

Curriculum Vita  
Keith A. Brewster, Ph.D.

Senior Research Scientist  
Center for Analysis and Prediction of Storms, Univ. of Oklahoma  
Adjunct Assistant Professor  
School of Meteorology, Univ. of Oklahoma

Sarkeys Energy Center, Room 1110  
100 East Boyd St., Norman, OK 73019-0470  
(405) 325-6115  
kbrewster@ou.edu

Keith Brewster earned a B.S. in Meteorology, magna cum laude, from the University of Utah in 1981, and an M.S. in Meteorology from the University of Oklahoma in 1984 with a study of the energy budget of thunderstorms, including turbulent dissipation from Doppler radar data. His Ph.D. in Meteorology was earned at the University of Oklahoma in 1999, with a dissertation entitled, "Phase-Correcting Data Assimilation and Application to Storm-Scale Weather Prediction." The phase correction technique is an automated scheme to use radar and other observations to correct thunderstorm-scale numerical forecasts for phase or position errors as part of the data assimilation process. Keith is currently a Senior Research Scientist with the Center for Analysis and Prediction of Storms (CAPS) where he leads the data acquisition and analysis effort. He is an Adjunct Assistant Professor in the School of Meteorology.

Dr. Brewster's research interests include quality control and analysis of data from modern meteorological data systems, including wind profiling radars, Doppler weather radars, aircraft, satellites and automated surface observing systems. Keith was part of the team that developed the Mesoscale Analysis and Prediction System (MAPS, which later became the Rapid Update Cycle, RUC) at NOAA's Forecast Systems Lab in Boulder; his contributions included comprehensive quality control of the input data. Additionally, he wrote training manuals for the National Weather Service covering the use of wind profiler data in wintertime forecast and quality control of wind profiler data. As part of the CAPS team, he has implemented an analysis and assimilation system, known as ADAS (ARPS Data Assimilation System), which has been used in real-time thunderstorm forecasting efforts at CAPS and several other sites. He has also been involved in testing and developing the Advanced Regional Prediction System (ARPS) forecast model. Recently he has also been working with the multi-agency group developing initialization techniques for the national Weather Research and Forecasting (WRF) model.

Dr. Brewster currently serves on the organizing committee for the National Severe Weather Workshop, was President of the Central Oklahoma Chapter of the American Meteorological Society/National Weather Association in 2000, is a member of the American Meteorological Society, the National Weather Association, and Phi Beta Kappa.

Keith A. Brewster, Ph.D

### Refereed Publications:

- Brewster, K.A., 2003: Phase-correction data assimilation and application to storm-scale numerical weather prediction. Part I: Method description and simulation testing. *Mon. Wea. Rev.*, **131**, 480-492.
- Brewster, K.A., 2003: Phase-correction data assimilation and application to storm-scale numerical weather prediction. Part II: Application to a severe storm outbreak. *Mon. Wea. Rev.*, **131**, 493-507.
- Souto, M. J., C. F. Balseiro, V. Pérez-Muñuzuri, M. Xue, and K. Brewster, 2003: Impact of cloud analysis on numerical weather prediction in the Galician region of Spain, *J. App. Meteor.*, 129-140.
- Lazarus, S.M., C.M. Ciliberti, J.D. Horel and K.A. Brewster, 2002: Near-real time applications of a mesoscale analysis system to complex terrain. *Wea. and Forecasting*, **17**, 971-1000.
- 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 multiscale nonhydrostatic atmospheric simulation and prediction tool. Part II: Model physics and applications. *Meteor. Atmos. Physics*, **76**, 143-165.
- Xue, M., K. K. Droegemeier, V. Wong, A. Shapiro, K. Brewster, F. Carr, D. Weber, Y. Liu, and D.-H. Wang, 2000: The Advanced Regional Prediction System (ARPS) - A multiscale nonhydrostatic atmospheric simulation and prediction tool. Part II: Model physics and applications. Accepted by *Meteor. Atmos. Physics*
- Sathye, A., G. Bassett, K. Droegemeier, M. Xue, and K. Brewster, 1996: Experiences using high performance computing for operational stormscale weather prediction, In: *Concurrency: Practice and Experience, special issue on Commercial and industrial Applications on High Performance Computing*. John Wiley & Sons, Ltd., 731-740.
- Miller, P.A., M.F. Barth, D.W. van de Kamp, T.W. Schlatter, B.L. Weber, D.B. Wuertz and K.A. Brewster, 1994: An evaluation of two automated quality control methods designed for use with hourly wind profiler data. *Ann. Geophysicae*, **12**, 711-724.
- Benjamin, S.G., K.A. Brewster, R. Brummer, B.F. Jewett, T.S. Schlatter, T.L. Smith and P.A. Stamus, 1991: An isentropic three-hourly data assimilation system using ACARS aircraft observations. *Mon. Wea. Rev.*, **119**, 888-906.
- Brewster, K.A., 1989: Profiler Training Manual #2 : Quality Control of Wind Profiler Data. NOAA/ERL/FSL, Boulder, CO, and NOAA/NWS/OM, Silver Spring, MD., 109 pp.
- Brady, R.H. and Brewster, K.A., 1989: Profiler Training manual #3 : Subjective Uses of Wind Profiler Data in Warm Season Analysis and Forecasting. NOAA/ERL/FSL, Boulder, CO, and NOAA/NWS/OM, Silver Spring, MD., 109 pp. NTIS: PB89-223333INZ
- Brewster, K.A., 1986: Photo of the month: Photographs of a funnel-producing cloudbase swirl., *Mon. Wea. Rev.*, **114**, 1771-1774.

