

Dr. Christopher A. Fiebrich
The University of Oklahoma
Oklahoma Mesonet- Oklahoma Climatological Survey
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Education:

University of Oklahoma, Meteorology, Ph. D., 2007
University of Oklahoma, Meteorology, M.S., 2000
University of Oklahoma, Meteorology, B.S. (magna cum laude), 1998

Dissertation:

Transitioning the historical climate archives to data from newly automated sites--
Maintaining continuity in the temperature climate reco. University of Oklahoma,
169 pp. (Awarded the Dissertation Medal in Applied Climatology for 2009 from
the American Association of State Climatologists)

Professional Appointments:

**Adjunct Faculty, University of Oklahoma School of Meteorology, Norman, OK,
2015-Present**

Collaborate with University faculty, supervise and mentor School of Meteorology
students.

Executive Director, Oklahoma Mesonet, Norman, OK 2016-Present

Oversee all activities of the Oklahoma Mesonet, including sensor calibrations,
field operations, technology and software development, outreach, data and
climate services, research, and strategic planning.

Associate Director, Oklahoma Climatological Survey, Norman, OK, 2010-Present

Responsibilities include the supervision of over 50 staff including System
Administrators, Software Developers, Outreach Managers, Technical Scientists,
Climatologists, Research staff, and Administrative staff; administer personnel
actions including hiring, promoting and terminating staff; administer federal, state,
and international grants and contracts; oversee the Oklahoma Climatological
Survey budget of over \$4M.

Manager, Oklahoma Mesonet, Norman, OK, 2001-2016

Responsibilities include the management of all purchasing, fabrication, testing,
calibration, deployment, and maintenance of all sensors and related equipment
at 191 weather stations, 34 repeaters, and 52 bases across Oklahoma; oversees
the operation and scientific integrity of the sites, sensors, and data quality of the
Oklahoma Mesonet and the OKC and USDA-ARS Micronets; conduct and
publish research.

Quality Assurance Manager, Oklahoma Mesonet, Norman, OK, 1998-2001

Responsibilities included both daily and long-term quality control of data from the
Oklahoma Mesonet and associated Micronets; communicated findings to
Mesonet technicians when stations needed repairs; prepared reports of
instrument repairs and problems for use by the research community; developed
algorithms and research methodology for quality control software.

Intern, National Weather Service Headquarters, Silver Spring, MD, 1997-1998

Developed Model Output Statistics software; provided forecast verification for National Weather Service offices; researched and developed algorithms to quality control weather station data.

Notable Awards, Honors, Memberships, and Activities

External Advisory Committee, Center for Analysis and Prediction of Storms, 2018-Present

Steering Committee Member, American Association of State Climatologists Mesonet Committee, 2017-Present

Review Panel, NOAA Air Resources Laboratory, 2016

Scientific Advisory Board for NSF Project “Algorithms and Cyberinfrastructure for High-Precision Automated Quality Control of Hydro-Meteo Sensor Networks”, Oregon State University, 2015-2018

Hired as consultant to work on World Bank-sponsored modernization of meteorological services in Yemen, 2014-2017

Certified Consulting Meteorologist, American Meteorological Society, 2014-Present.

Presented at World Meteorological Organization Technical Conference on Meteorological and Environmental Instruments and Methods of Observations, Brussels, Belgium, October 2012

Presented at Canadian Meteorological and Oceanographic Society, Montreal, Canada, May 2012.

Member, Cooperative Institute for Mesoscale Meteorological Studies Assembly of Fellows, 2012-2015.

Invited Presentation to the Korea Meteorological Administration, Seoul, Korea: “Quality Assurance Procedures for Mesoscale Meteorological Data: An Essential Ingredient to Become a Top Tier Federal Weather Service”, Oct 2010.

Awarded the Dissertation Medal in Applied Climatology from the American Association of State Climatologists, 2009.

Hired to review Korea Meteorological Administration weather network and develop a roadmap for modernization through on-site visits to Seoul, Jeju Island, Busan, Daegu, Andong, and Daegwallyeong, Nov 2009

Member, American Meteorological Society Committee on Measurements, 2008-2014.

Associate Member, American Association of State Climatologists, 2007-Present

Served on National Ecological Observing Network Design Review Panel, Boulder, CO, 2006-2009.

Served on National Ecological Observing Network Technical Working Group, 2011-2017.

Served on American Nuclear Society’s Meteorology and Wildland Fires Standard Working Group, 2017-Present.

Attended Swiss Climate Research Summer School, Grindelwald, Switzerland, Aug 2006

Member, American Society for Testing and Materials International Committee on Meteorology, 2003-2010.

