

FUQING ZHANG

Department of Meteorology, The Pennsylvania State University, University Park, PA 16802

Email: fzhang@psu.edu Tel: (814)865-0470 Fax: (814)865-0470

Research Interests

Atmospheric dynamics, modeling and predictability, data assimilation, parameter estimation, ensemble forecasting, tropical cyclones, gravity waves, sea breeze, high impact weather weather, and regional climate

Educational Background

North Carolina State University, Atmospheric Science, Ph.D., 2000

Nanjing University, Atmospheric Science, M.S., 1994; B.S. 1991

Professional Experiences

Employment

2014-present Director, Center for Advanced Data Assimilation and Predictability Techniques, Penn State

2008-present Professor of Meteorology, Department of Meteorology, Penn State University

2009-present Professor of Statistics, Department of Statistics (joint), Penn State University

2006-2008 Associate Professor, Department of Atmospheric Sciences, Texas A&M University

2001-2006 Assistant Professor, Department of Atmospheric Sciences, Texas A&M University

2000-2001 Postdoctoral Fellow, National Center for Atmospheric Research

1996-2000 Graduate Research Assistant, North Carolina State University

1994-1996 Research Associate, the Graduate School, Nanjing University

1991-1994 Graduate Research/Teaching Assistant, Nanjing University

Adjunct professorship or scientific visitorship

2015/Sep-Dec Visiting Professor sponsored by the Houghton Lecturer Fund, MIT

2013/Jun-Jul Visiting scientist, Guanzhou Marine and Tropical Meteorology Center, China

2011/Jun-Jul Advanced visiting scholar, Peking University, Beijing, China

2008/Jul-Aug Visiting Scientist, NOAA/AOML Hurricane Research Division, Miami, Florida

2008-present Adjunct Professor, Department of Atmospheric Sciences, Texas A&M University

2007-2010 Adjunct Professor, Chinese Academy of Meteorological Sciences, Beijing, China

2007/Aug-Dec Visiting Scientist, Navy Research Laboratory, Monterey, California

2007/May-Jul Visiting Researcher, State Key Laboratory of Severe Weather, CAMS, Beijing, China

2007/Apr-May Visiting Researcher, Laboratoire de Meteorologie Dynamique, École Normale Supérieure, France

2006-2008 Faculty Fellow, Hazard Reduction and Recovery Center, Texas A&M University

2006/Jun-Jul Visiting Scientist, National Center for Atmospheric Research, Boulder, Colorado

2004/Jun-Jul Visiting Scientist, National Center for Atmospheric Research, Boulder, Colorado

2003/Jun-Jul Visiting Scientist, National Center for Atmospheric Research, Boulder, Colorado

2002/Jun-Jul Visiting Scientist, National Center for Atmospheric Research, Boulder, Colorado

2001/Jun-Aug Science mentor, Significant Opportunities in Atmospheric Research and Sciences, UCAR

1999/Jun-Jul Student Visitor, National Center for Atmospheric Research, Boulder, Colorado

Honors and Awards

2015 Elected fellow, American Meteorological Society

2015 Group Achievement Award in leading the Penn State's participation of Hurricane and Severe Storm Sentinel, National Aeronautics and Space Administration (NASA) "for outstanding achievements of the

Hurricane and Severe Storm Sentinel (HS3) airborne mission to investigate the factors influencing hurricane intensity change.”

- 2015 Houghton Lecturer, Program in Atmospheres, Oceans and Climate, MIT
- 2015 Rossby Fellow, International Meteorology Institute, Stockholm, Sweden
- 2015 Banner Miller Award, American Meteorological Society *“for valuable insights into incorporating real-time airborne Doppler radar measurements via ensemble data assimilation, leading to improvements in forecasts of tropical cyclone track and intensity.”*
- 2012 Paul F. Robertson Award for the EMS Breakthrough of the Year, Penn State
- 2012 Gold Star Editor, Publications Commission, American Meteorological Society
- 2011 E. Willard & Ruby S. Miller Faculty Fellow, College of Earth and Mineral Sciences, Penn State
- 2011 Distinguished Lecturer, Florida International University
- 2009 The Clarence Leroy Meisinger Award, American Meteorological Society
“for outstanding contributions to mesoscale dynamics, predictability and ensemble data assimilation”
- 2009 Gold Star Editor, Publications Commission, American Meteorological Society
- 2007 Outstanding Publication Award, National Center for Atmospheric Research
- 2006 Distinguished Achievement Award for Faculty Research, College of Geosciences, Texas A&M University
- 2004 Young Investigator Award, Office of Navy Research, Department of Navy
- 2004 Certificate of Appreciation, National Aeronautics and Space Administration
- 2001 Science mentor for Significant Opportunities in Atmospheric Research and Sciences (SOARS), which is a recipient of the 2001 Presidential Award for Excellence in Science, Mathematics, and Engineering
Mentoring *“for embodying excellence in mentoring underrepresented students and encouraging their significant achievement in science, mathematics, and engineering”*

Professional Activities

Editorial boards

- 2012- Editor, Science China – *Earth Science*
- 2012- Editor, Journal of Meteorological Research
- 2010-14 Editor, Encyclopedia of Atmospheric Sciences
- 2008-14 Editor, Monthly Weather Review
- 2011-12 Editorial board member, Scientia Meteorologica Sinica
- 2011-12 Co-chief editor, Atmospheric Science Letters
- 2009-11 Guest editor, Computing in Science & Engineering
- 2008 Associate editor, Weather and Forecasting

Advisory, expert or review panels

- 2013-present Scientific Advisor, Hong Kong Observatory (“Hong Kong Weather Bureau”), Hong Kong
- 2013-present Member, Climate Working Group (CWG), NOAA's Science Advisory Board
- 2012-present Panelist, National Research Council RAP review panel, National Academies
- 2015 Panelist, NASA PMM Science Evaluation Panel, Washington, D.C.
- 2015 Panelist, National Severe Storm Lab (NSSL) 5-year external lab review panel, NOAA
- 2014 Panelist, NASA EV-2 Science Evaluation Panel, Washington, D.C.
- 2014 Panelist on NWP, Summer Community Colloquium, American Meteorological Society, Penn State
- 2013 Member, Scientific Advisory Board, CMA/Guangdong Joint Key Lab on Regional NWP, Guangzhou
- 2013 Panelist, Plains Elevated Convection at Night (PECAN) science panel, National Science Foundation
- 2013 Panelist, Software Infrastructure for Sustained Innovation (SI2) review panel, NSF

- 2013 Panelist, National Research Council RAP review panel, National Academies
- 2013 Panelist, China National Meteorological Center expert panel on ensemble application and development
- 2012 Panelist, NASA TRMM/GPM Science Evaluation Panel, Washington, D.C.
- 2012 Member, Scientific Advisory Board, China National Basic Research (973) Program on sustained rainfall
- 2012 Panelist, 10th Symposium on the Coastal Environment (landfalling tropical cyclones), New Orleans, LA
- 2011 Panelist, NCAR/CISL 5-year performance review, National Science Foundation
- 2011 Panelist, Defense Research Initiative (DRI) on hurricane science, Office of Naval Research
- 2009 Member, Ensemble Development Team, NOAA Hurricane Forecast Improvement Project (HFIP)
- 2009 Member, Data Assimilation/Vortex Initialization Team, NOAA HFIP Project
- 2009 Member, Oversea Chinese Expert Advisory Panel, CMA GRAPES NWP System, Beijing, China
- 2009 Ad-hoc member, Sensing & Information Systems (SIS) Panel, National Science Foundation (NSF)
- 2009 Panelist, Workshop on Chinese State Key Project on Mesoscale Severe Rainstorms, Changchun, China
- 2008 Panelist, NASA Hurricane Science Research Evaluation Panel, Washington, D.C.
- 2006 Member, THORPEX Interactive Grand Global Ensemble (TIGGE) LAM Expert Panel
- 2006 Member, Working Group on Ensemble Forecasting for Weather and Forecasting Model (WRF)
- 2006 Panelist, Workshop on China's State Key Project on Warm-season Precipitation Systems, Beijing, China
- 2004 Panelist, ONR Initiatives on Mesoscale Predictability, Office of Navy Research, Monterey, California

Organizer or co-organizer for the following conferences or workshops

- 2016 Chair, International Conference on Gravity Waves, State College, Pennsylvania
- 2016 Chair, Special Symposium on BigData Research for Weather, Climate and Earth System Monitoring and Prediction, State College, Pennsylvania
- 2016 Co-chair, 7th Workshop on Ensemble-based Data Assimilation, State College, Pennsylvania
- 2016 Co-chair, Special Symposium on Seamless Weather and Climate Prediction --- Limit of Multiscale Predictability, 2016 AMS Annual Meeting, New Orleans, Louisiana
- 2015 Co-chair, Hurricane Ensemble Workshop, Miami, Florida
- 2015 Co-chair, 14th CAS-TWAS-WMO Forum (CTWF) on Coupled Data Assimilation Symposium, Beijing
- 2015 Co-convener, Data Assimilation Summer School, 14th CAS-TWAS-WMO Forum (CTWF), Beijing
- 2015 Member, Science Organizer Committee, 4th International Symposium on Data Assimilation, Kobe, Japan
- 2014 Co-Chair, 6th Workshop on Ensemble-based Data Assimilation, Buffalo, New York, 2014
- 2013 Co-Chair, 5th PSU-UMD Joint Workshop on Ensemble Data Assimilation
- 2013 Member, Scientific Program Committee for the COAA's 6th International Conference on Atmosphere, Ocean and Climate, Hong Kong, 19-21 August 2013.
- 2013 Member, Scientific Program Committee for 9th International Conference on Mesoscale Convective Systems, Beijing, China, March 2013
- 2012 Co-chair, NSF EarthCube Workshop "Shaping the Development of EarthCube to Enable Advances in Data Assimilation and Ensemble Prediction", NCAR, Boulder, Colorado
- 2012 Co-Chair, 4th PSU-UMD Joint Workshop on Ensemble Data Assimilation
- 2012 Co-convener, AGU Fall Meeting, Session on "Remote Sensing of Tropical Cyclones and Tropical Convective Systems: Observations and Data Assimilation", San Francisco, California
- 2012 Chair, 5th Workshop on Ensemble-based Data Assimilation, Albany, New York, 2012
- 2011 Co-Chair, Workshop on Hurricane Science in honor of Frank Mark's 60th birthday, Miami, Florida
- 2011 Convener, Summer School on Severe and Convective Weather, Nanjing University, China
- 2011 Co-Chair, International Workshop on Severe and Convective Weather, Beijing, China
- 2011 Co-Chair, 3rd PSU-UMD Joint Workshop on Ensemble Data Assimilation

2011 Member, organizing committee for Chapman Conference on Atmospheric Gravity Waves and Their Effects on General Circulation and Climate, American Geophysical Union, Honolulu, Hawaii, 2011
 2010 Co-Chair, 2nd PSU-UMD Joint Workshop on Ensemble Data Assimilation, University Park, Pennsylvania
 2010 Chair, 4th Workshop on Ensemble-based Data Assimilation, Albany, New York
 2009 Co-Chair, 1st PSU-UMD Joint Workshop on Ensemble Data Assimilation, University Park, Pennsylvania
 2009 Chair, Workshop on Gravity Waves, University Park, Pennsylvania
 2008 Co-convener, WMO WWRP/THORPEX Workshop on 4D-VAR and EnKF comparisons, Argentina
 2008 Co-chair, 3rd Workshop on Ensemble-based Data Assimilation, Austin, Texas
 2008 Co-convener, Session on Predictability of Weather and Climate, 5th Annual Meeting Asian OGS
 2006 Co-chair, organizing committee for NCAR's Gravity Wave Summer Retreat, Boulder, Colorado
 2006 Co-chair, 2nd Workshop on Ensemble-based Data Assimilation, Austin, Texas
 2000-2001 Chair, biweekly seminar series "Dynamics Happy Hour", NCAR, Boulder, Colorado

