

Curriculum Vitae

Jielun Sun

Contact Information

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Educational Information

Ph.D.	atmospheric science	Yale University	1991
M. Phil.	atmospheric science	Yale University	1986
B. S.	meteorology	Peking Univ. (Beijing Univ.)	1983

Work History

Apr. 2018 -	Senior Research Scientist	Northwest Research Associates
Sept. 2018-Oct. 2021	Program Director	National Science Foundation
Jan. 2010 - Dec. 2018	Graduate faculty	Univ. of Colorado at Boulder.
Jul. 2005 - Aug. 2018	Scientist III	NCAR
Jun. 2001 - Jun. 2005	Scientist II	NCAR
Oct.1998 - May 2001	Project Scientist II	NCAR
Aug. - Oct. 1997	Visiting Scientist	Risø National Lab., Denmark
Jun. 1995 - Jul. 2003	Research Associate	Univ. of Colorado
Sept. 1995 - Sept. 1998	Long-Term Visitor	NCAR
Oct. - Dec. 1994	Visiting Scientist	NCAR
Oct. 1994 - May 1995	Research Assistant Prof.	Saint Louis Univ.
Oct. 1994 - Oct. 1998	Research Assistant Prof.	Oregon State Univ.
Oct. 1991 - Sept. 1994	Postdoctoral Research Associate	Oregon State Univ.

Editorships

Journal of Meteorological Research, 2017-
Associate Editor, Journal of Applied Meteorology and Climatology, 2004-2010
Editorial Board of Boundary-Layer Meteorology, 2004-2014

Awards and Honors

- The 2021 NSF Director's Award for Superior Accomplishment to the Navigating the New Arctic program
- UCAR Outstanding Publication Nominee from NCAR/MMM, 2014
- UCAR Outstanding Accomplishment Award for Mentoring, 2009

Across NSF Working Group

-NSF Navigating the New Arctic (NNA) with the budget of \$30 M / year

US Government Interagency Working Group

-U.S. Global Change Research Program (USGCRP), Integrated Water Cycle Working Group

External Services at NCAR

-Planning Committee, Workshop on The Future of Boundary Layer Observations, the National Academies of Sciences, Engineering, and Medicine, 2017- 2018

-International Advisory Committee, Institute of Urban Meteorology, Beijing, China, 2014-

-The Observing Facilities Assessment Panel (OFAP), 2015-2017

-DOE Panel Review, Apr. 2014

-Biosphere 2 Advisory Board, Univ. of Arizona, 30 Nov., 2012

-Advisory Group, Fundamental Instrument Unit, National Ecological Observatory Network (NEON), 2009-2017

-American Meteorological Society Boundary Layers and Turbulence Committee, 1998-2000

Contribution to Advanced Education

-Ph.D. Thesis Committee, Eric Russel, Dept. of Civil and Environmental Engineering, Washington State Univ., 2014-2016

-Ph.D. Thesis Committee, Sean Burns, Dept. of Geography, Univ. of Colorado, 2013-

-Ph.D. Research Advisor, Thesis Committee, Mireia Udina, Univ. of Barcelona, Spain, 2012-2015

-Ph.D. Research Advisor, Guoyin Wang, Lanzhou Univ., China, 2010-2012

-Ph.D. Research Advisor, Thesis Committee, Sherri Heck, Univ. of Colorado, 2010-2012

-A UCAR SOARS Science Mentor, Robert Cancel III, Jackson State Univ., 2004

-Master Research Advisor, Gerrit Oosterhuis, Dept. Meteorology and Air Quality, Wageningen Univ., the Netherlands, 2000

Contribution to K-12 Education

Science Advisory Board, Cool Girls Science and Art Club, 2010-2011

NCAR Committees and Services

-The NCAR Library Advisory Board, 2015-2017

-Co-Chair of Goal 8 for the UCAR Strategic Plan, 2014

-NCAR/EOL CentNet Committee, 2012-2018

-The NCAR Women Organizing Research and Leading Science (WORLS), 2010-2014

-NCAR Diversity Committee Chair, 2010-2011

-NCAR Asian Circle, 2009-2014

-NCAR Diversity Committee, 2009-2011

-Seminar Coordinator, MMM Division, NCAR, 2009-2012

-UCAR Distinguished Accomplishment Awards Committee, 2006-2008

-A selected member for the NCAR Leadership Academy, 2006

-Chair/Co-Chair, English as a Second Language (ESL), UCAR, 2005-2017

-Executive Committee of NCAR Biogeoscience Initiative, 2003-2009

-Co-Chair, Junior Faculty Forum on Future Science Directions: Interactions between Land Ecosystem and the Atmospheric Hydrological Cycle, NCAR Advanced Study Program and NCAR's Early Career Scientists Assembly (ECSA), 18-20 June 2003

