The Societal Value of Mesoscale Data: Examples From Oklahoma

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University of Oklahoma

State Climatologist for Oklahoma

June 11, 2008
The Oklahoma Mesonet

- Commissioned in 1994; average spacing of 120 sites is 30 km
- Atmospheric measurements with 5-minute resolution
Technical Details

- 120 remote weather stations
- 3300 sensors and 250 computers linked
- About 700,000 observations ingested each day
- 2-way communications
- Solar powered
- 30-day storage in on-site data loggers
- ~63,000 products and files for users made available each day
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http://www.mesonet.org

Oklahoma Mesonet

Current: Norman, OK

58°F

Dewpoint: 36°F F
Humidity: 46%
Rainfall: 0.00 in.
Wind: N at 14 mph

Over 3,702,683,328 observations since January 1st, 1994

http://www.mesonet.org
Remote sites communicate through network of 42 repeaters and 61 base stations and use the Oklahoma Law Enforcement Telecommunication System network.

- Reliable and no recurring costs
The Oklahoma Mesonet:
Aggressive Data QC/QA Procedures
The Result: Research Quality Data
Quality Products Relevant to Each User Group
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Products Using Archived & Real-Time Data
Outreach

- Earthstorm: K-12 Outreach
  - 250 teachers educated; Over 5000 students educated to use Mesonet data in the classroom

- OK-First: Public Safety Outreach
  - 450 emergency managers educated who rely on Mesonet data and services

- OK-FIRE: Fire Manager Outreach
  - 125 Oklahoma fire officials educated to use Mesonet fire products

- Agweather: Agriculture Outreach
  - 100s of farmers and ranchers educated to use Mesonet products and models in their farm and ranch decisions
03.14.08 || Record Wheat Sales


Read More...

02.28.08 || What’s the Deal with Beef?


Read More...

01.14.08 || Upcoming Farm Show

In elit nulla, molestie vel, ornare sit amet, interdum vel, mauris. Etiam dignissim imperdiet metus. Morbi!

Read More...
OK Department of Agriculture policies require aerial applicators to check Mesonet wind speeds just prior to takeoff to remain in compliance.
**Burning Index** from OK-FIRE, updated every 30 minutes with new Mesonet observations, but also linked to NAM forecasts out to 84 hours. Note the value of 102 near Hobart in southwest Oklahoma.
Spread Component image from OK-FIRE. Note the value of 183 near Hobart = 60 yards/minute in which the headfire will spread!
Note the ‘fire warning’ issued by the National Weather Service for a small portion of southwest Oklahoma at about the same time as the previous three images.
“We had a wildfire … along the Red River south of Grandfield. Using the Mesonet and your fire weather products, I was able to relay to the first fire truck that was en route to the scene how fast the fire should burn and what the winds, soil and air temperatures would be at the scene. Because the spread component was high, we dispatched 2 more trucks to the scene even before the first truck arrived. The 3 trucks had the fire out within 30 minutes, quite possibly saving property and lives.”

– Tommy Thornton, Emergency Management Director
Cumulative Infection Hours for Spinach White Rust (Red = 10 year average; Orange – growing season ending in 2008; Brown – 2004; Blue – 2001; and Green = 1998.)
“The Mesonet has proven to be one of the most valuable production and marketing tools available to Oklahoma producers.... Mesonet data will play an increasing role in pesticide and fertilizer applications, prescribed burning, confined animal operations, and irrigation scheduling, to name a few.”

– Mark Hodges, Exec. Director, Oklahoma Wheat Commission
# Climate Information for Managing Risks

**University of Florida**

**June 11, 2008**

### Calendar Year: Jan 1, 2008 through Jun 5, 2008

<table>
<thead>
<tr>
<th>Climate Division</th>
<th>Total Rainfall</th>
<th>Departure from Normal</th>
<th>Pct of Normal</th>
<th>Driest since</th>
<th>Wettest since</th>
<th>Rank since 1921 (86 periods)</th>
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</thead>
<tbody>
<tr>
<td>Panhandle</td>
<td>3.37&quot;</td>
<td>-5.13&quot;</td>
<td>40%</td>
<td>1965-66 (3.22&quot;)</td>
<td>2005-06 (4.26&quot;)</td>
<td>3rd driest</td>
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<tr>
<td>N. Central</td>
<td>14.13&quot;</td>
<td>+0.97&quot;</td>
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<td>2005-06 (8.15&quot;)</td>
<td>2004 (14.32&quot;)</td>
<td>23rd wettest</td>
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<tr>
<td>Northeast</td>
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<td>+9.16&quot;</td>
<td>152%</td>
<td>2005-06 (13.89&quot;)</td>
<td>1989-90 (27.04&quot;)</td>
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<td>W. Central</td>
<td>11.16&quot;</td>
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<td>89%</td>
<td>2005-06 (7.96&quot;)</td>
<td>2004 (11.36&quot;)</td>
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</table>

### Percentage of Normal Rainfall

**Calendar Year**

**Jan 1, 2008 through Jun 5, 2008**

*Oklahoma Climatological Survey*

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“The OWRB depends upon the reliable and accurate real-time drought and water-resources information supplied through the Oklahoma Mesonet’s vast suite of products. In addition, OCS staff have voluntarily provided many custom weather monitoring products … greatly enhancing the state’s ability to monitor and respond to drought episodes. As a result, critical drought-related decisions can be made more quickly and more confidently.”

– Brian Vance, Oklahoma Water Resources Board
The blue ribbon panel believed the success of the Oklahoma Mesonet’s was built upon five pillars:

• Users were involved from day one.
• Products were developed in direct partnership with users.
• Strong partnerships existed with mission agencies and with research elements.
• Information was accessible from the beginning.
• Education of users and potential users was an important element of the program.
The Long-Term Societal Value: Research Productivity

Peer-Reviewed Articles Using Oklahoma Mesonet Data

292 total

M.S. Theses and Ph.D. Dissertations Using Oklahoma Mesonet Data

99 total
Questions?