CURRICULUM VITAE
Ming Xue
George Lynn Cross Research Professor and Weathernews Chair, School of Meteorology
Director, Center for Analysis and Prediction of Storms
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EDUCATION

Ph.D. in Meteorology, University of Reading, U.K. Oct. 1985 - Oct. 1989. Degree received Dec. 1989. Dissertation Title: "A nonhydrostatic numerical model in σ-coordinates and simulations of mesoscale phenomena". Advisor: Professor Alan Thorpe.

Master's degree program in Dept. of Atmospheric Sciences, Nanjing University, P.R. China. Oct. 1984 - Oct. 1985.

B.Sc. in Atmospheric Sciences (graduated first in the class), Nanjing University, P. R. of China. Sept. 1980 - July 1984.

PROFESSIONAL EMPLOYMENT

George Lynn Cross Research Professor, University of Oklahoma, April 2018 – Present

Weathernews Chair in Applied Meteorology, School of Meteorology, University of Oklahoma, April 2010 - Present.

Professor, School of Meteorology, University of Oklahoma, July 2008 - Present.

Associate Professor, School of Meteorology, University of Oklahoma. Jun. 2003 – June 2008.

Assistant Professor, School of Meteorology, University of Oklahoma. Oct. 1999 – Jun. 2003.

Research Assistant Professor, School of Meteorology, University of Oklahoma. Jan. 1999 – Oct. 1999.

Adjunct Assistant Professor, School of Meteorology, University Of Oklahoma. Jan. 1997 - Jan 1999.

Senior Research Scientist, Center for Analysis and Prediction of Storms (CAPS), University of Oklahoma. Aug. 1993 – 1999.

Research Scientist, Center for Analysis and Prediction of Storms. Aug. 1992 - July 1993.

Post-Doctoral Fellow, Center for Analysis and Prediction of Storms. Oct. 1989 - Aug. 1992.

Teaching Assistant, Department of Meteorology, University of Reading, U.K. 1988.

PROFESSIONAL POSITIONS HELD

Director, Center for Analysis and Prediction of Storms, July 2006 –

Associate Director, ERC for Collaborative Adaptive Sensing of the Atmosphere (CASA) and the Analysis and Prediction Thrust Leader, 2006 -

Scientific Director, Center for Analysis and Prediction of Storms, 2001 – June 2006

Director, ARPS Model Development Project, Center for Analysis and Prediction of Storms. February 1993 – October 1999.

Co-Director, the ARPS Model Development Project, Center for Analysis and Prediction of Storms. July 1991 - December 1992.

HONORS AND AWARDS

Elected Fellow, American Meteorological Society, 2019.

Elected Fellow, American Geophysical Union, 2022.

George Lynn Cross Research Professor, University of Oklahoma, April 2018

Weathernews Chair Professor for Applied Meteorology, 2010
Regents' Award for Superior Research and Creative Activity, 2007.
Dean's Award for Excellence in Research and Scholarship, 2007.
Outstanding Overseas Young Scientists Collaborative Research Award, Chinese Natural Science
     Foundation, 2000-2004.
Junior Faculty Research Award, Office of Vice President of Research, 2000.
University of Oklahoma recognition of inventing (with 30% credit) the Advanced Regional
     Prediction System technology which contributes to the academic and public service mission
     of the University, 2000.
The ARPS model was the (sole) winner of the Discover Magazine Award for Technology
     Innovation in computer software category and the Computerworld Smithsonian Award in
     science category in 1997. The model development project was co-directed by Prof. Kelvin
     Droegemeier and myself from 1991 through 1992 and by myself alone since 1993.
Technical Corporation Award (selected as the first among all candidates in the entrance exam to
     enter graduate program at Department of Meteorology, Nanjing University), British
   Council. U.K. 1985 - 1989.

RESEARCH

PH.D. DISSERTATION

Xue, M., 1989: A nonhydrostatic numerical model in sigma-coordinates and simulations of mesoscale phenomena. Ph.D. Dissertation, Department of Meteorology, Reading University, 258pp. Advisor: Prof. Alan Thorpe.

REFEREED PUBLICATIONS (TOTAL SCI PUBLICATIONS IN WEB OF SCIENCE: 342)

Total number of citations as of October 2024: Google Scholar 25,043. H-index: 81.
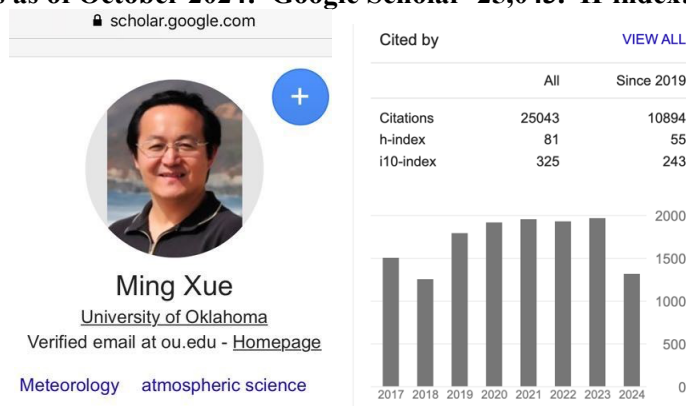
Publication list. Those by graduate students and post-docs he directly advised are proceeded with '*'.

1. **Xue**, M. and A. J. Thorpe, 1991: A mesoscale numerical model using the nonhydrostatic sigma-coordinate equations: Model experiments with dry mountain flows, *Mon. Wea. Rev.,* 119, 1168-1185.
2. Droegemeier, K.K., M. **Xue**, K. Johnson, K. Mills, and M. O'Keefe, 1993: Experiences with the scalable- parallel ARPS cloud/mesoscale prediction model on massively parallel and workstation cluster architectures. *Parallel Supercomputing in Atmospheric Science*, G.R. Hoffman and T. Kauranne, Eds., World Scientific, 99-129.

3. Johnson, K.W., J. Bauer, G.A. Riccardi, K.K. Droegemeier, and M. **Xue**, 1994: Distributed processing of a regional prediction model. *Mon. Wea. Rev.* 122. 2558-2572.

4. Sathye, A., G. Bassett, K. Droegemeier, and M. **Xue**, 1995: Towards operational severe weather prediction using massively parallel processing, *High Performance Computing.* Tata McGraw Hill, New Dehli, India.

5. Droegemeier, K.K., M. **Xue**, K. Johnson, M. O'Keefe, A. Sawdey, G. Sabot, S. Wholey, N.T. Lin, and K. Mills, 1995: Weather prediction: A scalable storm-scale model. In *High Performance* Computing, G. Sabot (Ed.), Addison-Wesley, Reading, Massachusetts, 45-92.

6. Sathye, A., G. Bassett, K. Droegemeier, M. **Xue**, and K. Brewster, 1996: Experiences using high performance computing for operational storm scale weather prediction, In: *Concurrency: Practice and Experience, special issue on Commercial and industrial Applications on High Performance Computing.* John Wiley & Sons, Ltd., 731-740.

7. Xu, Q., M. **Xue**, and K.K. Droegemeier, 1996: Numerical simulations of density currents in sheared environments within a vertically confined channel. 53, *J. Atmos. Sci*. 770-786.

8. Sathye, A., M. **Xue**, G. Bassett, and K.K. Droegemeier, 1997: Parallel weather modeling with the Advanced Regional Prediction System. *23, Parallel Computing,* 2243-2256.

9. **Xue**, M., Q. Xu, and K.K. Droegemeier, 1997: A Theoretical and numerical study of density currents in non-constant shear flows. *J. Atmos. Sci.* **54**, 1998-2019.

10. Gao, J., M. **Xue**, A. Shapiro, K.K. Droegemeier, 1999: A variational method for the retrieval of three-dimensional wind fields from dual-Doppler radars. *Mon. Wea. Rev.*, **127**, 2128-2142.

11. **Xue**, M., 2000: Density currents in two-layer shear flows. *Quart. J. Roy. Met. Soc.*, **126**, 1301-1320.

12. **Xue**, M., 2000: High-order monotonic numerical diffusion and smoothing, *Mon. Wea. Rev.* **128**, 2853-2864.

13. **Xue**, M., K. K. Droegemeier, and V. Wong, 2000: The Advanced Regional Prediction System (ARPS) - A multiscale nonhydrostatic atmospheric simulation and prediction tool. Part I: Model dynamics and verification. *Meteor. Atmos. Physics*. **75**, 161-193.

14. Doyle, J. D., D. R. Durran, B. A. Colle, C. Chen, M. Georgelin, V. Grubisic, W. R. Hsu, C. Y. Huang, D. Landau, Y. L. Lin, G. S. Poulos, W.Y.Sun, D. B. Weber, M. G. Wurtele, and M. **Xue**, 2000: An inter-comparison of model predicted wave breaking for the 11 January 1972 Boulder Windstorm. *Mon. Wea. Rev.*, **128**, 901-914.

15. **Xue**, M., and S. J. Lin, 2001: Numerical equivalence of advection in flux and advective forms and quadratically conservative high-order advection schemes. *Mon. Wea. Rev.*, **129**, 561-565.

16. **Xue**, M., K. K. Droegemeier, V. Wong, A. Shapiro, K. Brewster, F. Carr, D. Weber, Y. Liu, and D.-H. Wang, 2001: The Advanced Regional Prediction System (ARPS) - A multi-scale nonhydrostatic atmospheric simulation and prediction tool. Part II: Model physics and applications. *Meteor. Atmos. Physics*. **76**, 143-165.

17. Gao, J., M. **Xue**, A. Shapiro, Q. Xu, and K. K. Droegemeier, 2001: Three-dimensional simple adjoint velocity retrievals from single Doppler radar, *J. Atmos. Ocean Tech.,* **18**, 26-38.