Keith A. Brewster, Ph.D

Brewster, K.A. and D.S. Zrnic', 1986: Comparison of eddy dissipation rates computed from spatial spectra of Doppler velocities and Doppler spectrum widths. *J. Atmos. and Oceanic Tech.*, **3**, 440-452.

#### Conference Papers -- First Author (since 1991)

Brewster, K., 2002: Recent advances in the diabatic initialization of a non-hydrostatic numerical model. *Preprints, 21st Conf. on Severe Local Storms, and Preprints, 15th Conf. Num. Wea. Pred. and 19th Conf. Wea. Anal. Forecasting*, San Antonio, TX, Amer. Meteor. Soc., J6.3.

Brewster, K., 1998: Phase correcting assimilation of radar data for thunderstorm forecasting. *Preprints, 12th Conference on Num. Wea. Prediction*, Phoenix, AZ, Amer. Meteor. Soc., Boston, 181-184.

Brewster, K. A., 1996: Application of a Bratseth analysis system including Doppler radar. *Preprints, 15th Conference on Wea. Analysis and Forecasting*, Norfolk VA, Amer. Meteor. Soc., Boston, 92-95.

Brewster, K., F. Carr, N. Lin, J. Straka and J. Krause, 1994: A local analysis system for initializing real-time convective-scale models. *Preprints, Tenth Conf. on Num. Weather Prediction*, Portland, OR, Amer. Meteor. Soc., Boston, 596-598.

Brewster, K.A., 1991: Phase correcting data assimilation. *Preprints, Ninth Conference on Num. Wea. Prediction*, Denver, CO., AMS, Boston, 610-613.

#### Conference Papers -- Co-Author (since 1996)

Gao, J., M. Xue, K. Brewster, F. Carr, and K.K. Droegemeier, 2002: New developments in a 3DVAR system for a non-hydrostatic NWP model. *Preprints, 14th Conf. on Num. Wea. Pred.*, San Antonio, Texas, Amer. Meteor. Soc. 339-341.

Xue, M., K. Brewster, D. Weber, K. W. Thomas, F. Kong, and E. Kemp, 2002: Real-time storm-scale forecast support for IHOP 2002 at CAPS. *15th Conf. Num. Wea. Pred./19th Conf. Wea. Analysis and Forecasting*, San Antonio, Texas. Amer. Meteor. Soc., 124-126.

Yoo, H.-D., K.K. Droegemeier, K. Brewster, S.-Y. Lee, C.-H. Cho, 2002: Impact of radar data assimilation on the numerical prediction of heavy rainfall in Korea. *Preprints, 14th Conf. on Num. Wea. Pred.*, San Antonio, Texas, Amer. Meteor. Soc. J133-J136.

