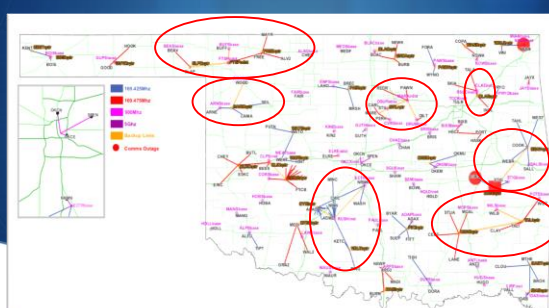
Sensor Redundancy



All 120 stations now have redundant rain gauges with automated failover if one gauge is deemed erroneous



Communications Redundancy



Mesonet Communications Map (RF Links ARE dynamic and Color Coded)

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New Sensor Testing

- Wet Bulb Globe Temperature
- Pavement Temperature
- Snow Depth



Prototyping a 3D Mesonet Concept

- UAS provides vertical profiles of pressure, temperature, humidity, and wind
- Additional sensors could be incorporated into the UAS
- Each site would likely be equipped with a "detect and avoid" radar system along with video monitoring and ADS-B capabilities as risk mitigation for unattended operation

OK Mesonet Tower With UAS Extended Measurements
UAS acts as a "virtual mast" to collect data