Workshop Committees, Conference Chair

- Organizing Committee Chair, Scientific Committee, the NCAR/GTP Workshop on Wave-Turbulence Interactions in Stable Boundary Layer (WINBAL), 2012.
- Organizing Committee Chair for the NCAR/GTP Workshop on Roughness Sublayers, 2006.
- Co-Chair, CASES-99 Workshop, 2001.
- Co-Chair, the Southern Great Plains Experiment Workshop, 2001
- Program Committee Co-Chair, the 14th AMS Boundary Layers and Turbulence Conference, 2000
- Co-Chair, Special Session-Cooperative Atmosphere-Surface Exchange Study, the 2000 AGU Fall Conference

Field Campaigns

Air-Land Experiments:

- SHINE (Study the Hydrostatic Imbalance NEar the surface), 2023-2025, funded by NSF
- SAVANT (Stable Atmospheric Variability ANd Transport), 2018-2021, funded by NSF.
- FANTASTIC-1 (Forced and Natural Turbulence Allowing Studies of AnIsotropic Conditions), 2018-2021, funded by NSF.
- SCP (Shallow Cold Pool), October-December, 2012, funded by NSF
- ACME-04 and ACME-07 (Airborne Carbon in the Mountains Experiment), 2004, 2007, funded by NSF
- CME-04 (Carbon in the Mountains Experiment) 2004, funded by NSF.
- NIWOT-02 (Niwot-Ridge Experiment), 2002, PI for the multidisciplinary experiment, funded by the NCAR Director Office, NSF.
- CASES-99 (Cooperative Atmosphere-Surface Exchange Study), 1999, funded by NSF and ARO with international participants.
- SGP-97 (Southern Great Plains), 1997, funded by NASA, with international participants.
- Microfronts, March, 1995, funded by NSF
- BOREAS (Boreal Ecosystem-Atmosphere Study), 1994 and 1996, funded by NASA.

Air-Sea Experiments:

- CBLAST-Low (Coupled Boundary Layer Air-Sea Transfer at Low Winds), 2001-2004, funded by ONR
- SHOWEX (Shoaling Wave Experiment), 1998-2001, funded by ONR

Membership in Professional Societies

European Geophysical Union
American Meteorological Society
American Geophysical Union
Sigma Xi
Royal Meteorology Society

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Theses

- B.S. Physical processes for maintaining the meridional and zonal circulation in midlatitude atmosphere. Supervisor: Qiushi Chen
- Ph.D. Tropopause fold investigations: secondary circulations, water vapor and ozone analysis. Supervisor: Ronald Smith

Refereed Journal Publications

- (80) Bhimireddy, S. R., J. Sun, J. Wang, D. A. R. Kristovich, and A. L. Hiscox, 2023: Effect of small-scale topographical variations and fetch from roughness elements on the stable boundary layer turbulence statistics. To appear *Boundary-Layer Meteorol.*
- (79) Sun, J., V. Wulfmeyer, Späth, H. Vömel, W. Brown, and S. Oncley, 2023: Investigation of Hydrostatic Imbalance with Field Observations. To appear in *J. App. Meteor. Clim.*
- (78) Hiscox, A., S. Bhimireddy, J. Wang, D. A. R. Kristovich, J. Sun, E. G. Patton, S. P. Only, and W. O. J. Brown, 2023, Exploring Influences of Shallow Topography in Stable Boundary Layers—the SAVANT Field Campaign. *Bull. Amer. Meteorol. Soc.*, **104(2)**, E520-E541
- (77) Sun, J., William J. Massman, Robert M. Banta, and Sean Burns, 2021, Revisiting the Surface Energy Imbalance. *J. Geo. Res.*, **126**, e2020JD034219, DOI: 10.1029/2020JD034219
- (76) Sun, J., E. Takle, and O. Acevedo, 2020, Understanding Physical Processes Represented by the Monin-Obukhov Bulk Formula for Momentum Transfer. *Boundary-Layer Meteorol.*, **177**, 69-95, DOI:10.1007/s10546-020-00546-5.
- (75) Grisogono, B., J. Sun, D. Belusic, 2020, A Note on MOST and HOST for turbulence parametrization. *Quart. J. Roy. Meteorol. Soc.*, **146 (729)**, 1991-1997, doi: 10.1002/qj.3770
- (74) Yus-Diez, J., M. Udina, M. R. Soler, M. Lathon, E. Nilsson, J. Bech, and J. Sun, 2019, Nocturnal boundary layer turbulence regimes analysis during the BLLAST campaign. *Atmos. Chem. Phys.*, **19**, 9495-9514.
- (73) LeMone, M. A., W. Angevine, C. Bretherton, F. Chen, J. Dudhia, E. Fedorovich, K. B. Katsaros, D. H. Lenschow, L. Mahrt, E. G. Patton, J. Sun, M. Tjernström, and Jeff Weil, 2019, 100 Years of Progress in Boundary-Layer Meteorology. *Meteor. Mon.*, **Chap. 9**, 9.1-9.85. DOI: 10.1175/AMSMONOGRAPHS-D-18-0013.1
- (72) Burns, S. P., J. Sun, D. H. Lenschow, S. P. Oncley, B. B. Stephens, C. Yi, D. E. Anderson, J. Hu, and R. K. Mogeopson, 2019, Correction to: Atmospheric stability effects on wind fields and scalar mixing within and just above a subalpine forest in sloping terrain. *Boundary-Layer Meteorol.*, doi: 10.1007/s10546-019-00436-5
- (71) Sun, J. 2019, Incorporating the work done by vertical density fluxes in both kinetic and thermal energy conservation equations to satisfy total energy conservation conservation. *J. Appl. Meteorol. Clim.*, **58**, 213-230
- (70) Maroneze, Rafael, Otavio C. Acevedo, Felipe D. Costa, Jielun Sun, 2019, Simulating the regime transition of the stable boundary layer using different simplified models. *Boundary-*

