

Curriculum Vitae

David B. Mechem
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Education

2003	Ph.D.	Atmospheric Sciences	University of Washington
1993	B.S.	Meteorology with Mathematics minor, summa cum laude	University of Oklahoma

Professional Experience

08/2007-present Assistant Professor, Department of Geography, University of Kansas
07/2003-08/2007 Research Scientist, Cooperative Institute for Mesoscale Meteorological Studies, Norman, OK
01/2004-05/2004 Adjunct Instructor, School of Meteorology (Physical Meteorology II), University of Oklahoma, Norman, OK
11/2002 Guest Lecturer, METR 5233 (Graduate cloud physics), University of Oklahoma, Norman, OK
01/2001-07/2003 Research Associate, Cooperative Institute for Mesoscale Meteorological Studies, Norman, OK
01/1999-12/2000 Research Associate, Coastal Meteorology Research Program, Norman, OK
09/1993-12/1998 Research Assistant, Department of Atmospheric Sciences, University of Washington, Seattle, WA
09/1994-12/1994 Teaching Assistant, Department of Atmospheric Sciences, University of Washington, Seattle, WA
09/1989-08/1993 Meteorological Technician, National Severe Storms Laboratory, Norman, OK

Presentations, Posters, and Meeting Participation

04/2007 Department of Geography, University of Kansas, Lawrence, KS
03/2007 ARM Program Science Team Meeting, Monterey, CA
03/2007 Department of Earth and Atmospheric Sciences, St. Louis University, St. Louis, MO
03/2007 Department of Geosciences, Texas Tech University, Lubbock, TX
02/2007 Department of Geosciences, University of Nebraska, Lincoln, NE
11/2006 National Weather Center, University of Oklahoma, Norman, OK
11/2006 ARM Cloud Properties Working Group, Annapolis, MD
09/2006 Oklahoma Supercomputing Symposium, Norman, OK
09/2006 Joint GCSS-GPCI/BLCI-RICO Workshop, NASA/GISS, New York, NY
07/2006 AMS Conferences on Cloud Physics and Radiation, Madison, WI

03/2006 ARM Program Science Team Meeting, Albuquerque, NM
11/2005 Department of Atmospheric and Oceanic Sciences, University of Wisconsin,
Madison, WI
10/2005 AMS Conference on Radar Meteorology, Albuquerque, NM
09/2005 National Severe Storms Laboratory, Norman, OK
05/2005 Pan-GCSS Meeting on Clouds, Models, and Climate, Athens, Greece
03/2005 ARM Program Science Team Meeting, Daytona Beach, FL
01/2005 Naval Research Laboratory, Monterey, CA
07/2004 International Conference on Clouds and Precipitation (ICCP), Bologna, Italy
03/2004 ARM Program Science Team Meeting, Albuquerque, NM
02/2004 Rain In Cumulus over the Ocean (RICO) planning meeting, Boulder, CO
10/2003 Joint meeting of GCSS and ARM WGs, Broomfield, CO
08/2003 AMS Conference on Coastal Atmospheric and Oceanic Prediction and Processes,
Seattle, WA (Session chair)
08/2003 AMS Conference on Radar Meteorology, Seattle, WA
07/2003 Department of Atmospheric Sciences, University of Washington, Seattle, WA
04/2003 ARM Program Science Team Meeting, Broomfield, CO
09/2002 Naval Research Laboratory, Monterey, CA
06/2002 AMS Conferences on Cloud Physics and Radiation
05/2002 Pan-GCSS Meeting on Clouds, Models, and Climate, Kananaskis, Alberta, Canada
04/2002 ARM Program Science Team Meeting, St. Petersburg, FL
03/2002 DYCOMS-II data meeting, Boulder, CO
11/2001 AMS Conference on Coastal Atmospheric and Oceanic Prediction and Processes,
St. Petersburg, FL
03/2001 Atmospheric Radiation Measurement Program Science Team Meeting, Atlanta, GA
12/2000 Naval Research Laboratory, Monterey, CA
06/2000 International Conference on Clouds and Precipitation (ICCP), Reno, NV
04/2000 FIRE-SHEBA meeting, Boulder, CO
11/1999 AMS Conference on Coastal Atmospheric and Oceanic Prediction and Processes,
New Orleans, LA

Field Project Participation

07/2001 Dynamics and Chemistry of Marine Stratocumulus (DYCOMS-II)
12/1995 Coastal Observation and Simulation with Topography Experiment (COAST-II)

Funded Proposals

“Improvement of the Cloud Physics formulation in the U.S. Navy Coupled Ocean/Atmosphere Mesoscale Prediction System” [Co-PI, 2/2003-2008, Office of Naval Research, \$889,393]

Professional Societies and Service

Member, American Meteorological Society

Member, American Geophysical Union

Reviewer for *Atmospheric Research*, *Journal of Applied Meteorology*, *Journal of the Atmospheric Sciences*, *Journal of Geophysical Research*, *Quarterly Journal of the Royal Meteorological Society*, and *Weather and Forecasting*

Member, AMS Committee on Cloud Physics

Publications

Formal

Mechem, D. B., R. A. Houze, Jr., and S. S. Chen, 2002: Layer inflow into precipitating convection over the western tropical Pacific. *Quart. J. Roy. Meteor. Soc.*, **128**, 1997-2030.

