

address:

Brian H. Fiedler
School of Meteorology
University of Oklahoma
120 David L. Boren Blvd.
Norman Oklahoma, 73072-7307

Phone:

E-mail: bfiedler@ou.edu

website: <http://12characters.net>

current position:

Professor Emeritus, School of Meteorology, University of Oklahoma

Brian H. Fiedler received a B.Sc. in Physics from M.I.T. in 1978 and a Ph. D. in Astro-Geophysics from the University of Colorado in 1982. After a two-year post-doc at NCAR and a six-month post-doc at MIT, he became a Lecturer in Applied Mathematics at Monash University in Australia. He joined the School of Meteorology in 1989 and was tenured and promoted to Associate Professor in 1993. In 1996, he became Principal Investigator of the Coastal Meteorology Research Program, a 5 year program funded at \$1,000,000 per year by the Department of Defense. He was promoted to Professor in 2000. He is first author on 34 articles in refereed journals.

Dr. Fiedler's research interests have traditionally been in numerical modelling of tornadoes, boundary layer convection and numerical weather prediction. Recent interests are in climate modeling and energy resources.

Teaching assignments are in Climate and Atmospheric Radiation, Atmospheric Dynamics, and Weather Simulation with Computers, Programming for Meteorology.

refereed publications:

- Fiedler, B. H., 1984: The mesoscale stability of entrainment into cloud-topped mixed layers. *J. Atmos. Sci.* **41**, 92. (Corrigenda, p. 1475)
- Fiedler, B.H., 1984: An integral closure model for the vertical turbulent flux of a scalar in a mixed layer. *J. Atmos. Sci.* **41**, 674-680.
- Fiedler, B. H., 1985: Mesoscale cellular convection: Is it convection? *Tellus* **37A**, 163-175.
- Fiedler, B.H. and C.H. Moeng, 1985: A practical integral closure model for mean vertical transport of a scalar in a convective boundary layer. *J. Atmos. Sci.* **42**, 359-363.
- Fiedler, B.H., 1985: Reply to a comment by A. van Delden. *Tellus* **37A**, 489.
- Fiedler, B.H. and R. Rotunno, 1986: A theory for the maximum windspeeds in tornado-like vortices. *J. Atmos. Sci.* **43**, 2328-2340.
- Fiedler, B.H., 1989: Scale selection in nonlinear thermal convection between poorly conducting boundaries. *Geophys. and Astrophys. Fluid Dyn.* **46**, 191-201.
- Fiedler, B.H., 1989: Validation study of scale selection in low-order models of Rayleigh-Benard convection. *Tellus* **41A**, 285-291.

- Fiedler, B.H., 1989: Conditions for laminar flow in geophysical vortices. *J. Atmos. Sci.* **46**, 252-259.
- Fiedler, B.H., 1990: Transitions to broad cells in a nonlinear thermal convection system. *Geophys. and Astrophys. Fluid Dyn.* **50**, 195-201.
- Fiedler, B. H., 1990: Comments on “Improving the anelastic approximation”. *J. Atmos. Sci.* **47**, 1817-1818.
- Fiedler, B. H. and S. Peckham, 1992: Numerical study of convective scale selection in a cloud-topped marine boundary layer. *Tellus* **44A**, 366-380.
- Fiedler, B. H., 1992: Comments on “Kelvin-Helmholtz instability in severe downslope wind flow”. *J. Atmos. Sci.* **49**, 2343-2344.
- Fiedler, B. H., 1993: Numerical simulation of axisymmetric tornadogenesis in forced convection. *The Tornado: Its Structure, Dynamics, Prediction, and Hazards*. American Geophysical Union.
- R. J. Trapp and B. H. Fiedler, 1993: Numerical simulation of tornadolike vortices in asymmetric flow. *The Tornado: Its Structure, Dynamics, Prediction, and Hazards*. American Geophysical Union.
- Fiedler, B. H and R. J. Trapp, 1993: A fast dynamic grid adaption scheme for meteorological flows. *Mon. Wea. Rev.* **121**, 2879 -2888.
- Fiedler, B. H., 1993: Cell broadening in three-dimensional thermal convection between poorly conducting boundaries. *Beitr. Phys. Atmosph.* **66**, 173-181.
- Fiedler, B. H. and M. Khairoutdinov, 1994: Cell broadening in three-dimensional thermal convection between poorly conducting boundaries: Large eddy simulations. *Beitr. Phys. Atmosph.* **67**, 235-241.
- Fiedler, B. H., 1994: The thermodynamic speed limit and its violation in axisymmetric numerical simulations of tornado-like vortices. *Atmosphere-Ocean* **32**, 335- 359.
- Fiedler, B. H., 1995: On modelling tornadoes in isolation from the parent storm. *Atmosphere-Ocean* **33**, 501-512.
- Trapp, R. J. and B. H. Fiedler, 1995: Tornado-like vortexgenesis in a simplified numerical model. *J. Atmos. Sci.* **52**, 3757-3778.
- Xu, Q., S. Gao and B. H Fiedler, 1996: A Theoretical Study of Cold Air Damming with Upstream Cold Air Inflow. *J. Atmos. Sci.* **53**, 312-326.
- Fiedler, B. H., 1997: Compressibility and windspeed limits in tornadoes. *Atmosphere-Ocean* **35**, 93-107.
- Fiedler, B. H., 1998: Continuous adaptation of a curvilinear grid. *Numerical methods in fluid mechanics* A. Vincent, ed. CRM Proc. Lectures Notes, **16**, AMS, Providence, RI, 1995, 99-107.
- Fiedler, B. H., 1998: Wind-speed limits in numerically simulated tornadoes with suction vortices. *Q. J. R. Meteorol. Soc.* **124** 2377-2392.
- Fiedler, B. H., 1999: Thermal convection in a layer bounded by uniform heat flux: application of a strongly nonlinear analytical solution. *Geophys. Astrophys. Fluid Dynamics* **91** 223-250.