Layer Meteorol., **170(2)**, 305–312, doi: 10.1007/s10546-018-0401-3

- (69) Li, J., J. Sun, M. Zhou, Z. Cheng, Q. Li, X. Cao, and J. Zhang, 2018, Observational analysis of dramatic developments of a severe air pollution event in the Beijing area. *Atmos. Chem. Phys.*, **18**, 3919-3935.
- (68) Liang, X., S. Miao, J. Li, R. Bornstein, X. Zhang, Y. Gao, F. Chen, X. Cao, Z. Cheng, C. Clements, W. Debberdt, D. Ding, J. J. Dou, J. X. Dou, Y. Dou, C. S. B. Grimmond, J. E. Gonzalez-Cruz, J. He, M. Huang, X. Huang, S. Ju, Q. Li, D. Niyogi, J. Quan, J. Sun, J. Z. Sun, M. Yu, J. Zhang, Y. Zhang, X. Zhao, Z. Zheng, M. Zhou: 2017, SURF: Understanding and Predicting Urban Convection and Haze. *Bull. Amer. Meteorol. Soc.*, **99**, 1391-1413
- (67) Sun, J., and J. R. French, 2016, Air-sea interactions in light of new understanding of air-land interactions. *J. Atmos. Sci.*, **73**, 3931-3949, doi: 10.1175/JAS-D-15-0354.1
- (66) Sun, J., D. H. Lenschow, M. A. LeMone, L. Mahrt, 2016, The role of large-coherent-eddy transport in the atmospheric surface layer based on CASES-99 observations. *Boundary-Layer Meteorol.*, **160(1)**, 83-111, doi: 10.1007/s10546-016-0134-0
- (65) Mahrt, L., E. L. Andreas, J. B. Edson, and D. Vickers, J. Sun, E. G. Patton, 2016: Coastal zone surface stress with stable stratification. *J. Phys. Oceanog.*, **46**, 95-105.
- (64) Udina, M., J. Sun, B. Kosović, and M. R. Soler 2016: Exploring vertical turbulence structure in neutrally and stably stratified flows using the Weather Research and Forecasting --Large-Eddy Simulation (WRF-LES) model. *Boundary-Layer Meteorol.*, **161**, 355-374, doi:10.1007/s10546-016-0171-8
- (63) Sun, J., C. J. Nappo, L. Mahrt, D. Belušić, B. Grisogono, D. R. Stauffer, M. Pulido, C. Staquet, Q. Jiang, A. Pouquet, C. Yagüe, B. Galperin, R. B. Smith, J. J. Finnigan, S. D. Mayor, G. Svensson, A. A. Grachev, and W. D. Neff, 2015, Review of wave-turbulence interactions in the stable atmospheric boundary layer. *Rev. Geophysics*, **53(3)**, 956-993, doi:10.1002/2015RG000487.
- (62) Lee, X., Z. Gao, C. Zhang, F. Chen, Y. Hu, W. Jiang, S. Liu, L. Lu, J. Sun, J. Wang, Z. Zeng, Q. Zhang, M. Zhao, M. Zhou, 2015: Meeting Summary: Priorities for boundary-Layer meteorology research in China. *Bull. Amer. Meteorol. Soc.*, doi: 10.1175/BAMS-D-14-00278.1
- (61) Sun, J., L. Mahrt, C. Nappo, and L. H. Lenschow, 2015: Wind and temperature oscillations generated by wave-turbulence interactions in the stably stratified boundary Layer. *J. Atmos. Sci.*, **72(4)**, 1484-1503.
- (60) Mahrt, L., J. Sun, and D. Stauffer, 2015: Dependence of turbulent velocities on wind speed and stratification. *Boundary-Layer Meteorol.*, **155(1)**, 55-71.
- (59) Mahrt, L., S. Oncley, J. Sun, and T. Horst, 2014: Transient cold air drainage down a shallow valley. *J. Atmos. Sci.*, **71**, 2534-2544.
- (58) Nappo, C., J. Sun, L. Mahrt, and D. Belušić, 2014: Determining wave-turbulence interactions in the stable boundary layer. *Bull. Amer. Meteorol. Soc.*, **95**, ES11-ES13, doi 10.1175/BAMS-D-12-00235.1.

