

JOHANNES M. L. DAHL

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Atmospheric Science Group
Texas Tech University
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23 August 2024

PROFESSIONAL EXPERIENCE

- 09/2019 – present **Associate Professor**
Department of Geosciences, Atmospheric Science Group,
Texas Tech University, Lubbock, TX
- 08/2013 – 08/2019 **Assistant Professor**
Department of Geosciences, Atmospheric Science Group,
Texas Tech University, Lubbock, TX
- 07/2010 – 08/2013 **Post-doctoral research scholar**
Convective Storms Group, North Carolina State University, Raleigh, NC
Supervisor: Dr. M. Parker

ADDITIONAL APPOINTMENTS

- 8/2022 – 12/2022 **Visiting Scientist**
Laboratory for Flow Instabilities and Dynamics
Institute for Fluid Dynamics and Technical Acoustics
Technical University Berlin, Berlin, Germany
- 11/2019 – 8/2021 **Adjunct Associate Professor**
Department of Marine, Earth, and Atmospheric Sciences,
North Carolina State University, Raleigh, NC
- 12/2015 – 11/2019 **Adjunct Assistant Professor**
Department of Marine, Earth, and Atmospheric Sciences,
North Carolina State University, Raleigh, NC

EDUCATION

- 03/2010 **Ph.D.** in atmospheric sciences, Institute of Atmospheric Physics at the German Aerospace Center (DLR) / Ludwig Maximilian University Munich, Germany
Advisor: Dr. U. Schumann
Thesis title: *Development and Implementation of a New Lightning Parameterization in a Mesoscale Weather Prediction Model*
- 02/2007 **M.Sc.** (Diplom) in meteorology, Free University of Berlin, Germany
Advisor: Dr. P. N  vir
Thesis title: *Supercells – Their Dynamics and Prediction*

GRANTS

- PI: *The Vorticity Dynamics of Tornadoes: Formation and Maintenance Mechanisms.*
Sponsor: NSF, \$320,846
- PI: *The Origin of Rotation in Tornadoes.* Sponsor: NSF, \$241,336.
- Co-PI: VORTEX-SE: *Insights into the Structure and Predictability of Southeastern U.S. Tornadoic Storms Afforded by Intense Observation and High-Resolution Modeling.*
Sponsor: NOAA, \$149,745; PI: Dr. Christopher Weiss; additional Co-PIs: Drs. Eric Bruning, Curtis Alexander, David Dowell.
- Co-PI: VORTEX-SE: *The Role and Predictability of Baroclinic and Terrain Influences in Southeastern U.S. Tornado Environments.* Sponsor: NOAA, \$249,835; PI: Dr. Christopher Weiss; additional co-PIs: Drs. Eric Bruning, Curtis Alexander, David Dowell.
- Co-PI: VORTEX-SE: *Improving Understanding and predictability of tornadoic storms in the Southeastern U.S. using intensive observations and high-resolution modeling.*
Sponsor: NOAA, \$249,942; PI: Dr. Christopher Weiss; additional Co-PIs: Drs. Eric Bruning, Curtis Alexander, David Dowell.

PEER-REVIEWED PUBLICATIONS

[21] **Dahl, J. M. L.**, 2024: The development of rotation in dust-devil-like vortices. *J. Atmos. Sci.*, **in press**.

[20] Fischer, J., **J. M. L. Dahl**, B. E. Coffey, J. Lesak Houser, P. M. Markowski, M. D. Parker, C. C. Weiss, and A. Schueth, 2024: Supercell toradogenesis: Recent progress in our state of understanding. *Bull. Amer. Meteor. Soc.*, **105**, E1084-E1097.