- Fiedler, B. H., 2000: Dissipative heating in climate models. *Q. J. R. Meteorol. Soc.* **126** 925-939.
- Fiedler, B. H. and K. Kanak, 2001: Rayleigh-Benard Convection as a tool for studying dust devils. *Atmos. Sci. Letters.*, doi:10.1006/asle.2001.0046
- Fiedler, Brian H., 2002: A Wind Transform for Acoustic Adjustment in Compressible Models. *Mon. Wea. Rev.* **130**, 741-746
- Fiedler, Brian H., 2002: Grid Adaption and Its Effect on Entrainment in an E-1 Model of the Atmospheric Boundary Layer. *Mon. Wea. Rev.* **130**, 733-740
- Dean, Andrew R., Brian H. Fiedler, 2002: Forecasting Warm-Season Burnoff of Low Clouds at the San Francisco International Airport Using Linear Regression and a Neural Network. *J. Appl. Met.* **41**, 629-639
- Fiedler, B. H. and F. Y. Kong, 2003: The performance of an E-1 scheme for the atmospheric boundary layer in a mesoscale model with grid spacing as small as 1 km. *Meteorol. Atmos. Phys.* **84**, 1-10
- Barrett, B.S., L.M. Leslie, and B.H. Fiedler, 2006: An Example of the Value of Strong Climatological Signals in Tropical Cyclone Track Forecasting: Hurricane Ivan (2004). *Mon. Wea. Rev.*, **134**, 1568-1577.
- Fiedler, B. H. 2009: Suction vortices and spiral breakdown in numerical simulations of tornado-like vortices. *Atmospheric Science Letters*, **10**, 109-114 DOI: 10.1002/asl.217
- Fiedler, B. H. 2010: How do we really compute with units? *Phys. Educ.*, **45**, 167-172. doi: 10.1088/0031-9120/45/2/007
- Fiedler, B. H. and Gabriel S. Garfield 2010: Axisymmetric vortex simulations with various turbulence models. *CFD Letters*, **2(3)**
- Fiedler, B. H. and M. S. Bukovsky 2011: The effect of a giant wind farm on precipitation in a regional climate model *Environ. Res. Lett.* **6** 045101
- Fiedler, B. H. 2011: Using an infrared thermometer for solar pyranometry. *Phys. Educ.* **46** 696
- Fiedler, B. H. and A. S. Adams 2014: A Subgrid Parameterization for Wind Turbines in Weather Prediction Models with an Application to Wind Resource Limits *Advances in Meteorology*, vol. 2014, Article ID 696202, 6 pages, 2014. doi:10.1155/2014/696202
- Fiedler, Brian H. 2017: Axisymmetric Tornado Simulations with a Semi-slip Boundary, *Fluids* 2(4), 68; doi:10.3390/fluids2040068
- Fiedler, B.H. 2018: An Analytical Model for the Regeneration of Wind after Exiting a Wind Farm. *Energies* 11, 2071

grants and contracts

\$100,000 from NSF 1990-1992 "Development of a Three-Dimensional, Dynamically Adaptive Grid Model to Study Tornado Genesis", P.I.

\$152,000 from NSF 1996-1998 "Three-dimensional numerical simulation of tornadoes", Co-P.I. with Vince Wong

\$5,000,000 from DOD 1996-2001 “Remote sensing and prediction of the coastal marine boundary layer”, P.I.

\$184,000 from NSF 2007-2009 “Suction Vortices, Spiral Breakdown and Multiple Vortices in Tornadoes”

students supervised

Ph. D. students graduated:

Luciano Fleishfresser, 2000: Tropical climate stability, hadley circulation, and deep cumulus convection: vital synergism on a wet planet.

Daniel Brian Weber, 1997: An investigation of the diurnal variability of the central Colorado downslope windstorm.

Cheng-Zhi Zou, 1995: Development of a 2-D zonally averaged climate model and study of the intertropical convergence zone dynamics.

Robert Jeffrey Trapp, 1994: Numerical simulation of the genesis of tornado-like vortices.

M. Sc. students graduated:

Gabriel Garfield, 2009: An Assessment of the Impact of Turbulence Parameterizations at High Reynolds Numbers on an Axisymmetric Tornado Model

Amy Buhl, 2003: Using Principal Component Analysis and a Neural Network to Forecast Fog Burnoff Times at the San Francisco International Airport

Andrew Dean, 2000: Forecasting warm-season burnoff at the San Francisco International Airport using linear regression and a neural network.

Stephen Strum, 1999: Interactive data assimilation techniques for convective weather.

Steven Peckham, 1990: A numerical study of thermal convection with latent heat release under an elastic inversion.

Non-thesis M. Sc. students graduated:

Rafal Jabrzemski, 1998. David Sherman, 2011.