XINGANG FAN

Ph.D., Professor 08/2025

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EDUCATION

1993 – 1996 **Ph.D.,** in ***Atmospheric Sciences,*** Lanzhou University, China
1990 – 1992 **M.S.,** in ***Atmospheric Sciences,*** Lanzhou Institute of Plateau Atmospheric Physics, Chinese
1985 – 1989 **B.S.,** in ***Meteorology*****,** Lanzhou University, China

PROFESSIONAL EXPERIENCES

2020–present **Professor, Graduate Faculty,** Department of Earth, Environmental, and Atmospheric Sciences, Western Kentucky University (WKU)
2015 – 2020 **Associate Professor, Graduate Faculty,** Department of Geography and Geology, Western Kentucky University (WKU)
2015–present **Visiting Professor,** Chengdu University of Information Technology
2009 – 2014 **Assistant Professor, Graduate Faculty,** Department of Geography and Geology, WKU
2012 – 2013 **Visiting Professor,** Institute of Atmospheric Physics, Chinese Academy of Sciences (CAS)
2008 – 2009 **Research Assistant Prof.,** Geosystems Research Institute, Mississippi State University
2003 – 2007 **Research Associate,** Geophysical Institute, University of Alaska Fairbanks
2001 – 2003 **Post-doctoral Fellow**, Geophysical Institute, University of Alaska Fairbanks
2000 – 2001 **Visiting Research Scholar**, Geophysical Institute, University of Alaska Fairbanks
1998 – 2000 **Research Associate Professor**, Center for Severe Weather Research, Chinese Academy of Meteorological Sciences (CAMS), China Meteorological Administration (CMA)
1996 – 1998 **Post-doctoral Fellow**, Department of Atmospheric Sciences, Nanjing University, China
1993 – 1994 **Teaching Assistant**, Department of Atmospheric Sciences, Lanzhou University, China
1992 – 1996 **Assistant Researcher**, Lanzhou Institute of Plateau Atmospheric Physics, CAS

TEACHING

1. **Traditional Courses** (Assistant Professor, Graduate Faculty, WKU)**:**

2009 – 2025 METR 121, *Meteorology*
METR 322, *Global Climate Systems*
METR 422/522, *Physical Climatology*
METR 430, *Computing Meteorology*
METR 438/538, *Physical Meteorology*

METR 439/539

GEOG 103, *Our Dynamic Planet*

2. **Independent Study/Research** (Assistant Professor, Graduate Faculty, WKU)**:**

2009 – 2025 METR 475 (*Various topics*)

GEOG 475 (*Various topics*)

NSF-REU, *Urban Weather Modeling – REU advising*

3. **Graduate Student Advisor:**

2025 – 2027 Nana Pinkrah, Joycelyn Adjekum

2018 – 2019 Gerardo Diaz, M.Sci in Climate Science

2014 – 2016 *Zachary Sullivan, M.Sci. in Climate Science* (Advisor, Western Kentucky University)

2010 – 2011 *Liang Chen, Ph.D. in Climate Science* (Co-Advisor, Institute of Atmospheric Physics, Chinese Academy of Sciences; Supervisor, Western Kentucky University)

4. **Graduate Student Committee (recent):**

2023 – 2024 Victor Towujo

2024 – 2025 Olufemi Aina

2024 – 2025 Samuel Davidson

RESEARCH INTERESTS

☆ **(Improve) Weather/Climate Prediction – the Ultimate Goal**

- Numerical weather prediction – modeling
  - Data assimilation to improve model initial/boundary conditions
    - Theory of data assimilation
    - Utilization of historical information
    - Satellite data assimilation
  - Improving model physics
    - Soil heat transfer
    - Karst representation
    - Karst parameterization
- Land-atmosphere interaction
  - Soil temperature and seasonal predictability
  - Karst landscape impact on weather/climate
  - Reforestation/afforestation and regional climate (e.g., Loess Plateau)
- Radar meteorology
  - Array Weather Radar
  - Radar data fusion
- Public health and atmospheric environment
  - Pollution and diseases
  - Atmospheric conditions for pollution and air quality
- Climate change and variability
  - Atmospheric teleconnections
  - Low-frequency climate signals in atmosphere and global oceans for prediction
  - Downscaling of projected climate for high resolution applications
  - Climatology of extreme events and hazards: hurricanes, tornados, heat wave, flood, drought