Participants of the following major field experiments

2012-2014 HS3: Hurricane and Severe Storm Sentinel, NASA
 2010 PREDICT: Pre-Depression Investigation of Convection in the Tropics, National Science Foundation
 2010 IFEX2010: Hurricane Intensity Forecast Experiment of 2010, NOAA
 2008 START08: Stratospheric-Tropospheric Atmosphere Regional Transport experiment of 2008, NSF
 2008-2009 SCHeREX: South China Heavy Rainfall Experiment, China National Key Project 973
 2008 IFEX2008: Hurricane Intensity Forecast Experiment of 2008, NOAA
 2003 BAMEX: Bow-echo and Mesoscale Convective Vortex Experiment of 2003, NSF

Reviewer of articles for the following 30+ professional journals:

Journal of the Atmospheric Sciences; Advances in Atmospheric Sciences; Advances in Space Research; AMS Monograph; Annales Geophysicae; Atmospheric Research; Atmospheric Sciences Letters; Bulletin of the American Meteorological Society; Geophysical Research Letters; Journal of Atmospheric and Oceanic Technology; Journal of Applied Meteorology and Climatology; Journal of Geophysical Research; Journal of Meteorological Society of Japan; Journal of Physical Oceanography; Meteorology and Atmospheric physics; Monthly Weather Review; Nonlinear Processes in Geophysics; Quarterly Journal of Royal Meteorological Society; Tellus A; Tellus B; Review of Geophysics; Water, Air, & Soil Pollution; Weather Analysis and Forecasting; Acta Oceanologica Sinica; Journal of Ocean University of China; Torrential, Atmospheric and Oceanic Sciences (TAOS); Scientific Online Journal on the Atmosphere (SOLA), Journal of the American Statistical Association (JASA); Weather, Climate and Society; International Journal of Climatology; Physics D; Atmospheric Chemistry and Physics; EOS; Nature Methods; Nature Communications; Nature Geoscience

Reviewer of grant applications for the following 10+ funding agencies:

National Sciences Foundation (NSF); National Aeronautic and Space Administrations (NASA); National Oceanic and Atmospheric Administration (NOAA); Department of Energy, Atmospheric Radiation Measurement (DOE/ARM); National Environmental Research Council (NERC) of UK; Canadian Natural Sciences and Engineering Research Council (NSERC); U.S. Civilian Research and Development Foundation (CRDF); Austrian Science Fund (FWF); French National Research Agency; Czech Science Foundation;); Department of Energy, ASCR Leadership Computing Challenge; Research Associateship Programs (NRC), National Research Council (NRL); University of Oklahoma (OU); Rutherford Discovery Fellowships, New Zealand; Powe Award; Canada Research Chairs; PAZY Foundation of Isarel

Professional memberships:

American Meteorological Society (AMS); American Geophysical Union (AGU); Chinese-American Oceanic and Atmospheric Association (COAA); American Association for the Advancement of Science (AAAS)

Postdoctoral, visiting and research scientists Sponsored/Supervised

Current: Yonghui Weng (2005-), Dandan Tao (2015-), Sourav Taraphdar (2015-), Chunyun Qiu (2015-), Ling Zhang (2015-), Yudong Gao (2015-), Yuanchun Zhang (2015-)

Past: Kun Zhang (2015), Xiaodong Tang (2014-15), Ashford Reyer (2013-15), Xuexing Qiu (2014-2015), Qinghong Zhang (2014-15), Shoujuan Shu (2013-2014), Jun Sun (2014-2015), Haiwen Liu (2013-14), Lin Dong (2014-2015), Wei Li (2014), Daniel Stern (2010-12), Xuyang Ge (2010-12), Xiaqiong Zhou (2011-12); Yanzhen Chi (2012-); Yudong Gao (2011-12); Xinghua Bao (2011-12); Chuanhai Qian (2011-2012); Qilin Wan (2011-2012), Hongwen Kang (2011-12); Xiaoming Hu (2008-11), Jianhua Sun (2010-11), Zhiyong Meng (2007-2008, 2010), Shuguang Wang (2008), Juan Fang (2008-2010), Naifang Bei (2004-2007), Yonghui Lin (2005-2006), Chanh Kieu (2009-2010), Shuanzhu Gao (2007), Zhe-Min Tan (2002)

Graduate Students Supervising/Supervised

In progress --- registered at Penn State (11)

Christopher Melhauser, PhD student since 2012

Scott Seiron, Ph.D. student since 2013 (NSF Graduate Fellow)

Erin Munsell, doctoral student since 2012

Masashi Minamide, doctoral student since 2014 (Funai Overseas Graduate Scholarship, Japan)

Ying Yue, doctoral student since 2012 (CSC government fellowship, China)

Yongqiang Sun, doctoral student since 2012

Robert Nystrom, doctoral student since 2015

Hans Chen, doctoral student since 2013

Andrew Thomas, master student since 2015 (co-advise with Amy Hurf)

Hui-Wen Lai, doctoral student since 2015 (co-advise with Eugene Clothiaux)

Yicun Zhen, PhD student since 2011 (co-advise with J. Harlim in Department of Mathematics)

In progress --- visiting graduate students (7)

Yunji Zhang, visiting PhD student from Peking University since 2012 (CSC fellow, China)

Mingxin Li, visiting PhD student from Peking University since 2014 (CSC fellow, China)

Lei Zhu, visiting PhD student from Peking University since 2015 (CSC fellow, China)

Yanting Ye, visiting PhD student from Beijing Normal University since 2015 (CSC fellow, China)

Yingjian Chen, visiting PhD student from Tsinghua University since 2015 (CSC fellow, China)

Su Liu, visiting PhD student from Nanjing University since 2015 (CSC fellow, China)

Xingchao Chen, visiting PhD student from Nanjing University since 2015

Completed doctoral degrees (17, '' co-advise)*

Benjamin Green, (PhD 2015), currently a CIRES postdoctoral fellow at NOAA/Univ of Colorado

Dandan Tao, (PhD 2015), currently a postdoctoral fellow at Penn State University

Junhong Wei, (PhD 2015), currently a postdoctoral fellow at Frankfurt University

Ye Yun*, (PhD 2015), currently assistant professor at Chinese Academy of Sciences

Jonathan Poterjoy (PhD 2014), currently an ASP fellow at National Center for Atmospheric Research

Yuanchun Zhang*, (PhD, 2013); currently assistant professor at the IAP/Chinese Academy of Sciences

Yanzhen Chi*, (PhD, 2013); currently meteorologist at China Fujian Meteorological Bureau
Baoguo Xie*, (PhD, 2012); currently assistant professor at the Chinese Meteorology of Atmospheric Sciences
Xinghua Bao*, (PhD 2011); currently postdoctoral researcher at Penn State University
Meng Zhang (PhD 2010), currently at IBM China, team leader of the Environmental Modeling group
Huizhong He* (PhD 2010), currently associate professor at the Chinese Meteorology of Atmospheric Sciences
Jason Sippel (PhD 2008), currently a postdoctoral fellow at NASA, Goddard Space Flight Center, Maryland
Shuguang Wang (PhD 2008), currently a postdoctoral fellow at Columbia University, New York
Tingting Qian* (PhD 2008), currently assistant professor at the Chinese Meteorology of Atmospheric Sciences
Yonghui Weng* (PhD 2008), currently research associate at Pennsylvania State University
Zhiyong Meng (PhD 2007), currently a tenure-track professor at Peking University, Beijing, China
Altug Aksoy* (PhD 2005), currently researcher at NOAA Hurricane Research Division, Miami, Florida

Completed master degrees (10)

Scott Serion (MS 2013), currently a doctoral student at Pennsylvania State University
Erin Munsell (MS 2012), currently a doctoral student at Pennsylvania State University
Benjamin Green (MS 2011), currently a doctoral student at Pennsylvania State University
Christopher Melhauser (MS 2010), currently a doctoral student at Pennsylvania State University
Matt Rigney* (MS 2009), currently a research associate at the NASA Marshall Center, Huntsville, Alabama
Meng Zhang (MS 2008), currently at IBM China, team lead of the Environmental Modeling group
Amber Reynolds* (MS 2007), currently research meteorologist at NASA/GSFC
Daniel Hawblitzel (MS 2006), currently lead forecast meteorologist at National Weather Service
Shuguang Wang (MS 2005), currently assistant research professor at Columbia University
Andrew Odins* (MS 2005), currently at WeatherPredict Inc.

Keynote or invited speaker for the following conferences or summer schools (50+)

2016 Invited speaker, AMS Annual meeting (Hurricane Katrina), New Orleans, Louisiana
2015 Invited speaker, AGU Fall meeting (Hurricane Predictability), San Francisco, California
2015 Invited speaker, NOAA HFIP Annual meeting (satellite data assimilation), Miami, Florida
2015 Invited speaker, NASA planning workshop on "tornadogenesis in supercells", Norman, Oklahoma
2015 Invited speaker, 14th CAS-TWAS-WMO Forum on Coupled Data Assimilation Symposium, Beijing
2015 Invited Lecturer, Data Assimilation Summer School, 14th CAS-TWAS-WMO Forum, Beijing
2015 Invited speaker, NSF-MOST joint workshop on extreme precipitation, Taipei, Taiwan
2015 Invited Lecturer, Data Assimilation Summer School, NCAR, Boulder, Colorado
2015 Invited speaker, Eugenia Kalnay Symposium, AMS Annual Meeting, Phoenix, Arizona
2014 Co-rapporteur, 8th Internal Workshop on Tropical Cyclones, WMO, Jeju, Korea
2014 Co-lead lecturer, WMO VCP short course on data assimilation, Hong Kong, China
2014 Keynote speaker, 8th Annual Workshop, Centre for Australian Weather and Climate Research, Melbourne, Australia
2014 Keynote speaker *on tropical cyclone predictability*, World Weather Open Science Conference, Montreal, Canada, August 2014
2014 Lead speaker *on tropical cyclone data assimilation*, 6th EnKF Workshop, Buffalo, New York
2014 Invited speaker on mesoscale dynamics and predictability of moist baroclinic waves, 1979 Presidents' Day Storm Colloquium, National Weather Service, College Park, Maryland, May, 2014
2014 Keynote speaker *on uncertainties in data assimilation and ensemble forecasting*, International Symposium on Data Assimilation, Munich, Germany, February 2014

2013 Planetary speaker on *regional scale ensemble based data assimilation*, South China Regional Conference on Numerical Weather Prediction, Guangzhou, 6/13

2013 Planetary speaker on *Advances and Challenges in Atmospheric Modeling*, NSF EarthCube Workshop on Modeling Workshop for the Geosciences, April 2013

2013 Invited speaker on *weather significant gravity waves and spontaneous balance adjustment*, Lance Bosart Symposium, University of Albany, Albany, New York, April 2013

2013 Planetary speaker on *Ensemble-based Data Assimilation: Inter-comparison, Hybrid and Coupling with Variational Methods at Mesoscales*, 9th International Conference on Mesoscale Convective Systems, Beijing, China

2013 Invited speaker on *Real-time Cloud-Permitting Hurricane Prediction with Assimilation of Inner-core Airborne Doppler Observations*, BIRS Workshop on Probabilistic Approaches to Data Assimilation for Earth Systems, Banff, Canada

2012 Planetary speaker on *Science Perspectives of Challenges and Opportunities for Regional-scale Data Assimilation and Ensemble Prediction*, NSF EarthCube Workshop on Data Assimilation and ensemble forecasting, Dec 2012

2012 Invited speaker, NOAA Science Day in Silver Spring, September 2012

2012 Invited speaker, Workshop on dynamics and predictability of high-impact weather and climate events. The International Commission on Dynamical Meteorology (ICDM), Kuming, China, August 2012

2012 Invited speaker, Advanced Indo-U.S. Workshop and Colloquium on Modeling and Data Assimilation for Tropical Cyclone Predictions to be held in Bhubaneswar, Odisha, India, July 9-14, 2012

2012 Invited speaker, APEC Typhoon Symposium and International Workshop on Typhoon and Flood to be jointly held at Taipei, Taiwan, June 4-7, 2012.