- (57) Sun, J., D. H. Lenschow, L. Mahrt, C. Nappo, 2013: The relationships among wind, horizontal pressure gradient, and turbulent momentum transport during CASES-99. *J. Atmos. Sci.*, **70**, 3397-3414, doi: 101175/JAS-D-12-0233.1.
- (56) Van de Wiel, B. J. H., A. F. Moene, H. J. J. Jonker, P. Baas, S. Basu, J. M. M. Donda, J. Sun, and A. A. M. Holtslag, 2012: The minimum wind speed for sustainable turbulence in the nocturnal boundary layer. *J. Atmos. Sci.*, **69**, 3116-3127.
- (55) Chougule, A., J. Mann, M. Kelly, J. Sun, D. H. Lenschow, and E. G. Patton, 2012: Vertical cross-spectral phases in neutral atmospheric flow. *J. Turbulence*, **13 (36)**, 1-13.
- (54) Sun, J., L. Mahrt, R. M. Banta, and Y. L. Pichugina, 2012: Turbulence regimes and turbulence intermittency in the stable boundary layer during CASES-99. *J. Atmos. Sci.*, **69**, 338-351.
- (53) Sun, J., 2011: Vertical variations of mixing lengths under neutral and stable conditions during CASES-99. *J. Appl. Meteorol. Clim.*, **50**, 2030-2041.
- (52) Burns, S. P., J. Sun, D. H. Lenschow, S. P. Oncley, B. B. Stephens, C. Yi, D. E. Anderson, J. Hu, and R. K. Mogeopnson, 2011: Atmospheric stability effects on wind fields and scalar mixing within and just above a subalpine forest in sloping terrain. *Boundary-Layer Meteorol.*, **138**, 231-262.
- (51) Patton, E. G., T. W. Horst, P. P. Sullivan, D. H. Lenschow, S. P. Oncley, W. O. J. Brown, S. P. Burns, A. B. Guenther, A. Held, T. Karl, S. D. Mayor, L. V. Rizzo, M. Spuler, J. Sun, A. A. Turnipseed, E. J. Allwine, S. L. Edburg, B. K. Lamb, R. Avissar, R. Calhoun, J. Kleissl, W. J. Massman, K. T. Paw U, and J. C. Weil, 2011: The canopy horizontal array turbulence study (CHATS). *Bull. Amer. Meteorol. Soc.*, **92(5)**, 593-611.
- (50) Sun, J., S. P. Oncley, S. Burns, B. B. Stephens, D. H. Lenschow, T. Campos, R. K. Monson, D. S. Schimel, W. J. Sacks, S. F. J. De Wekker, C.-T. Lai, B. Lamb, D. Ojima, P. Z. Ellsworth, L. S. L. Sternberg, S. Zhong, C. Clements, J. P. Moore, D. E. Anderson, A. S. Watts, J. Hu, M. Tschudi, S. Aulenbach, E. Allwine, and T. Coons, 2010: A Multi-scale and multi-disciplinary investigation of ecosystem-atmosphere CO₂ exchange over mountains. *Bull. Amer. Meteorol. Soc.*, **91(2)**, 209-230.
- (49) Oncley, S. P., K. Schwenz, S. P. Burns, J. Sun, and R. K. Monson, 2009: A cable-borne platform for atmospheric measurements along transects (TRAM). *J. Atmos. Oceanic Tech.*, **26**, 462-473.
- (48) Burns, S. P., A. C. Delany, J. Sun, B. B. Stephens, S. P. Oncley, G. D. Maclean, S. R. Semmer, J. Schröter, and J. Ruppert, 2009: An evaluation of calibration techniques for in situ carbon dioxide measurements using a programmable portable trace-gas measuring system. *J. Atmos. Oceanic Tech.*, **26**, 291-316.
- (47) Schaeffer, S. M., D. E. Anderson, S. P. Burns, R. K. Monson, J. Sun, and D. R. Bowling, 2008: Canopy structure and atmospheric flows in relation to the $\delta^{13}\text{C}$ of respired CO₂ in a subalpine coniferous forest. *Agric. Forest. Meteorol.*, **148**, 592-605.
- (46) Lenschow, D., and J. Sun, 2007: The spectral composition of fluxes and variances over land and sea out to the mesoscale. *Boundary-Layer Meteorol.*, **125**, 63-84.