Mechem, D. B., and Y. L. Kogan, 2003: Simulating the transition from drizzling marine stratocumulus to boundary layer cumulus with a mesoscale model. *Mon. Wea. Rev.*, **131**, 2342-2360.

Kogan, Z. N., **D. B. Mechem**, and Y. L. Kogan, 2005: Assessment of variability in continental low stratiform clouds based on observations of radar reflectivity. *J. Geophys. Res.*, **110**, D18205, doi: 10.1029/2005JD005982.

Mechem, D. B., S. S. Chen, and R. A. Houze, Jr., 2006: Momentum transport processes in the stratiform regions of mesoscale convective systems over the western Pacific warm pool. *Quart. J. Roy. Meteor. Soc.*, **132**, 709-736.

Mechem, D. B., P. C. Robinson, and Y. L. Kogan, 2006: Processing of cloud condensation nuclei by collision-coalescence in a mesoscale model. *J. Geophys. Res.*, **111**, D18204, doi: 10.1029/2006JD007183.

Kogan, Y. L., Z. N. Kogan, and **D. B. Mechem**, 2007: Assessing the errors of microphysical retrievals based on Doppler radar parameters. *J. Hydrometeor.*, **8**, 665-677.

Mechem, D. B., and Y. L. Kogan, 2007: A bulk parameterization of giant CCN. *J. Atmos. Sci.*, submitted 4/2007.

Informal (Selected)

Kogan, Y., and **D. Mechem**, 1999: On formulation of microphysical processes for marine stratocumulus in regional forecast models. Preprints, *AMS Third Conference on Coastal Atmospheric and Oceanic Prediction and Processes*, New Orleans, LA, 3-5 November 1999, Amer. Meteor. Soc.

Mechem, D., Y. Kogan, and F. Kong, 2000: A new microphysical parameterization for marine stratocumulus clouds in regional forecast models. *Proc. of the 13th International Conference on Clouds and Precipitation*, Reno, NV, 14-18 August 2000, International Commission on Clouds and Precipitation.

Mechem, D. B., and Y. L. Kogan, 2001: Representation of marine stratocumulus in regional forecast models: Role of subgrid inhomogeneity. *AMS Fourth Conference on Coastal Atmospheric and Oceanic Prediction and Processes*, 6-9 November 2001, St. Petersburg, FL, Amer. Meteor. Soc.

- Mechem, D. B.**, Y. L. Kogan, and M. R. Poellot, 2002: Large eddy simulation of post-frontal boundary layers in the ARM 2000 Cloud IOP. *Proc. of the Twelfth Atmospheric Radiation Measurement (ARM) Science Team Meeting*, 8-12 April 2002, St. Petersburg, FL.
- Mechem, D. B.**, M. Ovtchinnikov, Y. L. Kogan, A. B. Davis, R. F. Cahalan, E. E. Takara, and R. G. Ellingson, 2002: Multi-dimensional broadband IR radiative forcing of marine stratocumulus in a large eddy simulation model. Preprints, *11th Conference on Cloud Physics*, 3-7 June 2002, Ogden, UT, Amer. Meteor. Soc.
- Ovtchinnikov, M., **D. B. Mechem**, T. P. Ackerman, R. F. Cahalan, A. B. Davis, R. Ellingson, K. F. Evans, Y. L. Kogan, and E. Takara, 2002: Longwave cooling rates in inhomogeneous stratocumulus clouds: 3D radiation transfer versus independent pixel approximation calculations. Preprints, *11th Conference on Cloud Physics*, 3-7 June 2002, Ogden, UT, Amer. Meteor. Soc.
- Mechem, D. B.**, and Y. L. Kogan, 2003: Drizzle-induced mesoscale variability of boundary layer clouds in a regional forecast model. Preprints, *AMS Fifth Conference on Coastal Atmospheric and Oceanic Prediction and Processes*, Seattle, WA, 6-8 August 2003, Amer. Meteor. Soc.
- Kogan, Z. N., **D. B. Mechem**, and Y. L. Kogan, 2003a: The effect of precipitation on variability of low stratiform clouds over ARM SGP site. *Proc. of the Thirteenth Atmospheric Radiation Measurement (ARM) Science Team Meeting*, 31 March-4 April 2003, Broomfield, CO.
- Kogan, Z. N., **D. B. Mechem**, and Y. L. Kogan, 2003b: Radar study on variability of continental low stratiform clouds. *Proc. of the 31st AMS International Conference on Radar Meteorology*, 6-12 August 2003, Seattle, WA, Amer. Meteor. Soc.
- Mechem, D. B.**, M. Ovtchinnikov, Y. L. Kogan, K. F. Evans, A. B. Davis, R. F. Cahalan, E. E. Takara, and R. G. Ellingson, 2003: Simulation of PBL cloud fields with interactive multi-dimensional longwave radiative forcing. *Proc. of the Thirteenth Atmospheric Radiation Measurement (ARM) Science Team Meeting*, 31 March-4 April 2003, Broomfield, CO.
- Kogan, Z. N., **D. B. Mechem**, and Y. L. Kogan, 2004: Characterizing stratiform cloud variability from millimeter-wave radar data. *Proc. of the Fourteenth Atmospheric Radiation Measurement (ARM) Science Team Meeting*, 22-26 March 2004, Albuquerque, NM.
- Mechem, D. B.**, M. Ovtchinnikov, Y. L. Kogan, K. F. Evans, A. B. Davis, R. F. Cahalan, E. E. Takara, and R. G. Ellingson, 2004: Multi-dimensional longwave radiative forcing of PBL cloud systems. Preprints, *14th International Conference on Clouds and Precipitation*, Bologna, Italy, International Commission on Clouds and Precipitation, 1533-1536.
- Childers, M. E., K. M. Donner, and **D. B. Mechem**, 2005: Toward a diurnal climatology of cold season turbulence statistics in continental stratocumulus as observed by the ARM MMCR. *Proc. of the Fifteenth Atmospheric Radiation Measurement (ARM) Science Team Meeting*, 14-18 March 2005, Daytona Beach, FL.
- Kogan, Z. N., **D. B. Mechem**, and Y. L. Kogan, 2005: Variability of continental stratiform clouds and its scale dependence based on millimeter-wave radar data. Preprints, *32nd Conference on Radar Meteorology*, Albuquerque, NM, Amer. Meteor. Soc., CD-ROM, P2R.10.

