

FUQING ZHANG

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Research Interests

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

Educational Background

National Center for Atmospheric Research, Postdoc, 2000-2001

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, Penn State Center for Advanced Data Assimilation and Predictability Techniques

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

2008-present Professor of Meteorology, Department of Meteorology, 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

Adjunct professorship or scientific visitorship

2018/Feb Distinguished visiting scholar, The '111 Yingzhi' Plan, Nanjing University, China

2018/Jan Distinguished visiting scholar, The '111 Yingzhi' Plan, Sat-Yet Sun University, China

2017/Nov Burgers Visiting Professor, The Burgers Program for Fluid Dynamics, University of Maryland

2017/Jun-Jul Visiting Scientist, National Center for Atmospheric Research, Boulder, Colorado

2016/Nov Visiting scholar, Gothenburg Centre for Advanced Studies in Science and Technology, Sweden

2016/Sept Visiting scientist, European Center for Medium-range Weather Forecasting

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- 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

2018 Faculty Scholar Medal in Physical Sciences, Penn State University

2018 GoCAS Distinguished Chair, Gothenburg Chair Programme for Advanced Studies, Sweden

2017 Ranked **first** on the list of the *most impactful scientists* during 2011–2015 in the category of “*Meteorology and Atmospheric Science*”, Chinese Academy of Sciences (based on ISI Web of Science data analytics)

2017 Burgers Keynote Lecturer, The Burgers Program for Fluid Dynamics, University of Maryland

2016 The Nordenskjöld Lecturer, University of Gothenburg, Sweden

2015 Elected fellow, American Meteorological Society

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.*”

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

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

2018-present, member, award nomination committee, American Meteorological Society

2017 UCAR panel expert, congressional briefing on *Science's Impact on Weather Prediction & Economy*

2017-present, co-director, Severe Weather International Consortium (SWIC)

2017 chair, 5-year performance review committee for the data assimilation team, the RIKEN Institute, Japan

2017-present, member, scientific advisory board, Earth Observing Laboratory, NCAR
 2017-present, vice chair, scientific advisory board, MOE Key Laboratory on Severe Weather, NJU, China
 2016-present co-leader, SPARC Gravity Wave Activity Group, World Climate Program (WCRP), WMO
 2016-present Scientific Advisor on forecasting technology and research, China Meteorological Administration
 2016-present Member, Scientific Advisory Committee, Tropical Weather Analytics, Boston, MA
 2013-present Member, Climate Working Group (CWG), NOAA's Science Advisory Board
 2013-present Scientific Advisor, Hong Kong Observatory (“Hong Kong Weather Bureau”), Hong Kong
 2012-present Panelist, National Research Council RAP review panel, National Academies
 2016 Panelist, NASA Extreme Weather Science Evaluation Panel, Washington, D.C.
 2016 Panelist, NASA EVM-2 Science Evaluation Panel, Washington, D.C.
 2015 Panelist, National Severe Storm Lab (NSSL) 5-year external lab review panel, NOAA
 2015 Panelist, NASA PMM Science Evaluation Panel, Washington, D.C.
 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

2018 Chair, 3rd Symposium on Multiscale Predictability, AMS Annual Meeting, Austin, Texas
 2018 Co-chair, 8th Workshop on Ensemble-based Data Assimilation, Montreal, Canada
 2018 Co-Chair, SWIC workshop on tropical meteorology and tropical cyclones, Nanjing, China
 2018 Co-convener, SWIC summer school on tropical weather and climate, Nanjing, China
 2018 Co-convener, NSF-NCAR Geoscience Digital Data Resource and Repository Service Workshop
 2018 Organizing committee member, 6th International Symposium on Data Assimilation, Germany
 2017 Co-Chair, SWIC workshop on convective initiation, Nanjing, China
 2017 Co-convener, SWIC summer school on Severe Weather, Nanjing, China
 2017 Co-chair, UMD/PSU/EMC joint data assimilation workshop, College Park, Maryland
 2017 Chair, 2nd Symposium on Multiscale Atmospheric Predictability, AMS Annual Meeting
 2016 Co-chair, Workshop on Regional Climate Modelling and Reanalysis, Gothenburg, Sweden