- [19] **Dahl, J. M. L.** and J. Fischer, 2023: On the origins of vorticity in a simulated tornado-like vortex. *J. Atmos. Sci.*, **80**, 1361-1380.
- [18] Fischer, J. and **J. M. L. Dahl**, 2023: Supercell external boundaries acting as catalyst for tornadogenesis. *Mon. Wea. Rev.*, **151**, 23-28.
- [17] Fischer, J. and **J. M. L. Dahl**, 2022: Transition of near-ground vorticity dynamics during tornadogenesis. *J. Atmos. Sci.*, **79**, 467-483.
- [16] **Dahl, J. M. L.**, 2021: Centrifugal waves in tornado-like vortices: Kelvin's solutions and their applications to multiple-vortex development and vortex breakdown. *Mon. Wea. Rev.*, **149**, 3173-3216.
- [15] Schueth, A., C. Weiss, and **J. M. L. Dahl**, 2021: Comparing observations and simulations of the streamwise vorticity current and the forward flank convergence boundary in a supercell storm. *Mon. Wea. Rev.*, **149**, 1651-1671.
- [14] Fischer, J. and **J. M. L. Dahl**, 2020: The relative importance of updraft and cold pool characteristics on supercell tornadogenesis in highly idealized simulations. *J. Atmos. Sci.*, **77**, 4089-4107.
- [13] Boyer, C. H. and **J. M. L. Dahl**, 2020: The mechanisms responsible for large near-surface vertical vorticity within simulated supercells and quasi-linear storms. *Mon. Wea. Rev.*, **148**, 4281-4297.
- [12] **Dahl, J. M. L.**, 2020: The application of vortex patch dynamics to near-surface vortex formation in simulated supercells. *Mon. Wea. Rev.*, **148**, 3533-3547.
- [11] Vande Guchte, A. and **J. M. L. Dahl**, 2018: Sensitivities of parcel trajectories beneath the lowest scalar model level of a Lorenz vertical grid. *Mon. Wea. Rev.*, **145**, 1427-1435.
- [10] Coffey, B. E., M. D. Parker, **J. M. L. Dahl**, L. J. Wicker, and A. Clark, 2017: Volatility of tornadogenesis: An ensemble of simulated nontornadic and tornadic supercells in VORTEX2 environments. *Mon. Wea. Rev.*, **145**, 4605-4625.
- [9] **Dahl, J. M. L.**, 2017: Tilting of horizontal shear vorticity and the development updraft rotation in supercell thunderstorms. *J. Atmos. Sci.*, **74**, 2997-3020.
- [8] **Dahl, J. M. L.** and J. Fischer, 2016: The origin of western European warm-season prefrontal convergence lines. *Wea. Forecasting*, **31**, 1417-1431.
- [7] **Dahl, J. M. L.**, 2015: Near-ground rotation in simulated supercells: On the robustness of the baroclinic mechanism. *Mon. Wea. Rev.*, **143**, 4929-4942.

- [6] Parker, M. P., **J. M. L. Dahl**, 2015: Production of near-surface vertical vorticity by idealized downdrafts. *Mon. Wea. Rev.*, **143**, 2795-2816.
- [5] **Dahl, J. M. L.**, P. M. Markowski, 2014: Comment on “Eliminating the major tornado threat in Tornado Alley,” *Int. J. Mod. Phys. B*, **28**, 1475004.
- [4] **Dahl, J. M. L.**, M. D. Parker, and L. J. Wicker, 2014: Imported and storm-generated near-ground vertical vorticity in a simulated supercell. *J. Atmos. Sci.*, **71**, 3027-3051.
- [3] **Dahl, J. M. L.**, M. D. Parker, and L. J. Wicker, 2012: Uncertainties of trajectory calculations within near-surface mesocyclones of simulated supercells. *Mon. Wea. Rev.*, **140**, 2959-2966.
- [2] **Dahl, J. M. L.**, H. Höller, and U. Schumann, 2011: Modeling the flash rate of thunderstorms. Part II: Implementation, *Mon. Wea. Rev.*, **139**, 3112-3124.
- [1] **Dahl, J. M. L.**, H. Höller, and U. Schumann, 2011: Modeling the flash rate of thunderstorms. Part I: Framework, *Mon. Wea. Rev.*, **139**, 3093-3111.