2012 Invited speaker, Workshop on Tropical/Extra-tropical Interactions in Climate, Abu Dhabi, March 2012

2011 Invited speaker, AGU fall meeting, session on Data Assimilation, San Francisco, California

2011 Invited speaker, Hurricane science workshop in honor of Frank Mark's 60th birthday, Miami, FL

2011 Invited speaker, Storm-scale radar data assimilation workshop, NSSL, Norman, OK

2011 Co-lead Lecturer, The CAAC Training Workshop, Rockville, Maryland

2011 Co-lead Lecturer, Summer School on Severe and Convective Weather, Nanjing University, China

2011 Invited speaker, International Workshop on Severe and Convective Weather, Beijing, China

2011 Invited speaker, WRF-for-hurricanes tutorial, National Center for Atmospheric Research, Boulder, CO

2011 Invited speaker, AGU Chapman Conference on Atmospheric Gravity Waves, Honolulu, Hawaii

2010 Invited speaker, NOAA annual review workshop on Hurricane Forecast Improvement Project, Miami, FL

2010 Co-lead Lecturer, The CAAC Training Workshop, University Park, Pennsylvania

2010 Invited speaker, The 2010 AMS Summer Community Meeting, University Park, Pennsylvania

2010 Invited speaker, The NOAA/NCAR DTC Ensemble Testbed (DET) Workshop, Boulder, Colorado

2010 Invited speaker, The Wyngaard Symposium on Atmospheric Turbulence, University Park, Pennsylvania

2010 Lecturer, Training Workshop for Delegation from China Meteorological Administration, Falls Church, VA

2009 Invited speaker, International Workshop on GRAPES NWP System, CMA, Beijing, China

2009 Invited speaker, US National Workshop on Mesoscale Probabilistic Prediction, Boulder, Colorado

2009 Keynote speaker, Workshop on Dynamics and Structure of Mesoscale Rainfall Systems, Changchun, China

2009 Lecturer, Summer School on Tropical Cyclones, NUIST, Nanjing, China

2009 Lecturer, Summer School on Quantitative Remote Sensing, Peking University, Beijing, China

2009 Invited speaker, Fluid Dynamics and Computational Science, American Physical Society March Meeting

2009 Invited speaker, Workshop on High-Resolution Hurricane Modeling, NHC, Miami, Florida

2009 Invited speaker, START08 Workshop, National Center for Atmospheric Research, Boulder, Colorado

2008 Invited speaker, Hurricane Data Assimilation and Modeling, American Geophysical Union, Fall Meeting

2008 Invited speaker, WMO Workshop on 4D-VAR and EnKF comparisons, Buenos Aires, Argentina

2008 Invited speaker, 5th Annual Meeting of the Asia Oceania Geosciences Society, Busan, South Korea
 2008 Invited speaker, Geophysical Data Assimilation workshop, Banff International Research Center, Canada
 2007 Invited speaker, Hurricane Prediction, American Geophysical Union, Fall Meeting, San Francisco
 2007 Keynote speaker, Workshop on Structure and Dynamics of Mesoscale Torrential Rainfall, Beijing, China
 2007 Invited speaker, International Workshop on Atmospheric Gravity Waves and Parameterizations, Korea
 2006 Co-lead lecturer, Summer School on Mesoscale Processes, Chinese Academy of Meteorological Sciences
 2006 Keynote speaker, 1st Workshop on Spontaneous Imbalance, Seattle, Washington
 2006 Invited speaker, Severe Weather Systems, AGU Western Pacific Geophysics Meeting, Beijing, China
 2006 Co-lead lecturer, Summer School on Mesoscale Processes, Chinese Academy of Meteorological Sciences
 2005 Co-lead lecturer, Summer School on Mesoscale Processes, Chinese Academy of Meteorological Sciences
 2005 Keynote speaker, 12th AMS Conference on Mesoscale Processes, Albuquerque, New Mexico
 2002 Co-lead lecturer, Summer School on Mesoscale Processes, Chinese Academy of Meteorological Sciences

Invited Seminars at Research Institutions and Universities

155. Massachusetts Institute of Technology, Special Lecture Series (VII, hurricane BL), 1 December 2015
 154. Harvard University, Special Seminar (data assimilation and parameter estimation), 23 November 2015
 153. Massachusetts Institute of Technology, Department of Mechanical Engineering, 20 November 2015
 152. Massachusetts Institute of Technology, Special Lecture Series (VI, regional climate), 10 November 2015
 151. University of Rhode Island, 6 November 2015
 150. Massachusetts Institute of Technology, Special Lecture Series (V, diurnal cycle), 3 November 2015
 149. Massachusetts Institute of Technology, Special Lecture Series (IV, TC predictability), 20 October 2015
 148. Harvard University, Special Seminar (gravity waves), 7 October 2015
 147. Massachusetts Institute of Technology, Special Lecture Series (III, gravity waves), 29 September 2015
 146. Massachusetts Institute of Technology, Special Lecture Series (II, data assimilation), 22 September 2015
 145. Massachusetts Institute of Technology, Special Lecture Series (I, predictability), 14 September 2015
 144. European Center for Medium Range Forecasting (ECMWF), 25 July 2015
 143. University of Reading II (on gravity waves), United Kingdom, 24 July 2015
 142. University of Reading I (on data assimilation), United Kingdom, 22 July 2015
 141. Anqing Meteorological Bureau, Anqing, China, July 2015
 140. Anhui Meteorological Observatory, Hefei, China, July 2015
 139. Nanjing University, Nanjing, China, July 2015
 138. Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China, July 2015
 137. Beijing Normal University, Beijing, China, July 2015
 136. Chinese Academy of Meteorological Sciences, Beijing, China, June 2015
 135. National Taiwan University, Taiwan, June 2015
 134. National Central University, Taiwan, June 2015
 133. Stockholm University, Stockholm, Sweden, May 2015
 132. National Center for Atmospheric Research, Boulder, Colorado, May 2015
 131. University of Oklahoma, February 2015
 130. Environmental Modeling Center, NCEP/NOAA, February 2015
 129. Florida State University, Tallahassee, Florida, January 2015
 128. Environmental Canada II (on data assimilation), Montreal, Montreal, January 2015
 127. Environmental Canada I (on Predictability), Montreal, Montreal, January 2015
 126. Tropical and Marine Meteorology Research Institute, Guangzhou, China, December 2014
 125. Nanjing University, Nanjing, China, December 2014
 124. Peking University, Beijing, China, December 2014

123. Anhui Meteorological Observatory, Hefei, Anhui, November 2014
122. Hong Kong Observatory, Hong Kong, SAR, China, November 2014
121. University of Melbourne, Melbourne, Australia, November 2014
120. Australia Weather Bureau, Melbourne, Australia, November 2014
119. Naval Research Laboratory, Monterey, California, May 2014
118. Lawrence Liverpool National Laboratory (LLNL, DOE), California, April 2014
117. Depart of Atmospheric and Oceanic Sciences, UCLA, Los Angles, California, March 2014
116. University of Mainz, Mainz, Germany, March 2014
115. Institut fuer Atmosphaere und Umwelt, Johann Wolfgang Goethe-Universitaet Frankfurt, March 2014
114. Swiss Federal Institute of Technolgy in Zurich (ETHZ), Zurich, Switzerland, March 2014
113. Institut für Physik der Atmosphäre, DLR (German NASA), Oberpfaffenhofen, Germany, February 2014
112. Department of Meteorology, Pennsylvania State University, University Park, Pennsylvania 2014
111. Department of Atmospheric Sciences, Colorado State University, Ft Collins, Colorado, 2013
110. Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China, July 2013
109. Meteorological Center, Civil Aviation Administration of China, Beijing, China, July 2013
108. Anhui Meteorological Bureau, Hefei, China, July 2013
107. University of Science and Technology of China, Hefei, China, July 2013
106. China National Meteorological Center, Beijing, China, July 2013
105. Nanjing University, Nanjing, China, July 2013
104. Chinese Academy of Meteorological Sciences, Beijing, China, July 2013
103. National Center for Atmospheric Research, Boulder, Colorado, May 2013
102. North Carolina State University, Raleigh, North Carolina, April 2013
101. China National Meteorological Center, Beijing, China, March 2013
100. Zhongshan University, Guangzhou, China, August 2012
99. CMA Tropical and Marine Research Institute, Guangzhou, China, August 2012
98. Nanjing University, Nanjing, China, August 2012
97. Chinese Academy of Meteorological Sciences, Beijing, China, July 2012
96. Peking University, Beijing, China, July 2012
95. National Central University, Taipei, Taiwan, June 2012
94. National Taiwan University, Taipei, Taiwan, June 2012
93. Taiwan Central Weather Bureau, Taipei, Taiwan, June 2012
92. National Center for Atmospheric Research, Boulder, Colorado, May 2012
91. California Institute of Technology, Pasadena, California, March 2012
90. NASA Jet Propulsion Laboratory (JPL), Pasadena, California, March 2012
89. Scripps Institute of Oceanography, University of San Diego, La Jolla, California, March 2012
88. Penn State University, Department of Mathematics, University Park, Pennsylvania, February 2012
87. Distinguished Lecture Series, Florida International University, Miami, Florida, November 2011
86. NASA Goddard Space Flight Center, Silver Spring, Maryland
85. Peking University, Beijing, China, July 2011
84. Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China, July 2011
83. National Meteorological Center, Beijing, China, June 2011
82. Chinese Academy of Meteorological Sciences, Beijing, China, June 2011
81. NOAA National Center for environmental Prediction, May 2011
80. National Center for Atmospheric Research, Boulder, Colorado, April 2011
79. Naval Research Laboratory, Monterey, California, April 2011
78. I.M. System Group, Inc. (IMSG), Rockville, Maryland, January 2011
77. University of Wisconsin, Madison, Wisconsin, November 2010

76. Penn State University, Department of Meteorology, University Park, Pennsylvania, November 2010
75. University of Illinois at Urbana-Champaign, September 2010
74. Purdue University, Department of Statistics, West Lafayette, Indiana, September 2010
73. Purdue University, Department of Earth and Atmospheric Sciences, West Lafayette, Indiana, September 2010
72. University of South Florida, St. Petersburg, Florida, September 2010
71. Nanjing University, Nanjing, China, June 2010
70. PLA, Institute of Air Force Meteorology, Nanjing, China, June, 2010
69. Nanjing University of Information Science and Technology, Nanjing, China, June 2010
68. China State Key Laboratory of Severe Weather, Beijing, China, June 2010
67. Peking University, School of Physics, Beijing, China, June 2010
66. Chinese Academy of Meteorological Sciences, Beijing, China, June 2010
65. Penn State University, Department of Meteorology, University Park, Pennsylvania, February 2010
64. Penn State University, Department of Mathematics, University Park, Pennsylvania, December 2009
63. Courant Institute of Mathematics, New York University, New York, September 2009
62. Chinese Academy of Meteorological Sciences, Beijing, China, July 2009
61. Institute of Atmospheric Physics, Chinese Academy of Science, Beijing, China, June 2009
60. Anhui Meteorological Bureau, Hefei, China, June 2009
59. Peking University, Beijing, China, June 2009
58. University of Maryland, College Park, Maryland, April 2009
57. Texas Commission for Environmental Quality, Austin, Texas, December 2008
56. Penn State University, Department of Statistics, University Park, Pennsylvania, November 2008
55. Texas Commission for Environmental Quality, Austin, Texas, December 2008
54. Penn State University, Department of Meteorology, University Park, Pennsylvania, November 2008
53. NOAA Hurricane Research Division, Miami, Florida, November 2008
52. NOAA National Center for environmental Prediction, October 2008
51. NOAA National Hurricane Center, Miami, Florida, July 2008
50. Massachusetts Institute of Technology, Boston, Massachusetts, February 2008
49. Columbia University, New York, New York, February 2008
48. National Center for Atmospheric Research, Boulder, Colorado, January 2008
47. Penn State University, University Park, Pennsylvania, October 2007
46. Naval Postgraduate School, Monterey, California, September 2007
45. Naval Research Laboratory, Monterey, California, September 2007
44. Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China, July 2007
43. Chinese National Meteorological Center, Beijing, China, July 2007
42. Chinese Academy of Meteorological Sciences, Beijing, China, July 2007
41. Anhui Meteorological Bureau, Hefei, China, June 2007
40. University of Science and Technology of China, Hefei, China, June 2007
39. Nanjing University, Nanjing, China, June 2007
38. Nanjing University of Information Science and Technology, Nanjing, China, June 2007
37. China State Key Laboratory for Atmospheric Optics, Hefei, China, June 2007
36. Peking University, Beijing, China, May 2007
35. DLR, Institut für Physik der Atmosphäre, Germany, May 2007
34. University Innsbruck, Austria, May 2007
33. LMD and Ecole Normale Supérieure, Paris, France, May 2007
32. Ecole Polytechnique, Paris, France, April 2007
31. Stony Brook University, Stony Brook, New York, February 2007
30. Japanese Meteorological Bureau, Tokyo, Japan, February 2007