- (45) Edson, J., T. Crawford, J. Crescenti, T. Farrar, N. Frew, G. Gerbi, C. Helmis, T. Hristov, D. Khelif, A. Jessup, H. Jonsson, M. Li, L. Mahrt, W. McGillis, A. Plueddemann, L. Shen, E. Skyllingstad, T. Stanton, P. Sullivan, J. Sun, H. Trowbridge, D. Vickers, S. Wang, Q. Wang, R. Weller, J. Wilkin, D. Yu, and C. Zappa, 2007: The Coupled Boundary Layers and Air-Sea Transfer Experiment in Low Winds (CBLAST-LOW). *Bull. Amer. Meteorol. Soc.*, **88**, 341-356.
- (44) Sun, J., 2007: Tilt corrections over complex terrain and its implication for CO₂ transport. *Boundary-Layer Meteorol.*, **124**, 143-159.
- (43) Banta, R. M., L. Mahrt, D. Vickers, J. Sun, B. B. Balsley, Y. Pichugina, and E. J. Williams, 2007: The very stable boundary layer on nights with weak low-level jets. *J. Atmos. Sci.*, **64**, 3068-3090.
- (42) Sun, J. S. P. Burns, A. C. Delany, S. P. Oncley, A. A. Turnipseed, B. B. Stephens, D. H. Lenschow, M. A. LeMone, R. K. Monson, and D. E. Anderson, 2007: CO₂ transport over complex terrain. *Agric. Forest. Meteorol.*, **145**, 1-21.
- (41) Wang, Y.-C., J. Li, F. Chen, D. H. Lenschow, J. Sun, D. Niyogi, K. Lau, W. Jiang, X. Deng, and D. Wu, 2005: Challenge and opportunities in urban meteorology research and forecast. *Science Foundation in China (Bulletin of National Natural Science Foundation)*, **13(1)**, 23-30.
- (40) Barth, M., J. P. McFadden, J. Sun, C. Wiedinmyer, P. Chuang, D. Collins, R. Griffin, M. Hanningan, T. Karl, S.-W. Kim, S. Lasher-Trapp, S. Levis, M. Litvak, N. Mahowald, K. Moore, S. Nandi, E. Nemitz, A. Nenes, M. Potosnak, T. Raymond, J. Smith, C. Still, and C. Stroud, 2005: Coupling between land ecosystems and the atmospheric hydrologic cycle through biogenic aerosol pathways, *Bull. Amer. Meteorol. Soc.*, **86(12)**, 1738-1742.
- (39) Sun, J., S. P. Burns, D. Vandemark, M. A. Donelan, L. Mahrt, T. L. Crawford, G. H. Crescenti, and J. R. French, 2005: Measurement of directional wave spectra using aircraft laser altimeters. *J. Atmos. Oceanic Tech.*, **22(7)**, 869-885.
- (38) Vandemark, D., B. Chapron, J. Sun, G. H. Crescenti, and H. Graber, 2004: Ocean wave slope observations using Radar backscatter and laser altimeters. *J. Phys. Oceanog.*, **34**, 2825-2842.
- (37) Sun, J., D. H. Lenschow, S. P. Burns, R. M. Banta, R. K. Newsom, R. Coulter, S. Frasier, T. Ince, C. Nappo, B. Balsley, M. Jensen, L. Mahrt, D. Miller, and B. Skelly, 2004: Atmospheric disturbances that generate intermittent turbulence in nocturnal boundary layers. *Boundary-Layer Meteorol.*, **110**, 255-279.
- (36) Burns, S. P., J. Sun, A. C. Delany, S. R. Semmer, S. P. Oncley, and T. W. Horst, 2003: A field intercomparison technique to improve the relative accuracy of longwave radiation measurements and an evaluation of CASES-99 pyrgeometer data quality. *J. Atmos. Oceanic Tech.*, **20**, 348-361.
- (35) Sun, J., S. P. Burns, A. C. Delany, S. P. Oncley, T. W. Horst, and D. H. Lenschow, 2003: Heat balance in nocturnal boundary layers during CASES-99. *J. Appl. Meteorol.*, **42**, 1649-1666.
- (34) Sun, J., S. P. Burns, D. H. Lenschow, R. Banta, R. Newsom, R. Coulter, S. Frasier, T. Ince,