18. **Xue**, M., 2002: Density currents in shear flows: Effects of rigid lid and cold-pool internal circulation, and application to squall line dynamics. *Quart. J. Roy. Met. Soc*., **128**, 47-74.

19. Sharif, H. O., F. L. Ogden, W. F. Krajewski, and M. **Xue**, 2002: Numerical simulations of radar-rainfall error propagation. Water Resources Research, 38, 15-1 to 15-14.

20. **Xue**, M., D.-H. Wang, J.-D. Gao, K. Brewster, and K. K. Droegemeier, 2003: The Advanced Regional Prediction System (ARPS), storm-scale numerical weather prediction and data assimilation. *Meteor. Atmos. Physics*, 82, 139-170.

21. Souto, M. J., C. F. Balseiro, V. Pérez-Muñuzuri, M. **Xue**, and K. Brewster, 2003: Importance of cloud analysis and impact for daily forecast in terms of climatology of Galician region, Spain. J. App. Meteor., 42, 129-140.

22. Gao, J.-D., M. **Xue**, K. Brewster, and K. K. Droegemeier, 2004: A three-dimensional variational data analysis method with recursive filter for Doppler radars. J. Atmos. Ocean. Tech., 21, 457-469.

23. Sharif, H. O., F. K. Ogden, W. F. Krajewski, and M. **Xue**, 2004: Statistical analysis of radar-rainfall error propagation, J. Hydrometeor., 5, 199-212.

24. *Nutter, P., D. Stensrud, and M. **Xue**, 2004: Effects of coarsely-resolved and temporally-interpolated lateral boundary conditions on the dispersion of limited-area ensemble forecasts, Mon. Wea. Rev., 132, 2358-2377.

25. *Nutter, P., M. **Xue**, and D. Stensrud, 2004: Application of lateral boundary condition perturbations to help restore dispersion in limited area ensemble forecasts. Mon. Wea. Rev., 132, 2378-2390.

26. *Ren, D. and M. **Xue**, 2004: A revised force-restore model for land-surface modeling, J. App. Meteor., 43, 1768-1782.

27. *Ren, D., M. **Xue**, and A. Henderson-Sellers, 2004: Incorporating hydraulic lift into a land surface model and its effect on surface moisture prediction. J. Hydrometero., 5, 1181-1191.

28. *Tong, M. and M. **Xue**, 2005: Ensemble Kalman filter assimilation of Doppler radar data with a compressible nonhydrostatic model: OSSE Experiments. Mon. Wea. Rev., 133, 1789-1807.

29. Chow, F. K., R. L. Street, M. **Xue**, and J. H. Ferziger, 2005: Explicit filtering and reconstruction turbulence modeling for large-eddy simulation of neutral boundary layer flow. J. Atmos. Sci., 62, 2058-2077.

30. *Xiao, Y., M. **Xue**, W. J. Martin, and J. Gao, 2005: Development of an adjoint for a complex atmospheric model, the ARPS, using TAF. In Automatic Differentiation: Applications, Theory, and Implementations, H. M. Bücker, G. F. Corliss, P. Hovland, U. Naumann, and B. Norris, Eds., Springer, 263-272.

31. Droegemeier, K. K., K. Brewster, M. **Xue**, D. Weber, D. Gannon, B. Plale, D. Reed, L. Ramakrishnan, J. Alameda, R. Wilhelmson, T. Baltzer, B. Domenico, D. Murray, M. Ramamurthy, A. Wilson, R. Clark, S. Yalda, S. Graves, R. Ramachandra, J. Rushing, E. Joseph, and V. Morris, 2005: Service-oriented environments for dynamically interacting with mesoscale weather. Computing in Science and Engineering, 7, 12-27.

32. **Xue**, M. and W. Martin, 2006: A high-resolution modeling study of the 24 May 2002 case during IHOP. Part I: Numerical simulation and general evolution of the dryline and convection. *Mon. Wea. Rev.*, **134**, 149–171.

33. **Xue**, M. and W. Martin, 2006: A high-resolution modeling study of the 24 May 2002 case during IHOP. Part II: Horizontal convective rolls and convective initiation. *Mon. Wea. Rev.*, **134**, 172–191.

34. ***Xue**, M., M. Tong, and K. K. Droegemeier, 2006: An OSSE framework based on the ensemble square-root Kalman filter for evaluating impact of data from radar networks on thunderstorm analysis and forecast. *J. Atmos. Ocean Tech.*, **23**, 46–66.

35. Chow, F. K., A. P. Weigel, R. L. Street, M. W. Rotach, and M. **Xue**, 2006: High-resolution large-eddy simulations of flow in a steep Alpine valley. Part I: Methodology, verification and sensitivity experiments. *J. Appl. Meteor.*, **45**, 63-86.

36. Weigel, A. P., F. K. Chow, M. W. Rotach, R. L. Street, and M. **Xue**, 2006: High-resolution large-eddy simulations of flow in a steep Alpine valley. Part II: Flow structure and heat budgets. *J. Appl. Meteor.*, **45**, 87-107.

37. Martin, W. J. and M. **Xue**, 2006: Initial condition sensitivity analysis of a mesoscale forecast using very-large ensembles. *Mon. Wea. Rev.*, **134**, 192–207.

38. *Hu, M., M. **Xue**, and Keith Brewster, 2006: 3DVAR and cloud analysis with WSR-88D Level-II data for the prediction of the Fort Worth tornadic thunderstorms. Part I: Cloud analysis and its impact. *Mon. Wea. Rev.*, **134**, 675-698.

39. *Hu, M., M. **Xue**, J. Gao and K. Brewster, 2006: 3DVAR and cloud analysis with WSR-88D Level-II data for the prediction of the Fort Worth tornadic thunderstorms. Part II: Impact of radial velocity analysis via 3DVAR. *Mon. Wea. Rev.*, **134**, 699-721.

40. *Liu, H. and M. **Xue**, 2006: Retrieval of moisture from slant-path water vapor observations of a hypothetical GPS network using a three-dimensional variational scheme with anisotropic background error. *Mon. Wea. Rev.,* **134**, 933-949.

41. *Dawson, D. T., II and M. **Xue**, 2006: Numerical forecasts of the 15-16 June 2002 Southern Plains severe MCS: Impact of mesoscale data and cloud analysis. *Mon. Wea. Rev.,* **134**, 1607-1629.

42. Gao, J., K. Brewster, and M. **Xue**, 2006: A comparison of the radar ray path equations and approximations for use in radar data assimilation. *Adv. Atmos. Sci.,* **32***,* 190-198.

43. Gao, J., M. **Xue**, S. Y. Lee, K. K. Droegemeier, and A. Shapiro, 2006: A three-dimensional variational method for velocity retrievals from single-Doppler radar observations on supercell storms. *Meteo. Atmos. Phys.*, **94**, 11-26.

44. *Sheng, C., S. Gao, and M. **Xue**, 2006: Short-term prediction of a heavy precipitation event by assimilating Chinese CINRAD radar reflectivity data using complex cloud analysis. *Meteor. Atmos. Phy.*, **94**, 167-183.

45. Xu, Q., S. Liu, and M. **Xue**, 2006: Background error covariance functions for vector wind analysis using Doppler radar radial-velocity observations. *Quart. J. Roy. Meteor. Soc.*, **132**, 2887-2904.

46. *Hu, M. and M. **Xue**, 2007: Impact of configurations of rapid intermittent assimilation of WSR-88D radar data for the 8 May 2003 Oklahoma City tornadic thunderstorm case. *Mon. Wea. Rev.*, **135**, 507–525.

47. **Xue**, M., S. Liu, and T. Yu, 2007: Variational analysis of over-sampled dual-Doppler radial velocity data and application to the analysis of tornado circulations. *J. Atmos. Ocean Tech.*, **24**, 403–414.

48. Liu, S., M. **Xue**, and Q. Xu, 2007: Using wavelet analysis to detect tornadoes from Doppler radar radial-velocity observations. *J. Atmos. Ocean Tech.*, **24**, 344-359.

49. *Liu, H., M. **Xue**, R. J. Purser, and D. F. Parrish, 2007: Retrieval of moisture from GPS slant-path water vapor observations using 3DVAR with isotropic and anisotropic recursive filters. *Mon. Wea. Rev.*, **135**, 1506–1521.

50. Chu, K., Z.-M. Tan, and M. **Xue**, 2007: Impact of four-dimensional variational assimilation of rainfall data on precpitation forecast of mesoscale convective systems in a meiyu heavy rainfall event. *Adv. Atmos. Sci.*, **24**, 281-300.

51. *Hu, M. and M. **Xue**, 2007: Implementation and evaluation of cloud analysis with WSR-88D reflectivity data for GSI and WRF-ARW. *Geophy. Res. Letters*. **34**, L07808, doi:10.1029/2006GL028847.

52. ***Xue**, M., Y. Jung, and G. Zhang, 2007: Error modeling of simulated reflectivity observations for ensemble Kalman filter data assimilation of convective storms. *Geophys. Res. Letters*, **34**, L10802, doi:10.1029/2007GL029945.

53. Limpasuvan, V., D. L. Wu, M. J. Alexander, M. **Xue**, M. Hu, S. Pawson, and J. R. Perkins, 2007: The ARPS stratospheric gravity wave simulation over Greenland during 24 January 2005. *J. Geo. Res.*, **112**, D10115, doi:10.1029/2006JD007823.

