LISA S. DARBY
Meteorologist
NOAA/Earth System Research Laboratory/Physical Sciences Division
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PROFESSIONAL EXPERIENCE:
1990 - Present
Meteorologist
National Oceanic and Atmospheric Administration

Hydrometeorology Observations and Processes Team
2014 – Present

- Current work
    - Evaluate HRRR and RAP winter forecasts of precipitation, integrated water vapor, and winds at PSD Integrated Water Vapor Flux stations
    - Analysis for a Front Range Air Quality (FRAQ) case involving the transport of ozone in complex terrain
    - Analysis of mesoscale meteorology in the Columbia River Basin
- Hydrometeorology Testbed (HMT) Coordinator for PSD (2017 – 2019); hosted and led the planning for the NOAA Testbed and Proving Grounds Annual Meeting (2019)
- Founding member of the organizing committee for the updated PSD Seminar Series (2019)
- One of the originators and organizers of the NOAA OAR/NWS Shark Tank events (2016 – 2018)
- Onboard scientist for NOAA WP-3D CalWater 2015 research flights (winter 2015) and for NOAA G-IV El Niño Rapid Response (ENRR) research flights (winter 2016)

National Integrated Drought Information System (NIDIS)
2008 - 2014

- Drought Early Warning Information System Development
    - Development of the Carolinas Coastal Ecosystems Drought Early Warning Information System (DEWS), in collaboration with the Carolinas RISA
    - Development of the Apalachicola-Chattahoochee-Flint (ACF) River Basin DEWS
- Stakeholder engagement: Program and Partnership Building, Communications
    - Coordinate, initiate, and facilitate the integration of federal, academic, state, and local agency partners into NIDIS activities
    - Develop and produce national and regional drought products
- Intergovernmental Panel on Climate Change (IPCC) Volunteer Chapter Scientist
  Chapter 15: Adaptation Planning and Implementation

International Arctic Systems for Observing the Atmosphere (IASOA)
2008 - 2010

- As part of an International Polar Year project, promoted and facilitated pan-Arctic research across an international network of Arctic atmospheric observatories
- Developed and managed content for the project web site, www.iasoa.org

Lidar Remote Sensing of the Atmosphere – Mesoscale Meteorological Research
1990 – 2008

- Scientific analysis of Doppler lidar scan data and supporting meteorological data
- Author or co-author of 30 peer-reviewed publications
- Developed scientific objectives and Doppler lidar scanning strategies; performed logistics and field work for more than 15 Doppler lidar deployments, both domestic and international (including TexAQS I and II, NEAQS ’02 and ’04, VTMX, MAP, and SOS)

- Forecasting, ground support, and weather briefing preparation for airborne ozone lidar research flights (including TexAQS I and II, NEAQS ’02 and ’04)

EDUCATION:

2001, M.S., Atmospheric Science, Colorado State University, Fort Collins, CO. 80523
1990, B.S., Meteorology, Metropolitan State University of Denver, Denver, CO. 80217
1982, B.M., Music Therapy, Florida State University, Tallahassee, FL. 32306

SCIENTIFIC LEADERSHIP & COMMITTEES:

- NOAA/PSD Seminar Committee 2019
- NOAA/PSD Workplace Advisory Committee – 2017 - 2019
- Hydrometeorology Testbed Coordinator, 2017 - 2019
- NOAA Central Region Team, Member, 2013 – 2019
- 10th Annual NOAA Testbeds and Proving Grounds annual meeting – planning committee lead (2019)
- AMS History Committee, Member, 2016 - 2019
- Subject Matter Expert for the Rockefeller Foundation’s National Disaster Resilience Competition Capacity Building Initiative, Denver Academy, July 2015
- AMS Information Statement on Drought, co-author, 2013
- National Hydrologic Warning Council, Session co-convener and moderator: “Drought Monitoring and Early Warning,” 2011
- NIDIS/NDMC, Session chair, Building a Sustainable Network of Drought Communities Workshop, “Integrating Planning Efforts,” 2011
- UCOWR, Session convener and moderator, “Drought Planning,” 2011
- NIDIS Engaging Preparedness Communities Working Group, Member, 2011 – present
- International Polar Year (IPY) Oslo Science Conference, Session co-convener, “Land-Based Atmospheric Arctic Observatory Networks,” 2010
- AMS Mountain Meteorology Committee, Member, 2004 - 2010
- Atmospheric Science Collaborations and Enriching NeTworks (ASCENT), invited speaker and mentor, 2009
- AON Principle Investigator science meeting planning committee, 2009
- NOAA Leadership Seminar, by invitation only, 2009
- AMS 13th Conference on Mountain Meteorology, Conference co-chair, 2008
- AGU, Session co-convener and co-chair, “Cooperative Studies Incorporating Measurements from Land-Based Atmospheric Arctic Observatories,” 2008
- AGU, Session co-chair, **“**Transport and Mixing Affecting Air Quality in Coastal and Complex-Terrain Urban Areas II”, 2007
- Texas Commission on Environmental Quality (TCEQ), Rapid Science Synthesis Team, Chair of Working Group L, “What existing observational databases are suitable for evaluating and further developing meteorological models for application in the HGB area?” 2006
- AMS, Session chair, 12th Conference on Mountain Meteorology, “Mountain Waves and Rotors: Part IV,” 2006