OTHER PUBLICATIONS

- Vande Guchte, A. and **J. M. L. Dahl**, 2015: Inconsistencies within parcel trajectories that pass beneath the lowest model level. *Proceedings Eighth European Conference on Severe Storms*, ESSL, 14-18 September 2015, Wiener Neustadt, Austria.
- Mahalik, M. C., and **J. M. L. Dahl**, 2014: Objective identification of supercellular internal momentum surges using a cloud model. *Proceedings 27th Conference on Severe Local Storms*, AMS, 3-7 November 2014, Madison, WI.
- Parker, M. D. and **J. M. L. Dahl**, 2014: Toy model simulations of surface vorticity generation in downdrafts. *Proceedings 15th Conference on Mesoscale Processes*, AMS, 6-9 August 2013, Portland, OR.
- Dahl, J. M. L.**, M. D. Parker, and L. J. Wicker, 2011: On the development of large surface vorticity in high-resolution supercell simulations. *Proceedings Sixth European Conference on Severe Storms*, ESSL, 3-7 October 2011, Palma, Spain.
- Dahl, J. M. L.**, M. D. Parker, and L. J. Wicker, 2011: On the development of large surface vorticity in high-resolution supercell simulations. *Proceedings 14th Conference on Mesoscale Processes*, AMS, 1-4 August 2011, Los Angeles, CA.
- Dahl, J. M. L.**, 2011: Tornado warnings in the USA. *European Meteorological Calendar 2011*, European Meteorological Society.
- Dahl, J. M. L.**, H. Hoeller, and U. Schumann, 2010: A new lightning parameterization for the COSMO-DE model. *Proceedings 25th Conference on Severe Local Storms*, AMS, 11-14 October 2010, Denver, CO.

Dahl, J. M. L., H. Hoeller, and U. Schumann, C. Keil, 2009: A new lightning parameterization for the COSMO-DE model. *Proceedings Fifth European Conference on Severe Storms*, 12-16 October 2009, Landshut, Germany.

Dahl, J. M. L., 2007: Application of the shear and curvature vorticity equations to the initial mesocyclogenesis. *Proceedings Fourth European Conference on Severe Storms*, 10-14 September 2007, Trieste, Italy.

Dahl, J. M. L., , P. Groenemeijer, C. Gatzen, and O. van der Velde, 2004: The European Storm Forecast Experiment – Towards Operational Forecasting of European Severe Thunderstorms. *Proceedings Third European Conference on Severe Storms*, 9-12 November 2004 León, Spain.

Dahl, J. M. L., C. Gatzen, and J. Hoffmann, 2000: The Berlin Hailstorms of 19 August 2000. *Publications of the Meteorological Institute 94/00, Free University of Berlin*, ISSN 0938-5312, 13 pp.

CONFERENCE PRESENTATIONS

- 09/2022 Fischer, J. and **J. M. L. Dahl**: Towards an updated conceptual model of tornadogenesis. *Mini European Conference in Severe Storms*, 27-28 September 2022, virtual. (*oral*)
- 11/2021 Fischer, J. and **J. M. L. Dahl**: Transition of near-ground vorticity dynamics during tornadogenesis. *Student and Early Career Severe Local Storms Conference*, 4-5 November 2021, virtual. (*oral*)
- 09/2021 Fischer, J. and L. and **J. M. L. Dahl**: Entwicklung der Rotation von Tornados (Development of rotation in tornadoes). ExtremWetterKongress, 22-24 September 2021, Hamburg, Germany. (*oral, virtually*)
- 01/2020 Fischer, J. and L. and **J. M. L. Dahl**: Outflow character and updraft strength in idealized supercell simulations and their influence on tornadogenesis. *100th AMS Annual Meeting*, 12-16 January 2020, Boston, MA. (*oral*)
- 11/2019 Fischer, J. and L. and **J. M. L. Dahl**: Outflow surges in supercell-like storms and their influence on tornado development. *10th European Conference on Severe Storms*, 4-8 November 2019, Krakow, Poland. (*oral – winner of best oral presentation award*)
- 11/2019 Kretschmer, M. and L. and **J. M. L. Dahl**: A demonstration of the effect of vertical wind shear and the perturbation pressure fields on simulated thunderstorms. *10th European Conference on Severe Storms*, 4-8 November 2019 Krakow, Poland. (*poster*)

