

# VITA

## BRADLEY F. SMULL

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### Education

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| Undergraduate | B.S. in Meteorology with Special Distinction<br>University of Oklahoma, 1980 |
| Graduate      | Ph.D. in Atmospheric Sciences<br>University of Washington, 1986              |

### Positions

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|--------------|---|
| 1977-1980    | Meteorological Aide, National Severe Storms Laboratory, Norman, Oklahoma  |
| 1979-1980    | NOAA Weather Radio Announcer, National Weather Service Forecast Office, Oklahoma City, Oklahoma   |
| 1980-1986    | Research Assistant & Teaching Assistant (1982), Dept. of Atmospheric Sciences, University of Washington, Seattle, Washington  |
| 1986-1988    | Research Meteorologist, Mesoscale Convective Systems Group, NOAA/ERL/Weather Research Program, Boulder, Colorado  |
| 1988-1995    | Research Meteorologist, Mesoscale Research and Applications Division, NOAA National Severe Storms Laboratory, Boulder, Colorado (collocated with NCAR-MMM 1992-1995)          |
| 1995-1996    | Research Meteorologist, NOAA National Severe Storms Laboratory <i>and</i> Visiting Scholar, Dept. of Atmospheric Sciences, University of Washington, Seattle                  |
| 1996-2003    | Research Meteorologist, NOAA/National Severe Storms Laboratory <i>and</i> Research Associate Professor, Department of Atmospheric Sciences, University of Washington, Seattle |
| 2003-Present | Research Associate Professor, Department of Atmospheric Sciences, University of Washington, Seattle   |
| 2007-Present | Associate Program Director for Physical & Dynamic Meteorology, Division of Atmospheric Sciences, National Science Foundation, Arlington, Virginia                             |

### Honors and Awards

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| 1975 | Scholarship Recipient, Elks National Foundation |
| 1992 | Editor's Award, American Meteorological Society |

## Honors and Awards, cont.

- 1994 Bronze Medal Award, U.S. Department of Commerce/NOAA
- 1995 Sustained Superior Performance Award, NOAA/ERL
- 1995 Distinguished Authorship Award, NOAA/ERL

## Field Program Experience

- 1976-1980 NSSL Annual "Spring Program" and Tornado Intercept Project (Oklahoma, Texas and Kansas)
- 1985 PRE-STORM: Preliminary Regional Experiment for STORM Central (Kansas and Oklahoma)
- 1987 TAMEX: Taiwan Area Mesoscale Experiment (Okinawa, Japan, and waters surrounding Taiwan)
- 1988 PRECIP-6/3CPO: Cloud and Precipitation Chemistry Project (Illinois and surrounding Midwestern states)
- 1989 COPS-89: Cooperative Oklahoma P-3 Studies (Oklahoma, Texas and Kansas)
- 1990 SWAMP: Southwest Area Monsoon Project (Arizona and western Mexico)
- 1991 COPS-91: Cooperative Oklahoma Profiler Studies (Oklahoma, Texas and Kansas)
- 1992 STORM-FEST: STORM-Program Field Experiment Systems Test (Missouri and surrounding states)
- 1992-1993 TOGA COARE: Tropical Ocean Global Atmosphere Program Coupled Ocean-Atmosphere Response Experiment (Solomon Islands)
- 1993, 1995 COAST I & II: Coastal Observations and Simulations with Topography (Pacific Northwest coast and adjacent waters)
- 1998 CALJET: California Landfalling Jets and El Niño Impacts Experiment (California, Oregon and Eastern Pacific)
- 1999 MAP: Mesoscale Alpine Programme (European Alps)
- 2000 IPEX: Intermountain Precipitation Experiment (Utah)
- 2001 PACJET: Pacific Landfalling Jets Experiment (Coastal California and Eastern Pacific)
- 2003 IMPROVE II: Improvement of Microphysical Parameterization through Observational Verification Experiment (Oregon Cascades)

## Field Program Experience, cont.

- 2005 RAINEX: Hurricane Rainbands and Intensity Change Experiment (Co-Chief Airborne Scientist for Flights into Hurricanes Katrina, Ophelia and Rita aboard NRL & NOAA P-3s)
- 2006 CC-VEX: CloudSat-CALIPSO Verification Experiment (NASA ER-2 and WMI Learjet, Southeastern U.S. and adjacent Atlantic and Gulf of Mexico waters)
- NAMMA: NASA African Monsoon Multidisciplinary Analysis Project (NASA DC-8 and TOGA Radar, Eastern Tropical Atlantic)