29. Korean Meteorological Bureau, Seoul, Korea, February 2007
28. Georgia Institute of Technology, January 2007
27. NOAA Hurricane Research Division, January 2007
26. University of Texas, Austin, Texas, November 2006
25. University of Illinois at Urbana-Champaign, Urbana, Illinois, November 2006
24. Navy Research Lab, Monterey, California, October 2006
23. Anhui Meteorological Bureau, Hefei, China, August 2006
22. University of Science and Technology of China, Hefei, China, July 2006
21. Institute of Atmospheric Physics, Chinese Academy of Science, Beijing, China, August 2005
20. Anhui Meteorological Bureau, Hefei, China, August 2005
19. Navy Research Lab, Monterey, California, March 2005
18. Texas A&M University, College Station, Texas, November 2004
17. MIT, Program of Atmospheric and Oceanic Sciences, Cambridge, Massachusetts, October 2004
16. Nanjing University, Department of Atmospheric Sciences, Nanjing, China, July 2004
15. Shanghai Typhoon Institute, CAMS, Shanghai, China, July 2004
14. Shaanxi Meteorological Bureau, Xi'an, China, June 2004
13. Institute of Earth Environment, Chinese Academy of Sciences, Xi'an, China, June 2004
12. Chinese Academy of Meteorological Sciences, Beijing, China, June 2004
11. University of Hawaii, Honolulu, Hawaii, January 2004
10. Texas A&M University, College Station, Texas, November 2003
9. Chinese Academy of Meteorological Sciences, Beijing, China, July 2002
8. Institute of Atmospheric Physics, Chinese Academy of Science, Beijing, China July 2002.
7. Nanjing University, Nanjing, China, June 2002
6. NOAA/Forecast System Lab, Boulder, Colorado, March 2002
5. University of Oklahoma, Norman, Oklahoma, February 2002
4. Texas A&M University, College Station, Texas, April 2001
3. University of Nebraska, Lincoln, Nebraska, February 2001
2. National Center for Atmospheric Research, Boulder Colorado, March 2001
1. Navy Research Lab, Monterey, California, August 2000.

Funded Research Projects

41. **Zhang, F.**, E. Clothiaux: "Improving weather prediction and precipitation estimation through advanced ensemble assimilation using GPM microwave brightness temperature with coherent microphysics parameterization and radiative transfer models", NASA, 01/01/16-12/31/18, \$509,698.
40. **Zhang, F.**, D Stensrud, E. Clothiaux: "Assimilating GOESR Satellite Observations with Advanced Ensemble-based Data Assimilation for Prediction and Predictability of Tornadoic Thunderstorms", NASA, 07/01/15-06/30/18, \$515,496.
39. **Zhang, F.**, E. Clothiaux: "Prediction and Predictability of Tropical Cyclones through Advanced Ensemble-Based Assimilation of Satellite Observations", ONR, 04/13/15-01/31/18, \$464,729.
38. **Zhang, F.:** "Dynamics and predictability of hurricane structure and intensity changes through analysis and forecasts with HS3 field campaign observations", NASA/GSFC, 06/01/15-05/31/16, \$132,721.
37. Davis, K. et al.: "NASA Earth Venture --- Atmospheric Carbon Transport (ACT American)", NASA, 02/01/15-01/31/2020, \$30million shared among many institutions (**F. Zhang, co-I**, 1 month per year effort).
36. Verlinder J., E. Clothiaux, M. Kumjian, J. Harrington, **F. Zhang:** Arctic Cloud Microphysical Processes, DOE, 07/15/15-07/14/19, \$898,556.

35. **Zhang, F.:** Hurricane WRF data assimilation and initialization, NOAA subcontract through Colorado State University. \$300,000. 7/1/2014-6/30/2016.
34. Sieron, S. D. (Ph.D. advisor **F. Zhang**): NSF Graduate Student Research Fellowship, National Science Foundation (NSF); 9/1/2013-8/31/2016.
33. **Zhang, F.:** Dynamics and Predictability of Tropical Weather and Climate through Cloud-resolving Ensemble Assimilation of Sounding and Radar Observations from DYNAMO. \$476,672; National Science Foundation (NSF); 5/1/2013-4/30/2016.
32. **Zhang, F.:** Dynamics and Impacts of Moist Gravity Waves in the Baroclinic Jet-front Systems. \$542,264; National Science Foundation (NSF); 8/1/2011-7/31/2016.
31. **Zhang, F.:** Predictability and Dynamics of Tropical Cyclones through Assimilation Global-Hawk Observations with Ensemble-based Data Assimilation. \$389,281; National Aeronautics and Space Administration (NASA); 7/1/2012-6/30/2016.
30. **Zhang, F.:** NASA Subcontract through Morgan State University and MSG. \$184,484; 10/1/2012-9/30/2016.
29. **Zhang, F.:** Joint Development of the COAMPS-ENKF Data Assimilation System for Cloud-Resolving Analysis and Prediction of Tropical Cyclones. Office of Navy Research (ONR); 2/1/12-1/31/15, \$379,963.
28. **Zhang, F.:** "Realtime Convection-permitting ensemble analysis and prediction of Atlantic hurricanes through assimilating airborne, radar and satellite observations. National Oceanic and Atmospheric Administration (NOAA), 1/1/2012 - 12/31/2013, \$300,000.
27. **Zhang, F.:** Miller Faculty Research Fellowship, College of Earth and Mineral Sciences, Pennsylvania State University. \$50,000; 7/1/2011-6/30/2016.
26. Green, B.G. (Ph.D. advisor **F. Zhang**): NSF Graduate Student Research Fellowship, National Science Foundation (NSF); 9/1/2010-8/31/2014.
25. Duffy, C., K. Davis and **F. Zhang**: Resolving the Role of Groundwater-Surface Dynamics in Land-Atmosphere Interactions within a Multiscale Computation and Sensor Network: Juniata River Basin. NOAA, 8/1/10-7/31/13, \$212,000.
24. **Zhang, F.:** Support services during Pre-Depression Investigation of Cloud-systems in the Tropics (PREDICT), \$14,147; 8/1/2010-7/31/2011; NSF/National Center for Atmospheric Research (NCAR).
23. **Zhang, F.:** The Effects of Tropical Waves on the Formation and Structure of Tropical Cyclones, \$170,000; National Science Foundation (NSF); 07/22/2009-09/30/2011.
22. **Zhang, F.:** High-resolution tests for hurricane intensity forecast, \$238,000; NOAA/HFIP subcontracted through UCAR; 7/1/2010-9/30/2011.
21. **Zhang, F.:** Ensemble Data Assimilation and Predictability of Tropical Cyclones, \$340,978; Office of Navy Research (ONR); 2/01/2009-1/31/2012.
20. **Zhang, F.:** High-resolution tests for hurricane intensity forecast, \$150,000; NOAA/HFIP subcontracted through UCAR; 6/1/2009-9/31/2010.
19. **Zhang, F.:** Doppler radar observations and ensemble-based data assimilation for cloud-resolving hurricane prediction, \$550,146; National Science Foundation (NSF); 2/01/2009-1/31/2012.
18. **Zhang, F.:** Flow and Regime Dependent Mesoscale Predictability (second expansion of YIP award). \$46,253; Office of Navy Research (ONR); 9/1/2008-08/31/2009.
17. **Zhang, F.** and J. Nielsen-Gammon: Ensemble Kalman filter implementation and testing in support of air quality modeling", Texas Commission on Environmental Quality (TCEQ), 06/01/2008-08/31/2009.
16. Nielsen-Gammon J. and **Zhang, F.:** Validation and improvement of vertical mixing and surface fluxes, \$159,385; Texas Environmental research consortium (TERC), 04/01/2008-08/31/2009.
15. Bowman, B. and **F. Zhang**: Collaborative Research: Stratosphere-Troposphere Analyses of Regional Transport (START) Experiment (2008), \$200,000, National Science Foundation (NSF); 11/01/2007-10/31/2010.

14. **Zhang, F.**: Flow and Regime Dependent Mesoscale Predictability (in expansion of YIP award). \$36,041; Office of Navy Research (ONR); 10/01/07-08/31/08.
13. **Zhang, F.**: Dynamics and Impacts of Mesoscale Gravity Waves from Baroclinic Jet-front Systems. \$399,961; National Science Foundation (NSF); 11/1/06-10/31/11.
12. Genton, M, K. Bowman, R. Saravana, B. Mallick, M. Jun, **F. Zhang** and G. North: CMG: Non-Gaussian Statistical Analysis of Large Climate Datasets and Simulations. \$1,030,000. National Science Foundation (NSF); 09/01/06-08/31/09.
11. **Zhang, F.**: Flow and Regime Dependent Mesoscale Predictability (Young Investigator Award or YIP). \$299,978; Office of Navy Research (ONR); 06/01/04-05/31/08.
10. **Zhang, F.**: Collaborative Research: Ensemble-based State Estimation for Weather Research and Forecast Model. \$295,000; National Science Foundation (NSF); 09/01/02-08/31/08.
9. Collins, D. R., S. Brook, John Nielsen-Gammon, S. North, G. Schade, R. Zhang and **F. Zhang**: Characterization of Eastern Texas Air Quality for the TexAQS-2 Experiment, \$320,216, EPA (through the University of Houston), 05/2007-04/2009.
8. **Zhang, F.**: Dynamics and Impacts of Mesoscale Gravity Waves. \$224,834; National Science Foundation (NSF); 09/15/02-02/28/07.
7. Carey, L. C. and **F. Zhang**: Doppler Radar Observations of Boundary Layer Winds over Houston and Dallas Fort Worth in Support of TexAQS II”, \$120,000; Texas Commission on Environmental Quality (TCEQ); 2005-2006
6. Nielsen-Gammon, J. W., R. Zhang and **F. Zhang**: HT1: Modeling in Support of Texas AQS-II and 8-Hour Ozone Assessment (TAMU Component). \$120,000; Texas Air Research Center (TARC); 11/2004-11/2005
5. Nielsen-Gammon, J. W., C. E. Epifanio and **F. Zhang**: Development of Joint Multi Pollutant Air Quality Modeling Facilities & Air Monitoring for Houston-Galveston Metropolitan. \$329,995; EPA through University of Houston, 08/01/02-07/31/05
4. Nielsen-Gammon, J. W., A. L. Stuart and **F. Zhang**: Meteorological Model Improvements Using the Ensemble Kalman Filter. Texas Air Research Center (TARC); 12/01/03-11/30/04
3. **Zhang, F.**: Turbulence and Mesoscale Gravity Waves Generation from Baroclinic Jet-Front System. \$10,000; NOAA; 07/01/02- 06/30/03
2. Rotunno, R., C. Snyder and **F. Zhang**: Mesoscale Predictability Estimation through Explicit Simulation of Moist Baroclinic Waves (PI: Rich Rotunno). \$100,000; NCAR/USWRP; 10/01/01-09/30/03
1. John W. Nielsen-Gammon and **F. Zhang**: Enhanced Meteorological Modeling and Performance Evaluation. Texas Engineering Experiment Station. \$132,000; 09/01/2001-08/31/2002

Books Authored or Edited

4. North, G.R., J. Pyle, and **F. Zhang** (eds), 2014: *Encyclopedia of Atmospheric Sciences, 2nd edition*, Volumes I-VI, Academic Press, 2998 pages (ISBN-10: 0123822254).
3. Sippel, J. A and **F. Zhang**, 2010: *Predictability of Tropical Cyclones -- Understanding the Limits and Uncertainties in Hurricane Prediction*. VDM Verlag, 178pp.
2. **Zhang, F.** (ed.), 2011: *Computing in Science and Engineering*, Special Issue on “Hurricane Prediction”, American Institute of Physics.
1. Ide, K. and **F. Zhang** (eds), 2009: *Monthly Weather Review*, Special Issue on “Mathematical Advancement in Geophysical Data Assimilation”, American Meteorological Society.