- 11/2019 Schielicke, L. and **J. M. L. Dahl**: Vortex identification in simulated supercells: A comparison of methods. *10th European Conference on Severe Storms*, 4-8 November 2019 Krakow, Poland. (*poster*)
- 01/2019 Schielicke, L., M. Hirt, A. Mueller, P. Nevir, and **J. M. L. Dahl**: Blocking identification based on the kinematic vorticity number and its links to the point vortex model. *99th AMS Annual Meeting*, 6-10 January 2019, Phoenix, AZ. (*oral*)
- 01/2019 Boyer, C. and **J. M. L. Dahl**: Origin of near-surface vertical vorticity of mesovortices in a quasi-lunar convective system. *99th AMS Annual Meeting*, 6-10 January 2019, Phoenix, AZ. (*poster*)
- 10/2018 **Dahl, J. M. L.**: Impact of orography on updraft rotation in simulated supercells. *29th Conference on Severe Local Storms*, AMS, 22-26 October 2018, Stowe, VT. (*poster*)
- 10/2018 Schielicke, L. and **J. M. L. Dahl**: Vortex developments and interactions in idealized supercell simulations investigated by the kinematic vorticity number Wk. *29th Conference on Severe Local Storms*, AMS, 22-26 October 2018, Stowe, VT. (*poster*)
- 10/2018 Weiss, C. C., D. C. Dowell, A. J. Hill, J. McDonald, E. C. Bruning, **J. M. L. Dahl**. An update on VORTEX-SE activities at Texas Tech Univ. *29th Conference on Severe Local Storms*, AMS, 22-26 October 2018, Stowe, VT. (*oral*)
- 01/2018 Vancil, J., **J. M. L. Dahl**: Observational and numerical identification of downdraft generated vertical vorticity. *98th AMS Annual Meeting*, 7-11 January 2018, Austin, TX. (*poster*)
- 09/2017 Weiss, C., E. Bruning, **J. M. L. Dahl**, D. Dowell, C. Alexander, A. Hill, and V. Chmielewski: Preliminary results from the 2016 and 2017 VORTEX-SE project. *9th European Conference on Severe Storms*, 18-22 September 2017 Pula, Croatia. (*oral*)
- 09/2017 **Dahl, J. M. L.**, C. Weiss, E. Bruning, D. Dowell, C. Alexander: Behavior of vertical-vorticity rivers in simulated supercells. *9th European Conference on Severe Storms*, 18-22 September 2017 Pula, Croatia. (*poster*)
- 01/2017 Weiss, C., E. Bruning, **J. M. L. Dahl**, D. Dowell, C. Alexander, A. Hill, V. Chmielewski: An overview of Texas Tech operations during VORTEX-SE 2016. *97th AMS Annual Meeting*, 22-26 January 2017, Seattle, WA. (*oral*)
- 11/2016 **Dahl, J. M. L.**: Updraft rotation in supercells: Beyond tilting of horizontal shear vorticity. *28th Conference on Severe Local Storms*, AMS, 7-11 November 2016, Portland, OR. (*oral*)

- 11/2016 Vande Guchte, A. and J. M. L. **Dahl**: Inconsistencies Exhibited by Simulated Parcel Trajectories below the Lowest Scalar Model Level. *28th Conference on Severe Local Storms*, AMS, 7-11 November 2016, Portland, OR. (oral)
- 11/2016 Robertson, S. and J. M. L. **Dahl**: Intensification of the Low-Level Updraft in Supercells Preceding Tornadogenesis. *28th Conference on Severe Local Storms*, AMS, 7-11 November 2016, Portland, OR. (poster)
- 11/2016 Weiss, C., E. Bruning, J. M. L. **Dahl**., D. Dowell, C. Alexander, A. Hill, and V. Chmielewski:
An Overview of Texas Tech Operations during VORTEX-SE 2016. *28th Conference on Severe Local Storms*, AMS, 7-11 November 2016, Portland, OR. (oral)
- 11/2016 Bruning, E., V. Chmielewski, C. Weiss, J. M. L. **Dahl**, A. Hill, C. Schultz:
Flash Size Distributions Characterized by Mobile LMA Deployments During VORTEX-SE. *28th Conference on Severe Local Storms*, AMS, 7-11 November 2016, Portland, OR. (oral)
- 09/2015 **Dahl, J. M. L.**: Barotropic and baroclinic contributions to the mid-level mesocyclone. *8th European Conference on Severe Storms*, ESSL, 14-18 September 2015, Wiener Neustadt, Austria. (oral)
- 09/2015 Fischer, J. and **J. M. L. Dahl**: The origin of central European summertime prefrontal convergence lines. *8th European Conference on Severe Storms*, ESSL, 14-18 September 2015, Wiener Neustadt, Austria. (poster)
- 09/2015 Vande Guchte, A. and **J. M. L. Dahl**: Analysis of seemingly unphysical vertical vorticity evolution along simulated outflow trajectories. *8th European Conference on Severe Storms*, ESSL, 14-18 September 2015, Wiener Neustadt, Austria. (poster)
- 11/2014 **Dahl, J. M. L.**: The effect of barotropic vorticity in a supercell within unidirectional shear. *27th Conference on Severe Local Storms*, AMS, 3-7 November 2014, Madison, WI. (oral)
- 11/2014 Mahalik, M. C. and **J. M. L. Dahl**: Objective identification of supercellular internal momentum surges using idealized simulations. *27th Conference on Severe Local Storms*, AMS, 3-7 November 2014, Madison, WI. (poster)
- 11/2014 Parker, M. D. and **J. M. L. Dahl**: Impacts of the storm-relative wind profile upon surface vorticity production in downdrafts. *27th Conference on Severe Local Storms*, AMS, 3-7 November 2014, Madison, WI. (oral)
- 10/2014 Mahalik, M. C. and **J. M. L. Dahl**: Objective identification of supercellular internal momentum surges using a cloud model. *NWA 39th Annual Meeting*, 18-23 October 2014, Salt Lake City, UT. (poster – **winner of best poster award**)