- Climate predictability
  - Nonlinear dynamics
  - Predictability of the climate – strange attractor of chaotic system
  - Soil temperature vs. sea surface temperature in extending predictability

RESEARCH PROJECTS/GRANTS

1. External Grants, Fellowships, and Scholarships:

2024 – 2029 *Climate Resilience through Multidisciplinary Big Data Learning, Prediction & Building Response Systems (CLIMBS).* National Science Foundation EPSCoR Track 1. 2024-2029. Sub-award to UK submission. Suriano, Z.J., Oliver, D., Brotgze, J., Durkee, J., Fan, X., Goodrich, G. (Total $20,000,000; WKU Portion $2.1M).

2013 – 2018 (international collaborative project), Ma, Z. (PI), **X. Fan (Investigator)**, R. Mahmood, and collaborators, *The regional climate and hydrological effects of reforestation in the Loess Plateau*, Chinese National Science Foundation. (Equivalent to $180,000)

2009 – 2013 **Fan, X. (PI)**, Z. Fan, V. Anantharaj, *Sustainable management of coastal forest ecosystems under a changing climate in the Northern Gulf of Mexico*, National Aeronautics and Space Administration. ($360,000)

2008 – 2009 **Fan, X. (Investigator)**, *1) A rapid prototyping capability experiment to evaluate potential soil moisture retrievals of Aquarius radiometer and scatterometer*; *2) A rapid prototyping capability experiment to evaluate CrIS ARMS observations for urban modeling applications*, National Aeronautics and Space Administration.National Aeronautics and Space Administration. (Two components of a $9,600,000 grant: Rapid Prototyping Capabilities for Earth-Sun System Sciences)

2006 – 2008 Zhang, J. (PI), **X. Fan (Co-PI)**, *Beaufort Sea mesoscale meteorology model study*, Mineral Management Services, Department of Interior. ($350,000)

2006 – 2008 Atkinson, D., C. Lingle, U. Baht, **X. Fan (Co-PI)**, and J. Zhang, *Social vulnerability to climate change in the Alaska coastal zone*, National Oceanic and Atmospheric Administration. ($370,000)

2005 – 2006 **Fan, X. (PI)**, *Ensemble assimilation of multi-satellite products via hybrid approaches*, University Partnering for Operational Support, a joint project with Johns Hopkins University, funded by the Department of Defense. ($106,000)

2004 – 2006 **Fan, X. (Key Investigator)**, *An Arctic system reanalysis*, National Oceanic and Atmospheric Administration. ($100,000)

2004 – 2005 **Fan, X. (PI)**, *Assimilation of MODIS products in an Arctic MM5/3DVAR system*, University Partnering for Operational Support, a joint project with Johns Hopkins University, funded by the Department of Defense. ($161,000)

2004 – 2005 **Fan, X. (Key Investigator)**, *Arctic Extreme Weather Events,* Weather Initiatives/CAMP (Climate of the Arctic: Modeling and Processes), Cooperative Institute for Alaska Research/National Oceanic and Atmospheric Administration. ($100,000)

2003 – 2004 **Fan, X. (PI)**, *MM5 "Hot Start" with diabatic initialization using satellite data*, University Partnering for Operational Support, a joint project with Johns Hopkins University, funded by the Department of Defense. ($150,000)

2000 – 2002 **Fan, X. (Investigator)**, *Arctic MM5 modeling and data assimilation*, University Partnering for Operational Support, a joint project with Johns Hopkins University, funded by the Department of Defense. ($500,000)

2000 – 2002 **Fan, X. (PI)**, *Four-dimensional variational assimilation of satellite infrared radiances in a nonhydrostatic mesoscale model*, Chinese Natural Science Foundation. (equivalent to $40,000)

1999 – 2000 **Fan, X. (PI)**, *Application of 4-dimensional assimilation and retrieval techniques in mesoscale heavy rain systems*, Chinese Academy of Meteorological Sciences/China Meteorological Administration. (equivalent to $2,500)