54. **Xue**, M., K. K. Droegemeier, and D. Weber, 2007: Numerical prediction of high-impact local weather: A driver for petascale computing. In *Petascale Computing: Algorithms and Applications*, D. Bader, Ed., Taylor & Francis., 103-124.

55. May, R. M., M. I. Biggerstaff, and M. **Xue**, 2007: A Doppler radar emulator with an application to the detectability of tornadic signatures. *J. Atmos. Ocean Tech.,* **24**, 1973-1996.

56. Cheong, B. L., R. D. Palmer, and M. **Xue**, 2008: A time-series weather radar simulator based on high-resolution atmospheric models. *J. Atmos. Ocean. Tech.,* **25**, 230-243.

57. Gao, J. and M. **Xue**, 2008: An efficient dual-resolution approach for ensemble data assimilation and tests with assimilated Doppler radar data. *Mon. Wea. Rev.,* **136**, 945-963.

58. *Tong, M. and M. **Xue**, 2008: Simultaneous estimation of microphysical parameters and atmospheric state with radar data and ensemble Kalman filter. Part I: Sensitivity analysis and parameter identifiability. *Mon. Wea. Rev.,* **136**, 1630-1648.

59. *Tong, M. and M. **Xue**, 2008: Simultaneous estimation of microphysical parameters and atmospheric state with radar data and ensemble Kalman filter. Part II: Parameter estimation experiments. *Mon. Wea. Rev.,* **136**, 1649-1668.

60. Gao, S., S. Yang, M. **Xue**, and C. Cui, 2008: The total deformation and its role in heavy precipitation events associated with deformation-dominant flow patterns. *Adv. Atmos. Sci.,* **25**, 11-23.

61. *Jung, Y., G. Zhang, and M. **Xue**, 2008: Assimilation of simulated polarimetric radar data for a convective storm using ensemble Kalman filter. Part I: Observation operators for reflectivity and polarimetric variables. *Mon. Wea. Rev.,* **136**, 2228–2245.
62. *Jung, Y., M. **Xue**, G. Zhang, and J. Straka, 2008: Assimilation of simulated polarimetric radar data for a convective storm using ensemble Kalman filter. Part II: Impact of polarimetric data on storm analysis. *Mon. Wea. Rev.,* **136**, 2246–2260.
63. *Liu, H. and M. **Xue**, 2008: Prediction of convective initiation and storm evolution on 12 June 2002 during IHOP. Part I: Control simulation and sensitivity experiments. *Mon. Wea. Rev.*, **136**, 2261-2283.
64. Xu, Q., H. Lu, S. Gao, M. **Xue**, and M. Tong, 2008: Time-expanded sampling for ensemble Kalman filter: Assimilation experiments with simulated radar observations. *Mon. Wea. Rev.,* **136**, 2651-2667.
65. Gao, J., K. Brewster, and M. **Xue**, 2008: Variation of radio reflectivity with respect to moisture and temperature and influence on radar ray path. *Adv. Atmos. Sci.*, 1098-1106.
66. Tanamachi, R. L., W. Feltz, and M. **Xue**, 2008: Observations and numerical simulation of a water vapor oscillation event during the International H2O Project (IHOP_2002). *Mon. Wea. Rev.*, **136**, 3106-3120.
67. *Snook, N. and M. **Xue**, 2008: Effects of microphysical drop size distribution on tornadogenesis in supercell thunderstorms. *Geophy. Res. Letters*, **35**, L24803, doi:10.1029/2008GL035866.
68. Zhang, G., M. Xue, Q. Cao, and D. Dawson, 2008: Diagnosing the intercept parameter for exponential raindrop size distribution based on video disdrometer observations. J. Appl. Meteor. Climatol., **47**, 2983-2992.
69. ***Xue**, M., M. Tong, and G. Zhang, 2009: Simultaneous state estimation and attenuation correction for thunderstorms with radar data using an ensemble Kalman filter: Tests with simulated data. *Quart. J. Roy. Meteor. Soc*., **135**, 1409-1423.
70. *Sheng, C., M. **Xue**, and S. Gao, 2009: The structure and evolution of sea breezes during Qingdao Olympics sailing test event in 2006. *Adv. Atmos. Sci.,* **26**, 132–142.
71. *Zhao, K. and M. **Xue**, 2009: Assimilation of coastal Doppler radar data with the ARPS 3DVAR and cloud analysis for the prediction of Hurricane Ike (2008). *Geophy. Res. Letters,* 36, L12803, doi:10.1029/2009GL038658.
72. Potvin, C. K., A. Shapiro, T.-Y. Yu, J. Gao, and M. **Xue**, 2009: Using a low-order model to characterize and detect tornadoes in multiple-Doppler radar data. *Mon. Wea. Rev.*, **137**, 1230–1249.
73. Dunning, T. H., Jr., K. Schulten, J. Tromp, J. P. Ostriker, K. K. Droegemeier, M. **Xue**, and P. Fussell, 2009: Science and engineering in the petascale era. *Computing Sci. Engineering*, **11**, 28-36.
74. *Schwartz, C., J. Kain, S. Weiss, M. **Xue**, D. Bright, F. Kong, K. Thomas, J. Levit, and M. Coniglio, 2009: Next-day convection-allowing WRF model guidance: A second look at 2 vs. 4 km grid spacing. *Mon. Wea. Rev.,* **137**, 3351-3372.
75. Clark, A. J., W. A. Gallus, Jr., M. **Xue**, and F. Kong, 2009: A comparison of precipitation forecast skill between small convection-permitting and large convection-parameterizing ensembles. *Wea. Forecasting*, **24**, 1121-1140.
76. McLaughlin, D., D. Pepyne, V. Chandrasekar, B. Philips, J. Kurose, M. Zink, K. Droegemeier, S. Cruz-Pol, F. Junyent, J. Brotzge, D. Westbrook, N. Bharadwaj, Y. Wang, E. Lyons, K. Hondl, Y. Liu, E. Knapp, M. Xue, A. Hopf, K. Kloesel, A. DeFonzo, P. Kollias, K. Brewster, R. Contreras, B. Dolan, T. Djaferis, E. Insanic, S. Frasier, and F. Carr, 2009: Short-wavelength technology and the potential for distributed networks of small radar systems. Bull. Amer. Meteor. Soc., *Bull. Amer. Meteor. Soc.*, **90**, 1797-1817.
77. Stensrud, D. J., M. **Xue**, L. Wicker, K. Kelleher, M. Foster, J. Schaefer, R. Schneider, S. Benjamin, J. Ferree, J. Tuell, and J. Hayes, 2009: Convective-scale Warn on Forecast: A vision for 2020. *Bull. Am. Meteor. Soc*., **90**, 1487-1499.
78. *Jung, Y., M. **Xue**, and G. Zhang, 2010: Polarimetric radar signatures of a simulated supercell storm using a two-moment microphysics scheme and polarimetric radar emulator. *J. Appl. Meteor. Climatol.,* **49**, 146-163.

79. *Jung, Y., M. **Xue**, and G. Zhang, 2010: Simultaneous estimation of microphysical parameters and atmospheric state using simulated polarimetric radar data and an ensemble Kalman filter in the presence of an observation operator error. Mon. Wea. Rev., **138**, 539–562.

80. ***Xue**, M., Y. Jung, and G. Zhang, 2010: State estimation of convective storms with a two-moment microphysics scheme and an ensemble Kalman filter: Experiments with simulated radar data Q. J. Roy. Meteor. Soc, **136**, 685-700.

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82. Ge, G., J. Gao, K. Brewster, and M. **Xue**, 2010: Impacts of beam broadening and earth curvature on 3D variational radar data assimilation radial velocity with two Doppler radars. J. Atmos. Ocean Tech., 27, 617-636.

83. *Schwartz, C. S., J. S. Kain, S. J. Weiss, M. **Xue**, D. R. Bright, F. Kong, K. W.Thomas, J. J. Levit, M. C. Coniglio, and M. S. Wandishin, 2010: Toward improved convection-allowing ensembles: model physics sensitivities and optimizing probabilistic guidance with small ensemble membership. Wea. Forecasting, **25**, 263-280.

84. Coniglio, M. C., K. L. Elmore, J. S. Kain, S. Weiss, M. **Xue** and M. Weisman, 2010: Evaluation of WRF model output for severe-weather forecasting from the 2008 NOAA Hazardous Weather Testbed Spring Experiment. Wea. Forecasting, **25**, 408-427

85. Clark, A. J., W. A. Gallus, M. **Xue**, and F. Kong, 2010: Growth of spread in convection-allowing and convection-parameterizing ensembles Wea. Forecasting, **25**, 594-612.

86. Clark, A. J., W. A. Gallus, Jr., M. **Xue**, and F. Kong, 2010: Convection-allowing and convection-parameterizing ensemble forecasts of a mesoscale convective vortex and associated severe weather. Wea. Forecasting, **25**, 1052-1081.

87. Kain, J. S., M. **Xue**, M. C. Coniglio, S. J. Weiss, F. Kong, T. L. Jensen, B. G. Brown, J. Gao, K. Brewster, K. W. Thomas, Y. Wang, C. S. Schwartz, and J. J. Levit, 2010: Assessing advances in the assimilation of radar data within a collaborative forecasting-research environment. Wea. Forecasting, **25**, 1510-1521.

88. Srivastava, K., J. Gao, K. Brewster, S. K. R. Bhowmik, M. **Xue**, and R. Gadi, 2010: Assimilation of Indian radar data .. for simulation of a small-scale tropical cyclone. *Natural hazards*, DOI: 10.1007/s11069-010-9640-4.

89. Lan, W., J. Zhu, M. Xue, J. Gao, and T. Lei, 2010: Storm-scale ensemble Kalman filter assimilation experiments with simulated Doppler radar data: Part I: The perfect model case. Chinese J. Atmos. Sci., 34(3), 640-652.