Books Chapters Authored

6. **Zhang, F.**, C. Melhauser*, D. Tao*, Y. Q. Sun*, E. B. Munsell*, Y. Weng* and J. A. Sippel*, 2015:

- Predictability of Severe Weather and Tropical Cyclones at the Mesoscales. To appear in *Dynamics and Predictability of Large-scale, High-impact Weather and Climate Events* (eds, J. Li, R. Swinbank, H. Volkert and R. Grotjahn). Cambridge University Press.
5. Plougonven, R., and F. Zhang, 2015: Gravity waves generated by jets and fronts and their relevance for clear-air turbulence. *Aviation Turbulence: Processes, Measurement* (Eds R. Sharman and T. Lane), Springer, in press.
 4. **Zhang, F.**: Data assimilation and Predictability of Tropical Cyclones. To appear in *Advanced Numerical Modeling and Data Assimilation Techniques for Tropical Cyclone Predictions* (eds. UC Mohanty and SG Gopalakrishnan). Capital Press, India and Springer, Germany.
 3. Routray, A. and **F. Zhang**: Data assimilation Data Assimilation: Comparison and Hybridization between Ensemble and Variational Methods. To appear in *Advanced Numerical Modeling and Data Assimilation Techniques for Tropical Cyclone Predictions* (eds. UC Mohanty and SG Gopalakrishnan). Capital Press, India and Springer, Germany.
 2. Plougonven, R. and **F. Zhang**, 2015: *Gravity waves generated by jets and fronts and their relevance for clear-air turbulence*. *Aviation Turbulence: Processes, Measurement* (Eds R. Sharman and T. Lane), Springer, in press.
 1. Meng, Z and **F. Zhang**, 2014: *Ensemble based data assimilation*. *Encyclopedia of Atmospheric Sciences*, 2nd edition, G. North, J. Pyle and F. Zhang eds., Academic Press, Volume 2, 241-247.

Journal Publications (student/postdoc/associate co-authors denoted with “”)**

(Total citations as of 1/2016: Google Scholar 5285, h-index 42; Web of Science 3785, h-index 34)

2016

175. **Zhang, F.**, and K. A. Emanuel, 2016: On the role of surface fluxes and WISHE in tropical cyclone intensification. *Journal of the Atmospheric Sciences*, submitted.
174. Houtekamer, P.L. and **F. Zhang**, 2016: Review of the Ensemble Kalman Filter for Atmospheric Data Assimilation. *Monthly Weather Review*, submitted.
173. Sippel, J.A., **F. Zhang**, Y. Weng*, Scott A. Braun, and D. Cecil, 2016: Further Exploring the Potential for Unmanned Aircraft to Benefit Hurricane Analyses and Forecasts. *Tropical Cyclone Research and Review*, submitted.
172. Munsell, E. B.*, **F. Zhang**, J. A. Sippel, S. A. Braun, 2015: Dynamics and predictability of the rapid intensification of Hurricane Edouard (2014). *Journal of the Atmospheric Sciences*, submitted.
171. Chen*, H. W., R. B. Alley, **F. Zhang**, 2016: Interannual Arctic sea-ice variability and associated winter weather patterns: A regional perspective for 1979–2014. *Journal of Geophysical Research*, submitted.
170. **Zhang, F.**, M. Minamide*, E.E. Clothiaux, Potential Impacts of Assimilating All-sky Satellite Radiances from GOES-R on Convection-Permitting Analysis and Prediction of Tropical Cyclones through EnKF Assimilation of Reconnaissance Aircraft Observations. *Geophysical Research Letters*, submitted.
169. Further Exploring the Potential for Assimilation of Unmanned Aircraft Observations to Benefit Hurricane Analyses and Forecasts. *Tropical Cyclone Research and Review*, submitted.
168. Weng, Y.* and **F. Zhang**, 2016: Advances in Convection-permitting Tropical Cyclone Analysis and Prediction through EnKF Assimilation of Reconnaissance Aircraft Observations. *Journal of Meteorological Society of Japan*, accepted pending minor revisions (invited submission).
167. Wei, J.*, **F. Zhang**, and J. H. Richter, 2016: Toward Improving Nonorographic Gravity Wave Parameterizations: An Analysis of Gravity Wave Spectral Characteristics in Moist Baroclinic Jet-Front Systems. *Journal of the Atmospheric Sciences*, accepted pending revision.

166. Stern, D. P.*, and **F. Zhang**, 2016: The Warm Core Structure of Hurricane Earl (2010). *Journal of the Atmospheric Sciences*, accepted pending revision.
165. Tang, X.*, and **F. Zhang**, 2016: Impacts of the Diurnal Radiation Cycle on the Formation, Intensity and Structure of Hurricane Edouard (2014). *Journal of the Atmospheric Sciences*, accepted pending revision.
164. Li, M.*, Q. Zhang and **F. Zhang**, 2016: Hail Frequency and its Association with Atmospheric Circulation Patterns in Mainland China during 1960-2012. *Journal of Climate*, accepted pending revision.
163. Fang, J. and **F. Zhang**, 2016: Contribution of tropical waves to the formation of Super Typhoon Megi (2010). *Journal of the Atmospheric Sciences*, submitted.
162. Melhauser, C.*, and **F. Zhang**, 2016: Application of a Simplified Co-plane Wind Retrieval Using Dual-Beam Airborne Doppler Radar Observations for Tropical Cyclone Prediction. *Monthly Weather Review*, accepted pending revision.
161. Poterjoy, J.*, and **F. Zhang**, 2016: Comparison of hybrid four-dimensional data assimilation methods with and without the tangent linear and adjoint models for predicting the life cycle of Hurricane Karl (2010). *Monthly Weather Review*, accepted pending minor revision.
160. Chen*, H. W., **F. Zhang**, R. B. Alley, 2016: Nonlinear atmospheric response to Arctic sea-ice loss under different sea ice scenarios", *Journal of Climate*, submitted.
159. Sun, Y.Q.*, and **F. Zhang**, 2015: Intrinsic versus practical limits of atmospheric predictability and the significance of the butterfly effect. *Journal of the Atmospheric Sciences*, in press.
158. Dong, L.*, and **F. Zhang**, 2015: OBEST: An observation-based ensemble setting technique for tropical cyclone track forecasting. *Weather and Forecasting*, in press.
157. Zhang, Y. J.*, **F. Zhang**, Z. Meng, D. J. Stensrud 2016: Intrinsic Predictability of the 20 May 2013 Tornadoic Thunderstorm Event in Oklahoma at Storm Scales. *Monthly Weather Review*, in press.
156. Qiu, X.*, and **F. Zhang**, 2016: Prediction and Predictability of an extreme local rainfall event through EnKF assimilation of radar observations. *Science China-Earth Sciences*, in press.
155. Zhu, L., Q. Wang, X. Shen, Z. Meng, **F. Zhang**, Y. Weng; Y. Gao, Y. Zhang, and J. Yue, 2016: Prediction and Predictability of a High-impact Western Pacific Landfalling Typhoon Vicente (2012) through Convection-permitting Ensemble Assimilation of Doppler Radar Velocity. *Monthly Weather Review*, in press.
154. Mrowiec, A.A., O. M. Pauluis and **F. Zhang**, 2016: Isentropic analysis of a simulated hurricane. *Journal of the Atmospheric Sciences*, in press.
153. Zhao, K. Q. Li, W-C Lee, Y.Q. Sun* and **F. Zhang**, 2016: Doppler Radar Analysis of Triple Eyewalls in Typhoon Usagi (2013). *Bulletin of the American Meteorological Society*, doi: <http://dx.doi.org/10.1175/BAMS-D-15-00029.1>.

2015

152. Tao, D.*, and **F. Zhang**, 2015: Effects of Vertical Wind Shear on the Predictability of Tropical Cyclones: Practical versus Intrinsic Limit. *Journal of Advances in Modeling Earth Systems (JAMES)*, DOI: 10.1002/2015MS000474.
151. Shu*, S., and **F. Zhang**, 2015: Influence of Equatorial Wave Disturbances on the Genesis of Super Typhoon Haiyan (2013). *Journal of the Atmospheric Sciences*, **72**, 4591-4613.
150. Shi, Y.*, K. J. Davis, **F. Zhang**, C. J. Duffy, and X. Yu, 2015: Parameter estimation of a physically-based land surface hydrologic model using an ensemble Kalman filter: A multivariate real-data experiment. *Advances in Water Resources*, **83**, 421-427.
149. Colle, B. A., M. H. Bowman, K. J. Roberts, M. J. Bowman, C. N. Flagg, and J. Kuang, Y. Weng*, E.B. Munsell*, **F. Zhang**, 2015: Exploring the sensitivity of water level predictions for Metropolitan New York during Sandy (2012) using ensemble storm surge predictions. *J. Marine Science & Engineering*, **3**, 428-443.
148. Ying, Y.*, and **F. Zhang**, 2015: An adaptive covariance relaxation method for ensemble data assimilation. *Quarterly Journal of the Royal Meteorological Society*, **141**, 2898–2906.