- C. Nappo, J. Cuxart, W. Blumen, X. Lee, and X.-Z. Hu, 2002: Intermittent turbulence associated with a density current passage in the stable boundary layer. *Boundary-Layer Meteorol.*, **105**, 199-219.
- (33) Poulos, G. S., W. Blumen, D. C. Fritts, J. K. Lundquist, J. Sun, S. P. Burns, C. Nappo, R. Banta, R. Newsom, J. Cuxart, E. Terradellas, B. Balsley, and M. Jensen, 2002: CASES-99---A comprehensive investigation of the stable nocturnal boundary layer. *Bull. Amer. Meteorol. Soc.*, **83**, 555-581.
- (32) Mahrt, L., D. Vickers, J. Sun, T. L. Crawford, G. Crescenti, and P. Frederickson, 2001: Surface stress in offshore flow and quasi-frictional decoupling. *J. Geo. Res.*, **106**, 20629-20639.
- (31) Sun, J., D. Vandemark, L. Mahrt, D. Vicker, T. Crawford, and C. Vogel, 2001: Momentum transfer over the coastal zone. *J. Geo. Res.*, **106**, 12437-12448.
- (30) Mahrt, L., D. Vickers, and J. Sun, 2001: Spatial variations of surface moisture flux from aircraft data. *Adv. Water Resour.*, **24**, 1133-1141.
- (29) Blumen, W., R. Banta, S. P. Burns, D. C. Fritts, R. Newsom, G. S. Poulos, and J. Sun, 2001: Turbulence statistics of a Kelvin-Helmholtz billow event observed in the night-time boundary layer during the Cooperative Atmosphere-Surface Exchange Study field program. *Dyn. Atmos. Oceans*, **34**, 189-204.
- (28) Mahrt, L., D. Vickers, R. Nakamura, M. R. Soler, J. Sun, S. Burns, and D. H. Lenschow, 2001: Shallow drainage flows. *Boundary-Layer Meteorol.*, **101**, 243-260.
- (27) Mahrt, L., D. Vickers, J. Sun, and J. H. McCaughey, 2001: Calculation of area-averaged fluxes: Application to BOREAS. *J. Appl. Meteorol.*, **40**, 915-920.
- (26) Vickers, D., L. Mahrt, J. Sun, and T. Crawford, 2001: Structure of offshore flow. *Mon. Wes. Rev.*, **129**, 1251-1258.
- (25) Vandemark, D., P. D. Mourad, S. A. Bailey, T. L. Crawford, C. A. Vogel, J. Sun, and B. Chapron, 2001: Measured changes in ocean surface roughness due to atmospheric boundary layer rolls. *J. Geo. Res.*, **106**, 4639-4654.
- (24) Mahrt, L., D. Vickers, J. Sun, N.O. Jensen, H. Jørgensen, E. Pardyjak, and H. Fernando, 2001: Determination of the surface drag coefficient. *Boundary-Layer Meteorol.*, **99**, 249-276.
- (23) Sun, J. 1999: Diurnal variations of thermal roughness height over a grassland. *Boundary-Layer Meteorol.*, **92**, 407-427.
- (22) Sun, J., W. Massman, and D. Grantz, 1999: Aerodynamic variables in the bulk formulation of turbulent fluxes. *Boundary-Layer Meteorol.*, **91**, 109-125.
- (21) Sun, J., and W. Massman, 1999: Ozone transport during the California Ozone Deposition Experiment. *J. Geo. Res.*, **104**, 11939-11948.
- (20) Howell, J. F., and J. Sun, 1999: Surface-layer fluxes in stable conditions. *Boundary-Layer Meteorol.*, **90**, 495-520.

- (19) Mahrt, L., K. Kotwica, J. Sun, J. I. MacPherson, and R. L. Desjardins, 1998: Estimation of area-averaged moisture flux. *Quart. J. Roy. Meteorol. Soc.*, **124**, 2793-2815.
- (18) Mahrt, L., J. Sun, W. Blumen, T. Delany, and S. Oncley, 1998: Nocturnal boundary-layer regimes. *Boundary-Layer Meteorol.*, **88**, 255-278.
- (17) Mahrt, L., D. Vickers, J. Edson, J. Sun, J. Hojstrup, J. Hare, and J. M. Wilczak, 1998: Heat flux in coastal zone. *Boundary-Layer Meteorol.*, **86**, 421-446.
- (16) Sun, J., R. Desjardins, L. Mahrt, and J. I. MacPherson, 1998: Transport of carbon dioxide, water vapor, and ozone by turbulence and local circulations. *J. Geo. Res.*, **103**, 25873-25885.
- (15) Mahrt, L., J. Sun, J. I. MacPherson, N. O. Jensen, and R. L. Desjardins, 1997: Formulation of surface heat flux: Application to BOREAS. *J. Geo. Res.*, **102**, 29641-29649.
- (14) Sun, J., D. H. Lenschow, L. Mahrt, T. L. Crawford, K.J. Davis, S. P. Oncley, J. I. MacPherson, Q. Wang, R. J. Dobosy, and R. L. Desjardins, 1997: Lake-induced atmospheric circulations during BOREAS. *J. Geo. Res.*, **102**, 29155-29166.
- (13) Sun, J., J. F. Howell, S. K. Esbensen, L. Mahrt, C. M. Greb, R. Grossman, and M. A. LeMone, 1996: Scale dependence of air-sea fluxes over the western equatorial pacific. *J. Atmos. Sci.*, **53**, 2997-3012.
- (12) Sun, J., and L. Mahrt, 1995: Relationship of the heat flux to microscale temperature variations: Application to BOREAS. *Boundary-Layer Meteorol.*, **76**, 291-301.
- (11) Mahrt, L., D. H. Lenschow, J. Sun, J. C. Weil, J. I. MacPherson, and R. L. Desjardins, 1995: Ozone fluxes over a patchy cultivated surface. *J. Geo. Res.*, **100**, 23125-23131.
- (10) Mahrt, L., and J. Sun, 1995: Dependence of surface exchange coefficients on averaging scale and grid size. *Quart. J. Roy. Meteorol. Soc.*, **121**, 1835-1852.
- (9) Sun, J., S. K. Esbensen, and L. Mahrt, 1995: Estimation of surface heat flux. *J. Atmos. Sci.*, **52**, 3162-3171.
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- (7) Sun, J., and L. Mahrt, 1995: Determination of surface fluxes from the surface radiative temperature. *J. Atmos. Sci.*, **52**, 1096-1106.
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Book Chapters

Sun, J., and S. F. J. De Wekker, 2011: Atmospheric Carbon Dioxide Transport over Mountainous Terrain. Chapter 5, *Mountain Ecosystems: Dynamics, Management and Conservation*, Ed. by Kevin E. Richards, Nova Science Publishers, Inc. pp. 101-121, ISBN 978-1-61209-306-2. Open Access: https://www.novapublishers.com/catalog/product_info.php?products_id=30365

Internally Refereed Publications

Barth, M. C., J. P. McFadden, J. Sun, and C. Wiedinmyer, 2006: UCAR/NCAR Junior Faculty Forum on Future Scientific Directions. *NCAR Technical Note, TN-467+PROC*, July, 2006, 41 pp.