90. Lan, W., J. Zhu, M. Xue, T. Lei, and J. Gao, 2010: Storm-scale ensemble Kalman filter assimilation experiments with simulated Doppler radar data: Part II: The case with model error. Chinese J. Atmos. Sci., 34(4), 737-753.

91. *Schenkman, A., M. **Xue**, A. Shapiro, K. Brewster, and J. Gao, 2011: The analysis and prediction of the 8-9 May 2007 Oklahoma tornadic mesoscale convective system by assimilating WSR-88D and CASA radar data using 3DVAR. Mon. Wea. Rev., 139, 224-246.

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Graduate Student Advising

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PH.D. STUDENT DISSERTATIONS AS MAJOR ADVISOR

1. Paul Nutter, 2003: Effects of nesting frequency and lateral boundary perturbations on the dispersion of limited-area ensemble forecasts, Ph.D. Dissertation, School of Meteorology, University of Oklahoma, 156 pp.
2. Diandong Ren, 2004: 4DVAR Retrieval of Prognostic Land Surface Model Variables, Ph. D. Dissertation, School of Meteorology, University of Oklahoma, 228 pp.
3. Ming Hu, 2005: 3DVAR and cloud analysis with WSR-88D level-II data for the prediction of tornadic thunderstorms, Ph. D. Dissertation, School of Meteorology, University of Oklahoma, 217pp.
4. Mingjing Tong, 2006: Ensemble Kalman filer assimilation of Doppler radar data for the initialization and prediction of convective storms, Ph.D. Dissertation, School of Meteorology, University of Oklahoma, 243pp.
5. Haixia Liu, 2007: Analysis of GPS Slant-path Water Vapor Observations using 3DVAR with Anisotropic Filters and Their Impact on the Prediction of Convective Initiation and Precipitation, School of Meteorology, University of Oklahoma, 188pp.
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13. Jing Cheng, 2013: Assimilation of Attenuated Data from X-Band Network Radars using Ensemble Kalman Filter, School of Meteorology, University of Oklahoma, 160pp.
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15. Yongzuo Li, 2014: Assimilation of radar observations with ensemble-variational hybrid data assimilation method for the initialization and prediction of hurricanes. School of Meteorology, University of Oklahoma (Co-advisor).
16. Nathan Dahl, 2015: Coupling the Advanced Regional Prediction System and the Discrete Event Specification Fire Spread Model to Predict Wildfire Behavior, School of Meteorology, University of Oklahoma, 137 pp.
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20. Brett Roberts, 2017: Roberts, B., 2017: The Role of Surface Drag in Supercell Tornadogenesis and Mesocyclogenesis: Studies Based on Idealized Numerical Simulations, School of Meteorology, University of Oklahoma, 164 pp.
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25. Ilha de Oliveira, Mauricio, 2021: Cyclic Tornadogenesis and Horizontal Vortex Tubes in High-Resolution Idealized Simulations of Supercells, Ph.D. Dissertation, School of Meteorology, University of Oklahoma.
26. Advised 15 additional exchange/visiting Ph.D. students (Ningzhu Du, Shizhang Wang, Mingjin Wang, Xin Xu, Xiaoran Zhuang, Honglei Zhang, Liping Luo, Zhenqi Sun, Shiwei Sun, Yuehan Zhang, Lan Yang, Lijian Zhu, Ziqi Fan, Haojia Li, Xiuchen Wang)

EXTERNALLY SPONSORED RESEARCH GRANTS AT OU
- **Principal Investigator for 74 external grants** (from NSF, NOAA, FAA, DOD, NASA, DOE, EPA, foreign governments and industry) **totaling $26.7 million.**
- **Co-Principal Investigator for 56 additional external grants totaling** $**41.8 million.**
- **Total external grants** as PI and co-PI**: $68.5 million.**

External Grants between 2014-2024

Xue, M., (PI, 50% credit), Hong, Y., (Co-PI, 10% credit), Martin, E. R., (Co-PI, 10% credit), McPherson, R. A., (Co-PI, 10% credit), Hu, X., (Co-PI, 20% credit), "Very-High-Resolution Regional Climate Dynamic Downscaling and Hydrological Simulations for Peru and Arequipa Regions," Sponsored by Universidad Nacional de San Agustin, Industry, $2,032,052. (October 1, 2020 - September 30, 2023).

Xue, M., (PI, 50% credit), Hu, X., (Co-PI, 20% credit), Ziegler, C., (Co-PI, 30% credit), "Collaborative Research: Observing and Understanding PBL Heterogeneities and Their Impacts on Tornadic Storms During VORTEX-SE 2018 Field Experiment," NSF, $583,663. (August 1, 2019 - May 31, 2025).

Xue, M., (PI, 50% credit), Fierro, A. O., (Co-PI, 5% credit), Edward, M., (Co-PI, 5% credit), Kong, R., (Co-PI, 40% credit), "Direct Assimilation of GOES-R Geostationary Lightning Mapper (GLM) Data within JEDI Hybrid System for Operational UFS Convection-Allowing Predictions," NOAA $339,139. (August 1, 2021 - July 31, 2024).

Xue, M., (PI, 60% credit), Liu, C., (Co-PI, 25% credit), Snook, N. A., (Co-PI, 15% credit), "CAPS Contributions to Unified Forecast System Research-to-Operations Project (UFS-R2O)," NOAA, $290,500. (July 1, 2023 - June 30, 2025).

Xue, M., (PI, 70% credit), Hu, X., (Co-PI, 10% credit), Snook, N. A., (Co-PI, 10% credit), Supinie, T. A., (Co-PI, 10% credit), "CAPS Contributions to Unified Forecast System Research-to-Operations Project (UFS-R2O)," NOAA, $146,056. (October 1, 2022 - September 30, 2023).

Xue, M., (PI, 40% credit), Supinie, T. A., (Co-PI, 15% credit), Hu, X., (Co-PI, 20% credit), Snook, N. A., (Co-PI, 25% credit), "Unified Forecast System Research-to-Operations Project (UFS-R20) Task: RRFS and Retirement of Legacy Models," NOAA, $292,398. (July 1, 2020 - June 30, 2021).

Xue, M., (PI, 50% credit), Brewster, K. A., (Co-PI, 10% credit), Hu, X., (Co-PI, 10% credit), Snook, N. A., (Co-PI, 20% credit), Supinie, T. A., (Co-PI, 10% credit), "CAPS Contributions to Unified Forecast System Research-to-Operations Project (UFS-R2O)," NOAA. $292,398. (October 1, 2021 - September 30, 2022).

Xue, M., (PI, 60% credit), Fierro, A. O., (Co-PI, 10% credit), MacGorman, D., (Co-PI, 10% credit), Mansell, E., (Co-PI, 10% credit), Zhao, G., (Co-PI, 10% credit), "Assimilation of High-Frequency GOES-R Geostationary Lightning Mapper (GLM) Flash Ex-tent Density Data in GSI-Based EnKF and Hybrid for Improving Convective Scale Weather Predictions," NOAA, $581,144. (April 1, 2017 - March 31, 2020).

Xue, M. (PI, 60% credit), Brewster, K., (Co-PI, 20% credit), Kong, F., (Co-PI, 20% credit) "Establishment of Precision Weather Analysis and Forecasting Systems for the Jiangsu Province Meteorological Bureau (JSMB)" JSWB, China. $505.4K (February 1, 2014 - January 31, 2015)

Xue, M., (PI, 100% credit), "Contribution to Model Development and Enhancement Research Team by the Center for Analysis and Prediction of Storms," Sponsored by U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, $229,000. (12/2014 – 9/2017).

Xue, M., (PI, 25% credit), Zhang, G., (Co-PI, 50% credit), Xue, X., (Co-PI, 25% credit), "Development and Evaluation of an Ensemble Kalman Filter (EnKF)-Based," Sponsored by Beijing Meteorological Service, Industry, $49,895. (June 1, 2018 - December 31, 2019).

Xue, M., (PI, 30% credit), Brewster, K. A., (Co-PI, 20% credit), Jung, Y., (PI, 20% credit), Hu, X., (PI, 30% credit), "Evaluation and Optimization of Two New Scale-Aware PBL Schemes within WRF for the Prediction of Day- and Night-Time Storm Environment and Tornadic Storms during

VORTEX-SE," Sponsored by U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, Federal, $287,126. (September 1, 2017 - August 31, 2019).

Xue, M., (PI, 30% credit), Dawson, D., (Co-PI, 10% credit), Brewster, K. A., (Co-PI, 30% credit), Kong, F., (Co-PI, 30% credit), "Storm-Scale Ensemble Prediction Optimized for Heavy Precipitation Forecasting in Support of the Hydrometeorology Testbed (HMT)," $239,700. NOAA, Federal. (September 1, 2015 - August 31, 2017).

Xue, M., (PI, 30% credit), Hu, X. (Co-PI, 30%) Jung, Y., (Co-PI, 20% credit), Brewster, K., (Co-PI, 20% credit) "Assessment and Optimization of YSU-Type Non-Local PBL Scheme for the Prediction of Day- and Night-Time Storm Environment and Tornadic Storms during VORTEX-SE" NOAA, $287,126. 9/1/2017 – 8/31/2019.

Xue, M., (PI, 30% credit), Kong, F. (Co-PI, 30%) Brewster, K., (Co-PI, 30% credit), Snook, N., (Co-PI, 10% credit), "Convection-Allowing Ensemble Prediction for Heavy Precipitation in Support of the Hydrometeorology Testbed (HMT): New QPF Products, Data Assimilation Techniques and Prediction Model." Sponsored by U.S. Dept. of Commerce, NOAA, $289,961. (July 1, 2017 - June 30, 2019).

