



OKLAHOMA CLIMATOLOGICAL SURVEY

Unit Mini Vitae 2018

Faculty and Staff Highlights

The Oklahoma Climatological Survey team consisted of two faculty, 26 staff, three research scientists, and seven student employees in 2018. Our 2018 Employee of the Year award went to Mr. Kirk Wilson, while our Student of the Year award went to Ms. Alex Laney. We added two new technicians (Aaron Beckwith and Chris Bieschke) and two developers (Thomas Andrews and Tim Hiebert) in 2018.

Dr. Kevin Kloesel	Director and University Meteorologist
Dr. Chris Fiebrich	Associate Director & Executive Director of Mesonet
Gary McManus	State Climatologist
Dr. Mark Shafer	Associate State Climatologist & Director of SCIPP
Monica Deming	Assistant State Climatologist
Oklahoma Climatological Survey 120 David L. Boren Blvd., Suite 2900 Norman, OK 73072	

On 1 May, the Mesonet received the Governor's Office commendation for 20 years of outreach to the public safety community through the OK-First Program.

Funding

State funding totaled \$1.656 million while grant and revenue funding was \$1.192 million. The balance on OCS' foundation accounts was \$217,518. Active grants and contracts included:

- "Southern Climate Impacts Planning Program (SCIPP) Phase III," Sponsored by U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration
- "OU-ARS Cooperative Agreement," Sponsored by U.S. Department of Agriculture, Agricultural Research Service
- "Water and agro-ecosystem dynamics in watersheds under changing climate and land use," Sponsored by U.S. Department of Agriculture
- "South-Central Climate Science Center," Sponsored by U.S. Department of the Interior, U.S. Geological Survey
- "Southern Climate Impacts Planning Program (SCIPP) Phase II," Sponsored by U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration
- "Operation and Maintenance of the USDA/ARS Micronets," Sponsored by U.S. Department of Agriculture
- "Upgrade of the Mesonet's Sensing, Calibration, Computer, and Communication Systems," Sponsored by the National Science Foundation and Oklahoma State University
- "Development and Support of UAV Activities in the Oklahoma Mesonet," Sponsored by Stinger Ghaffarian Technologies
- "Oklahoma Mesonet Data Service," Sponsored by Department of Energy's Atmospheric Radiation Measurement Program
- "Oklahoma Mesonet Data Service," Sponsored by NASA-JPL

Student Highlights

We hired four new students during 2018: Jacob Genuise, Mesonet Student Operator; Daniela Spade, Ph.D. Graduate Research Assistant; James Cuellar, SCIPP Student Assistant; and Jacylyn Alger, summer

intern. We also hosted three REU students: Justin Bonds, Tim Corrie, and Zuleydian Roche-Rivera. Jacob Genuise was awarded the National Weather Association Foundation's Phillips Family Undergraduate Scholarship. Jack Dimpsey and Robert MacDonald presented posters at the Annual meeting of the American Meteorological Society.

Teaching Activities

Dr. Kevin Kloesel taught METR 4743 and served on one Ph.D. committee. Dr. Mark Shafer taught GEOG 3890, GEOG 5980, and GEOG 5990. Dr. Shafer served on five Master's Committees with two graduating (Melissa Wagner and Logan Gerber-Chavez) and seven Doctoral Committees. Dr. Brad Illston taught METR 2603 and served on one Master's Committee. Dr. Chris Fiebrich served on two Master's Committees with two graduating (Bryan Greene and Tyler Bell) and four Doctoral Committees.

Research Activities

Research was another area of emphasis, both internal and in support of outside efforts, utilizing data collected by the Oklahoma Mesonet. OCS staff produced or participated in two momentous publications during 2018. Kevin Kloesel served as lead author for "Southern Great Plains. Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II," along with co-authors Gary McManus and Mark Shafer. OK-First Program Manager James Hocker served as lead author on "The evolution and impact of a meteorological outreach program for public safety officials: An update on the Oklahoma Mesonet's OK-First program" published in *BAMS*, teaming with co-authors Kevin Kloesel, Andrea Melvin, and Chris Fiebrich. OCS staff published four additional peer-reviewed publications and presented over 20 meeting/conference preprints, including six at the Annual AMS meeting. A major update to the Mesonet Bibliography added 219 articles, 89 theses, and 153 dissertations using Mesonet data to our database. This brings the current totals to 955 articles, 204 theses, and 213 dissertations covering 1993-2018.

