XINGANG FAN

Ph.D., Associate Professor 7/2018

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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

2015–present **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 – 2015 METR 121, *Meteorology* (Fall 2009 – Present)
   METR 322, *Global Climate Systems* (Fall 2011, Fall 2013, Fall 2015, Fall 2017)
   METR 422/522, *Physical Climatology* (Spring 2010)
   METR 430, *Computing Meteorology* (Spring 2017)
   METR 438/538, *Physical Meteorology* (Springs of 2012, 2014, 2016, 2018)
   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)

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

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.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)

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]

Cao, Y., D. Su, **X. Fan**, H. Chen, 2018: 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*. DOI: 10.1007/s00376-018-8032-7. [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 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

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.

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.

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.

Dallas, P., and **X. Fan**, 2012: Characteristics of Karst areas on precipitation amounts. The 42nd 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. 92nd 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 8th 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. (**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 8th 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.

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. 8th 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 Fracisco, 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 Fracisco, 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. 18th Conference on Applied Climatology, 90th Annual Meeting of American Meteorological Society, Atlanta, GA, January 17-21, 2010. Paper 10B.4, Abstract #165247.

Fan, X., 2009: Sustainable Management of Coastal Forest Ecosystems under a Changing Climate in the Northern Gulf of Mexico. *NASA Applied Science Gulf Workshop*, December 8-10, New Orleans, LA.

Fan, X. (2009), Heating from Below: Impacts on Weather and Climate Prediction, *Eos Trans. AGU*, **90**(22), Jt. Assem. Suppl., Abstract GC23B-06.

Masutani, M., R. Errico, T. W. Schlatter, J. S. Woollen, Y. Xie, T. Zhu, N. Prive, R. Yang, L. P. Riishojgaard, A. Stoffelen, G.-J. Marseille, E. Andersson, F. Weng, T. J. Kleespies, O. Reale, G. D. Emmitt, S. Greco, S. A. Wood, C. Hill, V. Anantharaj, P. Fitzpatrick, **X. Fan**, H. Pryor, E. Salmon, H.- C. Liu, M. Sienkiewicz, A. da Silva, H. Sun, Y. Song, M. Govett, Z. Pu, L. Cucurull, S. J. Lord, D. Devenyi, D. L. Birkenheueri, T. Jung, A. Thompkins, D. Groff, D. Kleist, R. Treadon, K. Fielding, W. Lahoz, E. Brin, Z. Toth, Y. Sato, M. Hu, S. Weygandt, M. J. McGill, T. Miyosh, T. Enomoto, M. Watanabe, H. Koyama, Y. Rochen, M. Seablom, B. I. Hauss, R. Burn, G. Higgins, R. Atlas, S. Koch, H. Wang, Y. Chen, X.-Y. Huang, 2009: Expanding collaboration in Joint OSSEs. 13th Symposium on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (IOAS-AOLS), 89th Amer. Met. Soc. Annual Meeting, Phoenix, AZ, January 10-16, 2009.

Hill, C. M., P. Fitzpatrick, **X. Fan**, V. Anantharaj, M. Masutani, L. P. Riishojgaard, and Y. Li, 2009: An observing system simulation experiment to evaluate CrIS/ATMS observations in modeling a mesoscale weather event. 16th Conference on Satellite Meteorology and Oceanography; Fifth Annual Symposium on Future Operational Environmental Satellite Systems – NPOESS and GOES-R. 89th Amer. Met. Soc. Annual Meeting, Phoenix, AZ, January 10-16, 2009.

Luo, Y., P. R. Houser, V. Anantharaj, **X. Fan**, G. J. De Lannoy, L. Dabbiru, A. C. Turlapaty, and J. Aanstoos, 2008: Potential L-band Aquarius radiometer and scatterometer soil moisture products from an observing system simulation experiment. Eos Trans, AGU, 89(53), Fall Meet. Suppl., Abstract 3059 (H23F-1034).

Klene, A.E., M.D. Shulski, J. Zhang, **X. Fan**, J.R. Krieger, and D. Morton, 2008: Studying winds on the north slope of Alaska. 104th Annual Meeting of the Association of American Geographers, Boston, MA, April 15-19, 2008.

Zhang, J., J. Krieger, M. Shulski, **X. Fan**, U. Bhatt, D. Atkinson, X. Zhang, D. Morton, and A. E. Klene, 2008: Beaufort Sea coastal wind regime study from observations and model simulations. *2008 Alaska Marine Science Symposium*, Anchorage, AK, January 20-23, 2008.

Fan, X., J. Zhang, J. Krieger, D. Morton, M. Shulski, A. Klene, and X. Zhang, 2007: Assimilating QuikSCAT SeaWinds with WRF Model for High Latitude Sea Breeze Simulation. *AGU Fall Meeting*, San Francisco, California, December 10-14, 2007.

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Fan, X. and J. S. Tilley, 2003: Tests of a satellite-based cloud initialization scheme for high-latitude application in MM5. 7th Conference on Polar Meteorology and Oceanography and Joint Symposium on High-Latitude Climate Variations, AMS, May 12-16, 2003, Hyannis, MA.

Fan, X. and J. S. Tilley, 2002: The impact of assimilating satellite derived humidity on MM5 forecast. 19th Conference on Weather Analysis and Forecasting, Aug. 12-16, 2002, San Antonio, TX.

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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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T.N. Palmer, (translated by **X. Fan** from Weather, 48(10), 314-326, 1993) 1994: A nonlinear dynamical perspective on climate change, *Atmospheric Information*, Vol. **14**, No.2, 13-22.

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 1st/2nd graders

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