Xue, M., (PI, 30% credit), Kong, F. (Co-PI, 30%) Jung, Y., (Co-PI, 20% credit), Liu, C., (Co-PI, 10% credit), "Development and Optimization of Radar-Assimilating Ensemble-Based Data Assimilation for Storm-Scale Ensemble Prediction in Support of HWT Spring Experiments." $290,837. Sponsored by U.S. Dept. of Commerce, NOAA (July 1, 2017 - June 30, 2019).

Xue, M., (PI, 30% credit), Snook, N. A., (Co-PI, 10% credit), Brewster, K. A., (Co-PI, 20% credit), Jung, Y., (Co-PI, 20% credit), Kong, F., (Co-PI, 20% credit), "A Partnership to Develop and Evaluate Optimized Realtime Convective-Scale Ensemble Data Assimilation and Prediction Systems for Hazardous Weather: Toward the Goals of a Weather-Ready Nation," Sponsored by U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, Federal, $450,000. (May 1, 2016 - April 30, 2019).

Xue, M., (PI, 30% credit), Snook, N. A., (Co-PI, 10% credit), Brewster, K. A., (Co-PI, 30% credit), Kong, F., (Co-PI, 30% credit), "Convection-Allowing Ensemble Prediction for Heavy Precipitation in Support of the Hydrometeorology Testbed (HMT): New QPF Products, Data Assimilation Techniques and Prediction Model," Sponsored by U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, Federal, $289,961. (July 1, 2017 - June 30, 2019).

Xue, M., (PI, 30% credit), Snook, N. A., (Co-PI, 10% credit), Jung, Y., (Co-PI, 30% credit), Kong, F., (Co-PI, 30% credit), "Improving Initial Conditions and their Perturbations through Ensemble-Based Data Assimilation for Optimized Storm-Scale Ensemble Prediction in Support of HWT Severe Weather Forecasting," NOAA. $249,705. (September 1, 2015 - August 31, 2017).

Xue, M., (PI, 35% credit), Brewster, K. A., (Co-PI, 20% credit), Jung, Y., (Co-PI, 20% credit), Kong, F., (Co-PI, 25% credit), "A Partnership to Develop, Conduct, and Evaluate Realtime Advanced Data Assimilation and High-Resolution Ensemble and Deterministic Forecasts for Convective-scale Hazardous Weather: Towards the Goals of Weather Ready Nation," NOAA, Federal. $375K, (July 1, 2013 - June 30, 2016).

Xue, M., (PI, 40% credit), Brewster, K. A., (Co-PI, 10% credit), Kong, F., (Co-PI, 10% credit), Jung, Y., (Co-PI, 20% credit), Zhang, C., (Co-PI, 20% credit), "Continued Enhancements to FV3 Model with Advanced Physics through CCPP and Convective-Scale Data Assimilation into GSI and JEDI for Convection-Allowing Forecasting and Evaluations through Hazardous Weather Testbed towards Accelerated Operational Implement," NOAA, $199,581. (July 1, 2018 - June 30, 2019).

Xue, M., (PI, 40% credit), Brewster, K. A., (Co-PI, 20% credit), Jung, Y., (Co-PI, 20% credit), Kong, F., (Co-PI, 20% credit), "Enhancement and Evaluation of NGGPS Model FV3 at Convection-Allowing Resolutions through Hazardous Weather Testbed Spring Experiment towards Accelerated Operational Implementation of FV3 for Mesoscale Applications," NOAA, $194,175. (May 1, 2017 - April 30, 2018).

Xue, M., (PI, 40% credit), Brewster, K., (Co-PI, 30% credit), Kong, F., (Co-PI, 30% credit), "Storm-Scale Ensemble Prediction Optimized for Heavy Precipitation Forecasting in Support of the Hydrometeorology Testbed (HMT)," NOAA, Federal, $239,700. (9/2015 – 8/2017).

Xue, M., (PI, 45% credit), Jung, Y., (Co-PI, 15% credit), McGovern, A., (Co-PI, 15% credit), Snook, N. A., (Co-PI, 25% credit), "The Severe Hail Analysis, Representation, and Prediction (SHARP) Project," NSF, Federal. $819K. (September 15, 2013 - August 31, 2017).

Xue, M., (PI, 45% credit), with co-PIs Alex Fierro, Edward Mansell, Donald MacGorman, Gang Zhao "Assimilation of High Frequency GOES-R Geostationary Lightning Mapper (GLM) Flash Ex-tent Density Data in GSI-Based EnKF and Hybrid for Improving Convection Scale Weather Predictions". NOAA, $597,835, 04/01/2017 – 03/31/2020.

Xue, M., (PI, 50% credit), Brewster, K. A., (Co-PI, 20% credit), Kong, F., (Co-PI, 30% credit), "Development of a Short-Range Realtime Analysis and Forecasting System based on the ARPS for Taiwan Region," NOAA. $110,250. (March 1, 2012 - September 30, 2017).

Xue, M., (PI, 50% credit), Brewster, K., (Co-PI, 25% credit), Jung, Y., (Co-PI, 25% credit), "Advanced Data Assimilation and Prediction Research for Convective-Scale," NOAA, $450,000. (8/2014-7/2016).

Xue, M., (PI, 60% credit), Jung, Y., (Co-PI, 40% credit), "Advanced Data Assimilation and Prediction Research for Convective-Scale Warn-on-Forecast," NOAA, $800,000. (October 1, 2016 - June 30, 2020).

Xue, M., (PI, 50% credit), Snook, N. A., (Co-PI, 15% credit), Liu, C., (Co-PI, 35% credit), "Advanced Data Assimilation and Prediction Research for Convective-Scale," NOAA, $194,800. (July 1, 2020 - June 30, 2021).

Xue, M., (PI, 60% credit), Liu, C., (Co-PI, 40% credit), "Advanced Data Assimilation and Prediction Research for Convective-Scale Warn-on-Forecast Year 2021-2022," NOAA. $200,000, (October 1, 2021 - September 30, 2022).

Xue, M., (PI, 50% credit), Zhang, G., (Co-PI, 50% credit), "Assessment of the Performance of Beijing Meteorological Service (BMS) X-band Polarimetric Radars and Data Quality Control and Assimilation for the BMS X-band Radar Network," Sponsored by Beijing Meteorological Service, $120,000. (January 1, 2017 - December 31, 2018).

Xue, M., (PI, 60% credit), Brewster, K. A., (Co-PI, 15% credit), Kong, F., (Co-PI, 25% credit), "Establishment of Precision Weather Analysis and Forecasting Systems (PWAFS) for the Jiangsu Province Meteorological Bureau (JSMB)," Nanjing NRIET Industrial Co., Ltd., Industry. $505.4K (February 1, 2013 - January 31, 2016).

Xue, M., (PI, 60% credit), Brewster, K., (Co-PI, 20% credit), Kong, F., (Co-PI, 20% credit), "Proxy Radiance Data Testbed: Ensemble Simulation of GOES-R Radiance from CONUS Storm-Scale Ensemble Forecasts, Product Demonstration and Assessment at the Hazardous Weather Testbed GOES-R Proving Ground," NOAA, $29,195. (5/2014 – 4/2015).

Nathan Snook (PI, 35% credit), Ming Xue (Co-PI, 20% credit), Andrew Fagg (Co-PI, 25% credit), Amy McGovern (Co-PI, 20% credit) "CAIG: Investigating Tornadogenesis via Explainable Deep Learning". NSF, $886,172. (9/2024 – 8/2027).

Huang, Y., (PI, 70% credit), McFarquhar, G., (Co-PI, 10% credit), Xue, M., (Co-PI, 10% credit), Ryzhkov, A. V., (Co-PI, 10% credit), "Surface, Aerosol, and Meteorological Controls on Subtropical Coastal Metropolitan Convective Clouds: Observations and Simulations from TRACER," DOE, $879,135. (October 1, 2023 - September 30, 2026).

Weng, B., (PI, 40% credit), Xue, M., (Co-PI, 10% credit), Burkhart, B., (Co-PI, 0% credit), Ebert, D., (Co-PI, 10% credit), Filley, T. R., (Co-PI, 10% credit), Hanak, J., (Co-PI, 0% credit), Hu, X., (Co-PI, 10% credit), Kayacan, E., (Co-PI, 10% credit), Moore, B., (Co-PI, 0% credit), Stice, J. M., (Co-PI, 0% credit), Wang, C., (Co-PI, 10% credit), , "A Regional-Scale Showcase of Hybrid Methane Sensing Networks in the Anadarko Basin". DOE, $3,999,987. (September 15, 2023 - September 14, 2027).

Ebert, D., (PI, 9.09% credit), Bedle, H., (Co-PI, 9.09% credit), Moore, B., (Co-PI, 9.091% credit), Danala, G., (Co-PI, 9.091% credit), Hu, X., (Co-PI, 9.091% credit), Kayacan, E., (Co-PI, 9.091% credit), Koch, J. A. M., (Co-PI, 9.09% credit), Suriamin, F. M., (Co-PI, 9.091% credit), Wang, C., (Co-PI, 9.091% credit), Weng, B., (Co-PI, 9.091% credit), Xue, M., (Co-PI, 9.09% credit), "A Multi-Scale CH4 Monitoring System for Enhancing Emission Detection, Quantification & Prediction," DOE, $856,329. (September 1, 2023 - August 31, 2024).