HONORS AND AWARDS:

- *NOAA/DOC Bronze Medal,* 2017. Awarded to the Physical Sciences Division for rapidly implementing and supporting a complex, multi-platform, multiorganizational field campaign to observe a rare, high-intensity El Niño event.
- *OAR Outstanding Paper Award,* 2005. For the paper: T.B. Ryerson, et al., 2003: Effect of petrochemical industrial emissions of reactive alkenes and NOx on tropospheric ozone formation in Houston, Texas. *Journal of Geophysical Research*, **108**, doi:10.1029/ 2002JD003070.
- *NOAA/DOC Group Silver Medal Award for Scientific/Engineering Achievement,* 2004. “For the discovery of a previously unrecognized major factor that causes ozone pollution in the Houston, Texas area.”
- *NOAA/DOC Bronze Medal,* 2003. For facilitating workgroup meetings for NOAA’s Second Survey Feedback Action program.
- *NOAA Employee of the Year Award*, October, 2000. “For her outstanding research contributions, including

exemplary leadership in field programs involving Doppler lidar data and for her critical contributions to the success of several high visibility experiments."

- *Outstanding Scientific Paper Award*, December, 1995. For the paper: Banta, R.M., *et al.*, 1993: Evolution of the Monterey Bay sea-breeze layer as observed by pulsed Doppler lidar. *J. Atmos. Sci.*, **50**, 3959-3982.

PROPOSAL REVIEWS:

- Proposal reviewer for the National Science Foundation; NOAA Sea Grant; NOAA/CPO Coping with Drought, NOAA Hydrometeorology Testbed; NOAA SBIR

PEER REVIEWER FOR PROFESSIONAL JOURNALS:

- Journal of Applied Meteorology and Climatology, Monthly Weather Review, and Atmospheric Environment

COMMUNITY ACTIVITIES:

- Board of Directors, Safehouse Progressive Alliance for Nonviolence (SPAN), serving Boulder and Broomfield, CO counties, 2011 – present. (Board Chair 2015 – 2019.)
- Mediator, landlord and tenant issues, Boulder County, 2006 – 2011

SOFTWARE:

- Interactive Display Language (IDL)
- Model Evaluation Tools (MET)
- Word, Excel, PowerPoint
- Adobe Illustrator and InDesign

REFEREED JOURNAL ARTICLES:

Banta, R.M., Y.L. Pichugina, W.A. Brewer, A. Choukulkar, K.O. Lantz, J. B. Olson, J. Kenyon, H.J.S. Fernando, R. Krishnamurthy, M. J. Stoelinga, J. Sharp, **L.S. Darby**, D.D. Turner, S. Baidar, and S.P. Sandberg, 2019: Characterizing NWP model errors using Doppler-lidar measurements of recurrent regional diurnal flows: Marine-air intrusions into the Columbia-River Basin, *Mon. Wea. Rev.*, In press, DOI: https://doi.org/10.1175/MWR-D-19-0188.1.

Darby, L.S., A.B. White, D. J. Gottas, and T. Coleman, 2019: An evaluation of integrated water vapor, wind, and precipitation forecasts using water vapor flux observations in the Western United States, *Wea. Forecasting,* **34**, 1867-1888, DOI: 10.1175/WAF-D-18-0159.1.