- 08/2013 **Dahl, J. M. L.**, M. D. Parker, L. J. Wicker: The roles of ambient and storm-generated vorticity in near-ground rotation of a simulated supercell. *15th Conference on Mesoscale Processes*, AMS, 6-9 August 2013, Portland, OR. (oral)
- 08/2013 Parker, M. D. and **J. M. L. Dahl**, 2013: Toy model simulations of surface vorticity generation in downdrafts. *15th Conference on Mesoscale Processes*, AMS, 6-9 August 2013, Portland, OR. (oral)
- 08/2013 Sherburn, K. D., **J. M. L. Dahl**, and M. D. Parker, 2013: Development of mesovortices and tornado-like vortices within idealized high-shear, low-CAPE simulations. *15th Conference on Mesoscale Processes*, AMS, 6-9 August 2013, Portland, OR. (poster)
- 06/2013 **Dahl, J. M. L.**, M. D. Parker, L. J. Wicker: The role of ambient horizontal vorticity in near-ground rotation of supercells. *Seventh European Conference on Severe Storms*, 3-7 June 2013, Helsinki, Finland. (oral)
- 06/2013 Parker, M. D., and **J. M. L. Dahl**: Toy model simulations of baroclinic and barotropic processes in downdrafts. *Seventh European Conference on Severe Storms*, 3-7 June 2013, Helsinki, Finland. (poster)
- 09/2012 **Dahl, J. M. L.**, M. D. Parker, L. J. Wicker: Near-ground rotation due to pre-existing and storm-generated vorticity. *26th Conference on Severe Local Storms*, 5-8 November 2012, Nashville, TN. (oral)
- 10/2011 **Dahl, J. M. L.**, M. D. Parker, L. J. Wicker: On the development of large surface vorticity in high-resolution supercell simulations. *Sixth European Conference on Severe Storms*, 3-7 October 2011, Palma, Spain. (oral)
- 08/2011 **Dahl, J. M. L.**, M. D. Parker, and L. J. Wicker: On the development of large surface vorticity in high-resolution supercell simulations. *14th Conference on Mesoscale Processes*, AMS, 1-4 August 2011, Los Angeles, CA. (oral)
- 10/2010 **Dahl, J. M. L.**, H. Hoeller, and U. Schumann: A new lightning parameterization for the COSMO-DE model. *Proceedings 25th Conference on Severe Local Storms*, AMS, 11-14 October 2010, Denver, CO. (poster)
- 10/2009 **Dahl, J. M. L.**, H. Hoeller, and U. Schumann, C. Keil: A new lightning parameterization for the COSMO-DE model. *Fifth European Conference on Severe Storms*, 12-16 October 2009, Landshut, Germany. (oral)
- 10/2009 Groenemeijer, P., **J. M. L. Dahl**, C. Gatzen, T. Púčik, O. Schlenczek, H. Tuschy, O. van der Velde: Probabilistic severe weather forecasting at the European Storm Forecasting Experiment (ESTOFEX). *Fifth European Conference on Severe Storms*, 12-16 October 2009, Landshut, Germany. (oral)