Outreach

Public and stakeholder outreach were again a prime focus of OCS during 2018, including the Oklahoma Mesonet's public safety, K-12, climate and data services, and agricultural programs. The Mesonet's public safety outreach program, OK-First, had its biggest training year in program history during 2018 with 438 public safety officials receiving training (exceeding the previous high mark of 425 set in 2017). The OK-First program had 694 active members in 2018, spanning a variety of public safety roles. OK-First certifies approximately 100 new members each year. The program received a special commendation from the Governor's Office for 20 years of outreach to the public safety community.

K-12 outreach participated in dozens of activities attended by thousands of students and adults. In June, OCS held their sixth Regents camp, "Partly Weather With A Chance Of Fun." Campers were challenged with contouring surface and upper air maps, charting upper air data on skew-T diagrams, and researching weather careers. Students had the opportunity to issue warnings with AWIPS systems provided by NOAA's Warning Decision Training Division. Staff traveled to ten school sites to give career presentations to 8th graders in support of the Oklahoma Regents for Higher Education's GearUP program. The National Weather Festival was held on Oct. 20 with thousands of attendees. Mesonet staff answered questions at the Crawford tower and inside near the OCS front office.

Agricultural outreach underwent a significant change during 2018 with the retirement of longtime Mesonet Extension Specialist Al Sutherland of Oklahoma State in August. Wes Lee, who had been in an assistant role to Al since March, assumed sole responsibility for those duties. The Mesonet's agricultural group was extremely busy during 2018 and didn't miss a beat with the personnel changes. They provided Mesonet booths at numerous meetings and conferences across the state, as well as providing informational talks concerning climate, weather and Mesonet products.

The Mesonet's Climate and Data Services (CDS) team's duties were driven by Oklahoma's weather and climate extremes, as well as customer requests. The year began with severe drought in place across Oklahoma's wheat belt and resulted in severe damage to Oklahoma's winter wheat crop. A substantial amount of time was spent providing input to the U.S. Drought Monitor report. The dry conditions also contributed to perhaps the largest wildfire outbreak in state history in April, with fire complexes burning more than 400,000 acres in the state. The drought and its impacts led to hundreds of information and media requests that were fulfilled by CDS team members. We organized and hosted the Oklahoma Drought Plan Advisory Meeting - the first significant step in revamping Oklahoma's outdated drought plan in more than two decades. Outreach staff produced 49 Mesonet Weather segments for OETA's SUNUP-TV program, airing most Saturday mornings and produced 133 Mesonet Tickers and 12 monthly press releases during 2018.

Field Operations and Sensors

During 2018, the Mesonet Calibration Lab and Sensor Development team completed 1700 sensor laboratory calibrations. Field Technicians made a total of 1259 site visits to repeaters, bases, Oklahoma Mesonet stations, and Little Washita and Fort Cobb ARS stations. The Mesonet's Field Operations, Calibration, and Quality Assurance teams resolved 675 trouble tickets and rotation tickets during 2018 in the three networks. A new Mesonet site was installed in Yukon to replace the decommissioned OKC North station, and a new site was installed in Seminole to replace the decommissioned Bowlegs station.

Technology Updates

Our IT staff support the IP networking to 250 remote weather stations, radio repeater towers, and data communications equipment at law enforcement agencies statewide, as well as servers at multiple physical locations and offsite cloud services. In 2018, we completed the addition of HTTPS encryption for all of our websites and set up an offsite NOAAPort data feed and backup capabilities at the Kessler Atmospheric and Ecological Field Station. Our IT staff also made a number of technology updates to our tools and products. We released updates to our field technician iPad app, our iPhone app, and our Android app. We also created a new website for our Micronets in the Little Washita and Fort Cobb Watersheds as part of our USDA-ARS contract.

Short Outlook for 2019

Our key focus in 2019 is to continue our efforts in re-writing our mesonet.org, OK-FIRE, OK-First, Ag, Research, and K-12 websites and tools into the more modular and mobile-friendly Drupal content management system. We also plan to launch our new high-resolution Oklahoma Fire Danger Model which will process daily imagery from the MODIS satellite. To ensure a reliable archive of Oklahoma climate data, we plan to complete our efforts to manually quality control the 1895-Present Cooperative Observer network dataset for Oklahoma and work with NCEI to update their official dataset with our findings.

Note: Quarterly and/or Annual Reports for SCIPP and Mesonet can be found on file at the Oklahoma Climatological Survey.

About OCS

The Oklahoma Climatological Survey, a research unit of the College of Atmospheric & Geographic Sciences at the University of Oklahoma, was established in 1980 to provide climatological services to the people of Oklahoma, conduct research on the impacts of climate on human activities, and serve as a support facility for the State Climatologist. OCS has a legislative mandate to acquire, process, and disseminate climate and weather data and information for use by the state's citizens. The Survey maintains an extensive array of climatological information, operates the Oklahoma Mesonet, and hosts a wide variety of educational outreach and scientific research projects.