Member, American Meteorological Society, 1998-Present.

Served on U.S. Climate Reference Network Science Review Panel and Test Review Panel, National Climatic Data Center, Asheville, NC, 2003-2006.

Organized Mesonet 2002 Institute with over 25 states and countries represented, Oklahoma City, June 2002.

Awarded David James Shellberg Memorial Scholarship, 2000.

Awarded Graduate Fellowship, National Science Foundation, 1998-2000.

Awarded WeatherData, Inc., Scholarship for Excellence in Weather Forecasting, 1996.

Recipient of University of Oklahoma Award of Excellence, 1993.

Volunteer Work

Monroe Elementary WatchD.O.G.S. volunteer one day per month during the school year, 2007-2018.

Monroe Elementary Outdoor Classroom Committee Chair, 2014-2018

Cleveland County Habitat for Humanity, construction of the 833 S.W. 10th St, Moore, Oklahoma home, 2014.

Publications

Duchon, C.E., C. A. Fiebrich, and B. G. Illston, 2017: Observing the May 2015 record rainfall at Norman, Oklahoma using various methods. *J. Hydromet.* **18**, 3043-3049. DOI: <https://doi.org/10.1175/JHM-D-17-0137.1>

Wang, T., Q. Liu, T.E. Franz, R. Li, Y. Lang, C.A. Fiebrich, 2017: Spatial patterns of soil moisture from two regional monitoring networks in the United States. *Journal of Hydrology*, **552**, 578-585.

Martens, B. V., B. G. Illston, and C. A. Fiebrich, 2017: The Oklahoma Mesonet: A case study of the diverse state of environmental sensor data citations. *Data Sci. J.*, **16**:47, 1-15. DOI: <https://doi.org/10.5334/dsj-2017-047>

Illston, B., and C. Fiebrich, 2017: Horizontal and vertical variability of observed soil temperatures. *Geosciences Data Journal*, **4**, 40-46.

Mahmood, R., R. Boyles, K. Brinson, C. Fiebrich, S. Foster, K. Hubbard, D. Robinson, J. Andresen, and D. Leathers, 2016: Mesonets: meso-scale weather and climate observations for the U.S. *Bull. Amer. Meteor. Soc.*, in press. DOI: <http://dx.doi.org/10.1175/BAMS-D-15-00258.1>

Ziokowska, J.R., C.A. Fiebrich, J.D. Carlson, A.D. Melvin, A.J. Sutherland, K.A. Kloesel, G.D. McManus, B.G. Illston, J.E. Hocker, and R. Reyes, 2017: Benefits and beneficiaries of the Oklahoma Mesonet: a multisectoral ripple effect analysis. *Wea. Climate Soc.*, **9**, 499-519.

Lin, X., R.A. Pielke Sr., R. Mahmood, C.A. Fiebrich, and R. Aiken, 2015: Observational evidence of temperature trends at two levels in the surface layer. *Atmos. Chem.*

Phys., **16**, 827-841, doi:10.5194/acp-16-827-2016.

- Guzman, J. A., M.L. Chu, P.J. Starks, D.N. Moriasi, J.L. Steiner, C.A. Fiebrich, and A.G. McCombs, 2014: Upper Washita River experimental watersheds: Data screening procedure for data quality assurance. *J. Environ. Qual.*, **43**, 1250-1261.
- Duchon, C., C. Fiebrich, and D. Grimsley, 2014: Using high-speed photography to study undercatch in tipping-bucket rain gauges. *J. Atmos. Ocean. Tech.*, **31**, 1330-1336.
- Starks, P.J., C.A. Fiebrich, D.L. Grimsley, J.D. Garbrecht, J.L. Steiner, J.A. Guzman, and D.N. Moriasi, 2014: Upper Washita River experimental watersheds: Meteorologic and soil climate measurement networks. *J. Environ. Qual.*, **43**, 1239-1249.
- Scott, B.L., T.E. Ochsner, B.G. Illston, C.A. Fiebrich, J.B. Basara, and A. Sutherland, 2013: New soil property database improves Oklahoma Mesonet soil moisture estimates, *J. Atmos. Ocean. Tech.*, **30**, 2585-2595.
- Illston, B. G., C. A. Fiebrich, D. L. Grimsley, and J. B. Basara, 2013: Evaluation of a heat dissipation sensor for in situ measurement of soil temperature. *Soil Sci. Soc. Of Amer. J.*, **77** (3), 741-747.
- McManus, G., T. W. Schmidlin, and C. A. Fiebrich, 2013: A new minimum temperature record for Oklahoma. *Bull. Amer. Meteor. Soc.*, **94**, 469-470.
- Basara, J. B., B. G. Illston, C. A. Fiebrich, P. D. Browder, C. R. Morgan, A. McCombs, J. P. Bostic, R. A. McPherson, A. J. Schroeder, and K. C. Crawford, 2010: The Oklahoma City Micronet. *Meteorological Applications*, **18**, 252-261.
- Fiebrich, C. A., C. R. Morgan, A. G. McCombs, P. K. Hall, Jr., and R. A. McPherson, 2010: Quality assurance procedures for mesoscale meteorological data. *J. Atmos. Oceanic Technol.*, **27**, 1565-1582.
- Fiebrich, C. A., and K. C. Crawford, 2009: Automation: A step toward improving the quality of daily temperature data produced by climate observing networks. *J. Atmos. Oceanic Technol.*, **26**, 1246-1260.
- Basara, J. B., B. G. Illston, T. E. Winning, and C. A. Fiebrich, 2009: Evaluation of rainfall measurements from the WXT510 sensor for use in the Oklahoma City Micronet. *The Open Atmospheric Science Journal*, **3**, 39-47. Doi: 10.2174/1874282300903010039.
- Fiebrich, C.A., 2009: History of surface weather observations in the United States. *Earth-Science Reviews*, **93**, 77-84.