147. Munsell, E. B.*, J. A. Sippel, S. A. Braun, Y. Weng*, **F. Zhang**, 2015: Dynamics and predictability of Hurricane Nadine (2012) evaluated through convection-permitting ensemble analysis and forecasts with NASA HS3 field campaign observations. *Monthly Weather Review*, **143**, 4514–4532.
146. Zhang, Y. J.*, **F. Zhang**, Z. Meng, D. J. Stensrud 2015a: Predictability of the 20 May 2013 Tornadic Thunderstorm Event in Oklahoma: Sensitivity to Synoptic Timing and Topographical Forcing. *Monthly Weather Review*, **143**, 2973-2997.
145. Yun*, Y., Q. Zheng, B. Green*, and **F. Zhang**, 2015: Mitigating atmospheric effects in the InSAR measurement through high-resolution data assimilation and numerical simulations with a weather prediction model. *International Journal of Remote Sensing*, **36**, 2129-2147.
144. **Zhang, F.**, J. Wei*, M. Zhang*, K.B. Bowman, L.L. Pan, E. Atlas, and S.C. Wofsy, 2015: Aircraft Measurements of Gravity Waves in the Upper Troposphere and Lower Stratosphere during the START08 Field Experiment. *Atmospheric Chemistry and Physics*, **15**, 7667-7684.
143. Green, B.W.*, and **F. Zhang**, 2015b: Numerical simulations of Hurricane Katrina (2005) in the turbulent gray zone. *Journal of Advanced Modeling in Earth Sciences*, **7**, 142-161.
142. Green, B.W.*, and **F. Zhang**, 2015a: Idealized Large Eddy Simulations of a Tropical Cyclone-Like Boundary Layer. *Journal of the Atmospheric Sciences*, **72**, 1743-1746.
141. Poterjoy, J.*, and **F. Zhang**, 2015a: Systematic comparison of tangent-linear and ensemble-based four-dimensional data assimilation methods using hybrid background error covariance: E4DVar versus 4DEnVar. *Monthly Weather Review*, **143**, 1601-1621.
140. Stern, D. P.*, J. Vigh, D. S. Nolan, and **F. Zhang**, 2015: Revisiting the Relationship Between Eyewall Contraction and Intensification. *Journal of the Atmospheric Sciences*, **72**, 1283-1306.
139. Wang, S., A. H. Sobel, **F. Zhang**, Y. Qiang Sun*, Y. Yue*, L. Zhou, 2015: Regional Simulation of the October and November MJO Events Observed during the CINDY/DYNAMO Field Campaign at Gray Zone Resolution. *Journal of Climate*, **28**, 2097-2119.
138. Chi, Y.*, **F. Zhang**, W. Li*, J. He, and Z. Guan, 2015: Correlation between the Onset of the East Asian Subtropical Summer Monsoon and the Eastward Propagation of the Madden–Julian Oscillation. *Journal of the Atmospheric Sciences*, **72**, 1200-1214.
137. Qian, T., P. Zhao, **F. Zhang**, and X. Bao, 2015: Rainy season precipitation over Sichuan Basin. *Monthly Weather Review*, **143**, 383-394.
136. Wei, J* and F. Zhang, 2015: Tracking gravity waves in moist baroclinic waves. *Journal of Advanced Modeling in Earth Sciences* (JAMES), DOI: 10.1002/2014MS000395
135. **Zhang, F.**, and Y. Weng*, 2015: Predicting Hurricane Intensity and Associated Hazards: A Five-Year Real-Time Forecast Experiment with Assimilation of Airborne Doppler Radar Observations. *Bulletin of the American Meteorological Society*, **96**, 25-32.

2014

134. Zhang, X., X.-Y. Huang, J. Liu, J. Poterjoy*, Y. Weng* and F. Zhang, 2014: Development of an efficient regional four-dimensional variational data assimilation system for WRF. *Journal of Atmospheric and Oceanic Technology*, **31**, 2777-2794.
133. Sippel, J.A., F. Zhang, Y. Weng*, Lin Tian, Gerald M. Heymsfield, and Scott A. Braun, 2014: Ensemble Kalman Filter Assimilation of HIWRAP Observations of Hurricane Karl (2010) from the Unmanned Global Hawk Aircraft. *Monthly Weather Review*, **142**, 4559-4580.
132. Zhang, Y. C.*, F. Zhang, and J. Sun, 2014: Comparison of the diurnal variations of warm-season precipitation for East Asia versus North America downstream of the Tibetan Plateau versus the Rocky Mountains. *Atmospheric Chemistry and Physics*, **14**, 10741-10759.
131. Zhen, Y.*, and F. Zhang, 2014: A Probabilistic Approach of Adaptive Covariance Localization For Serial Ensemble Square-root Filters. *Monthly Weather Review*, **142**, 4499-4518.

130. Taraphdar*, S., P. Mukhopadhyay, R. L. Lueng, **F. Zhang**, S. Abhilash, and B. N. Goswami, 2014: The Role of Moist Processes in the Intrinsic Predictability of Indian Ocean Cyclones. *Journal of Geophysical Research*, **119**, doi:10.1002/2013JD021265.
129. Poterjoy, J.*, **F. Zhang**, 2014: Inter-comparison and coupling of ensemble and variational data assimilation approaches for the analysis and forecasting of Hurricane Karl (2010). *Monthly Weather Review*, **142**, 3347-3364.
128. Zhang, Y. J.*, Z. Meng, Y. Weng*, and **F. Zhang**, 2014: Predictability of Tropical Cyclone Intensity Evaluated through 5-year Forecasts with a Convection-permitting Regional-scale Model in the Atlantic Basin. *Weather and Forecasting*, **29**, 1003-1023.
127. Tao, D.*, and **F. Zhang**, 2014: Effect of environmental shear, sea-surface temperature and ambient moisture on the formation and predictability of tropical cyclones: an ensemble-mean perspective. *Journal of Advanced Modeling in Earth Sciences*, **6**, 384-404.
126. Shi*, Y., K. J. Davis, **F. Zhang**, C. J. Duffy, 2014: Parameter Estimation of a Physically-Based Land Surface Hydrologic Model Using the Ensemble Kalman Filter: A Synthetic Experiment. *Water Resources Research*, **50**, 706-724.
125. Shu, S., **F. Zhang**, Y. Wang and J. Ming, 2014: Environmental Influences on the Intensity Changes of Tropical Cyclones over the Western North Pacific. *Atmospheric Chemistry and Physics*, **14**, 6329–6342.
124. Bei, N., and **F. Zhang**, 2014: Mesoscale Predictability of Moist Baroclinic Waves: Variable and Scale Dependent Error Growth. *Advances in Atmospheric Sciences*, 995-1008. doi: 10.1007/s00376-014-3191-7.
123. Green, B.W.*, and **F. Zhang**, 2014: Sensitivity of Tropical Cyclone Simulations to Parametric Uncertainties in Air-Sea Fluxes and Implications for Parameter Estimation. *Monthly Weather Review*, **142**, 2290-2308.
122. Shi*, Y., K. J. Davis, **F. Zhang**, C. J. Duffy, 2014: Evaluation of the Parameter Sensitivities of a Coupled Land Surface Hydrologic Model. *Journal of Hydrometeorology*, **15**, 279-299.
121. Poterjoy, J.*, **F. Zhang**, and Y. Weng*, 2014: The effects of sampling error on the EnKF assimilation of inner-core hurricane observations. *Monthly Weather Review*, **142**, 1609-1630.
120. Poterjoy, J.*, **F. Zhang**, 2014: Predictability and genesis of Hurricane Karl (2010) examined through the EnKF assimilation of field observations collected during PREDICT. *Journal of the Atmospheric Sciences*, **71**, 1260-1275.
119. Melhauser, C.*, and **F. Zhang**, 2014: Diurnal radiation cycle impact on the genesis of Hurricane Karl (2010). *Journal of the Atmospheric Sciences*, **71**, 1241-1259.
118. Wei, J.*, and **F. Zhang**, 2014: Mesoscale gravity waves in moist baroclinic jet-front systems. *Journal of the Atmospheric Sciences*, doi:10.1175/JAS-D-13-0171.1.
117. Plougonven, R., and **F. Zhang**, 2014: Internal gravity waves from jets and fronts. *Review of Geophysics*, doi: 10.1002/2012RG000419.
116. Munsell, E. B.* and **F. Zhang**, 2014: Prediction and uncertainty of Hurricane Sandy (2012) explored through a real-time cloud-permitting ensemble analysis and forecast system. *Journal of Advanced Modeling in Earth Sciences (JAMES)*, **6**, 1-20.

2013

115. **Zhang, F.**, and D. Tao*, 2013: Impacts of vertical wind shear on the predictability of tropical cyclones. *Journal of the Atmospheric Sciences*, **70**, 975-983.
114. Stern, D. P.*, and **F. Zhang**, 2013: How does the eye warm? Part I: A potential temperature budget analysis of an idealized tropical cyclone. *Journal of the Atmospheric Sciences*, **70**, 73-90.
113. Stern, D. P.*, and **F. Zhang**, 2013: How does the eye warm? Part II: Sensitivity to Vertical Wind Shear, and a Trajectory Analysis. *Journal of the Atmospheric Sciences*, **70**, 1849-1873.
112. Munsell, E. B.*, **F. Zhang**, and D. P. Stern*, 2013: Predictability and dynamics of a non-intensifying tropical storm: Erika (2009). *Journal of the Atmospheric Sciences*, **70**, 2505-2524.

111. **Zhang, F.**, M. Zhang*, and J. Poterjoy*, 2013: E3DVar: Coupling an ensemble Kalman filter with three-dimensional variational data assimilation in a limited-area weather prediction model and comparison to E4DVar. *Monthly Weather Review*, **141**, 900-917.
110. Xie, B.* , **F. Zhang**, Q. Zhang, J. Poterjoy*, and Y. Weng*, 2013: Observing Strategy and Observation Targeting for Tropical Cyclones using Ensemble-based Sensitivity Analysis and Data Assimilation. *Monthly Weather Review*, **141**, 1437-1453.
109. Green, B.W.* , and **F. Zhang**, 2013: Impacts of air-sea flux parameterizations on the intensity and structure of tropical cyclones. *Monthly Weather Review*, **141**, 1308-1324.
108. Sippel, J. A., S. A Braun, **F. Zhang**, and Y. Weng*, 2013: Ensemble Kalman Filter Assimilation of Simulated HIWRAP Doppler Velocity Data from a Hurricane. *Monthly Weather Review*, **141**, 2683-2704.
107. **Zhang, F.**, M. Zhang*, J. Wei*, and S. Wang, 2013: Month-long Simulations of Gravity Waves over North America and North Atlantic in Comparison with Satellite Observations. *Acta Meteorologica Sinica*, **27**, 446-454.
106. Bao, X.* , and **F. Zhang**, 2013: Evaluation of NCEP/CFSR, NCEP/NCAR, ERA-Interim and ERA-40 Reanalysis Datasets against Independent Sounding Observations over the Tibetan Plateau. *Journal of Climate*, **26**, 206–214.
105. Bao, X.* , and **F. Zhang**, 2013: Impacts of the Mountain-Plains Solenoid and Cold Pool Dynamics on the Diurnal Variation of Precipitation over Northern China. *Atmospheric Chemistry and Physics*, **13**, 6865-6982.
104. Hu, X.-M., P. M. Klein, M. Xue, **F. Zhang**, D. C. Doughty, and J. D. Fuentes, 2013: Impact of the Vertical Mixing Induced by Low-level Jet on Boundary Layer Ozone Concentration. *Atmospheric Environment*, **70**, 123-130.
103. Hu, X.-M., P. M. Klein, M. Xue, J. K. Lundquist, **F. Zhang**, and Y. Qi, 2013: Impact of Low-Level Jets on the Nocturnal Urban Heat Island Intensity in Oklahoma City. *Journal of Applied Meteorology and Climatology*, **52**, 1779-1801.
102. Sun*, Y., Y. Jiang, B. Tan and **F. Zhang**, 2013: Governing Dynamics in Secondary Eyewall Formation of Typhoon Sinlaku (2008). *Journal of the Atmospheric Sciences*, **70**, 3818-3837.
101. Sieron*, S. A., **F. Zhang**, and K. A. Emanuel, 2013: Feasibility of Tropical Cyclone Intensity Estimation Using Satellite-borne Radiometer Measurements: an Observing System Simulation Experiment, *Geophysical Research Letters*, **40**, 1–5, doi:10.1002/grl.50973, 2013.
100. Zhao, Q., **F. Zhang**, T. Holt, C. H. Bishop, Q. Xu, 2013: Development and Testing of A Mesoscale and Storm-scale Ensemble Data Assimilation System at The Naval Research Laboratory, *Weather and forecasting***28**, 1322–1336.
99. Qian*, C., **F. Zhang**, B. W., Green*, J. Zhang, X. Zhou*, 2013: Probabilistic Evaluation of the Dynamics and Prediction of Super Typhoon Megi (2010), *Weather and forecasting*, **28**, 1562–1577.