1998 – 2000 **Fan, X. (PI)**, *Theory and method of assimilating mesoscale cloud and precipitation data*, Chinese National Key Program "Disastrous Weather and Climate Prediction Theory", Chinese Department of Science and Technology. (equivalent to $40,000)

2. Internal Grants, Fellowships, and Scholarships:

2025 – 2026 **Faculty Advisor**, *Jalyn Radford – Developing A Severe Weather Risk Distribution Methodology Using Atmospheric Reanalysis Data,* Faculty Undergraduate Student Engagement (FUSE) Grant, Western Kentucky University. ($3,000)

2024 Fan, X., Course redevelopment – METR 121 Meteorology, WKU CITL ($2,000)

2023 – 2024 **Faculty Advisor**, *Jackson Powers – The Influence of Climate Change on Out-Of-Season Tornadoes in Kentucky,* Faculty Undergraduate Student Engagement (FUSE) Grant, Western Kentucky University. ($3,000)

2023 – 2024 **Faculty Advisor**, *Zachariah Shrader – Tornadic wind field interception survey,* Faculty Undergraduate Student Engagement (FUSE) Grant, Western Kentucky University. ($3,000)

2019 – 2020 **Fan, X. (PI)**, *Exploring inter-relationships among land surface processes for predicting regional climate*, Interdisciplinary Research and Creativity Activities Program (iRCAP), Western Kentucky University. ($16,000)

2014 – 2015 **Faculty Advisor**, *Chi Fai Wong – Estimating historical croplands distribution over the past 2220 years in China,* Faculty Undergraduate Student Engagement (FUSE) Grant, Western Kentucky University. ($3,500)

2014–Present **Thesis Advisor**, *Zachary Sullivan – Karst weather modeling study*, Graduate Student Research Fellowship (GSRF), Graduate School, Western Kentucky University. ($15,000 for 2014-2015, renewable for 2015-2016)

2013 – 2014 **Faculty Advisor**, *Chris Johnson – Influence of karst landscape on weather systems: A WRF model study on responses for different vegetation and soil types,* Faculty Undergraduate Student Engagement (FUSE) Grant, Western Kentucky University. ($3,500)

2013 – 2014 **Fan, X. (PI)**, C. Groves (Co-PI), J. Polk (Co-PI), J. Yan (Co-PI), *Coupled landscape-atmosphere interactions: Improved atmospheric computer modeling in the central US karst region through incorporation of real-world hydrological data*, Interdisciplinary Research and Creativity Activities Program (iRCAP), Western Kentucky University. ($20,000)

2010 – 2011 **Fan, X. (PI)**, *Climate downscaling for regional applications*, New Faculty Scholarship, Western Kentucky University. ($4,000)

CONTRIBUTIONS

1. Peer-Reviewed Journal Publications (student)

Su, D., J. Zhong, Y. Xu, L. Lv, H. Liu, X. Fan, L. Han, F. Wang (2024): SAL Method Applied in Grid Forecasting Product Verification with Three-source Fusion Product. *Atmosphere*. **15**(11), 1366; https://doi.org/10.3390/atmos15111366.

Wang, H., Y. Yan, K. Long, Q. Chen, X. Fan, F. Zhang, L. Tan, (2022). Relationships between rapid urbanization and extreme summer precipitation over the Sichuan-Chongqing area of China. Frontiers in Earth Science, DOI: 10.3389/feart.2022.909547.[Web version]

Tang, S., Li, R., He, J., Fan, X., Wang, H., Yao, S. (2021). Seasonal Error Component Analysis of the GPM IMERG Version 05 Precipitation Estimations over Sichuan Basin of China. *Earth and Space Science*, **9**(1): e2020EA001259. [Web version]

Ma, P., Zhang, Y., Wang, X., Fan, X., Chen, L., Hu, Q., Wang, S., Li, T. (2021). Effect of diurnal temperature change on cardiovascular risks differed under opposite temperature trends. *Environmental Science and Pollution Research*, **28**, 39882–39891. [Web version]

Zhang, Y., Zhang, X., Fan, X., Ni, C., Sun, Z., Wang, S., Fan, J., Zheng, C. (2020). Modifying effects of temperature on human mortality related to black carbon particulates in Beijing, China. *Atmospheric Environment,* **43**: 117845. [Web version]