- Kogan, Y. L., Z. N. Kogan, and **D. B. Mechem**, 2005: The enhancement of radar retrievals by the use of higher moments of drop spectrum. Preprints, *32nd Conference on Radar Meteorology*, Albuquerque, NM, Amer. Meteor. Soc., CD-ROM, P2R.6.
- Mechem, D. B.**, and Y. L. Kogan, 2005a: Representing cloud processing of aerosols in numerical models. *Proc. of the Fifteenth Atmospheric Radiation Measurement (ARM) Science Team Meeting*, 14-18 March 2005, Daytona Beach, FL.
- Mechem, D. B.**, and Y. L. Kogan 2005b: Turbulence structure of cold season continental stratocumulus as observed by the ARM MMCR. Preprints, *32nd Conference on Radar Meteorology*, Albuquerque, NM, Amer. Meteor. Soc., CD-ROM, P2R.1.
- Kogan, Y. L., Z. N. Kogan, and **D. B. Mechem**, 2006: Sensitivity of the retrieval of stratocumulus cloud liquid water and precipitation flux to Doppler radar parameters. Preprints, *12th Conference on Cloud Physics*, Madison, WI, Amer. Meteor. Soc., CD-ROM, P1.17.
- Kogan, Z. N., Y. L. Kogan, and **D. B. Mechem**, 2006: Scale dependence of variability in continental stratiform clouds. Preprints, *12th Conference on Cloud Physics*, Madison, WI, Amer. Meteor. Soc., CD-ROM, P1.24.
- Mechem, D. B.**, and Y. L. Kogan, 2006a: Improving the representation of aerosol-cloud-precipitation interactions in numerical models. *Proc. of the Sixteenth Atmospheric Radiation Measurement (ARM) Science Team Meeting*, Ed. by D. Carrothers, U.S. Department of Energy. Richland, WA.
- Mechem, D. B.**, and Y. L. Kogan, 2006b: Bulk parameterization of giant CCN. Preprints, *12th Conference on Cloud Physics*, Madison, WI, Amer. Meteor. Soc., CD-ROM, P1.3.
- Mechem, D. B.**, and Y. L. Kogan, 2006c: Three-dimensional aspects of droplet nucleation. Preprints, *12th Conference on Cloud Physics*, Madison, WI, Amer. Meteor. Soc., CD-ROM, 1.2.
- Kogan, Y. L., and **D. B. Mechem**, 2007: Approximation of cloud drop distributions by analytic functions. *Proc. of the Seventeenth Atmospheric Radiation Measurement (ARM) Science Team Meeting*, Ed. By D. Carrothers, U.S. Department of Energy, Richland, WA.
- Mechem, D. B.**, and Y. L. Kogan, 2007: Large eddy observation and LES of liquid stratus over the ACRF. *Proc. of the Seventeenth Atmospheric Radiation Measurement (ARM) Science Team Meeting*, Ed. By D. Carrothers, U.S. Department of Energy, Richland, WA.