2012

98. Xie*, B and **F. Zhang**, 2012: Impacts of typhoon track, island topography and monsoon flow on the heavy rainfalls in Taiwan associated with Morakot (2009). *Monthly Weather Review*, **140**, 3379-3394.
97. Melhauser, C.* , and **F. Zhang**, 2012: Practical and intrinsic predictability of Severe and Convective Weather at the mesoscales. *Journal of the Atmospheric Sciences*, **69**, 3350-3371.
96. Qian*, C., Z. Li, **F. Zhang**, Y. Duan, 2013: Review on International Aircraft Reconnaissance of Tropical Cyclones. *Advances in Meteorological Sciences and Technology*, **2(6)**, 1-16, doi: 10.3969/j.issn.2095-1973.2012.06.001.
95. Bao, X.* , and **F. Zhang**, 2012: Impacts of the Mountain-Plains Solenoid and Cold Pool Dynamics on the Diurnal Variation of Precipitation over Northern China. *Atmospheric Chemistry and Physics Discussion*, **12**, 27891-27926. doi: <http://dx.doi.org/10.1175/JAS-D-12-0133.1>
94. Fang*, J. and **F. Zhang**, 2012: Beta effect on the development of tropical cyclones. *Monthly Weather Review*, **140**, 3327-3346.

93. Rozoff, C. M., D. S. Nolan, J. P. Kossin, **F. Zhang**, and J. Fang, 2012: The roles of an expanding wind field and inertial stability in tropical cyclone secondary eyewall formation. *Journal of the Atmospheric Sciences*, **69**, 2621–2643.
92. Zhang*, M. and **F. Zhang**, 2012: E4DVar: Coupling an ensemble Kalman filter with four-dimensional variational data assimilation in a limited-area weather prediction model. *Monthly Weather Review*, **140**, 587-600.
91. Sun*, J. and **F. Zhang**, 2012: Impacts of mountain-plains solenoid on diurnal variations of rainfalls along the Mei-yu front over East China Plains. *Monthly Weather Review*, **140**, 179-397.
90. Qian*, T., C. C. Epifanio, and **F. Zhang**, 2012: Topographic effect on the tropical land and sea breeze. *Journal of the Atmospheric Sciences*, **69**, 130-149.
89. Jung, B.-J., H.-M. Kim, **F. Zhang** and C.-C. Wu, 2012: Effect of targeted dropsonde observations and best track data on the track forecasts of Typhoon Sinlaku (2008) using an Ensemble Kalman Filter. *Tellus A*, **64**, 14984.
88. Montgomery, M. T., C. Davis, T. Dunkerton, Z. Wang, C. Velden, R. Torn, S. Majumdar, **F. Zhang**, R. K. Smith, L. Bosart, M. M. Bell, J. S. Haase, A. Heymsfield, and M. A. Boothe, 2012: The Pre-Depression Investigation of Cloud Systems in the Tropics (PREDICT) experiment: Scientific basis, new analysis tools and some first results. *Bulletin of the American Meteorological Society*, **93**, 152-172.
87. Weng*, Y. and **F. Zhang**, 2012: Assimilating Airborne Doppler Radar Observations with an Ensemble Kalman Filter for Cloud-resolving Hurricane Initialization and Prediction: Katrina (2005). *Monthly Weather Review*, **140**, 841-859.
86. Bei*, N., **F. Zhang**, J. W., Nielsen-Gammon, 2012: Ensemble-based observation targeting for improving ozone prediction in Houston and the surrounding area. *Pure and Applied Geophysics*, **169**, 539-554.
85. Meng*, Z., **F. Zhang**, P. Markowski, D. Wu, K. Zhao, 2012: Mechanisms for the Formation of Rear Inflow and Bow Echo within a Squall Line over South China. *Journal of the Atmospheric Sciences*, doi: <http://dx.doi.org/10.1175/JAS-D-11-0121.1>.
84. Aksoy, A., S. Lorsolo, T. Vukicevic, K. J. Sellwood, S. D. Abersson, and **F. Zhang**, 2012: NOAA/AOML/HRD's HWRf ensemble data assimilation system (HEDAS) for the assimilation of high-resolution hurricane inner-core data: Impact of airborne Doppler radar observations in an OSSE. *Monthly Weather Review*, doi: <http://dx.doi.org/10.1175/MWR-D-11-00212.1>.

2011

83. Lane, T.P. and **F. Zhang**, 2011: Coupling between gravity waves and tropical convection at mesoscales. *Journal of the Atmospheric Sciences*, **68**, 2582-2598.
82. Hu*, X., **F. Zhang**, G. Yu, J.D. Fuentes, and L. Wu, 2011: Contribution of mixed-phase boundary layer clouds to the termination of ozone depletion events in the Arctic. *Geophysical Research Letters*, **38**, L21801.
81. Green*, B. G., **F. Zhang**, P. M. Markowski, 2011: Multi-scale Processes Leading to Supercells in the Landfalling Outer Rainbands of Hurricane Katrina (2005). *Weather and Forecasting*, **26**, 828-847.
80. **Zhang, F.**, Y. Weng*, J. F. Gamache, and F. D. Marks, 2011: Performance of Cloud-resolving Hurricane Initialization and Prediction during 2008-2010 with Ensemble Data Assimilation of Inner-core Airborne Doppler Radar Observations. *Geophysical Research Letters*, **38**, L15810.
79. Meng*, Z. and **F. Zhang**, 2011: Limited area ensemble based data assimilation: A review. *Monthly Weather Review*, **139**, 2025-2045.
78. Fang*, J and **F. Zhang**, 2011: Evolution of Multi-scale Vortices in the Development of Hurricane Dolly (2008). *Journal of the Atmospheric Sciences*, **68**, 103-122.
77. **Zhang, F.**, 2011: The future of hurricane prediction. *Computing in Science and Engineering*, **13**, 9-12 (guest editor introduction).
76. Weng*, Y., M. Zhang*, and **F. Zhang**, 2011: Advanced data assimilation for cloud-resolving hurricane initialization and prediction. *Computing in Science and Engineering*, **13**, 40-49.

75. Zhang*, M., **F. Zhang**, X.-Y. Huang, and X. Zhang, 2011: Inter-comparison of an ensemble Kalman filter with three- and four dimensional variational data assimilation methods in a limited-area model during the month of June 2003. *Monthly Weather Review*, **139**, 566-572.
74. Poterjoy*, J. and **F. Zhang**, 2011: Dynamics and structures of error covariance in the core of a developing hurricane. *Journal of the Atmospheric Sciences*, **68**, 1586-1606.
73. Bao*, X., **F. Zhang**, and J. Sun, 2011: Diurnal Variations of Warm-season Precipitation East of the Tibetan Plateau over China. *Monthly Weather Review*, **139**, 2790-2810.
72. Jun, M., I. Szunyogh, M. G. Genton, **F. Zhang**, C. H. Bishop, 2011: A statistical investigation of the sensitivity of ensemble based Kalman filters to covariance filtering. *Monthly Weather Review*, **139**, 3036-3051. doi: 10.1175/2011MWR3577.1.

2010

71. **Zhang, F.**, Y. Weng, Y.-H. Kuo, and J. S. Whitaker, 2010: Predicting Typhoon Morakot's Catastrophic Rainfall and Flooding With a Cloud-Scale Ensemble System. *Weather and Forecasting*, **25**, 1816-1825.
70. Wu, C.-C., G.-Y. Lien, J.-H. Chen, and **F. Zhang**, 2010: Assimilation of Tropical Cyclone Track and Structure Based on the Ensemble Kalman Filter (EnKF). *Journal of the Atmospheric Sciences*, **67**, 3806-3822.
69. Wang, S., **F. Zhang** and C. C. Epifanio, 2010: Forced gravity wave responses near the jet exit region in a linear model. *Quarterly Journal of the Royal Meteorological Society*, **136**, 1773-1787.
68. Hu, X.-M., J. D. Fuentes, and **F. Zhang**, 2010: Downward transport and modification of tropospheric ozone through moist convection. *Journal of Atmospheric Chemistry*, **65**, 13-35. (DOI 10.1007/s10874-010-9179-5).
67. Hu, X.-M., J. W., Nielsen-Gammon, **F. Zhang**, 2010: Evaluation of Three Planetary Boundary Layer Schemes in the WRF Model. *Journal of Applied Meteorology and Climatology*, **49**, 1831-1844.
66. Nielsen-Gammon, J. W., X.-M. Hu, and **F. Zhang**, 2010: Evaluation of Planetary Boundary Layer Scheme: Sensitivities for the Purpose of Parameter Estimation. *Monthly Weather Review*, **138**, 3400-3417.
65. Wang, S. and **F. Zhang**, 2010: Sources of Gravity Waves Within a Vortex-Dipole Jet Revealed by a Linear Model. *Journal of the Atmospheric Sciences*, **63**, 1438-1455.
64. Hu, X.-M., **F. Zhang**, J. W., Nielsen-Gammon, 2010: Ensemble-Based Simultaneous State and Parameter Estimation for Treatment of Mesoscale Model Error: A Real-data study. *Geophysical Research Letters*, **37**, L08802, doi:10.1029/2010GL043017.
63. He, H. and **F. Zhang**, 2010: Diurnal variations of warm-season precipitation over North China. *Monthly Weather Review*, **138**, 1017-1025.
62. Sippel, J. A and **F. Zhang**, 2010: Factors affecting the predictability of hurricane Humberto (2007). *Journal of the Atmospheric Sciences*, **67**, 1759-1778.
61. Fang, J and **F. Zhang**, 2010a: Initial development and genesis of Hurricane Dolly (2008). *Journal of the Atmospheric Sciences*, **67**, 655-672.
60. Pan, L., K. P. Bowman, Atlas E., Wofsy, S. C., **F. Zhang**, and co-authors, 2010: Stratosphere-Troposphere Analyses of Regional Transport Experiment. *Bulletin of the American Meteorological Society*, **91**, 327-342.

2009

59. **Zhang, F.**, Y. Weng, J. A. Sippel, Z. Meng, and C. H. Bishop, 2009: Cloud-resolving Hurricane Initialization and Prediction through Assimilation of Doppler Radar Observations with an Ensemble Kalman Filter: Humberto (2007). *Monthly Weather Review*, **137**, 2105-2125.
58. Plougonven R., C. Snyder and **F. Zhang**, 2009: Comments on 'Application of the Lighthill-Ford Theory of Spontaneous Imbalance to Clear-Air Turbulence Forecasting'. *Journal of the Atmospheric Sciences*, **66**, 2506-2510.
57. Gao, S., Z. Meng, **F. Zhang**, L. F. Bosart, 2009: Torrential Rainfall Mechanisms of Severe Tropical Storm Bilis (2006) after its Landfall: Observational Analysis. *Monthly Weather Review*, **137**, 1881-1897.

56. **Zhang, F.** and J. A. Sippel, 2009: Effects of moist convection on hurricane predictability. *Journal of the Atmospheric Sciences*, **66**, 1944-1961.
55. Qian, T., C. C. Epifanio, and **F. Zhang**, 2009: Linear Theory Calculations for the Sea Breeze in a Background Wind: The Equatorial Case. *Journal of the Atmospheric Sciences*, **66**, 1749-1763.
54. Wang, S., **F. Zhang**, and C. Snyder, 2009: Generation and Propagation of Inertial Gravity Waves from Vortex Dipoles and Jets. *Journal of the Atmospheric Sciences*, **66**, 1294-1314.
53. **Zhang, F.**, M. Zhang and J. A. Hansen, 2009: Coupling ensemble Kalman filter with four-dimensional variational data assimilation. *Advances in Atmospheric Sciences*, **26**, 1-9.