Dole R. M., and Coauthors, 2017: Advancing Science and Services during the 2015-16 El Niño: The NOAA El Niño Rapid Response Field Campaign. *Bull. Amer. Meteor. Soc.*, **99**, 975-1001, doi:10.1175/BAMS-D-16-0219.1.

Conrads, P.A. and **L. S. Darby**, 2016: Development of a Coastal Drought Index using salinity data, *Bull. Amer. Meteor. Soc.*, **98**, 753-766, DOI: http://dx.doi.org/10.1175/BAMS-D-15-00171.1.

Uttal, T., S., and Coauthors, 2016: International Arctic Systems for Observing the Atmosphere: An International Polar Year Legacy Consortium. *Bull. Am. Meteor. Soc.*, **97**, 1033-1056, DOI:10.1175/BAMS-D-14-00145.1.

Mahoney, K., D. L. Jackson, P. Neiman, M. Hughes, **L. Darby**, G. Wick, A. White, E. Sukovich, and R. Cifelli, 2016: Understanding the role of atmospheric rivers in heavy precipitation in the Southeast United States, *Mon. Wea. Rev*., **144**, 1616-1632, doi:10.1175/MWR-D-15-0279.1.

Banta, R.M., C.J. Senff, D.D. Parrish, R.J. Alvarez, A.O. Langford, D.D. Parrish, M.K. Trainer, **L.S. Darby**, R.M. Hardesty, B. Lambeth, J.A. Neuman, W.M. Angevine, J. Nielsen-Gammon, S.P. Sandberg, and A.B. White, 2011: Dependence of daily peak O_3 concentrations near Houston, Texas on environmental factors: Wind speed, temperature, and boundary-layer depth. *Atmos. Environ.*, doi:10.1016/j.atmosenv.2010.09.30.

Gohm, A., G.J. Mayr, **L.S. Darby**, R.M. Banta, 2010: Evolution and structure of a cold front in an Alpine valley as revealed by a Doppler lidar. *Q.J.R. Meteorol. Soc*., 136:962-977, April 2010 Part B.

Langford, A. O., C. J. Senff, R. M. Banta, R. M. Hardesty, R. J. Alvarez, II, S. P. Sandberg, and **L. S. Darby**, 2009: Regional and local background ozone in Houston during Texas Air Quality Study 2006, J. Geophys. Res., 114, D00F12, doi:10.1029/2008JD011687

Darby, L.S., S.A. McKeen, C.J. Senff, A.B. White, R.M. Banta, M.J. Post, W.A. Brewer, R.D. Marchbanks, R.J. Alvarez II, S.E. Peckham, H. Mao, and R. Talbot, 2007: Ozone differences between near-coastal and offshore sites in New England: Role of Meteorology. *J. Geophys. Res.*, 112, D16S91, doi:10.1029/2007JD008446.

White, A.B., **L.S. Darby**, C.J. Senff, C.W. King, R.M. Banta, J. Koermer, J.M. Wilczak, P.J. Neiman, W.M. Angevine, and R. Talbot, 2007: Comparing the impact of meteorological variability on surface ozone during the NEAQS (2002) and ICARTT (2004) field campaigns. *J. Geophys. Res.*, 112, D10S14, doi:10.1029/2006JK007590.

White, A.B., C.J. Senff, A.N. Keane, **L.S. Darby**, I.V. Djalalova, D.C. Ruffieux, D.E. White, B.J. Williams, and A.H. Goldstein, 2006: A wind profiler trajectory tool for air quality transport applications. *J. Geophys. Res.*, **111**, D23S23, doi:10.1029/2006JD007475.

Darby, L.S., and G.S. Poulos, 2006: The Evolution of Lee Wave/Rotor Activity in the Lee of Pike's Peak under the Influence of a Cold Frontal Passage: Implications for Aircraft Safety. *Mon. Wea. Rev.,* **134**, 2857-2876.

Darby, L.S., K.J. Allwine, and R.M. Banta, 2006: Nocturnal low-level jet in a mountain basin complex. Part II. Transport and diffusion of tracer under stable conditions. *J. Appl. Meteor.,* **45**, 740-753.

Darby, L.S., 2005: Cluster analysis of surface winds in Houston, Texas and the impact of wind patterns on ozone. *J. Appl. Meteor.,* **44**, 1788-1806.