Ma, P., S. Wang, L. Chen, X. Zhang, X. Fan, N. Zhou, T. Li, Y. Zhang, 2020: Independent influences of extreme atmospheric pressure on hypertension-related ER visits. *Air Quality, Atmosphere & Health*, DOI: 10.1007/s11869-020-00859-x. [Web version]

Yang, L., Y. Wang, Z. Wang, Q. Yang, X. Fan, F. Tao, X. Zhen, Z. Yang, 2020: Automatic identification of clear-air echoes based on millimeter-wave cloud radar measurements. *Advances in Atmospheric Sciences*, **37**, 912-924. DOI: 10.1007/s00376-020-9270-z. [Web version]

Ma, P., S. Wang, J. Zhou, T. Li, X. Fan, J. Fan, S. Wang, 2020: Meteorological rhythms of respiratory and circulatory diseases revealed by harmonic analysis. *Heliyon*, **6**(5), e04034, DOI: 10.1016/j.heliyon.2020.e04034. [Web version]

Tang, S., R. Li, J. He, H. Wang, X. Fan, S. Yao, 2020: Comparative evaluation of the GPM IMERG Early, Late, and Final hourly precipitation using the CMPA data over Sichuan Basin of China. *Water*, **12**(2), 554; DOI: 10.3390/w12020554. [HTML; PDF]

Zhang, Y., X. Fan, X. Zhang, P. Ma, S. Wang, C. Zheng, 2019: Moderately cold temperatures associates with high cardiovascular disease mortality in China. *Air Quality, Atmosphere & Health*, DOI: 10.1007/s11869-019-00740-6. [Web version]

Ye, K., L. Yang, S. Ma, X. Zhen, X. Fan, 2019: Fusion of High-Resolution Reflectivity for a New Array Weather Radar. *Atmosphere*, **10**, 566. DOI: 10.3390/atmos10100566. [Web version]

Wang, J., **X. Fan**, Y. Zhang, J. Yang, Y. Du, and J. He, 2019: Methods for assessing and optimizing solar orientation by non-planar sensor arrays. Sensors, 19(11), 2561, DOI: 10.3390/s19112561. [HTML; PDF]

Yang, L., Y. Fu, Z. Wang, X. Zhen, Z. Yang, **X. Fan**, 2019: An optimized level set method based on QPSO and fuzzy clustering. IEICE Transactions on Information and Systems, E102.D (5), 1065-1072. DOI: 10.1587/transinf.2018EDP7132. [Web version]

Zhang, Y., S. Wang, **X. Fan**, J. Xin, Y. Cheng, 2019: A temperature indicator for heavy air pollution risks (TIP). Science of The Total Environment, 678, 712-720. DOI: 10.1016/j.scitotenv.2018.05.006. [Web version]

Cao, Y., D. Su, **X. Fan**, H. Chen, 2019: Evaluating the algorithm for correction of the bright band effects in radar-based QPEs with S-, C-, and X-band dual-polarized radars. Advances in Atmospheric Sciences. 36(1), 41-54. DOI: 10.1007/s00376-018-8032-7. [Web version]

Ma, P., J. Zhou, S. Wang, T. Li, **X. Fan**, J. Fan, J. Xie, 2018: Differences of hemorrhagic and ischemic strokes in age spectra and responses to climatic thermal conditions. Science of the Total Environment. 644, 1573-1579. DOI: 10.1016/j.scitotenv.2018.07.080. [Web version]

Zhang, Y., S. Wang, **X. Fan**, X. Ye, 2018: Temperature modulation of the health effects of particulate matter in Beijing, China. Environ Sci Pollut Res. DOI: 10.1007/s11356-018-1256-3. [Web-view-only version]

Johnson, C.M., **X. Fan**, R. Mahmood, C. Groves, J.S. Polk, J. Yan, 2018: Evaluating weather research and forecasting model sensitivity to land and soil conditions representative of karst landscapes. *Boundary-Layer Meteorology*, **166**(3), 503-530. DOI 10.1007/s10546-017-0312-8.