2008

52. Sippel, J. A., and **F. Zhang**, 2008: Probabilistic evaluation of the dynamics and predictability of tropical cyclogenesis. *Journal of the Atmospheric Sciences*, **65**, 3440–3459.
51. Meng, Z, and **F. Zhang**, 2008: Test of an ensemble-Kalman filter for mesoscale and regional-scale data assimilation. Part IV: Performance over a warm-season month of June 2003. *Monthly Weather Review*, **136**, 3671-3682.
50. Lin, Y. and **F. Zhang**, 2008: Tracking mesoscale gravity waves in baroclinic jet-front systems. *Journal of the Atmospheric Sciences*, **65**, 2402-2415.
49. Morss, R. E. and **F. Zhang**, 2008: Linking meteorological education to reality: A prototype undergraduate research study of public response to Hurricane Rita forecasts. *Bulletin of the American Meteorological Society*, **89**, 497-504.
48. Meng, Z, and **F. Zhang**, 2008: Test of an ensemble-Kalman filter for mesoscale and regional-scale data assimilation. Part III: Comparison with 3Dvar in a real-data case study. *Monthly Weather Review*, **136**, 522-540.
47. Tan, Z., F. Zhang, R. Rotunno and C. Snyder, 2008: Corrigendum for Tan et al. (2004), *Journal of the Atmospheric Sciences*, **65**, 1479-1479.

2007

46. **Zhang, F.**, R. M. Morss, and 10 student co-authors, 2007: An In-person Survey Investigating Public Perceptions of and Response to Hurricane Rita Forecasts along the Texas Coast. *Weather and Forecasting*, **22**, 1177-1190.
45. Snyder, C., D. J. Muraki, R. Plougonven, and **F. Zhang**, 2007: Inertia-gravity waves generated within a dipole vortex. *Journal of the Atmospheric Sciences*, **64**, 4417-4431.
44. **Zhang, F.**, N. Bei, R. Rotunno, C. Snyder and C. C. Epifanio, 2007: Mesoscale predictability of moist baroclinic waves: Cloud-resolving experiments and multistage error growth dynamics. *Journal of the Atmospheric Sciences*, **64**, 3579-3594.
43. Schultz, D. M., and **F. Zhang**, 2007: Baroclinic development within zonally varying flows. *Quarterly Journal of the Royal Meteorological Society*, **133**, 1101-1112.
42. Zhang, M., Y. Ni, and **F. Zhang**, 2007: Variational assimilation of GPS precipitable water vapor and hourly rainfall observations for a meso-beta-scale heavy precipitation event during the 2002 Mei-Yu season. *Advances in Atmospheric Sciences*, **24**, 509-526.
41. **Zhang, F.** and C. Snyder, 2007: Ensemble-based data assimilation. *Bulletin of the American Meteorological Society*, **88**, 565-568.
40. Stuart, A. L., A. Aksoy, **F. Zhang**, and J. W. Nielsen-Gammon, 2007: Ensemble-based data assimilation and targeted observation of a chemical tracer in a sea breeze model. *Atmos. Env.*, **41**, 3082-3094.
39. Plougonven, R. and **F. Zhang**, 2007: On the forcing of inertia-gravity waves from synoptic-scale flows. *Journal of the Atmospheric Sciences*, **64**, 1737-1742.
38. Bei, N. and **F. Zhang**, 2007: Mesoscale predictability of the torrential rainfall along the Mei-yu front of China. *Quarterly Journal of Royal Meteorological Society*, **133**, 83-99.

37. Meng, Z., and **F. Zhang**, 2007: Test of an ensemble-Kalman filter for mesoscale and regional-scale data assimilation. Part II: Imperfect-model experiments. *Monthly Weather Review*, **135**, 1403-1423.
36. Hawblitzel, D., **F. Zhang**, Z. Meng and C. A. Davis, 2007: Probabilistic evaluation of the dynamics and predictability of mesoscale convective vortex event of 10-13 June 2003. *Monthly Weather Review*, **135**, 1544-1563.
35. Richter, J. H., M. A. Geller, R. R. Garcia, H.-L. Liu and **F. Zhang**, 2007: Report on the gravity wave retreat. *SPARC newsletter*, **28**, 26-27.
34. **Zhang, F.**, N. Bei, J. W. Nielsen-Gammon, G. Li, R. Zhang, A. Stuart and A. Aksoy, 2007: Impacts of meteorological uncertainties on ozone pollution predictability estimated through meteorological and photochemical ensemble forecasts. *Journal of Geophysical Research – Atmosphere*, **112**, D04304, doi:10.1029/2006JD007429.
33. Wang, S. and **F. Zhang**, 2007: Sensitivity of mesoscale gravity waves to the baroclinicity of jet-front systems. *Monthly Weather Review*, **135**, 670-688.

2006

32. Aksoy, A., **F. Zhang**, J. W. Nielsen-Gammon, 2006: Ensemble-based simultaneous state and parameter estimation with MM5. *Geophysical Research Letters*, **33**, L12801, doi:10.1029/2006GL026186, 2006.
31. Aksoy, A., **F. Zhang**, and J. W. Nielsen-Gammon, 2006: Ensemble-based simultaneous state and parameter estimation in a two-dimensional sea breeze model. *Monthly Weather Review*, **134**, 2951-2970.
30. **Zhang, F.**, A. Odins, and J. W. Nielsen-Gammon, 2006: Mesoscale predictability of an extreme warm-season rainfall event. *Weather and Forecasting*, **21**, 149-166.
29. **Zhang, F.**, Z. Meng and A. Aksoy, 2006: Test of an ensemble-Kalman filter for mesoscale and regional-scale data assimilation. Part I: Perfect-model experiments. *Monthly Weather Review*, **134**, 722-736.
28. **Zhang, F.**, N. Bei, C. C. Epifanio, R. Rotunno and C. Snyder, 2006: A multistage error-growth conceptual model for mesoscale predictability. *Bulletin of the American Meteorological Society*, **87**, 287-288.

2005

27. Nielsen-Gammon, J., **F. Zhang**, and A. Odins, and B. Myoung, 2005: Extreme rainfall events in Texas: Patterns and predictability. *Physical Geography*, **26**, 340-364.
26. **Zhang, F.**, 2005: Dynamics and structure of mesoscale error covariance of a winter cyclone estimated through short-range ensemble forecasts. *Monthly Weather Review*, **133**, 2876-2893.
25. Aksoy, A., **F. Zhang**, J. W. Nielsen-Gammon, and C. C. Epifanio, 2005: Data assimilation with the ensemble Kalman filter for thermally forced circulations. *Journal of Geophysical Research - Atmosphere*, **110**, D16105, doi:10.1029/2004JD005718.

2004

24. Wu, D. L., and **F. Zhang**, 2004: A study of mesoscale gravity waves over North Atlantic with satellite observations and a mesoscale model. *Journal of Geophysical Research - Atmosphere*, **109**, D22104.
23. Lu, H., **F. Zhang**, X. Liu, and R. A. Duce, 2004: Periodicities of palaeoclimatic variations recorded by loess-paleosol sequences in China. *Quaternary Science Reviews*, **23**, 1891-1900.
22. **Zhang, F.**, S. Wang, and R. Plougonven, 2004: Potential uncertainties in using the hodograph method to retrieve gravity wave characteristics from individual soundings. *Geophysical Research Letters*, **31**, L11110, doi:10.1029/2004GL019841.
21. Dowell, D. C., **F. Zhang**, L. J. Wicker, C. Snyder, and N. A. Crook, 2004: Wind and thermodynamic retrievals in the 17 May 1981 Arcadia, Oklahoma supercell: Ensemble Kalman filter experiments. *Monthly Weather Review*, **132**, 1982-2005.

20. Tan Z., **F. Zhang**, R. Rotunno, and C. Snyder 2004: Mesoscale predictability of moist baroclinic waves: Experiments with parameterized moist convection. *Journal of the Atmospheric Sciences*, **61**, 1794-1804.
19. **Zhang, F.**, C. Snyder, and J. Sun, 2004: Tests of an ensemble Kalman filter for convective-scale data assimilation: Impact of initial estimate and observations. *Monthly Weather Review*, **132**, 1238-1253.
18. **Zhang, F.**, 2004: Generation of mesoscale gravity waves in the upper-tropospheric jet-front systems. *Journal of the Atmospheric Sciences*, **61**, 440-457.

2003

17. Snyder, C., and **F. Zhang**, 2003: Tests of an ensemble Kalman filter for convective-scale data assimilation. *Monthly Weather Review*, **131**, 1663-1677.
16. **Zhang, F.**, S. E. Koch, and M. L. Kaplan, 2003: Numerical simulations of a large-amplitude gravity wave event. *Meteorology and Atmospheric Physics*, **84**, 199-216.
15. **Zhang, F.**, C. Snyder, and R. Rotunno, 2003: The influence of moist processes on the predictability of larger scales. *Journal of the Atmospheric Sciences*, **60**, 1173-1185.
14. Lu, H., **F. Zhang**, X. Liu, 2003: Patterns and frequencies of the East Asian winter monsoon variations revealed by wavelet and spectral analysis. *Global and Planetary Change*, **35**, 67-74.

2002

13. **Zhang, F.**, C. Snyder, and R. Rotunno, 2002: Mesoscale predictability of the 'surprise' snowstorm of 24-25 January 2000. *Monthly Weather Review*, **130**, 1617-1632.

2001

12. **Zhang, F.**, S. E. Koch, C. A. Davis, and M. L. Kaplan, 2001: Wavelet analysis and the governing dynamics of a large-amplitude gravity wave event along the East Coast of the United States. *Quarterly Journal of Royal Meteorological Society*, **127**, 2209-2245.
11. Koch, S. E., **F. Zhang**, M. L. Kaplan and Y.-L. Lin, R. Weglarz, and C. M. Trexler, 2001: Numerical simulation of a gravity wave event observed during CCOPE. Part 3: Mountain-plain solenoids in the generation of the second wave episode. *Monthly Weather Review*, **129**, 909-932.

2000

10. **Zhang, F.**, and S. E. Koch, 2000: Numerical simulation of a gravity wave event observed during CCOPE. Part 2: Wave generation by an orographic density current. *Monthly Weather Review*, **128**, 2777-2796.
9. **Zhang, F.**, S. E. Koch, C. A. Davis, and M. L. Kaplan, 2000: A survey of unbalanced flow diagnostics and their application. *Advances in Atmospheric Sciences*, **17**, 165-183.

1993-1999

8. Lu, H., X. Liu, **F. Zhang**, Z. An, and J. Dodson, 1999: Astronomical calibration of loess-palaeol deposit in Luchuan of Central Chinese Loess Plateau. *Palaeo-geography, Palaeo-climatology and Palaeo-ecology*. **119**, 473-478.
7. Wang, L., **F. Zhang** and H. Lu, 1997: Features of storm surge disasters along Jiangsu coastal zone of China. *(Chinese) Journal of Catastrophy*, **12**(3), 39-43.
6. **Zhang, F.**, Q. Jiang and R. Dang, 1996: Numerical simulation of a landing typhoon and its unusually heavy rain. *(Chinese) Journal of Tropical Meteorology*, **12**(3), 156-161.
5. **Zhang, F.**, H. Du and Q. Jiang, 1994: A numerical study of the boundary layer effect on mature tropical cyclone. *(Chinese) Journal of Tropical Meteorology*, **10**(2), 107-114.
4. **Zhang, F.**, Z. Lin and Q. Jiang, 1994: The fractal dimension distribution of the short-term climate system and its connection with the monsoon climate in China. *Advances in Atmospheric Sciences*, **11**, 459-463.

3. Lin, Z. and **F. Zhang**, 1993: The distribution of predictable time scale of local climate system in China. *Chinese Journal of Atmospheric Sciences*, **17**, Special Issue, 89-92.
2. Lin, Z. L. Jian, X. Hua, and **F. Zhang**, 1993: Lyapunov Exponent model of long term forecast. *Chaos, Solitons & Fractals*, **3**, 431-437.
1. **Zhang, F.**, Z. Lin and Q. Jiang 1993: The fractal dimension distribution of the short-range climate attractors of China. *Journal of Nanjing University*, **29**, Geoscience Issue, 138-145.