## Service and Professional Activities

- 1978-1981 Invited Member, Dean's Student Advisory Council, College of Engineering, University of Oklahoma
- 1984-Present Reviewer of scientific manuscripts for:  
*Journal of the Atmospheric Sciences, Monthly Weather Review, Journal of Applied Meteorology, Journal of Aircraft, Journal of Atmospheric and Oceanic Technology, Bulletin of the American Meteorological Society, Journal of the American Water Resources Organization, and Quart. Journal of the Royal Meteorological Society*
- Reviewer of research proposals for:  
*National Science Foundation, NOAA Office of Global Programs, National Aeronautics and Space Administration, and California Space Institute*
- 1987 Member, Panel on Mesoscale Processes, 40th Battan Memorial Conference on Radar Meteorology
- 1989-1993 Adjunct Assistant Professor of Astronomy and Physics, Univ. of Oklahoma: Ph.D. Committee member for M. Bateman. Adjunct Assistant Professor of Meteorology, Univ. of Oklahoma: M.S. Committee member for T. J. Schuur and M. Stolzenburg
- 1992 Representative, U.S. Contingent to Bilateral Workshop on Mesoscale Meteorology (chaired by R. Serafin, NCAR Director), Dalian, People's Republic of China
- 1993 Lecturer, COMET (Cooperative Program for Operational Meteorology, Education & Training) Mesoscale Analysis and Prediction Course (4/93), and Special Mesoscale Course (11/93), Boulder, Colorado
- Member, AMS Committee on Mesoscale Processes and Program Committee, 17th Conf. on Severe Local Storms

## Service and Professional Activities, cont.

- 1994 Lecturer/Mentor, COMET Mesoscale Analysis and Prediction Course (3/94-5/94; 10/94), NCAR, Boulder, Colorado
- 1994-1996 Chair, AMS Committee on Mesoscale Processes, and Program Co-Chair, 7th AMS Conference on Mesoscale Processes, University of Reading, England
- 1994-1999 Member, AMS *ad hoc* Interdisciplinary Panel for Policy re: meteorological input to the Intelligent Transportation System
- 1996-2000 Member, Review Panel for AMS Monograph on Severe Local Storms, C. Doswell III, Ed.
- 1998-1999 Member, U.S. Scientific Steering Committee and Mission Selection Team for MAP (Mesoscale Alpine Programme)
- 1999-2001 Member, NSF/UCAR Observing Facilities Advisory Panel (OFAP)
- 2000-2002 Member, AMS Committee on Mountain Meteorology and Program Committee for 10th Mountain Meteorology Conference
- 2001 Invited member, NCAR USWRP (U.S. Weather Research Program) Review Panel
- 2003 Invited member, NOAA/OGP Review Panel for PACS/GAPP Warm-season Precipitation Initiative and NAME (North American Monsoon Experiment)
- 2004 Member, U.S. Scientific Steering Committee for AMMA (African Monsoon Multidisciplinary Analysis Program)
- 2005 Invited instructor, AMS Educational Symposium "A Primer on Radar Analysis Techniques Used in Mesoscale Meteorology," held in conjunction with AMS 12th Mesoscale & 32nd Radar Meteorology Joint Conference, Albuquerque
- 2003-2006 Member, AMS Committee on Mesoscale Meteorology and Program Co-chair, AMS 31<sup>st</sup> Conf. on Radar Meteorology (Seattle - 2003)
- 2006 Ad hoc member, NSF/UCAR Observing Facilities Advisory Panel (OFAP)
- 2007 Member, Program Committee, AMS 12<sup>th</sup> Conference on Mesoscale Processes, Waterville