Yang, Q., Z. Ma, **X. Fan**, Z.-L. Yang, Z. Xu, P. Wu, 2017: Decadal modulation of precipitation patterns over East China by sea surface temperature anomalies. *J. Climate*. doi: 10.1175/JCLI-D-16-0793.1. [Web version]

Li, R., J. He, S. Tang, F. Miao, **X. Fan**, 2017: Observational consistency comparison and analyses of an X-band all solid-state radar and an X-band klystron Doppler radar. *J. Atmos. Ocean. Tech.* DOI: 10.1175/JTECH-D-16-0220.1

Ma, P., S. Wang, **X. Fan**, T. Li, 2016: The impacts of air temperature on accidental casualties in Beijing, China. *Int. J. Environ. Res. Public Health* 2016, **13**(11), 1073; doi: 10.3390/ijerph13111073. [Web version] [Full Text PDF]

Huang, Z., **X. Fan,** L. Cai, S.Q. Shi, 2016: Tornado hazard for structural engineering. *Natural Hazards*, **83**(3), 1821-1842, DOI: 10.1007/s11069-016-2392-z.

Fan, X, Z. Ma, Q. Yang, Y. Han, R. Mahmood, and Z. Zheng, 2015: Land use/land cover changes and regional climate over the Loess Plateau during 2001-2009. Part I: Observational evidence. *Climatic Change,* Vol. **129**, No. 3, 427-440. DOI: 10.1007/s10584-014-1069-4. (**Impact Factor 4.622**)

Fan, X, Z. Ma, Q. Yang, Y. Han, and R. Mahmood, 2015: Land use/land cover changes and regional climate over the Loess Plateau during 2001-2009. Part II: Interrelationship from observations. *Climatic Change,* Vol. **129**, No. 3, 441-455. DOI: 10.1007/s10584-014-1068-5. (**Impact Factor 4.622**)

Crosby, M.K., Fan, Z., Spetich, M.A., Leininger, T.D., **Fan, X.** (2015) Early indications of drought impacts on forests in the southeastern United States. *The Forestry Chronicle,* **91**(4): 376-383.

Fan, X., J. R. Krieger, J. Zhang, and X. Zhang, 2013: Assimilating QuikSCAT Ocean Surface Winds with the Weather Research and Forecasting Model for surface wind-field simulation over the Chukchi/Beaufort Seas. *Boundary-Layer Meteorology*, **148**: 207-226, DOI 10.1007/s10546-013-9805-2. (**Impact Factor 2.525**)

Luo, Y., X. Feng, P. Houser, V. Anantharaj, **X. Fan**, G. De Lannoy, X. Zhan, L. Dabbiru, 2013: Potential soil moisture products from the Aquarius radiometer and scatterometer using an observing system simulation experiment. Geoscientific Instrumentation, Methods and Data Systems (GI), 2, 113-120, doi: 10.5194/gi-2-113-2013.

Chen, L., Z. Ma, and **X. Fan**, 2012: A comparative study of two land surface schemes in WRF model over eastern China. *J. Tropical Meteorology*, **18**(4), 445-456. (**Impact Factor 0.255)**

Fan, X., 2009: Impacts of soil heating condition on precipitation simulations in the Weather Research and Forecasting model. *Mon. Wea. Rev.*, Vol. **137** No. 7, 2263-2285. (**Impact Factor 3.616**)

Fan, X., J. E. Walsh, and J. R. Krieger, 2008: A one year experimental Arctic reanalysis and comparisons with ERA-40 and NCEP/NCAR reanalyses, *Geophys. Res. Lett.*, **35**, L19811, doi:10.1029/2008GL035110. (**Impact Factor 4.456**)

Fan, X. and J. S. Tilley, 2005: Dynamic assimilation of MODIS-retrieved humidity profiles within a regional model for high latitude forecast applications. *Mon. Wea. Rev.*, Vol. **133**, No. 12, 3450-3480. (**Impact Factor 3.616**)

Fan, X., J.-F. Chou, B.-R. Guo, and M.D. Shulski, 2004: A coupled simple climate model and its global analysis. *Theor. Appl. Climatol*., Vol. **79**, No. 1-2, 31-43. (**Impact Factor 1.942**)

Gao, Z., **X. Fan**, and L. Bian, 2003: Analytical solution to one-dimensional thermal conduction-convection in soil. *Soil Science*, Vol. **168**, No. 2, 99-107. (**Impact Factor 1.051)**

Fan, X. and J.-F. Chou, 1999c: The role of initial information in climate prediction. *Chinese Journal of Atmospheric Science*, Vol. **23**, No.1, 104-110.