Filley, T. R., (PI, 15% credit), Costa Acevedo, O., (Co-PI, 2% credit), Ebert, D., (Co-PI, 2% credit), Fiebrich, C., (Co-PI, 9% credit), Floyd, R., (Co-PI, 2% credit), Greene, J. S., (Co-PI, 9% credit), Hanak, J., (Co-PI, 11% credit), Hu, X., (Co-PI, 2% credit), Illston, B. G., (Co-PI, 2% credit), Klein, P. M., (Co-PI, 2% credit), Mullenbach, L. E., (Co-PI, 9% credit), Wang, C., (Co-PI, 9% credit), Warnken, C. G., (Co-PI, 2% credit), Weng, B., (Co-PI, 2% credit), Xiao, X., (Co-PI, 4% credit), Xue, M., (Co-PI, 9% credit), Zaman, M., (Co-PI, 9% credit), "EPA Climate Pollution Reduction Grant Phase 1," Sponsored by State of Oklahoma, Department of Environmental Quality, State, $599,131. (November 1, 2023 - October 30, 2026).

Brewster, K. A., (PI, 30% credit), Snook, N. A., (Co-PI, 25% credit), Supinie, T. A., (Co-PI, 25% credit), Xue, M., (Co-PI, 20% credit), "FV3-LAM CAM Ensemble Forecast System and Improving Ensemble Probabilistic and Consensus Forecast Products in Support of HMT Winter Weather and Heavy Precipitation Forecasting," NOAA. (August 1, 2022 - July 31, 2025).

Brewster, K. A., (PI, 35% credit), Xue, M., (Co-PI, 10% credit), Zhang, C., (Co-PI, 15% credit), Kong, F., (Co-PI, 20% credit), Snook, N. A., (Co-PI, 20% credit), "Enhancing CAM Ensemble Forecast System and Improving Ensemble Forecast Products in Support of HMT Winter Weather and Heavy Precipitation Forecasting," NOAA. (July 1, 2019 - June 30, 2022).

Jung, Y., (PI, 40% credit), Xue, M., (Co-PI, 20% credit), Kong, R., (Co-PI, 20% credit), Liu, C., (Co-PI, 20% credit), "Accelerated Implementation, Testing and Evaluation of Optimized Radar Data Assimilation Capabilities within Ensemble-Variational Hybrid GSI for the NOAA Convection-allowing rapidly updated Forecasting System," NOAA, $394,870. (10/2018 – 9/2020).

Jung, Y., (PI, 60% credit), Xue, M., (Co-PI, 20% credit), Liu, C., (Co-PI, 20% credit), Liu, C., (Co-PI, 20% credit), "Development and Testing of a GSI-based Multi-Scale EnKF System for Convection-Allowing Stand-Alone Regional FV3," NOAA. (9/2019 – 8/2021).

Jung, Y., (PI, 60% credit), Xue, M., (Co-PI, 20% credit), Zhang, G., (Co-PI, 20% credit), "Development of a Polarimetric Radar Data Simulator for KLAPS," Sponsored by Korean Meteorological Administration, $546,288. 3/5/2013 – 12/31/18.

Jung, Y., (PI, 60% credit), Xue, M., (Co-PI, 40% credit), "Impact of Assimilating Polarimetric Phased Array Radar Observations on Convective-scale Numerical Weather Prediction Model for Severe Weather Forecasts," NOAA, $345,996. (June 1, 2017 - May 31, 2019).

Kong, F., (PI, 70% credit), Xue, M., (Co-PI, 30% credit), "Further Development of the Storm-Scale Numerical Weather Prediction Capability for Shenzhen Meteorological Bureau," Sponsored by Shenzhen Institute of Advanced Technology, $193,038. (April 1, 2014 - March 31, 2015)

Kong, F., (PI, 70% credit), Xue, M., (Co-PI, 30% credit), "Technical Support to the Storm-Scale Numerical Weather Prediction Capability for Shenzhen Meteorological Bureau," Sponsored by Shenzhen Institute of Advanced Technology. $173,339. (July 1, 2015 - June 30, 2017).

Kong, F., (PI, 60% credit), Xue, M., (Co-PI, 20% credit), Jung, Y., (Co-PI, 20% credit), "Extended support to the Storm-Scale Numerical Weather Prediction Capability for Shenzhen Meteorological Bureau," Sponsored by Shenzhen Institute of Advanced Technology, $175,380. (January 1, 2017 - December 31, 2017).

Kong, F., (PI, 20% credit), Hu, X., (Co-PI, 10% credit), Jung, Y., (Co-PI, 10% credit), Xue, M., (Co-PI, 20% credit), "Upgrade the Storm-Scale Assimilation and Ensemble Forecast Capability for Shenzhen Meteorological Bureau," Sponsored by Shenzhen Institute of Advanced Technology. $214,480. (August 1, 2018 - July 31, 2019).

Kong, F., (PI, 70% credit), Xue, M., (Co-PI, 15% credit), Brewster, K. A., (Co-PI, 15% credit), "Establishment of an Improved Numerical Weather Forecasting System for Chongqing Meteorological Service," Chongqing Inst of Green and Intelligent Tech. $838,900. (April 15, 2012 - April 30, 2017).

Kong, F., (PI, 60% credit), Brewster, K. A., (Co-PI, 10% credit), Hu, X., (Co-PI, 10% credit), Xue, M., (Co-PI, 20% credit), "Development of a Storm-Scale Ensemble Numerical Weather Prediction System for Chongqing," Sponsored by Chongqing Inst of Green and Intelligent Tech $515,398. (April 1, 2017 - March 31, 2019).

Kong, F., (PI, 60% credit), Xue, M., (Co-PI, 20% credit), Liu, C., (Co-PI, 20% credit), "Application of Advanced Data Assimilation for Chongqing Meteorological Service," Sponsored by Chongqing Inst of Green and Intelligent Tech, $112,267. (May 1, 2019 - April 30, 2020)

Liu, C., (PI, 60% credit), Xue, M., (Co-PI, 40% credit), "Implementation, Testing and Evaluation of Radar Data Assimilation Capabilities within JEDI Hybrid EnVar System for the Rapid Refresh Forecast System," NOAA, $404,682. (August 1, 2021 - July 31, 2023)

Moore, B., (PI, 3.33% credit), Xue, M., (Co-PI, 90% credit), McPherson, R. A., (Co-PI, 3.33% credit), Bamzai, A., (Co-PI, 3.34% credit), , "(Xue) Very High-Resolution Dynamic Downscaling of Regional Climate for Use in Long-term Hydrologic Planning along the Red River Valley System," USGS, $62,698. (9/2015 – 9/2016).

Moore, B., (PI, 50% credit), Xue, M., (Co-PI, 10% credit), Hu, X., (Co-PI, 40% credit), "Atmospheric Carbon and Transport - America," NASA (February 10, 2017 - February 9, 2020).

Neeman, H. J., (PI, 25% credit), Xue, M., (Co-PI, 1.3% credit), …, "Acquisition of a Regional Resource for Long-term Archiving of Large Scale Research Data Collections," NSF. $967,755. (September 1, 2018 - August 31, 2021).

Neeman, H. J., (PI, 36% credit), …, Xue, M., (Co-PI, 4% credit), …, "Oklahoma Friction Free Network," NSF, Federal. (October 1, 2013 - September 30, 2017).

Neeman, H. J., (PI, 40% credit), …, Xue, M., (Co-PI, 6% credit), …, "CC*IIE Engineer: A Model for Advanced Cyberinfrastructure Research and Education Facilitators," NSF, (September 15, 2014 - September 14, 2016).

Snook, N. A., (PI, 40% credit), Xue, M., (Co-PI, 20% credit), Jung, Y., (Co-PI, 20% credit), McGovern, A., (Co-PI, 20% credit), "Improving Operational Hail Prediction through Machine Learning from HREF and CAPS Storm-Scale Ensemble FV3 and WRF ARW Forecasts including Advanced Microphysics," NOAA. $342,147. (October 1, 2018 - September 30, 2020).

Snook, N. A., (PI, 40% credit), Xue, M., (Co-PI, 20% credit), Jung, Y., (Co-PI, 20% credit), McGovern, A., (Co-PI, 20% credit), "Development and Implementation of Probabilistic Hail Forecast Products using Multi-moment Microphysics and Machine Learning Algorithms," NOAA, $335,084. (October 1, 2016 - September 30, 2018).

Wang, X., (PI, 60% credit), Xue, M., (Co-PI, 20% credit), Kong, F., (Co-PI, 20% credit), "Optimal Design of Multi-scale Ensemble Systems for Convective-Scale Probabilistic Forecasting," NSF, $395,769. (March 15, 2011 - February 28, 2017).

Zhang, G., (PI, 50% credit), Xue, M., (Co-PI, 50% credit), "X-band Polarimetric Radar Data Quality Control and Applications in Weather Observation and Quantification," Sponsored by Beijing Meteorological Service, Industry, $24,948.

Grants in Prior Years

PI   "A Partnership to Develop, Conduct, and Evaluate Realtime Advanced Data Assimilation and High-Resolution Ensemble and Deterministic Forecasts for Convective-scale Hazardous Weather: Toward the Goals of a Weather-Ready Nation" (with Keith Brewster, Fanyou Kong and Youngsun Jung as co-PI). 5/1/2013 – 4/30/2016, NOAA CSTAR Program, $375K, 35% credit.

PI   "Establishment of Precision Weather Analysis and Forecasting Systems (PWAFS) for the Jiangsu Province Meteorological Bureau (JSMB)". (with Keith Brewster and Fanyou Kong as co-PI).