## Publications

- 1985 Smull, B.F., and R.A. Houze, Jr., 1985: A midlatitude squall line with a trailing region of stratiform rain: Radar and satellite observations. *Mon. Wea. Rev.*, **113**, 117-133.
- 1987 Smull, B.F., and R.A. Houze, Jr., 1987: Dual-Doppler radar analysis of a midlatitude squall line with a trailing region of stratiform rain. *J. Atmos. Sci.*, **44**, 2128-2148.
- Smull, B.F., and R.A. Houze, Jr., 1987: Rear inflow in squall lines with trailing stratiform precipitation. *Mon. Wea. Rev.*, **115**, 2869-2889.
- 1989 Parsons, D.B., D.K. Lilly, and B.F. Smull, 1989: Mesoscale Organization and Processes: Panel report, in Radar in Meteorology: Battan Memorial and 40th Anniversary Conf. on Radar Meteorology. D. Atlas, Ed., Amer. Meteor. Soc., Boston, 461-476.
- Houze, R.A., Jr., S.A. Rutledge, M.I. Biggerstaff, and B.F. Smull, 1989: Interpretation of Doppler weather radar displays in midlatitude mesoscale convective systems. *Bull. Amer. Meteor. Soc.*, **70**, 608-619.
- 1990 Houze, R.A., Jr., B.F. Smull, and P. Dodge, 1990: Mesoscale organization of springtime rainstorms in Oklahoma. *Mon. Wea. Rev.*, **118**, 613-654.
- 1991 Schuur, T.J., W.D. Rust, B.F. Smull, and T.C. Marshall, 1991: Electrical and kinematic structure of the stratiform precipitation region trailing an Oklahoma squall line. *J. Atmos. Sci.*, **48**, 825-842.
- Stumpf, G.J., R.H. Johnson, and B.F. Smull, 1991: The wake low in a midlatitude mesoscale convective system having complex convective organization. *Mon. Wea. Rev.*, **119**, 134-158.
- 1993 Jorgensen, D.P., and B.F. Smull, 1993: Mesovortex circulations seen by airborne Doppler radar within a bow-echo mesoscale convective system. *Bull. Amer. Meteor. Soc.*, **74**, 2146-2157.
- Smull, B.F., and J.A. Augustine, 1993: Multiscale analysis of a mature mesoscale convective complex. *Mon. Wea. Rev.*, **121**, 103-132.
- 1994 Stolzenburg, M., T.C. Marshall, W.D. Rust, and B.F. Smull, 1994: Horizontal distribution of electrical and meteorological conditions across the stratiform region of a mesoscale convective system. *Mon. Wea. Rev.*, **122**, 1777-1797.

## Publications, cont.

- 1995 Bateman, M.G., W.D. Rust, B.F. Smull, and T.C. Marshall, 1995: Precipitation charge and size measurements in the stratiform regions of two mesoscale convective systems. *J. Geophys. Res.*, **100**, 16341-16356.
- Smull, B.F., 1995: Convectively-induced mesoscale weather systems in the tropical and warm-season midlatitude atmosphere. *Rev. Geophys. Suppl.*, **33**, 897-906.
- Yuter, S.E., R.A. Houze, Jr., B.F. Smull, F.D. Marks, J.R. Daugherty, and S.R. Brodzik, 1995: TOGA COARE aircraft mission summary images: An electronic atlas. *Bull. Amer. Meteor. Soc.*, **76**, 319-328.
- 1997 Bond, N.A., C.F. Mass, B.F. Smull, R.A. Houze, Jr., M.-J. Yang, B.A. Colle, S.A. Braun, M.A. Shapiro, B.R. Colman, P.J. Neiman, J.E. Overland, W.D. Neff, and J.D. Doyle, 1997: The Coastal Observations and Simulations with Topography (COAST) experiment. *Bull. Amer. Meteor. Soc.*, **78**, 1941-1955.
- Braun, S.A., R.A. Houze, Jr., and B.F. Smull, 1997: Airborne dual-Doppler observations of an intense frontal system approaching the Pacific Northwest coast. *Mon. Wea. Rev.*, **125**, 3131-3156.
- 1998 Neiman, P.J., M.A. Shapiro, F.M. Ralph, B.F. Smull, and D. Johnson, 1998: An observational study of fronts and frontal mergers during the phasing of arctic and Pacific-polar synoptic-scale waves over the continental United States. *Mon. Wea. Rev.*, **126**, 2521-2554.
- Stolzenburg, M., W.D. Rust, B.F. Smull, and T.C. Marshall, 1998: Electrical structure in thunderstorm convective regions. Part I: Mesoscale convective systems. *J. Geophys. Res.*, **103**, No. D12, 14059-14078.
- 1999 Colle, B.A., C.F. Mass, and B.F. Smull, 1999: An observational and numerical study of a cold front interacting with the Olympic mountains during COAST IOP5. *Mon. Wea. Rev.*, **127**, 1310-1334.
- Petersen, W.A., S.A. Rutledge, R.C. Cifelli, B.S. Ferrier, and B.F. Smull, 1999: Shipborne dual-Doppler operations during TOGA COARE: Integrated observations of storm kinematics and electrification. *Bull. Amer. Meteor. Soc.*, **80**, 81-97.
- Yu, C.-K., B.J.-D. Jou, and B.F. Smull, 1999: Formative stage of a long-lived mesoscale vortex observed by airborne Doppler radar. *Mon. Wea. Rev.*, **127**, 838-857.