Invited Talks

- (32) Sun, J., E. Takle, and O. Acevedo, 2019, Revisiting Monin-Obukhov Similarity Theory. 2019 EGU General Assembly, AS2.2 Atmospheric Boundary Layer: From Basic Turbulence Studies to Integrated Applications
- (31) Sun, J. 2017, Energy conservation. Invited seminar at Department of Geophysics, Faculty of Science, 3 April, University of Zagreb, Zagreb, Croatia.
- (30) Sun, J. 2017, Energy conservation, *Workshop on the Atmospheric Stable Boundary Layer*, 27-31 March 2017, Delft, the Netherlands.
- (29) Sun, J., 2017, Energy conservation in understanding atmospheric thermodynamic structures and wave-turbulence interactions. *The 10th International Workshop on Nonlinear Waves and Chaos (NWCW17)*, 20-24 March 2017, Lo Jolla, CA.
- (28) Sun, J., D. H. Lenschow, M. A. LeMone, L. Mahrt, 2015, the role of large-coherent-eddy transport in the atmospheric surface layer based on CASES-99 observations. 9 December, 2015, University of Barcelona, Spain.
- (27) Sun, J., D. H. Lenschow, M. A. LeMone, L. Mahrt, 2015, The role of large-coherent-eddy transport in the atmospheric surface layer based on CASES-99 observations. 7 December, 2015, Universidad Complutense de Madrid, Spain

- (26) Sun, J., D. H. Lenschow, M. A. LeMone, L. Mahrt, 2015, The role of large-coherent-eddy transport in the atmospheric surface layer based on CASES-99 observations. *9th Brazilian Micrometeorology Workshop*, 11-13 November, 2015, Santa Maria, Brazil.
- (25) Sun, J. 2015: Field experiments and data archive, *Workshop for the Beijing Urban Meteorology Field Experiment*, 21-23 October, 2015, Beijing, China
- (24) Sun, J., 2014: Observed features of flow in the atmospheric boundary layer. *11th Symposium for Strategic Development of Boundary Layer Research*, 28-29 November, 2014, Nanjing, China.
- (23) Sun, J., D. H. Lenschow, L. Mahrt, and C. Nappo 2014: The relationships between wind, horizontal pressure gradient, and turbulent momentum transport during CASES-99. 19 March 2014, Department of Atmospheric and Oceanic Sciences, Peking University, Beijing, China
- (22) Sun, J., M. Zhou, and S. Zhong, 2014: Some fundamental issues in Urban Meteorology and Field Campaign Strategies. 13-14 March 2014, Workshop on Urban Rainfall and Air Quality, Institute of Urban Meteorology, Beijing, China.
- (21) Sun, J. 2013: The relationships between wind, horizontal pressure gradient, and turbulent momentum transport during CASES-99. 4 April 2013, Atmospheric Sciences, University of Utah.
- (20) Sun, J., 2012: Turbulence regimes and surface turbulence parameterization in neutral to stable boundary layer during CASES-99. 29 November 2012, Department of Geography, Michigan State University.
- (19) Sun, J. 2012: Interactions between the Atmosphere and Ecosystem over Complex Terrain---A Journey from Candle Lake to the Rocky Mountains of Colorado. *The American Meteorological Society, First Conference on Atmospheric Biogeosciences*, 29 May-1 June 2012, Boston MA.
- (18) Sun, J. 2011: Challenging issues in atmospheric boundary layers. *The American Geophysical Union Fall Conference*, 9 December 2011, San Francisco, California.
- (17) Sun, J. 2011: The role of atmospheric boundary layer dynamics in the environmental sciences. Department of Civil and Environmental Engineering, Environmental and Water Resources Engineering, Washington State University, Pullman, WA, 10 October 2011.
- (16) Sun, J., 2011: Vertical variations of mixing lengths under neutral and stable conditions during CASES-99. Danish Meteorological Institute, 29 March 2011, Copenhagen, Denmark.
- (15) Sun, J. 2010: New developments in atmospheric boundary layer observations. Institute of Urban Meteorology, Beijing, China, December 2010.
- (14) Sun, J., 2010: Atmospheric carbon dioxide transport over mountain terrain. *The American Geophysical Union Fall Conference*, San Francisco, CA, Dec. 2010.
- (13) Sun, J. 2010: Nocturnal stable boundary layer parameterization. *Institute of Atmospheric Physics, Chinese Academy of Sciences*, June, 2010, Beijing, China.