2016 Co-chair, Severe Weather and Tropical Cyclone Workshop, Nanjing, China
 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 / Physics; EOS; Nature Methods; Nature Communications; Nature Geoscience; Science

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 Israel; EFG, Germany

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: Jiaolan Fu (2018-), Xingchao Chen (2017-), Yinghui Lu (2017-), Dandan Tao (2015-), Yunji Zhang (2016-), Jie Ma (2017-), Yongxiang Zhang (2017-), Hong Yin (2017-)

Past: Yu Shu (2017), Tingting Qian (2017), Yongqiang Sun (2017), Tonghua Su (2016-2017), Kun Zhao (2017), Sourav Taraphdar (2015-2017), AJ Deng (2016-2017), Yonghui Weng (2005-2016), Yingjian Chen (2017), Lin Huang (2017), Daigao Teng (2016-2017), Erin Munsell (2016), Chunyun Qiu (2015-16), Ling Zhang (2015-16), Jinsong Pan (2016), Yudong Gao (2015-16), Yuanchun Zhang (2015), Kun Zhao (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 (9)

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

Robert Nystrom, doctoral student since 2015 (NASA Graduate Fellowship)
Masashi Minamide, doctoral student since 2014 (Funai Overseas Graduate Scholarship, Japan)
Ying Yue, doctoral student since 2012 (CSC government graduate fellowship, China)
Hans Chen, doctoral student since 2013 (co-advise with Richard Alley)
Wenjie Li, doctoral student since 2016 (co-advise with Richard Alley)
Jonathan Seibeit, master student starting 2017 (co-advise with Steve Greybush)
Chan Man Yau, doctoral student since 2017
Sean Sentellanes, master student starting 2017

In progress --- visiting graduate students (6)

Jie He, visiting PhD student from NUSIT since 2017 (CSC fellow, China)
Yanting Ye, visiting PhD student from Beijing Normal University since 2015 (CSC fellow, China)
Su Liu, visiting PhD student from Nanjing University since 2015 (CSC fellow, China)
Lei Zhu, visiting PhD student from Peking University since 2015 (CSC fellow, China)
Yan Wang, visiting PhD student from Tsinghua University since 2017 (China)
Eun-Geong Yang, visiting PhD student from Yonsei University since 2017 (Korean)

Completed doctoral degrees (25, '' co-advised)*

Yongqiang Sun, (PhD 2017), currently postdoctoral fellow at Princeton University (with GFDL)
Mingxin Li*, (PhD 2017), currently assistant professor at the Chinese Meteorology of Atmospheric Sciences
Yingjian Chen*, (PhD 2017), currently a research hydrologist at Wuhan, China
Erin Munsell, (PhD 2016), currently a NPP postdoc fellow at NASA
Christopher Melhauser, (PhD 2016), currently at NOAA/NCEP
Xingchao Chen*, (PhD 2016), currently assistant research professor at Penn State University
Yicun Zhen*, (PhD 2016 in mathematics)
Yunji Zhang*, (PhD 2016), currently a postdoctoral fellow at Penn State University
Benjamin Green, (PhD 2015), currently research scientists at NOAA/ESRL
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), to start his assistant professorship at University of Maryland
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 at IBM China, scientist of the Environmental Modeling group
Xinghua Bao*, (PhD 2011); currently associate professor at the Chinese Meteorology of Atmospheric Sciences
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 data assimilation team lead at Hurricane Research Division of NOAA
Shuguang Wang (PhD 2008), to start his full professorship at Nanjing University, China
Tingting Qian* (PhD 2008), currently associate professor at the Chinese Meteorology of Atmospheric Sciences
Yonghui Weng* (PhD 2008), currently lead software engineer, I M System Group, Rockville, Maryland
Zhiyong Meng (PhD 2007), currently a full professor at Peking University, China
Altug Aksoy* (PhD 2005), currently researcher at NOAA Hurricane Research Division, Miami, Florida

Completed master's degrees (11)

Andrew Thomas (MS 2017), currently a doctoral student at University of Georgia
Scott Serion (MS 2013), currently a doctoral student at Pennsylvania State University

Erin Munsell (MS 2012), currently a NPP postdoc fellow at NASA
Benjamin Green (MS 2011), currently at NOAA/ESRL
Christopher Melhauser (MS 2010), currently at NOAA/EMC
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 (80)