- Illston, B. G., J. B. Basara, D. K. Fisher, R. Elliott, C. A. Fiebrich, K. C. Crawford, K. Humes, and E. Hunt; 2008: Mesoscale monitoring of soil moisture across a statewide network. *J. Atmos. Oceanic Technol.*, **25**, 167-182.
- Fiebrich, C. A., 2007: Transitioning the historical climate archives to data from newly automated sites-- Maintaining continuity in the temperature climate record. Ph. D. Dissertation, University of Oklahoma, 169 pp.
- McPherson, R. A., C. A. Fiebrich, K. C. Crawford, R. L. Elliott, J. R. Kilby, D. L. Grimsley, J. E. Martinez, J. B. Basara, B. G. Illston, D. A. Morris, K. A. Kloesel, S. J. Stadler, A. D. Melvin, A.J. Sutherland, and H. Shrivastava, 2007: Statewide Monitoring of the Mesoscale Environment: A Technical Update on the Oklahoma Mesonet. *J. Atmos. Oceanic Technol.*, **24**, 301-321.
- Fiebrich, C. A., D. L. Grimsley, R. A. McPherson, K. A. Kesler, and G. R. Essenberg, 2005: The value of routine site visits in managing and maintaining quality data from the Oklahoma Mesonet. *J. Atmos. Oceanic Technol.*, **23**, 406-416.
- Fiebrich, C. A., J. E. Martinez, J. A. Brotzge, and J. B. Basara, 2003: The Oklahoma Mesonet's skin temperature network. *J. Atmos. Oceanic Technol.*, **20**, 1496-1504.
- Fiebrich, C. A., and K. C. Crawford 2001: The impact of unique meteorological phenomena detected by the Oklahoma Mesonet and ARS Micronet on automated quality control. *Bull. Amer. Meteor. Soc.*, **82**, 2173-2187.
- Shafer, M. A., C. A. Fiebrich, D. S. Arndt, S. E. Fredrickson, and T. W. Hughes, 2000: Quality assurance procedures in the Oklahoma Mesonet. *J. Atmos. Oceanic Technol.*, **17**, 474-494.

Conference Preprints:

- Chilson, P.B., A. R. Segales Espinosa, B. Greene, J. Salazar, A. Umeyama Matsumoto, C. A. Fiebrich, R. Huck, J. Grimsley, M. B. Yearly, R. D. Palmer, M. E. Weber, K. Carson, and S. Teja Kanneganti, 2018: Development of an autonomous UAV atmospheric profiling system: Initial implementation and first results. *19th Symp. On Meteorological Observation and Instrumentation*, Austin, TX, Amer. Meteor. Soc., January 2018.
- Greene, B., P.B. Chilson, J. Salazar, S. Duthoit, A. Segales, C. Fiebrich, W. Doyle, B. Wolf, S. Waugh, S.E. Fredrickson, S.P. Oncley, L. Tudor, and S. Semmer, 2018: Optimization of rotary-wing UAS as an atmospheric sensing platform. *19th Symp. On Meteorological Observation and Instrumentation*, Austin, TX, Amer. Meteor. Soc., January 2018.

Chilson, P.B., C. A. Fiebrich, R. Huck, J. Grimsley, J. Salazar-Cerreno, K. Carson, K and J. Jacob, 2017: The 3D Mesonet Concept: Extending Networked Surface Meteorological Tower Observations Through Unmanned Aircraft Systems, *Atmospheric Sciences Program AGU*, New Orleans, LA, December 2017.