Fan, X. and J.-F. Chou, 1999b: The role of initial information in climate prediction, *SCIENTIA ATMOSPHERICA SINICA*, Vol. **23**, 71-76. (Chinese)

Fan, X. and J.-F. Chou, 1999a: Methods and experiments of numerical prediction raised as inverse problem: I. Three kinds of inverse problems and numerical solutions, *SCIENTIA ATMOSPHERICA SINICA*, Vol. **23**, No. 5. (Chinese)

Fan, X., 1999: A global study on ensemble prediction, *ACTA METEOROLOGICA SINICA*, Vol. **57**, 74-83. (Chinese)

Fan, X., H. Zhang, J.-F. Chou, 1999: Global study on climate predictability, *ACTA METEOROLOGICA SINICA*, Vol. **57**, 190-197. (Chinese)

Zhang, H., **X. Fan**, M. Xu, and J.-F. Chou, 1998: Application of a global analysis method to a simplified climate model, *Theor. Appl. Climatol*., Vol. **61**, 103-111. (**Impact Factor 1.942**)

Fan, X. and J.-F. Chou, 1997: Hierarchy and value forecasting methods based upon probability distribution, *Journal of Nanjing University*, Vol. **33**, Special Issue. (Chinese)

Fan, X. and M.-C. Tang, 1996: Structural feature of soil temperature and precipitation and soil heat flux fields of strong earthquakes, *Chinese Journal of Geophysics*, Vol. **39**, No. 2, 247-261.

Fan, X., 1995: Teleconnection on summer precipitation and winter air temperature in north-west china and sea surface temperature in eastern tropical pacific ocean, *Studies on Climate Change and Interrelated Problems in West China*, Lanzhou University Press, 149-155. (Chinese)

Fan, X. and M.-C. Tang, 1994b: A preliminary study on structural feature of soil temperature and precipitation and soil heat flux fields of strong earthquakes, *ACTA GEOPHYSICA SINICA*, Vol. **37**, supplementary issue, 192-203. (Chinese)

Fan, X. and M.-C. Tang, 1994a: A preliminary study on conductive and convective soil heat flux, *Plateau Meteorology*, Vol. **13**, No. 1, 14-19. (Chinese)

Fan, X., 1993: A preliminary analysis of relationship between torrential rain and underlying heat field in mid- and lower-reaches of Yangtze River, *Plateau Meteorology*, Vol. **12**, No. 3, 322-327. (Chinese)

2. Monograph

Guo, B.-R., J.-M. Jiang, **X. Fan**, H. Zhang, J.-F. Chou, 1996: The nonlinear characteristics and prediction theory of climate system, Meteorological Press, Beijing, pp254. (Chinese)

3. Conference Presentations (student, only selected recent years)

Powers, J., Fan, X., Suriano, Z.J. (2025) Performance Analysis of WRF-Hydro Parameterization Schemes in Eastern Kentucky. 55th WKU Student Scholar Showcase, Western Kentucky University, Bowling Green, KY, April 5, 2025.

Powers, J., Fan, X., Suriano, Z.J. (2025) Performance Analysis of WRF-Hydro Parameterization Schemes in Simulating Flooding over Eastern Kentucky. Presented at the 24th Annual

Student Meeting of the 2025 American Meteorological Society. New Orleans, LA. 12 January.

Powers J., X. Fan, (2023) Atypical Tornado Climatology and Vertical Profiling. The 53rd WKU Student Scholar Showcase (Student Research Conference), April 1, 2023, Bowling Green, KY.