Hardesty, R.M., and **L.S. Darby**, 2005: Ground-based and airborne lidar. *Encyclopedia of Hydrologic Sciences,* Malcolm G. Anderson, Ed., Wiley, pp. 697-712.
Banta, R.M., C.J., Senff, J. Nielsen-Gammon, **L.S. Darby**, T.B. Ryerson, R.J. Alvarez, S.P. Sandberg, E.J. Williams, and M. Trainer, 2005: A bad air day in Houston. *Bull. Amer. Meteor. Soc.*, **86**, 657-669.

Mayr, G.J., L. Armi, S. Arnold, R.M. Banta, **L.S. Darby**, D.D. Durran, C. Flamant, S. Gaberšek, A. Gohm, R. Mayr, S. Mobbs, L.B. Nance, I. Vergeiner, J. Vergeiner, and C.D. Whiteman, 2004: Gap flow measurements during the Mesoscale Alpine Programme. *Meteorol. Atmos. Phys*. **86**, 99-119. DOI 10.1007/s00703-003-0022-2.

Banta, R.M., **L.S. Darby**, J.D. Fast, J. O. Pinto, C.D. Whiteman, W.J. Shaw, and B.D. Orr, 2004: Nocturnal low-level jet in a mountain basin complex I: Evolution and implications to other flow features. *J. Appl. Meteor.,* **43**, 1348-1365.

Fast, J.D., and **L.S. Darby**, 2004: An evaluation of mesoscale model predictions of down-valley and canyon flows and their consequences using Doppler lidar measurements during VTMX 2000. *J. Appl. Meteor.,* **43**, 420-436.

Durran, D.R., T. Maric, R.M. Banta, and **L.S. Darby**, 2002: A comparison of ground-based Doppler lidar and airborne in situ wind observations. *Q. J. R. Meteorol. Soc.*, **129**, 693-714.

T.B. Ryerson, M. Trainer, W.M. Angevine, C.A. Brock, R.W. Dissly, F.C. Fehsenfeld, G.J Frost, P.D. Goldan, J.S. Holloway, G. Hubler, R.O. Jakoubek, W.C. Kuster, J.A. Neuman, D.K. Nicks Jr., D.D. Parrish, J.M. Roberts, D.T. Sueper, E.L. Atlas, S.G. Donnelly, F. Flocke, A. Fried, W. T. Potter, S. Schauffler, V. Stroud, A.J Weinhimer, B.P. Wert, C. Wiednmyer, R.J. Alverez, R. M. Banta, **L.S. Darby**, and C.J. Senff, 2003: Effect of Petrochemical Industrial Emissions of Reactive Alkenes and NOx on Tropospheric Ozone Formation in Houston, Texas. *J. Geophys. Res.*, Vol. 108, NO. D8, 4249, doi:10.1029/ 2002JD003070,2003.

Darby, L.S., R.M. Banta, and R.A. Pielke, Sr., 2002: Comparisons between mesoscale model terrain sensitivity studies and Doppler lidar measurements of the sea breeze at Monterey Bay. *Mon. Wea. Rev.*, **130**, 2813-2838.

Flamant, C., P. Drobinski, L. Nance, R. Banta, **L. Darby**, J. Dusek, M. Hardesty, J. Pelon, and E. Richard, 2002: Gap flow in an Alpine Valley during a shallow south foehn event: Observations, numerical simulations, and hydraulic analog. *Q. J. R. Meteorol. Soc.*, **128**, 1171-1210.

Darby, L. S., R. M. Banta, W. A. Brewer, W. D. Neff, R. D. Marchbanks, B. J. McCarty, C. J. Senff, A. B. White, W. M. Angevine, and E. J. Williams, 2002: Vertical variations in O_3 concentrations before and after a gust front passage, *J. Geophys. Res.*, **107**(D13), 4176, doi:10.1029/2001JD000996.

Darby, L. S., W. D. Neff, and R. M. Banta, 1999: Multiscale analysis of a Meso-β frontal passage in the complex terrain of the Colorado Front Range. *Mon. Wea. Rev.*, **127**, 2062-2081.

Banta, R. M., **L. S. Darby**, P. Kaufman, D. H. Levinson, and C. J. Zhu, 1999: Wind flow patterns in the Grand Canyon as revealed by Doppler lidar. *J. Appl. Meteor.*, **38**, 1069-1083.

