

Larry K. Berg

Research Scientist III

Atmospheric Chemistry and Meteorology Technical Group

Atmospheric Sciences and Global Change Division

Pacific Northwest National Laboratory

Education

Ph.D. Atmospheric Sciences, The University of British Columbia	2002
M.S. Atmospheric Sciences, The University of British Columbia	1996
B.S. Meteorology, The Pennsylvania State University	1993

Research Experience

Dr. Berg joined the staff at Pacific Northwest National Laboratory in June 2002. His principal research interests are cloud parameterizations, boundary-layer meteorology, turbulence, mesoscale modeling and atmospheric dispersion. Selected research experience includes the following:

Boundary-layer Cumulus. Dr. Berg has developed a simple parameterization for boundary-layer cumulus. This parameterization couples the cumuli with turbulence in the convective boundary layer. Dr. Berg has helped plan a U.S. Department of Energy Atmospheric Radiation Measurement field campaign to investigate the relationship of these clouds to the land surface.

Atmospheric Aerosols. Dr. Berg is investigating the effect of fair-weather clouds on atmospheric aerosols. This research is focused on finding changes to the optical properties of the aerosols that can be associated with the passage of the aerosol through clouds.

Urban Dispersion. Dr. Berg has helped to coordinate PNNL's contribution to three urban dispersion field studies, one in Oklahoma City and two in New York City. He is also leading PNNL's effort to develop a Rapidly Deployable Chemical Detection System for use during special events.

Mesoscale modeling for dispersion applications. Dr. Berg has been working on developing a modeling system that couples a state-of-the-art mesoscale model with a dispersion model. This system is designed to put advanced meteorological tools in the hands of non-meteorologists.

Publications (including those submitted)

Berg, L. K., and E. Kassianov, 2007: Temporal variability of fair-weather cumulus statistics at the ARM SGP site. *J. Climate*, (submitted).

Berg, L. K., and R. B. Stull, 2005: A simple parameterization coupling the convective daytime boundary layer and fair-weather cumuli. *J. Atmos. Sci.*, **62**, 1976-1988.

Berg, L. K., and S. Zhong, 2005: Sensitivity of MM5 simulated boundary-layer characteristics to turbulence parameterizations. *J. Appl. Meteor.*, **44**, 1467-1483.

- Berg, L. K., and R. B. Stull, 2004: Parameterization of joint frequency distributions of potential temperature and water vapor mixing ratio in the daytime convective boundary layer. *J. Atmos. Sci.*, **61**, 813-828.
- Berg, L. K., and R. B. Stull, 2002: Accuracy of point and line measures of boundary layer cloud amount. *J. Appl. Meteor.*, **41**, 640-650.
- Stull, R., E. Santoso, L. Berg, and J. Hacker, 1997: Boundary Layer Experiment 1996 (BLX96). *Bull. Amer. Meteor. Soc.*, **78**, 1149-1158.

Technical Reports

- Berkowitz, C. M., L. K. Berg, J. A. Ogren, C. A. Hostetler, and R. Ferrare, 2006: Project Overview: Cumulus Humilis Aerosol Processing Study (CHAPS): Proposed Summer 2007 ASP Field Campaign. PNNL-15700, Pacific Northwest National Laboratory, Richland, WA.
- Berg, L. K., and K. J. Allwine, 2006: An analysis of wintertime winds in Washington D. C. PNNL-15799, Pacific Northwest National Laboratory, Richland, WA.
- Berg, L. K., R. B. Stull, E. Santoso, and J. P. Hacker, 1997: Boundary Layer Experiment-1996 (BLX96) airborne scientist flight log. Boundary Layer Research Team Tech. Note BLRT-97-1, 116 pp.

Recent Conference Proceedings

- Berg, L. K., E. I. Kassianov, and C. M. Flynn, 2006: The long-term properties of continental aerosol and cumulus clouds: Implications for aerosol cloud interactions. *American Geophysical Union Fall Meeting*, San Francisco, CA.
- Berg, L. K., and S. Zhong, 2006: Evaluation of boundary-layer characteristic predicted by MM5. 17th Symposium on Boundary Layers and Turbulence, *American Meteorological Society*, San Diego CA.
- Berg, L. K., and R. B. Stull, 2006: Evaluation of a new parameterization for fair-weather cumulus. 17th Symposium on Boundary Layers and Turbulence, *American Meteorological Society*, San Diego CA.
- Grimit, E., R. C. Foster, C. S. Bretherton, L. K. Berg, T. P. Ackerman, C. S. Mass, J. McCaa, 2006: A case for a combined mesoscale and climate boundary layer parameterization improvement project. 17th Symposium on Boundary Layers and Turbulence, *American Meteorological Society*, San Diego CA.
- Berg, L. K., E. Kassianov, C. N. Long, and W. Gustafson Jr., 2006: A climatology of fair-weather cloud cover at the ARM SGP Site: Temporal and spatial variability, 16th ARM Science Team Meeting, Albuquerque NM.
- Berg, L. K., R. M. Reynolds, K. J. Allwine, and A. Blumberg, 2006: Comparisons of measurements made using two sodars in an urban environment. Sixth Conference on Urban Meteorology, Atlanta, GA, *American Meteorological Society*.
- Berg, L. K., E. Kassianov, and W. Gustafson Jr., 2005: A climatology of fair-weather cumuli at the ARM SGP Site, ARM Cloud Parameterization Working Group Meeting, Stony Brook NY.
- Leung, L. R., L. K. Berg, T. P. Ackerman, and R. T. Marchand, 2005: Evaluation of Cloud Resolving Simulations over the Southern Great Plains During IHOP 2002. 19th Conference on Hydrology, San Diego CA, *American Meteorological Society*.

- Berg, L. K., and R. B. Stull, 2005: A New Parameterization Framework for Boundary-Layer Cumuli. ARM Science Team Meeting, Daytona Beach FL.
- Berg, L. K., K. J. Allwine and F. C. Rutz, 2004: Incorporating a Full-Physics Meteorological Model into an Applied Atmospheric Dispersion Modeling System. 13th Conference on the Applications of Air Pollution Meteorology with the Air and Waste Management Assoc. Vancouver, BC, Canada.
- Berg, L. K., S. F. J. De Wekker, W. J. Shaw, R. L. Coulter, and K. J. Allwine, 2004: Observations of boundary-layer winds in an urban environment. Fifth Conference on Urban Meteorology, Vancouver, BC, Canada, *American Meteorological Society*.
- De Wekker, Stephan F. J., L. K. Berg, K. J. Allwine, J. C. Doran, and W. J. Shaw, 2004: Boundary-layer Structure Upwind and Downwind of Oklahoma City during the Joint Urban 2003 Field Study. Fifth Conference on Urban Meteorology, Vancouver, BC, Canada, *American Meteorological Society*.

Collaborators & Other Affiliations

(a) Collaborators and Co-Editors.

A. Blumberg, Stevens Institute of Technology
R. Coulter, Argonne National Laboratory
J. Fast, Pacific Northwest National Laboratory
E. Kassianov, Pacific Northwest National Laboratory
L. R. Leung, Pacific Northwest National Laboratory
R. M. Reynolds, Brookhaven National Laboratory
W. Shaw, Pacific Northwest National Laboratory
R. Stull, The University of British Columbia
S. Zhong, Michigan State University

(b) Graduate and Postdoctoral Advisors.

Roland Stull, The University of British Columbia,
K. Jerry Allwine, Pacific Northwest National Laboratory