



# XINGANG FAN

Ph.D., Professor

5/2020

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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 Geography and Geology, Western Kentucky University (WKU)  
2015–present **Visiting Professor**, Chengdu University of Information Technology  
2015 – 2020 **Associate Professor, Graduate Faculty**, Department of Geography and Geology, Western Kentucky University (WKU)  
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 – 2015 METR 121, *Meteorology* (Fall 2009 – Present)  
METR 322, *Global Climate Systems* (Fall 2011, 2013, 2015, 2017, 2019)  
METR 422/522, *Physical Climatology* (Spring 2010)  
METR 430, *Computing Meteorology* (Spring 2017, 2019, Fall 2020)  
METR 438/538, *Physical Meteorology* (Springs of 2012, 2014, 2016, 2018, 2020)

METR 439/539, *Atmospheric Modeling* (Spring 2011, Fall 2012, Fall 2014)

GEOG 103, *Our Dynamic Planet*

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

2009 – 2015 GEOG 475, *Tornado Climatology* (Spring 2017)

GEOG 475, *Historical Cropland of China* (Fall, 2014, Spring 2015)

GEOG 475, *Soil Temperature Data* (Fall 2010)

GEOG 475, *Climate Analysis* (Spring 2012)

GEOG 475, *Regional Climate Modeling* (Spring 2012)

GEOG 475, *Karst Weather Modeling* (Spring 2013)

GEOG 475, *Weather Modeling & Analysis* (Fall 2013)

NSF-REU, *Urban Weather Modeling – REU advising* (Summer 2012)

**3. Graduate Student Advisor:**

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)

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## 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)
- 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
  - Extreme events and hazards: tornados, heat wave, flooding, drought, water
- Climate predictability
  - Nonlinear dynamics
  - Predictability of the climate – strange attractor of chaotic system
  - Soil temperature vs. sea surface temperature in extending predictability

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## RESEARCH PROJECTS/GRANTS

**1. External Grants, Fellowships, and Scholarships:**

- 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. (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:

- 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)

- 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)