Greene, B., P. Chilson, J. Salazar-Cerreno, S. Duthoit, B. Doyle, B. Wolf, A. Segales, C. A. Fiebrich, S. Waugh, S. Fredrickson, S. Oncley, L. Tudor, and S. Semmer, 2017: Development of Rotary-Wing UAS for Use in Atmospheric Sensing of Near-Storm Environments, *Atmospheric Sciences Program AGU*, New Orleans, LA, December 2017.

Chilson, P., C. Fiebrich, R. Huck, J. Grimsley, J. Salazar-Cerreno, K. Carson, J. Jacob, B. Greene, A. Segales, A.Y. Umeyama, S. Duthoit, and J. Martin, 2017: The 3D Mesonet concept: Extending networked surface meteorological tower observations through unmanned aircraft systems. *Int'l Symp on Earth-Science Challenges*, Kyoto, Japan, October 2017.

Greene, B. P. Chilson, J. Salazar-Cerreno, S. Duthoit, B. Doyle, B. Wolf, T. Segales, C. Fiebrich, S. Waugh, and S. Fredrickson, 2017: Calibration and Validation of Weather Sensors for Rotary-Wing UAS. *5th Conf. of the Int'l Society for Atmospheric Research using Remotely-piloted Aircraft*, Oban Scotland, May 2017.

Tate, R.A., D.L. Grimsley, and C.A. Fiebrich, 2016: New All In One Sensors- Looking Into the Future of Meteorological Instrumentation Packages, *18th Symposium on Observations and Instrumentation*, New Orleans, LA, Amer. Meteor. Soc., January 2016.

Duchon, C.E., C.A. Fiebrich, and B.G. Illston, 2016: Ground Level and Aboveground Observations of Record Rainfall in May 2015 in Oklahoma. *22nd Conf. on Applied Climatology*, New Orleans, LA, Amer. Meteor. Soc., January 2016.

Sellers, M.A., C.A. Fiebrich, and C.R. Luttrell, 2016: A Comparison Of 20 Years Of Automated And Manual Rainfall Observations At Over 250 Locations Across Oklahoma. *22nd Conf. on Applied Climatology*, New Orleans, LA, Amer. Meteor. Soc., January 2016.

Sallee, B.M., T.E. Ochsner, C. Fiebrich and C. Neel, 2014: Estimating Groundwater Recharge Using the Oklahoma Mesonet. *Oklahoma Water Research Symposium*, Oklahoma City, Oklahoma. October 2014.

Sallee, B.M., T.E. Ochsner, C. Fiebrich and C. Neel, 2014: Estimating Groundwater Recharge Using the Oklahoma Mesonet. *ASA-CSSA-SSSA International Annual Meeting*, Long Beach, California. November 2014.

- King, Jonathan, and C. Fiebrich, 2015: Enhancing the rainfall archive of the Oklahoma Mesonet by installing dual gauges. *14th Annual Student Conference*, Phoenix, AZ, Amer. Meteor. Soc., January 2015.
- Tomaszewski, Jessica M., and C. Fiebrich, 2015: Operating a surface mesonet during extreme weather events. *14th Annual Student Conference*, Phoenix, AZ, Amer. Meteor. Soc., January 2015.
- Stalker, S. L., M. K. Corbett, K. A. Kloesel, C. A. Fiebrich, J. Hocker, A. Melvin, and D. Mattox, 2014: How weather decisions are made in schools: the first step in weather ready schools. *23rd Symposium on Education*, Atlanta, GA, Amer. Meteor. Soc., February 2014.
- Corbett, M. K., S. L. Stalker, K. A. Kloesel, C. A. Fiebrich, J. Hocker, A. Melvin, 2014: Weather ready schools and weather education: what are our students being taught? *23rd Symposium on Education*. Atlanta, GA, Amer. Meteor. Soc., February 2014.
- Morrissey, M., P., Masale, C. Fiebrich, J. S. Greene, and S. Postawko, 2014: Pacific climate services capacity building in cooperation with Pacific Island Country Meteorological Offices and NOAA, a case study in the country of Vanuatu. *26th Conf. on Climate Variability and Change*. Atlanta, GA, Amer. Meteor. Soc., February 2014.
- McCombs, A. G., A. J. Ilk, and C. A. Fiebrich, 2014: Effects of nearby irrigation on Oklahoma Mesonet observations. *18th Conf. on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface*. Atlanta, GA, Amer. Meteor. Soc., February 2014.
- Illston, B. G., C. A. Fiebrich, and D. Grimsley, 2013: Utilizing a Campbell Scientific 229 matric potential sensor as an operational soil temperature sensor. *3rd Conf. on Transition of Research to Operations*, Austin, TX, Amer. Meteor. Soc., January 2013.
- Hocker, J., A. Melvin, K. Kloesel, and C. Fiebrich, 2013: Oklahoma's OK-First weather education program for emergency managers: 15 years of lessons learned and a look towards the future. *22nd Symposium on Education*. Austin, TX, Amer. Meteor. Soc., January 2013.
- Fiebrich, C. A., K. Kloesel, D. Grimsley, G. McManus, A. McCombs, and C. Luttrell, 2013: The Oklahoma Mesonet: Evolution from real-time weather network to climate network. *20th Conf. on Applied Climatology*. Austin, TX, Amer. Meteor. Soc., January 2013.
- Illston, B. G., N. E. Bain, C. A. Fiebrich, J. B. Basara, R. Jabrzemski, and B. Vassmer, 2013: Leveraging decadal averages of mesoscale observations from the