2018 Keynote speaker, SWIC symposium on tropical meteorology, Nanjing, China
2018 Invited speaker, 8th ensemble data assimilation workshop, Montreal, Canada
2018 Planetary speaker, symposium on radar technology and applications, Nanjing, China
2018 Invited speaker, symposium on frontiers in atmospheric sciences, Fudan University, Shanghai
2018 Invited speaker, 3rd symposium on multiscale predictability, Austin, Texas
2017 Keynote lecture, Burges Symposium on fluid dynamics, University of Maryland
2017 Keynote speaker, SWIC opening ceremony special symposium, Nanjing, China
2017 Invited speaker, Workshop on data assimilation for National Science Computing Initiatives, NSF
2017 Invited speaker, symposium on Big Data application, Japan Science and Technology Agency
2017 Co-lead lecturer, SWIC summer school on Severe Weather, Nanjing, China
2016 Invited speaker, Workshop on Regional Reanalysis for Tibetan Plateau, Gothenburg, Sweden
2016 Invited speaker, 2nd NSF-MOST joint workshop on extreme precipitation, Honolulu, Hawaii
2016 Co-lead Lecturer, Extreme Rainfall Summer School, Peking University, Beijing, China
2016 Co-lead Lecturer, Tropical Cyclone Summer School, CAMS, Beijing, China
2016 Invited speaker, AOGS Annual meeting (session on tropical cyclones), Beijing, China
2016 Invited speaker, AOGS Annual meeting (session on severe storms), Beijing, China
2016 Keynote speaker, COAA International Conference (session on severe weather), Beijing, China
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, Australia
2014 Keynote speaker *on tropical cyclone predictability*, World Weather Open Science Conference, Canada
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
 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 (186)

186. Center for Hydrometeorology and Remote Sensing, University of California at Irvine, 2018
 185. Earth System Science Interdisciplinary Center, University of Maryland, 2018
 184. Institute of Tibetan Plateau, Chinese Academy of Sciences, Beijing, China, Feb 2018
 183. Chinese Academy of Meteorological Sciences, Beijing, China, Feb 2018
 182. School of Atmospheric Sciences, Nanjing University, China, Feb 2018
 181. Zhuhai Campus, Sat-Yet Sun University, Zhuhai, China, Jan 2018
 180. South China Sea Institute of Oceanography, Chinese Academy of Science, Guangzhou, China, Jan 2018
 179. School of Atmospheric Sciences, Sat-Yet Sun University, Guangzhou, China, Jan 2018
 178. Burgess Keynote Lecturer, University of Maryland, Nov 2017
 177. San Diego State University, San Diego, California, Oct 2017
 176. National Center for Atmospheric Research, Boulder, Colorado, Jun 2017
 175. Jet Propulsion Laboratory, Pasadena, California, Mar 2017
 174. Center for Advanced Data Assimilation and Predictability Techniques, Mar 2017
 173. RIKEN Institute on Advanced Scientific Computing, Kobe, Japan, Jan 2017
 172. Japanese Meteorological Agency (JMA), Jan 2017
 171. University of Tokyo, Jan 2017
 170. The Nordenskjöld Lecture, University of Gothenburg, Nov 2016
 169. Texas A&M University, College Station, Texas, Oct 2016
 168. Department of Meteorology and Atmospheric Science, Penn State University, Oct 2016
 167. European Center for Medium-range Weather Forecasting (#2 predictability), Reading, UK, Sept 2016
 166. European Center for Medium-range Weather Forecasting (#1 data assimilation), Reading, UK, Sept 2016
 165. UK Meteorological Office (seminar #2 on atmospheric predictability), Exeter, UK, September 2016
 164. UK Meteorological Office (seminar #1 on data assimilation), Exeter, UK, September 2016
 163. Oxford University, Oxford, United Kingdom, September 2016
 162. University of Hawaii, Honolulu, Hawaii, September 2016
 161. Columbia University, New York, New York, August 2016
 160. China Meteorological Administration, Beijing China, August 2016
 159. Anhui Meteorological Observatory, Hefei, China, August 2016
 158. Chinese Academy of Meteorological Sciences, Beijing, China, July 2016
 157. Institute of Tibetan Plateau, Chinese Academy of Sciences, Beijing, China, July 2016
 156. Department of Meteorology, Pennsylvania State University, University Park, Pennsylvania, March 2016
 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 Technology 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