- Fan, X.**, 2015: Model simulation of soil temperature impacts on regional climate. 2015 Fall Meeting, AGU, San Francisco, 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 Francisco, 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 Francisco, 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 Francisco, 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. 94<sup>th</sup> 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. 94<sup>th</sup> 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](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 17<sup>th</sup> 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., 19<sup>th</sup> Conference on Planned and Inadvertent Weather Modification, 93<sup>rd</sup> 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](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](http://www.fia.fs.fed.us/symposium/proceedings/pubs/2012_FIA_Proceedings-opt.pdf)
- Crosby, M.K. \*, Z. Fan, W.K. Moser, M.A. Spetich, T.D. Leininger, and **X. Fan**, 2012: Assessing crown dieback in the Ozark Highlands using FIA and remotely sensed data. 2012 Forest Health Monitoring Working Group Meeting. April 16-19. Tucson, AZ. Poster available at [http://fhm.fs.fed.us/posters/posters12/Crosbyetal\\_FHM2012\\_CDOzarks.pdf](http://fhm.fs.fed.us/posters/posters12/Crosbyetal_FHM2012_CDOzarks.pdf).
- Crosby, M. K. \*, Z. Fan, M. A. Spetich, T. D. Leininger, and **X. Fan**, 2012: Crown dieback trends across the southeastern United States. 2012 Forest Health Monitoring Working Group Meeting. April 16-19, 2012. Tucson, AZ. Poster available at [http://fhm.fs.fed.us/posters/posters12/Crosbyetal\\_FHM2012\\_CrownDieback\\_SEUS.pdf](http://fhm.fs.fed.us/posters/posters12/Crosbyetal_FHM2012_CrownDieback_SEUS.pdf).
- Sui, Z., Z. Fan, and **X. Fan**, 2012: Changing importance of longleaf pine and loblolly pine in the South over past 40 years and its association with climate. 2012 Forest Health Monitoring Working Group Meeting. April 16-19, 2012. Tucson, AZ. Poster available at [http://fhm.fs.fed.us/posters/posters12/Sui\\_etal\\_FHM2012.pdf](http://fhm.fs.fed.us/posters/posters12/Sui_etal_FHM2012.pdf).
- Dallas, P., and **X. Fan**, 2012: Characteristics of Karst areas on precipitation amounts. The 42<sup>nd</sup> Annual WKU Student Research Conference. March 24, 2012, Bowling Green, KY.
- Fan, X.**, L. Chen, Z. Ma, G. Russell, and Z. Fan, 2012: Drought and wetness conditions in USA from a high-resolution downscaled climate. 92<sup>nd</sup> AMS Annual Meeting, American Meteorological Society. January 23-27, 2012, New Orleans, LA.
- Crosby, M. K. \*, Z. Fan, M. A. Spetich, T. D. Leininger, and **X. Fan**, 2011: Remote sensing of forest health indicators for assessing change in forest health. Proceedings of the 8<sup>th</sup> Southern Forestry and Natural Resources Management GIS Conference. December 11-13, 2011, Athens, GA. Available at [http://www.soforgis.net/2011/files/Crosby\\_Final\\_071512.pdf](http://www.soforgis.net/2011/files/Crosby_Final_071512.pdf). (**Best student paper award**)
- Sui, Z., Z. Fan, and **X. Fan**, 2011: A simulation study of forest dynamics under multiple harvest regimes and wind disturbance in Southern Mississippi. Proceedings of the 8<sup>th</sup> Southern Forestry and Natural Resource Management GIS Conference. December 11-13, 2011. Athens, GA. Available at [http://www.soforgis.net/2011/files/Sui\\_Final\\_071512.pdf](http://www.soforgis.net/2011/files/Sui_Final_071512.pdf).
- Sui, Z., Z. Fan, and **X. Fan**, 2011: A simulation study of forest dynamics under different forest management regimes along the Gulf of Mexico region. 8<sup>th</sup> North American Forest Ecology Workshop, June 19-23, 2011. Roanoke, VA.
- Fan, X.**, G. Russell, L. Chen, and Z. Fan, 2011: A high-resolution (10-km) downscaled regional climate from NASA GISS AOM model for the southeastern United States. WCRP Open Science Conference. October 24-28, 2011. Denver, CO.
- Fan, X.**, L. Chen, and Z. Ma, 2010: *Comparison of Grid Nudging and Spectral Nudging Techniques for Dynamical Climate Downscaling within the WRF Model*. Abstract A21G-0182 presented at 2010 Fall Meeting, AGU, San Francisco, CA, 13-17, Dec., 2010.
- Chen L., **X. Fan**, and Z. Ma, 2010: *Approaches for assessing downscaled climate*. Abstract A21G-0181 presented at 2010 Fall Meeting, AGU, San Francisco, CA, 13-17, Dec., 2010.
- Chen L., **X. Fan**, 2010: *Assessment of the Dynamical Downscaling Technique Using the Weather Research and Forecasting (WRF) Model*. 2010 Kentucky Academy of Sciences Annual Meeting, Bowling Green, KY, 12-13, Nov., 2010.
- McCann, S.C., and **X. Fan**, 2010: *Bias correction for ERA-40 soil temperature data*. 2010 Kentucky Academy of Sciences Annual Meeting, Bowling Green, KY, 12-13, Nov., 2010.



- Fan, X.**, Z. Fan, and V. G. Anantharaj, 2010: Climate downscaling for regional ecosystem modeling. 18<sup>th</sup> Conference on Applied Climatology, 90<sup>th</sup> Annual Meeting of American Meteorological Society, Atlanta, GA, January 17-21, 2010. Paper 10B.4, Abstract #165247.
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- Fan, X.** and J. S. Tilley, 2002: The impact of assimilating satellite derived humidity on MM5 forecast. *19<sup>th</sup> Conference on Weather Analysis and Forecasting*, Aug. 12-16, 2002, San Antonio, TX.
- Fan, X.** and J. S. Tilley, 2001: Application of the Bratseth scheme for high latitude intermittent data assimilation using the PSU/NCAR MM5 mesoscale model. *18th Conference on Weather Analysis and Forecasting and the 14th Conference on Numerical Weather Prediction*, Jul. 30 - Aug. 2, 2001, Ft. Lauderdale, FL.

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#### **4. Published Translations**

Thomas R. Karl, (translated by **X. Fan** from Bulletin of the American Meteorological Society, 74(6), 1007-1022, 1993) 1996: A new perspective on recent global warming: asymmetric trends of daily maximum and minimum temperature, *Atmospheric Information*, Vol. **16**, No.4, 1-16.

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### **SERVICE ACTIVITIES**

#### **1. Program / Department / College / University**

2013–Present 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:
  - Journal of Geophysical Research – Atmosphere
  - Journal of Hydrometeorology
  - Monthly Weather Review
  - Tellus – A
  - Journal of Applied Remote Sensing
  - Climatic Change
  - Journal of Applied Meteorology and Climatology
  - Quarterly Journal of Royal Meteorological Society
- 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 Rich Pond Elementary School, Meteorology for 1<sup>st</sup>/2<sup>nd</sup> graders

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## PROFESSIONAL MEMBERSHIP

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

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## AWARDS/HONORS

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