## Publications, cont.

- 2000 Yu, C.-K., and B.F. Smull, 2000: Airborne Doppler observations of a landfalling cold front upstream of steep coastal orography. *Mon. Wea. Rev.*, **128**, 1577-1603.
- 2002 Colle, B.A., B.F. Smull, and M.-J. Yang, 2002: Numerical simulations of a landfalling cold front observed during COAST: Rapid evolution and responsible mechanisms. *Mon. Wea. Rev.*, **130**, 1945-1966.
- Schultz, D.M., W.J. Steenburgh, R.J. Trapp, J. Horel, D.E. Kingsmill, L.B. Dunn, W.D. Rust, L. Cheng, A. Bansemer, J. Cox, J. Daugherty, D.P. Jorgensen, J. Meitin, L. Showell, B.F. Smull, K. Tarp, and M. Trainor, 2002: Understanding Utah winter storms: The Intermountain Precipitation Experiment. *Bull. Amer. Meteor. Soc.*, **83**, 189-210.
- 2003 Bousquet, O., and B.F. Smull, 2003: Observations and impacts of upstream orographic blocking during a widespread orographic precipitation event. *Quart. J. Roy. Meteor. Soc.*, **129**, 391-410.
- Bousquet, O., and B.F. Smull, 2003: Airflow and precipitation fields within deep Alpine valleys observed by airborne Doppler radar. *J. Appl. Meteor.*, **42**, 1497-1513.
- Steiner, M., O. Bousquet, R.A. Houze, Jr., B.F. Smull, and M. Mancini, 2003: Airflow within major Alpine river valleys under heavy rainfall. *Quart. J. Roy. Meteor. Soc.*, **129**, 411-432.
- Stoelinga, M. T., P. V. Hobbs, C. F. Mass, J. D. Locatelli, B. A. Colle, R. A. Houze, Jr., A. L. Rangno, N. A. Bond, B.F. Smull, R. M. Rasmussen, G. Thompson, and B. R. Colman, 2003: Improvement of Microphysical Parameterization through Observational Verification Experiment (IMPROVE). *Bull. Amer. Meteor. Soc.*, **84**, 1807-1826.
- 2004 Cox, J.A., W.J. Steenburgh, D.E. Kingsmill, J.C. Schafer, B.A. Colle, O. Bousquet, B.F. Smull, and H. Cai, 2004: The kinematic structure of a Wasatch mountain winter storm during IPEX IOP3. *Mon. Wea. Rev.*, **132**, 521-542.
- Davis, C. A., N. Atkins, D. Bartels, L. Bosart, M. Coniglio, G. Bryan, W. Cotton, D. Dowell, B. Jewett, R. Johns, D. Jorgensen, J. Knievel, K. Knupp, W.-C. Lee, G. McFarquhar, J. Moore, R. Przybylinski, R. Rauber, B. Smull, R. Trapp, S. Trier, R. Wakimoto, M. Weisman, and C. Ziegler, 2004: The bow echo and MCV experiment: Observations and opportunities. *Bull. Amer. Meteor. Soc.*, **85**, 1075-1093.

## Publications, cont.

- 2005 Bond, N.A., B.F. Smull, M.T. Stoelinga, C.P. Woods, and A. Haase, 2005: Evolution of a cold front encountering steep quasi-2D terrain: Coordinated aircraft observations on 8-9 December 2001 during IMPROVE-2. *J. Atmos. Sci.*, **62**, 3559-3579.
- Medina, S., B.F. Smull, R.A. Houze, Jr., and M. Steiner, 2005: Cross-barrier flow during orographic precipitation events: Results from MAP and IMPROVE. *J. Atmos. Sci.*, **62**, 3580-3598.
- 2006 Bousquet, O., and B.F. Smull, 2006: Observed mass transports accompanying upstream orographic blocking during MAP IOP8. *Quart. J. Roy. Meteor. Soc.*, **132**, 2393-2413.
- 2007 Garvert, M.F., B.F. Smull, and C.F. Mass, 2007: Multiscale mountain waves influencing a major orographic precipitation event. *J. Atmos. Sci.*, **64**, 711-737.
- Houze, R.A., Jr., D.C. Wilton, and B.F. Smull, 2007: Monsoon convection in the Himalayan region as seen by the TRMM precipitation radar. *Quart. J. Roy. Meteor. Soc.*, **133**, 1389-1411.
- Houze, R.A., Jr., S.S. Chen, B.F. Smull, W.-C. Lee, and M.M. Bell, 2007: Hurricane intensity and eyewall replacement. *Science*, **315**, 1235-1239.
- 2008 Colle, B.A., Y. Lin, S. Medina and B.F. Smull, 2008: Orographic modification of convection and flow kinematics by the Oregon coastal range and Cascades during IMPROVE-2. *Mon. Wea. Rev.*, **136**, 3894-3916.
- 2009 Fierro, A.O., J.M. Simpson, M.A. LeMone, J.M. Straka and B.F. Smull, 2009: On how hot towers fuel the Hadley cell: An observational and modeling study of line-organized convection in the equatorial trough from TOGA COARE. *J. Atmos. Sci.*, **66**, (In Press).