46. **Zhang, F.**, Coupling of Gravity Waves and Convection, and Their Impacts on the Dynamics and Predictability of Multiscale Processes Associated with Moist Baroclinic Jet-Front Systems. NSF, \$683,131. 7/1/2017-6/30/2020.
45. Didlake, A. and **F. Zhang**, Examining the Dynamics of Rainbands and Secondary Eyewall Formation in Tropical Cyclones. NSF, 7/1/2018-6/30/2021.
44. Greybush, S., **F. Zhang** and G. Young, Dynamics and Predictability of Lake-effect snowstorms. NSF, 1/1/2018-12/31/2020.
43. Nystrom, R (supervisor **F. Zhang**), Improving the Predictability and Understanding of Tropical Cyclones: Ensemble Assimilation of AllSky Satellite Observations. NASA Graduate Research Fellowship. 2017-2020.
42. **Zhang, F.**, L. Bao, Y. Weng: Hurricane WRF data assimilation and initialization, NOAA subcontract through Colorado State University. \$150,000. 10/1/2016-12/31/2017.
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 Tornadic 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); 9/1/2013-8/31/2017.
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); 5/1/2013-4/30/2017.

32. **Zhang, F:** Dynamics and Impacts of Moist Gravity Waves in the Baroclinic Jet-front Systems. \$542,264; National Science Foundation (NSF); 8/1/2011-7/31/2017.
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 IMSG. \$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)*, 6 Volumes (I, II, III, IV, V and VI), Academic Press, total 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*, 2016: 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, 141-152.
5. Plougonven, R., and **F. Zhang**, 2016: 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, 385-406.
4. **Zhang, F.**, 2016: 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, 331-360.

3. **Zhang, F.**, and A. Routary, 2016: 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, 361-384.
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.

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

(Total citations as of 2/2018: Google Scholar 8375, h-index 49; Web of Science 5715, h-index 43)

(No.1 on the list of the most impactful scientists during 2011-2015 in the category of “Meteorology and Atmospheric Science”, Chinese Academy of Sciences based on ISI Web of Science data analytics)

2018

207. Ying, Y.*, **F. Zhang**, 2018: Potentials in improving predictability of multiscale tropical weather systems evaluated through ensemble assimilation of simulated satellite-based observations. *Journal of the Atmospheric Sciences*, in press.
206. Chen*, Y., **F. Zhang**, B. W. Green, and Y. Xu, 2018: Combined Impacts of Ocean Cooling and Reduced Wind Drag on the Intensity and Structure of Hurricane Katrina (2005). *Monthly Weather Review*, in press.
205. Li, J., **F. Zhang**, 2018: Geometry-Sensitive Ensemble Mean based on Wasserstein Barycenters: Proof-of-Concept on Cloud Simulations. *Journal of Computational Statistics*, in press.
204. Zhang, Y*, **F Zhang**, CA Davis and J Sun, 2018: Diurnal evolution and structure of long-lived mesoscale convective vortices along the Mei-yu front over the East China Plains. *Journal of the Atmospheric Sciences*, in press.
203. Chen*, X., O. Pauluis, **F. Zhang**, 2018: Regional Simulation of Indian summer Monsoon Intraseasonal Oscillations at Gray Zone Resolution. *Atmospheric Chemistry and Physics*, in press.
202. Munsell*, EB, **F Zhang**, SA Braun1, JA Sippel, and AC Didlake, 2018: The inner-core temperature structure of Hurricane Edouard (2014): Observations and ensemble variability. *Monthly Weather Review*, in press.
201. Nystrom*, R, **F Zhang**, EB Munsell, SA Braun, JA Sippel, Y Weng, and K Emanuel, 2018: Predictability and dynamics of Hurricane Joaquin (2015) explored through convection-permitting ensemble sensitivity experiments. *Journal of the Atmospheric Sciences*, in press.
200. Pan, J., D. Teng, Y. Zhang, Y. Weng and **F. Zhang**, 2018: Dynamical processes of heavy local rainfall over East China induced by Super Typhoon Soudelor (2015). *Science China – Earth Science*, in press.
199. Chen*, X. O. Pauluis, **F. Zhang**, 2018: Atmospheric overturning across multiple scales of an MJO event during the CINDY/DYNAMO Campaign. *Journal of the Atmospheric Sciences*, in press.
198. Ying, Y., **F. Zhang**, J. L. Anderson, 2018: On the selection of localization radius in ensemble filtering for multi-scale quasi-geostrophic dynamics. *Monthly Weather Review*, in press.