Gao, J., M. Xue, K. Brewster, F. Carr, and K.K. Droegemeier, 2001: A three-dimensional variational data assimilation scheme for a storm-scale model. *Preprints, 14th Conf. on Num. Wea. Pred.*, Fort Lauderdale, Florida, Amer. Meteor. Soc. J72-J74.

Gao, J., M. Xue, K. Brewster, F. Carr, and K. K. Droegemeier, 2002: New Development of a 3DVAR system for a nonhydrostatic NWP model. *Preprints, 15th Conf. Num. Wea. Pred. and 19th Conf. Wea. Anal. Forecasting*, San Antonio, TX, Amer. Meteor. Soc.

Carpenter, R.L. Jr., K. Droegemeier, G. Bassett, K. Brewster, D. Jahn, J. Levit, M. Xue, W. Qualley, and R. Strasser, 1998: Storm-scale NWP for commercial aviation: Results from real-time operational tests in 1996-1997. *Preprints, 12th Conference on Num. Wea. Prediction*, Phoenix, AZ, Amer. Meteor. Soc., Boston, 213-216.

Keith A. Brewster, Ph.D

- Shin, K-S, S-K Chung, S-Y Lee, H-D Yoo, D-I Lee, M. Xue, K. Brewster, G. Bassett, S-K Park and K Droegemeier, 1998: Explicit real-time operational prediction of deep convection over Korea during the 1997 summer monsoon season. *Preprints, 16th Conf. on Wea. Analysis and Forecasting*, Phoenix, AZ, Amer. Meteor. Soc., Boston,.
- Xue, M., D. Wang, D. Hou, K. Brewster, and K.K. Droegemeier, 1998: Prediction of the 7 May 1995 squall lines over the Central U.S. with intermittent data assimilation. *Preprints, 12th Conference on Num. Wea. Prediction*, Phoenix, AZ, Amer. Meteor. Soc., Boston, 191-194.
- Xue, M., D. Wang, D. Hou, K. Brewster, and K.K. Droegemeier, 1998: Analysis and prediction of convective initiation along a dryline. *Preprints, 16th Conference on Wea. Analysis and Forecasting*, Phoenix, AZ, Amer. Meteor. Soc., Boston, 191-194.
- Zhang, J., F. Carr and K. Brewster, 1998: ADAS cloud analysis. *Preprints, 12th Conf. on Num. Wea. Prediction.*, Phoenix, AZ, Amer. Meteor. Soc., Boston, 185-188.
- Carr, F., J. Mewes, K. Brewster, 1996: Quantitative verification of non-hydrostatic model forecasts of convective phenomena., *Preprints, 18th Conf. on Severe Local Storms*, San Francisco, CA, Amer. Meteor. Soc., Boston, 174-177.
- Carr, F.H., J.M. Krause, and K. Brewster, 1996: Application of the Bratseth scheme to high resolution analyses in inhomogeneous data regimes. *Preprints, 15th Conf. Wea. Analysis and Forecasting*, 231-233.
- Droegemeier, K. K., M. Xue, K. Brewster, Y. Liu, S. Park, F. Carr, J. Mewes, J. Zong, A. Sathye, G. Bassett, M. Zou, R. Carpenter, D. McCarthy, D. Andra, P. Janish, R. Graham, S. Sanielvici, J. Brown, B. Loftis, and K. McLain, 1996: The 1996 CAPS spring operational forecasting period: Realtime storm-scale NWP, Part I: Goals and methodology. *Preprints, 11th Conf. on Num. Wea. Pred.*, Norfolk, VA, Amer. Meteor. Soc., Boston, 294-296.
- Xue, M., K. Brewster, K. Droegemeier, V. Wong, D. Wang, F. Carr, A. Shapiro, L. Zhao, S. Weygandt, D. Andra, and P. Janish: 1996: The 1996 CAPS spring operational forecasting period: Real-time stormscale NWP, Part II: Operational summary and sample cases. *Preprints, 11th Conf. on Num. Wea. Prediction*, Norfolk, VA, Amer. Meteor. Soc., Boston, 297-300.