Powers, J.+, X. Fan (2023) Climatological Trends of Nocturnal and Out-of-Season Tornadoes. 109th Kentucky Academy of Science Annual Meeting, Northern Kentucky University, Highland Heights, KY, Nov 3-4, 2023. [Abstract]

Powers, J.+, X. Fan (2023) Atypical Tornadoes Climatological Trends. Midwest Student Conference on Atmospheric Research, University of Illinois Urbana-Champaign, Urbana, IL, Sept 30 – Oct 1, 2023.

Powers J., X. Fan, (2024) Tornado and Severe Weather Modeling. The 54th WKU Student Scholar Showcase (Student Research Conference), April 6, 2024, Bowling Green, KY.

Fan, X., 2015: Model simulation of soil temperature impacts on regional climate. 2015 Fall Meeting, AGU, San Fracisco, CA, 14-18, Dec., 2015. Abstract A33J-0316.

Sullivan, Z., **X. Fan**, 2015: Soil parameters for representing a karst geologic terrain in the Noah Land-Surface Model over Tennessee and Kentucky. 2015 Fall Meeting, AGU, San Fracisco, CA, 14-18, Dec., 2015. Abstract GC21B-1089.

Wong, C.-F., J. Yan, **X. Fan**, 2015: Estimating historical cropland distribution over the past 2220 years in China. 2015 Fall Meeting, AGU, San Fracisco, CA, 14-18, Dec., 2015. Abstract: GC11E-1064.

Sullivan, Z., **X. Fan**, 2014: Forecast verification for North American Mesoscale (NAM) operational model over karst/non-karst regions. 2014 Fall Meeting, AGU, San Fracisco, CA, 15-19, Dec., 2014.

Fan, X., G. Goodrich, Q. Yang, P. Dallas, J. Bailey, C. Moss, J. Clark, J. Walker, C. Murphy, A. Mattingly, K. Southers, R. Ollier, T. Wilcox, and K. Blanton, 2014: The Record-breaking Extreme Hot/Dry Summer of 2011 in the Southern Plains: Indications from Teleconnection Patterns. 94th American Meteorological Society Annual Meeting, Feb. 2-6, 2014, Atlanta, GA.

Johnson, C.M., **X. Fan**, R. Mahmood, C. Groves, J. Polk, and J. Yan, 2014: Influence of Karst Landscape on Weather Systems: A WRF Model Study on Responses for Different Land and Soil Types. 94th American Meteorological Society Annual Meeting, Feb. 2-6, 2014, Atlanta, GA.

Sui, Z., Z. Fan, **X. Fan**, M.A. Spetich. 2014. Estimating future distribution probabilities of southern red oak and water oak in the southeastern United States under a changing climate. Forest Health Monitoring Working Group Meeting. March 25-27, 2014. Jacksonville, FL. Poster available at http://fhm.fs.fed.us/posters/posters14/FHM_Sui_Oaks_2014.pdf.

Sui, Z., Z. Fan, **X. Fan**. 2014: Predicting *Triadica sebifera* occupied probability by climate envelope models in the southeastern United States. In K. Merry, P. Bettinger (ed.): Proceedings of the 9th Southern Forestry and Natural Resource Management GIS Conference. December 8-10, 2013. Athens, GA (peer-reviewed, in print)

Sui, Z., Z Fan, M.K. Crosby, and **X. Fan**. 2014: Distribution of longleaf pine in the southeastern United States and its association with climatic conditions. In Holley, A. Gordon, Connor, Kristina F., and Haywood, James D. (ed.): Proceedings of the 17th Biennial Southern Silvicultural Research Conference. March 5-7, 2013. Shreveport, LA. Gen. Tech. Rep. SRS. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. (peer-reviewed, in print)

Schisler, L., J. Young, **X. Fan**, and R. Mahmood, 2013: Modeling urban impacts on regional weather of central U.S., 19th Conference on Planned and Inadvertent Weather Modification, 93rd American Meteorological Society Annual Meeting, Jan. 5-10, 2013, Austin, TX.

Crosby, M.K., Z. Fan, M.A. Spetich, T.D. Leininger, X. Fan, 2013: Determination of Hardwood Mortality Changes in the Southeastern United States Using Consecutive Inventory Cycles. Forest

Health Monitoring Program, Online poster is available at http://fhm.fs.fed.us/posters/posters13/Spetich-et-al-Crosbyetal-FHM2013-Poster.pdf.