	IN-NRIET. $505K. 2/1/2013 – 1/31/2015. 60% credit.
PI	"Establishment of an Urban-Scale Weather Forecasting System (USWFS) for the Su Zhou Meteorological Bureau (SZMB)". (with Keith Brewster and Fanyou Kong as co-PI). $127K. 2/1/2013 – 1/31/2014. 60% credit.
PI	"Advanced Data Assimilation and Prediction Research for Convective-Scale Warn-on-Forecast" DOC-NOAA. DOC-NOAA NA080AR4320904. $750K, 7/1/2011 - 6/30/2014. (with Keith Brewster, Youngsun Jung and Xuguang Wang as co-PI). 40% credit.
PI	"Contribution to Model Development and Enhancement Research Team by CAPS" FAA Aviation Weather Research Program. Sole PI. DOT-FAA NA08OAR4320904. $160K, 1/2011 - 12/2011. 100% credit.
PI	"A Partnership to Develop, Conduct, and Evaluate Realtime High-Resolution Ensemble and Deterministic Forecasts for Convective-scale Hazardous Weather: Moving to the Next Level". NOAA CSTAR Program. $375K (with F. Kong, K. Brewster, and X. Wang as co-PI), 5/2010 – 4/2013. 50% credit.
PI.	"Evaluating High-Resolution Ensemble Forecasting for Wind Energy" Zeus grant. $120K (with F. Kong and K. Brewster as co-PI), 2010. 40% credit.
PI	"Refinement and Adaptation of Radar Data Assimilation Software" (with K. Brewster as co-PI), WSI-EEC Corporation, $60K 2/2010-1/2011. 50% credit.
PI	"Ensemble Simulation of GOES-R Proxy Radiance Data from CONUS Storm-Scale Ensemble Forecasts, Product Demonstration and Assessment at the Hazardous Weather Testbed GOES-R Proving Ground" NOAA, 5/2011-4/2013. $389K (with Keith Brewster and Fanyou Kong as co-PI). My credit is 70%.
PI	"Short-Term Data Assimilation and Forecast System for Taiwan Central Weather Bureau" Taiwan CWB via NOAA-CWB Agreement. $200K. 1/2011 – 12/2011. (with Fanyou Kong and Keith Brewster as co-PI). 60% credit.
PI	"Probabilistic Forecasting for Aviation Decision Air Applications". IMPACT Technology LLC (Subcontract for Amy SBIR). $20K. 12/15/2010-4/20/2011 (With F. Kong as co-PI). 50% credit.
PI	"Contribution to Model Development and Enhancement Research Team by CAPS" FAA Aviation Weather Research Program. Ming Xue PI. DOT-FAA NA08OAR4320904. $260K, 1/2010 - 12/2010. 100% credit.
PI	"Advanced Data Assimilation and Prediction Research for Convective-Scale Warn-on-Forecast" DOC-NOAA. Ming Xue PI with Keith Brewster, Jidong Gao and Xuguang Wang as co-PI. $375K, 4/2010 - 9/2011. 40% credit.
PI	"Development of a Short-Range Realtime Analysis and Forecasting System based on the ARPS for Taiwan Region" American Institute in Taiwan via NOAA. Ming Xue PI, with Fanyou Kong and Keith Brewster as co-PI. $710K, 5/2010-4/2014. 60% credit.
PI	"Advanced Multi-Moment Microphysics for Precipitation and Tropical Cyclone Forecast Improvement within COAMPS". Office of Naval Research. Ming Xue PI with Fanyou Kong as co-PI. $592K. 5/2010 - 4/2013. 70% credit.
PI	"Collaborative Research: Enabling Petascale Ensemble-based Data Assimilation for the Numerical Analysis and Prediction of High-Impact Weather". PI (with Xuguang Wang, Ronald Barnes, and Henry Neeman as co-PI). National Science Foundation. $902K (with X. Wang, H. Neeman and R. Barnes as co-PI), 10/2009 – 9/2013. 55% credit.
PI	"Collaborative Research: CDI-Type II: Integrated Weather and Wildfire Simulation and Optimization for Wildfire Management". National Science Foundation. $483,634 (with Y. Hong as co-PI). 11/2009 – 10/2013. 55% credit.
PI	"Prediction and Predictability of Tropical Cyclones over Oceanic and Coastal Regions and Advanced Assimilation of Radar and Satellite Data for the Navy Coupled Ocean-Atmosphere Mesoscale Prediction System". Office of Naval Research, Defense EPSCOR Program. $454K from ONR and $100K from OKSRHE, (with G. Zhang, K. Brewster and F. Kong as co-PIs). 2009-2012. 60% credit.

PI	"Assimilation of NEXRAD radial winds in a regional mesoscale model" Department of Homeland Security, subcontract to Mississippi State University, $79,340. 2009-2010. 100% credit.
PI	"A Study of Tornado and Tornadic Thunderstorm Dynamics through High-Resolution Simulation, Advanced Data Assimilation and Prediction". National Science Foundation, $780K (with Keith Brewster and Jidong Gao as co-PI), 12/2008 – 12/2011). 60% credit.
PI	"Advancing Warn on Forecast - Storm-scale Analysis of VORTEX2 Thunderstorms." National Several Storms Lab, NOAA, $70K (with J. Gao as co-PI), 4/2009 – 3/2010, 60% credit.
PI	"Integration and testing of advanced radar QC algorithms for HWT spring forecast experiments" National Several Storms Lab, NOAA, $35K (with K. Brewster as co-PI), 4/2009 – 3/2010, 60% credit.
PI	"Ensemble-based Data Assimilation for Tropical Storms, and Realtime 3DVAR Analysis for Initial Proof of Warn-on-Forecast Concept: Collaborative Research between CAPS and NSSL" National Several Storms Lab, NOAA, $100K, (with K. Brewster and J. Gao as co-PI). 7/15/2009 – 7/14/2010. 50% credit.
PI	"Contribution to WRF Model Development". Federal Aviation Administration, $412K, 5/2009-6/2013. 100% credit.
PI	"NSF Engineering Center for Collaborative Adaptive Sensing of the Atmosphere (CASA)" National Science Foundation. OU subcontract amount: $3.9 million, 9/2006 – 8/2013, 40% credit.
PI	"Technical Support for the WRF Ensemble Reforecast System". ATSC, LLC. $86.1K (with K. Droegemeier and F. Kong as co-PI), 112007-10/2009, 34% credit.
PI	"Refinement and Adaptation of Radar Data Assimilation Software" WSI-EEC Corporation, $60K (with K. Brewster as co-PI), 6/2008-9/2009. 60% credit.
PI	"Ensemble-based Data Assimilation for Convective Storms and Hurricanes: Collaborative Research between CAPS and NSSL" National Severe Storms Lab/NOAA, $100K (with K. Brewster as co-PI), 7/2008 – 10/2009. 80% credit.
PI	"Storm-Scale Quantitative Precipitation Forecasting Using Advanced Data Assimilation Techniques: Methods, Impacts and Sensitivities" National Science Foundation. $835K (with K. Brewster, J. Gao, and A. Shaprio as Co-PIs), 12/2005-12/2009. 75% credit.
PI.	"Theory and Methods for Assimilating Doppler Radar Data for Severe Weather based-on Ensemble Kalman Filter" Major Overseas Collaboration Research. Natural Science Foundation of China, No. 40620120437. ~$120K to be used inside China. 1/2007 – 12/2009. 50% credit.
PI	"Optimal Utilization and Impact of Water Vapor and Other High Resolution Observations in Storm-Scale QPF". National Science Foundation, $830K (with F. Carr, K. Brewster, J. Gao, and A. Shaprio as Co-PIs), 1/2002-12/2005. 40% credit.
PI	"An Investigation on the Importance of Environmental Variability to Storm-scale Radar Data Assimilation". National Severe Storms Lab/NOAA. $72.5K (with J. Gao as co-PI), 2/2008-1/2009, 70% credit.
PI	"CAPS-NSSL Collaboration for Spring 2007 Realtime Storm-scale Ensemble Prediction", NSSL, Xue PI. $30,186. 1/2007 – 6/2007. 100% credit.
PI	"Overseas Collaborative Research Grant. Chinese Academy of Sciences". ~$50K to be used inside China. 1/2005 – 12/2007. 100% credit.
PI	"CAPS Support for GOES-R Program", Atmospheric Environmental Research, $37K (with K. Brewster and F. Kong as Co-PI), 2/2006 – 8/2006, 40% credit.
PI.	"Observing System Simulation Experiments for Airborne Weather Sensors", The Boeing Company, $90K, (with F. Kong as Co-PI), 5/2006 – 12/2006, 60% credit.
PI	"A New Joint Weather Research and Prediction (WRF) Model". National Science Foundation. $431K (with Fred. Carr), 1/15/2000-12/31/2003. 70% credit.
PI	"Contribution to WRF Model Development – Years 1-7". Federal Aviation Administration. $780K, 7/1/2000-6/30/2007, 100% credit.

PI   "The Sensitivity of Numerically-Simulated Deep Convective Storms to Imposed Large-Amplitude Perturbations". Air Force, Department of Defense, $25K (with K. Droegemeier), 9/2002-9/2003. 70% credit.

PI   "Outstanding Overseas Yang Scientists Collaborative Research Award", Chinese Natural Science Foundation, $50K, 1/1/2001 – 12/31/2003. 100% credit.

Co-PI   "Development of a Polarimetric Radar Data Simulator for KLAPS".   PI Youngsun Jung as PI and Guifu Zhang as co-PI. IN-Korean Meteorological Administration. $176,712. 3/1/2013 – 2/28/2014, 20% credit.

Co-PI   "Establishment of an Improved Numerical Weather Forecasting for Chongqing Meteorological Service" (with Fanyou Kong as PI and Keith Brewster as Co-PI), Chongqing, Meteorological Bureau, 9/2012 – 9/2015 $852K. 15% credit.