- Oklahoma Mesonet to provide decision-makers enhanced tools. *20th Conf. on Applied Climatology*. Austin, TX, Amer. Meteor. Soc., January 2013.
- Duchon, C., C. A. Fiebrich, and D. L. Grimsley, 2013: Using high-speed photography to study undercatch in tipping-bucket rain gauges. *European Geosciences Union General Assembly*, Vienna, Austria, April 2013.
- Taylor, J.R., H. Luo, E. Ayres, C. Fiebrich, S. Berukoff, and H. W. Loescher, 2011: Data flows for NEON's fundamental instrument unit: Quality assurance and quality control approaches. *96th ESA Conference*, Austin, TX, August 2011.
- Morgan, C. R., G. R. Essenberg, K. C. Crawford, and C. A. Fiebrich, 2007: Improved accuracy in measuring precipitation with the NERON network in New England. *14th Symposium on Meteorological Observations and Instrumentation*, San Antonio, TX, Amer. Meteor. Soc., January 2007.
- Fiebrich, C. A., R. A. McPherson, C. C. Fain, J. R. Henslee, and P. D. Hurlbut: An end-to-end quality assurance system for the modernized COOP network. *15th Conference on Applied Climatology*, Savannah, GA. Amer. Meteor. Soc., June 2005.
- Martinez, J. E., C. A. Fiebrich, and R. A. McPherson: The value of weather station metadata. *15th Conference on Applied Climatology*, Savannah, GA, Amer. Meteor. Soc., June 2005.
- Martinez, J. E., C. A. Fiebrich, and M. A. Shafer: The value of a quality assurance meteorologist. *14th Conference on Applied Climatology*, Seattle, WA, Amer. Meteor. Soc., January 2004.
- Illston, B. G., J. B. Basara, C. A. Fiebrich, M. Wolfenbarger, G. McManus, and D. Arndt: Real-time soil moisture information for drought monitoring and assessment. *14th Conference on Applied Climatology*, Seattle, WA, Amer. Meteor. Soc., January 2004.
- Fiebrich, C. A., D. L. Grimsley, and S. J. Richardson: The impact of a major ice storm on the operations of the Oklahoma Mesonet. *18th International Conference on Interactive Information and Processing Systems (IIPS) for Meteorology, Oceanography, and Hydrology*, Orlando, FL, Amer. Meteor. Soc., January 2002.
- Fiebrich, C. A., and R. A. McPherson: An examination of the impact of harvested winter wheat fields on summer air temperature in Oklahoma. *The 98th Association of American Geographers Annual Meeting*, Los Angeles, CA, March 2002.
- Fiebrich, C. A., and K. C. Crawford: An investigation of significant low-level temperature inversions as measured by the Oklahoma Mesonet. *10th Symp. On*

Meteorological Observations and Instrumentation, Phoenix, AZ, Amer. Meteor. Soc., January 1998.

Fiebrich, C. A., V. J. Dagostaro, and J. P. Dallavalle, 1997: An algorithm to eliminate precipitation reports caused by surface condensation in AEV-ASOS data. TDL Office Note 97-2, National Weather Service, NOAA, U.S. Department of Commerce, 6 pp.

Referee Activities

Weather and Forecasting; Journal of Applied Meteorology; Journal of Atmospheric and Oceanic Technology; Journal of Geophysical Research; Journal of Hydrologic Engineering; Atmospheric Research; Open Atmospheric Science Journal; Bulletin of the American Meteorological Society; Vadose Zone; Arctic; Journal of Applied Meteorology and Climatology; Acta Geophysica; National Science Foundation