Sui, Z., Z. Fan, X. Fan, M.K. Crosby, M.A. Spetich, 2013: Predicting *Triadica Sebifera* Occupied Probability by Climate Envelope Models in the Southeastern United States. Forest Health Monitoring Program, Online poster is available at http://fhm.fs.fed.us/posters/posters13/Spetich-et-al-FHM2013-Sui.pdf.

Fan, X., Fan, Z. (2013). *Downscaled climate and applications*. Presented at NASA ROSES-GULF Wrapup workshop for NASA Applied Science, New Orleans, LA.

Schisler, L., J. Young, **X. Fan**, and R. Mahmood, 2012: Modeling urban impacts on regional weather of central U.S. 2012 Land Use and Land Cover NSF REU Research Symposium, August 8, 2012, WKU, Bowling Green, KY.

Crosby, M.K.* Z. Fan, **X. Fan**, T.D. Leininger, and M.A. Spetich, 2012: Predicting forest mortality trends using climate and FIA data at multiple scales. Proceedings of the Forest Inventory Analysis Symposium, USDA, Northern Research Station, General Technical Report, NRS-P-105, pp. 319-324. December 4-6, 2012. Baltimore, MD. Available at http://www.fia.fs.fed.us/symposium/proceedings/pubs/2012_FIA_Proceedings-opt.pdf

Crosby, M.K.*, Z. Fan, M.A. Spetich, T.D. Leininger, and **X. Fan**, 2012: Relationship between crown dieback and drought in the southeastern United States. Proceedings of the Forest Inventory Analysis Symposium, USDA, Northern Research Station, General Technical Report, NRS-P-105, pp. 316-318. December 4-6, 2012. Baltimore, MD. Available at http://www.fia.fs.fed.us/symposium/proceedings/pubs/2012_FIA_Proceedings-opt.pdf

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4. Published Translations

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SERVICE ACTIVITIES

1. Program / Department / College / University

2023 – 2025 WKU Faculty Senate, Faculty Welfare and Professional Development Committee

2022 Meteorology Faculty Search Committee

2022 Search Committee for Kentucky State Climatologist/Kentucky Climate Center Director/Kentucky Mesonet Director

2019–present Ogden College QTAG committee

2013 – 2019 Developing a sequence of courses (tentatively *Computing Skills in Atmospheric Sciences* and *Atmospheric Modeling*

2013 – 2014 Reviewer for Research and Creativity Activities Program (RCAP) grant applications

2012–Present Ogden College of Science and Engineering Undergraduate Curriculum Committee

2012 – 2014 Reviewer for Faculty Undergraduate Student Engagement (FUSE) grant applications

2010 – 2014 Served as judge at Western Kentucky University Student Research Conferences

2. **Graduate Thesis Committees**
3. **Professional Services**

- Peer-reviewed Journal Reviewer:
  - Advance in Atmospheric Sciences
  - Advances in Meteorology
  - Agricultural and Forest Meteorology
  - Atmosphere
  - Earth Interactions
  - Environmental Earth Sciences
  - Heliyon
  - Journal of Geophysical Research – Atmosphere
  - Journal of Hydrometeorology
  - Journal of Meteorological Research
  - Monthly Weather Review
  - Tellus – A
  - Journal of Applied Remote Sensing
  - Climatic Change
  - Journal of Applied Meteorology and Climatology
  - Natural Hazards
  - Quarterly Journal of Royal Meteorological Society
  - Weather and Forecasting
- Funding Agency Grant Reviewer / Panelist
  - National Aeronautics and Space Administration: Applied Sciences
  - Department of Energy
  - American Geophysical Union: Thriving Earth Exchange
  - National Science Foundation

4. **Public / Community Outreach**

- Guest speaker, at local K-12 schools

PROFESSIONAL MEMBERSHIP

- American Meteorological Society, 2000 – Present
- American Geophysical Union, 2000 – Present
- Kentucky Academic of Science, 2009 – Present

AWARDS/HONORS

2012 Gansu Provincial Science and Technology Progress Award, **second prize**, *The Creation and Application of "Diqitu" Method on Short-term Climate Prediction.* Science and Technology Progress Award Committee of Gansu Province, China