2017

197. Ying*, Y., **F. Zhang**, 2017a: Practical and intrinsic predictability of multi-scale weather and convectively-coupled equatorial waves during the active phase of an MJO. *Journal of the Atmospheric Sciences*, **74**, 3771-3785.
196. Sun, J.*, and **F. Zhang**, 2017: Daily extreme precipitation and trends over China. *Science China – Earth Science*, **60**, 2190-2203.

195. Stern, D. P.*, J. Vigh, D. S. Nolan, and **F. Zhang**, 2015: Reply to Comments On “Revisiting the Relationship Between Eyewall Contraction and Intensification”. *Journal of the Atmospheric Sciences*, **74**, 4275-4286.
194. Evans, C., K. Wood, S. Aberson, H. Archambault, S. Milrad, L. Bosart, K., Corbosiero, C. Davis, J. Dias Pinto, J. Doyle, C. Fogarty, T. Galarneau, Jr., C., Grams, K. Griffin, J. Gyakum, R. Hart, N. Kitabatake, H. Lentink, R. McTaggart Cowan, W. Perrie, J. Quinting, C. Reynolds, M. Riemer, E. Ritchie, Y. Sun, **F. Zhang**, 2017: The Extratropical Transition of Tropical Cyclones. Part I: Cyclone Evolution and Direct Impacts. *Monthly Weather Review*, **145**, 4317-4344.
193. Cohen Y, N Harnik, E Heifetz, DS Nolan, D Tao, **F Zhang**, 2017: On the Violation of Gradient Wind Balance at the top of Tropical Cyclones. *Geophysical Research Letters*, **44**, doi:10.1002/2017GL074552.
- 192. Zhang, F.**, D. Tao*, Y.Q. Sun* and J. D. Kepert, 2017: Dynamics and predictability of secondary eyewall formation in sheared tropical cyclones. *Journal of Advances in Modeling Earth Systems (JAMES)*, **9**, 89-112, DOI: 10.1002/2016MS000729.
191. Minamide, M.*, and **F. Zhang**, 2017: Adaptive Observation Error Inflation for Assimilating All-sky Satellite Radiance. *Monthly Weather Review*, **145**, 1063-1081.
190. Melhauser, C.*, **F. Zhang**, Y. Weng, Y. Jin, H. Jin and Q. Zhao, 2017: A Multiple-Model Convection-permitting Ensemble Examination of the Probabilistic Prediction of Tropical Cyclones: Hurricanes Sandy (2012) and Edouard (2014). *Weather and forecasting*, **32**, 665-668.
189. Zhang, Q.*, X Ni* and **F. Zhang**, 2017, Decreasing trend in severe weather occurrence over China during the past 50 years. (*Nature*) *Scientific Reports*, **7**, 42310, doi:10.1038/srep42310.
188. Munsell, E. B.*, **F. Zhang**, J. A. Sippel, S. A. Braun, Y. Weng, 2017: Dynamics and predictability of the intensification of Hurricane Edouard (2014). *Journal of the Atmospheric Sciences*, **74**, 573-595.
187. Sun, Y.Q.*, R. Rotunno, and **F. Zhang**, 2017: Contributions of moist convection and internal gravity waves to building the atmospheric “-5/3” kinetic energy spectra, *Journal of the Atmospheric Sciences*, **74**, 185-201.
186. Zhao, K., M. Wang, P. Fu, Z. Yang, J. Wen, W-C Lee, and **F. Zhang**, 2017: Doppler radar analysis of a tornadic miniature supercell during the Landfall of Typhoon Mujigae (2015) in South China. *Bulletin of the American Meteorological Society*, **98**, 1821-1831.
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