Co-PI   "Further Development of the Storm-Scale Numerical Weather Prediction Capability for Shenzhen Meteorological Bureau". (with Fanyou Kong as PI). Shenzhen Meteorological Bureau, $479K, 10/2012 – 9/30/2014, 35% credit.

Co-PI   "High Resolution Data Assimilation for Trajectory Improvement". DOD-Air Force. $80K, 7/2012 – 7/2013. (with K. Brewster as PI), 20% credit.

Co-PI   "Improving High-Resolution Tropical Cyclone Prediction Using a Unified GSI-based Hybrid Ensemble-Variational Data Assimilation System for HWRD". NOAA $150K, 8/2011 – 7/2013, 20% credit.

Co-PI   "Optimal Design of Multi-scale Ensemble Systems for Convective-Scale Probabilistic Forecasting" NSF AGS-1046081. $395,976. Xuguang Wang (PI), Ming Xue and Fanyou Kong (co-PI). 3/15/2011-3/14/2013. 20% credit.

Co-PI   "Further Enhancement of the Hourly Assimilation and Prediction System (HAPS) for Shenzhen Meteorological Bureau" Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, $228K. 3/2011-2/2012, (with Fanyou Kong as PI). 30% credit.

Co-PI   "High-Resolution Numerical Weather Prediction to Support Wind Power Production" AWSTruePower – DOE. $211,478. 2010-2012, (With Keith Brewster as PI and Fanyou Kong as other co-PI). 30% credit.

Co-PI   "Advanced Study of Precipitation Microphysics with Multi-Frequency Polarimetric Radar Observations and Data Assimilation". NSF, $638K 5/2011-4/2014. (with G. Zhang as PI and B. Cheong, and T. Schurr as other co-PIs). 40% credit.

Co-PI   "Acquisition of Extensive Petascale Storage for Data Intensive Research". NSF MRI Program. 2010 – 2012. Total funding is ~$800K. (with Henry Neeman as PI and others as co-PI). 6% credit.

Co-PI   "Oklahoma Optical Initiative". NSF MRI Program. 08/2010 – 7/2012. Total funding is $1,176K. (with Henry Neeman as PI and others as co-PI) 10% credit.

Co-PI   "Establishment of an Experimental Real-Time Short-Term Storm Prediction System for Shenzhen Meteorological Bureau" Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences, $58K. 2010, (with Fanyou Kong as PI), 30% credit.

Co-PI   "Techniques for Assimilating Geostationary Lightning Mapper Data and Assessment of the Resulting Impact on Ensemble Forecasts" NOAA JCSDA/NESDIS, $407.4K. 2010-2013. (with Don MacGorman as PI, with other co-PIs), 10% credit.

Co-PI   "Improving NOAA operational global numerical weather prediction using a hybrid variational-ensemble Kalman filter data assimilation and ensemble forecast system" NOAA THORPEX program. Xuguang Wang PI with Ming Xue as co-PI. $312K, 7/2010- 6/2013. 10% credit.

Co-PI   "Improving Microphysics Parameterizations and Quantitative Precipitation Forecast through Optimal Use of Video Disdrometer, Profiler and Polarimetric Radar Observations", National Science Foundation, $464,614 (with G. Zhang as PI and two other co-PIs). 9/1/2006-8/31/2008. 30% credit.

Co-PI   "Meteorological Studies with the Phased Array Weather Radar and Data Assimilation using the Ensemble Kalman Filter". Office of Naval Research Defense EPSCOR Program and Oklahoma

State Regents. $560,767 (with Tianyu Yu as PI and M. Xue and others as Co-PI). 7/2006 – 6/2009, under NCE. 12% credit.

Co-PI "A Partnership to Develop, Conduct, and Evaluate Realtime High-Resolution Ensemble and Deterministic Forecasts for Convective-scale Hazardous Weather". NOAA CSTAR Program. K. K. Droegemeier as PI with Xue and two other co-PIs. Funded for 5/2007 – 4/2010. $375K. 30% credit.

Co-PI "MRI: Development of a Multi-Channel Receiver for the Realization of of Multi-Mission Capabilities at the National Weather Radar Testbed". National Science Foundation. Mark Yeary PI with Xue and 6 others as co-PI. $699.4K. 9/2007-8/2009, under NCE. 10% credit.

Co-PI "Collaborative Research: ITR Linked Environments for Atmospheric Discovery (LEAD)", National Science Foundation, (with K.K. Droegemeier as PI and other Co-PIs), $2,713K, 10/2003-9/2009, 5% credit.

Co-PI "Engineering Research Centers: Center for Collaborative Adaptive Sensing of the Atmosphere (CASA)", National Science Foundation. (with K.K. Droegemeier as PI and other Co-PIs), $5,478K, 10/2003-9/2008 (Re-competed in 2006 for 9/2006 – 8/2011). 10% credit.

Co-PI "On the Optimal Use of WSR-88D Doppler Radar Data for Variational Storm-scale Data Assimilation", National Science Foundation, (with J.D. Gao as PI and others as Co-PIs), $600K, 11/2003-11/2007. 10% credit.

Co-PI "Observing System Simulation Experiments for Airborne Weather Sensors". HRL Laboratories, LLC (with Kelvin Droegemeier as PI). 2005-2006, $33K. 15% credit.

Co-PI "Assimilation of Doppler radar, surface mesonet and satellite data", Office of Naval Research, (PI Alan Shapiro), $12K, 2003. 50% credit.

Co-PI "Advanced Weather Analysis and Prediction for Energy". Williams Companies. (with PI K.K. Droegemeier and other Co-PIs). $8 million for 5 years. Year 1 (2001) amount $2,871K. 10% credit. Funding terminated in 2nd year due to financial hardship of the company.

Co-PI "Assimilation of Doppler radar, surface mesonet and satellite data" Office of Naval Research, $583K (with Alan Shapiro as PI and Wei Gu), 3/1/1998-2/28/2003. 30% credit.

Co-PI "Center for Analysis and Prediction of Storms" National Science Foundation Science and Technology Center Program, $4.8 million from 2/1/1997 to 1/31/2000 (with K. Droegemeier as PI and other Co-PIs). 10% credit.

Co-PI "Project Hub-CAPS: A Prototype Storm-scale NWP System for Commercial Aviation". American Airlines, $1 million, 7/2/1997- 6/30/1999 (with K. Droegemeier as PI and other Co-PIs). 10% credit.

Co-PI "Doppler Radar Analysis for Climate Model Verification and Numeric Weather Prediction" Air Force Office for Scientific Research, $100K (with Q. Xu and R. Doviak). 1995-1998, 30% credit.

PROFESSIONAL SERVICES

University Services

- Director, Center for Analysis and Prediction of Storms, University of Oklahoma. 2006-present.
- Graduate Studies Committee. School of Meteorology, University of Oklahoma. 2015-present.
- Award Committee. School of Meteorology, University of Oklahoma. 2017-present.
- Department Committee A. School of Meteorology, University of Oklahoma. 2014-2016.

Service on External Committees

- Co-Editor-in-Chief, Advances in Atmospheric Sciences. 2013-present.
- Editor, J. Meteorological Research, 2011-present.
- Editor, Journal, npj Climate and Atmospheric Science. 2018 - Present.
- International Scientific Steering Committee, Earth System Model and Numerical Weather Prediction Center, Chinese Meteorological Administration (CMA). June 2019 - Present.

- Associate Director, NSF Engineering Research Center (ERC) for Collaborative Adaptive Sensing of the Atmosphere (CASA) and the Analysis and Prediction Thrust Leader, 2006 – 2013.
- Member, NOAA Unified Forecasting System Science Steering Committee, 2018 -
- Member, International Affairs Committee, American Meteorological Society, 2016 –
- Co-Editor-in-Chief, Advances in Atmospheric Sciences, 2012 -
- Member, Science Advisory Committee, National Key Laboratory for Disastrous Weather, Chinese Meteorological Administration, China, 2017 –
- Member, Academic Oversight Committee, Key Laboratory for Mesoscale Severe Weather/Ministry of Education, Nanjing University, China, 2018 -
- Member, Science Advisory Committee, Laboratory for Regional Numerical Weather Prediction, Chinese Meteorological Administration, China, 2012-
- WMO World Weather Research Program TIGGE-LAM North American Working Group. 9/2010-
- Member, WMO World Weather Research Program TIGGE-LAM North American Working Group. 9/2010-
- Scientific Fellow, National Severe Storms Laboratory, NOAA, 2010-
- Member, Science Advisory Board of National Warn-on-Forecast Project. 2010-
- Member, Advisory Committee, National Ensemble Testbed/Developmental Testbed (DTC). 2010-
- Member, Advisory Committee of the National eXtreme Science and Engineering Discovery Environment Project. 2010 -2011.
- Member, National WRF Model Research Application Board, 2006 -
- Member, Advisory Board of the National WRF Developmental Testbed Center (DTC). 2006-2009.
- Member, five working groups (model dynamics, physics, architecture, 4DVAR, ensemble forecasting) of the WRF model development. 2000-now
- Member, External Review Panel, NCAR Data Assimilation Strategic Initiative, 2004.
- Member, Weather Research and Forecast (WRF) Model Science Board, 2002-2011.
- Elected member, World Meteorological Organization (WMO)/WGNE COMPARE (International Comparison of Mesoscale Prediction and Research Experiment) Scientific Steering Committee. 1997 - 1999.

Invited and keynote speakers at ~50 national and international conferences

Reviewer of ~200 journal papers and ~75 proposals to national and international funding agencies.