- (12) Sun, J. 2008: CO₂ transport over complex terrain. *Proceedings of the International Symposium on CO₂ Flux Monitoring Technology*. December 16-18, 2008, The Experimental Forest, National Taiwan University, Taiwan.
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- (10) Sun, J. 2007: Trace gas transport in nocturnal boundary layers. *Expert workshop on the relevance of surface and boundary layer processes for the exchanges of reactive- and greenhouse gases*, 9-12 October 2007. Wageningen University, The Netherlands.
- (9) Sun, J. 2007: Carbon in the mountain. *NCAR ASP Summer Colloquium*, Boulder, CO, 4-15 June 2007.
- (8) Sun, J. 2006: Turbulence in Stable Boundary Layers. *An invitation-only workshop on Stable Boundary Layers, November 2006, Sedona, Arizona, USA*.
- (7) Sun, J. 2004: Current issues in urban boundary layer meteorology. *The Institute of Urban Meteorology, October 2004, Beijing, China*.
- (6) Sun, J. 2003: Boundary Layer Meteorology. *The National Academy of Science Committee on Weather Research for Surface Transportation: The Roadway Environment*, June 23-25, 2003, Boulder, Colorado, USA.
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Conference Presentations (abstracts, conference preprints)

- (92) Sun, J. 2023: Discrepancies between boundary layer observations and the traditional thermal energy balance. 2023 EGU General Assembly, 23-28 April, 2023, Vienna, Austria.
- (91) Sun, J., William J. Massman, Robert M. Banta, and Sean Burns, 2023, Revisiting the

Surface Energy Imbalance. 24th Symposium on Boundary Layers and Turbulence, 8-12 January, 2023, Denver, CO

- (90) Sun, J. 2022, Non-hydrostatic Energy Transfer in Linking Kinetic and Thermal Energy Changes. AGU Fall Meeting, 12-16 December 2022, Chicago, IL.
- (89) Sun, J., 2020, Progresses in understanding Monin-Obukhov similarity theory, turbulence parameterization, and turbulence energetics. *100th American Meteorological Society Annual Meeting*, 12-16 January 2020, Boston, MA.
- (88) Li, J., J. Sun, M. Zhou, Z. Cheng, Q. Li, X. Cao, J. Zhang, 2017, Observational analyses of dramatic developments of a severe air pollution event in the Beijing area. *AGU Fall Meeting* 11-15 December 2017, New Orleans, LA.
- (87) Sun, J., Z. Cheng, J. Li, J. Dou, X. Cao, J. Zhang, and M. Zhou, 2017, Urban HOST during SURF-15. *American Meteorological Society Annual Meeting*, 23-27 January 2017, Seattle, Washington.
- (86) Rajewski, Daniel, Eugene s. Takle, J. Sun, S. Zilintinkevich, M. Nelson, S. Irvin, R. Doorenbos, 2016, Measurements of Spatial and Temporal Characteristics of Turbulence Outside and Within a Wind Farm from a Network of Surface Flux Stations and a Tall Tower Network, *the Fall American Geophysical Union Meeting*, 2016.
- (85) Sun, J., and J. French 2016: Air-sea interactions in light of new understanding of air-land interactions. *20th Conference on Air-Sea Interactions, American Meteorological Society*, 15-19 August 2016, Madison, Wisconsin, USA.
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- (72) Sun, J. 2013: What do we need to know about monitoring the atmosphere-ecosystem carbon dioxide exchange? ---from a micrometeorologist's perspective. *9th International Carbon Dioxide Conference, 3-7 June 2013, Beijing, China.*
- (71) Burns, S.P., J. Sun, D. H. Lenschow, S.P. Oncley, and P.D. Blanken, 2012: Gravity waves within and above a subalpine forest in complex terrain. *20th Symposium on Boundary Layer and Turbulence Conference, American Meteorological Society, 9-13 July 2012, Boston, Massachusetts, USA.*
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- (65) Oncley, S., K. Schwenz, S. Burns, J. Sun, and R. Monson, 2009: An investigation of nocturnal drainage of carbon dioxide in a montane forest using a new TRAM system. *8th International Carbon Dioxide Conference (ICDC8)*, 13-19 September 2009, Jena, Germany.
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- (58) Sun, J., S. Burns, J. Edson, D. Khelif, L. Mahrt, D. Vickers, and T. Hristov, 2006: Contributions of swell to air-sea interactions under weak wind conditions. *27th Hurricanes and Tropical Meteorology*, 24-28 April 2006, Monterey, California, USA, American Meteorological Society.
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- (49) Sun, J., S. P. Burns, R. M. Banta, and R. L. Coulter, 2004: Turbulence intermittency and nocturnal disturbances in CASES-99. *16th Symposium on Boundary Layers and Turbulence, 9-13 August 2004, Portland, Maine, USA, American Meteorological Society.*
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