Papers published under the name of Lisa D. Olivier

Rothermel, J., D. R. Cutten, R. M. Hardesty, R. T. Menzies, J. N. Howell, S. C. Johnson, D. M. Tratt, **L. D. Olivier**, and R. M. Banta, 1998: The multi-center airborne coherent atmospheric wind sensor, MACAWS. *Bull. Amer. Meteor. Soc.*, **79**, 581-599.

Rothermel, J., **L. D. Olivier**, R. M. Banta, R. M. Hardesty, J. N. Howell, D. R. Cutten, S. C. Johnson, R. T. Menzies, and D. M. Tratt, 1998: Remote sensing of multi-level wind fields with high-energy airborne scanning coherent Doppler lidar. *Optics Express*, **2**, 40-50.

Banta, R. M., P. B. Shepson, J. W. Bottenheim, K. G. Anlauf, H. A. Wiebe, A. Gallant, T. Biesenthal, **L. D. Olivier**, C. J. Zhu, I. G. McKendry, and D. G. Steyn, 1997: Nocturnal cleansing flows in a tributary valley. *Atmos. Environ.*, **31**, 2147-2162.

McKendry, I. G., D. G. Steyn, J. Lundgren, R. M. Hoff, W. Strapp, K. Anlauf, F. Froude, J. B. Martin, R. M. Banta, and **L. D. Olivier**, 1997: Elevated ozone layers and vertical down-mixing over the Lower Fraser Valley, BC. *Atmos. Environ.*, **31**, 2135-2146.

Banta, R. M., **L. D. Olivier**, P. H. Gudiksen, and R. Lange, 1996: Implications of small-scale flow features to modeling dispersion over complex terrain. *J. Appl. Meteor.,* **35**, 330-342.

Banta, R. M., **L. D. Olivier**, W. D. Neff, D. H. Levinson, and D. Ruffieux, 1995: Influence of canyon-induced flows on flow and dispersion over adjacent plains. *Theor. Appl. Climatol.,* **52**, 27-42.

Banta, R. M., **L. D. Olivier**, and P. H. Gudiksen, 1993: Sampling requirements for drainage flows that transport atmospheric contaminants in complex terrain. *Radiat. Prot. Dosim.,* **50** (2-4), 233-248.

Banta, R. M., **L. D. Olivier**, and D. H. Levinson, 1993: Evolution of the Monterey Bay sea-breeze layer as observed by pulsed Doppler lidar. *J. Atmos. Sci.*, **50**, 3959-3982.

Banta, R. M., **L. D. Olivier**, E. T. Holloway, R. A. Kropfli, B. W. Bartram, R. E. Cupp, and M. J. Post, 1992: Smoke Column Observations from Two Forest Fires Using Doppler Lidar and Doppler Radar. *J. Appl. Meteor.*, **31**, 1328-1349.

Banta, R. M. and **L. D. Olivier**, 1991: Doppler lidar observations of air flow in the Grand Canyon. *Papers from the 84th Annual Meeting. Volume 2, Atmospheric Monitoring and Measurement.* 16-21 June 1991, Vancouver, BC. Air and Waste Management Association, Pittsburgh, Pennsylvania. Paper 91-47.11 (Refereed conference proceedings).

BOOK CHAPTERS

McNutt C.A., M. J. Hayes, **L.S. Darby**, J. P. Verdin, and R. S. Pulwarty, 2013: Developing Early Warning and Drought Risk Reduction Strategies, in ***Drought, Risk Management, and Policy: Decision-Making Under Uncertainty***, Eds., L.C. Botterill, G. Cockfield , CRC Press, 226 pp.

Banta, R.M., C.M. Shun, D.C. Law, W.O.J. Brown, R.F. Reinking, R.M. Hardesty, C.J. Senff, W.A. Brewer, M.J. Post, L.S. Darby, 2012: Observational techniques: Sampling the mountain atmosphere. Ch. 8 in ***Mountain Weather Research and Forecasting***, Eds., *F.K. Chow, S. De Wekker, and B. Snyder*, Springer, Dordrecht, the Netherlands.

Darby, L.S., T. Uttal, A. Makshtas, J. Drummond, R. Albee, J. Burkhart, E. Dlugokencky, P. Fogal, L. Matrosova, R. Schnell, B. Vasel, S. Zimov, 2011: International Arctic Systems for Observing the Atmosphere, Chapter 3.4 in ***Understanding Earth's Polar Challenges: International Polar Year 2007-2008***. International Council for Science. Eds., Igor Krupnik and David Hick.