- 03/2009 **Dahl, J. M. L.:** The development of a lightning parameterization for the COSMO-DE model. *COSMO User Seminar*, 9-11 March 2009, Langen, Germany. (*oral*)
- 03/2008 **Dahl, J. M. L.,** U. Schumann, C. Keil: The effect of moisture perturbations on the radiation budget: In which layer are moisture perturbations most significant? *COSMO User Seminar*, 3-4 March 2008, Langen, Germany. (*oral*)
- 09/2007 **Dahl, J. M. L.:** Application of shear and curvature vorticity equations to the initial mesocyclogenesis. *Fourth European Conference on Severe Storms*, 10-14 September 2007, Trieste, Italy. (*poster*)
- 09/2007 Gatzen, C., P. Groenemeijer, O. van der Velde, J. Hoffmann, A. Dimitrov, H. Tuschy, **J. M. L. Dahl:** A close look at a severe MCS during the “Kyrill“ winter storm over central Europe. *Fourth European Conference on Severe Storms*, 10-14 September 2007, Trieste, Italy. (*oral*)
- 09/2007 Tuschy, H., C. Gatzen, P. Groenemeijer, O. van der Velde, **J. M. L. Dahl,** J. Hoffmann, A. Dimitrov: A case-study of two severe hail storms over southern and eastern Germany. *Fourth European Conference on Severe Storms*, 10-14 September 2007, Trieste, Italy. (*poster*)
- 09/2007 Groenemeijer, P., O. van der Velde, H. Tuschy, C. Gatzen, **J. M. L. Dahl,** N. Verge: Verification of dichotomous lightning forecasts at the European Storm Forecast Experiment (ESTOFEX). *Fourth European Conference on Severe Storms*, 10-14 September 2007, Trieste, Italy. (*oral*)
- 11/2004 **Dahl, J. M. L.,** P. Groenemeijer, C. Gatzen, and O. van der Velde: The European Storm Forecast Experiment – towards operational forecasting of European severe thunderstorms. *Third European Conference on Severe Storms*, 9-12 November 2004 León, Spain. (*oral*)
- 09/2002 **Dahl, J. M. L.:** Forecasting Severe Thunderstorms in Europe. *DACH 2002*, September 2002, Karlsruhe, Germany. (*oral*)
- 09/2002 **Dahl, J. M. L.,** P. Groenemeijer, C. Gatzen, and O. van der Velde: The European Storm Forecast Experiment (ESTOFEX). *DACH 2002*, September 2002, Karlsruhe, Germany. (*poster*)

INVITED PRESENTATIONS

- 12/2022 Zu der Dynamik von Tornados (On the dynamics of tornadoes)
Meteorological Institute, Free University of Berlin, Berlin, Germany
- 02/2021 Einfuehrung in die Tornadoforschung (Overview of tornado research), Laboratory for Flow Instabilities and Dynamics, Technical University Berlin, Berlin, Germany (*virtual*)

11/2016	Research tools: Numerical modeling. <i>28th Conference on Severe Local Storms</i> , AMS, 7-11 November 2016, Portland, OR
09/2015	Presentation (together with B. Antonescu) of the workshop by D. Schultz: Publishing your conference presentation. ESSL workshop, Wiener Neustadt, Austria
06/2015	Supercell and Tornado Dynamics, ESSL Testbed, Wiener Neustadt, Austria
04/2015	Application of Vorticity Decomposition to Near-Ground Rotation in Simulated Supercells, Department of Atmospheric Sciences, Texas A&M University, College Station, TX
06/2013	Barotropic and Baroclinic Contributions to Near-Ground Rotation within a Simulated Supercell, National Severe Storms Laboratory, Norman, OK
05/2013	The Sources of Near-Ground Rotation within Supercells, Mathematics Department, Free University of Berlin, Berlin, Germany
05/2013	The Sources of Near-Ground Rotation within Supercells, Department of Geosciences, Texas Tech University, Lubbock, TX
02/2013	The roles of ambient and storm-generated vorticity in near-ground rotation of supercells, Department of Meteorology, The Pennsylvania State University, State College, PA
06/2012	First Severe Weather Testbed at the European Severe Storms Laboratory, Wiener Neustadt, Austria
09/2011	ORF/Ö3 (Austrian TV and radio network) Extreme Weather Workshop, Krumbach, Austria
09/2011	The Source of Rotation in Tornadoes, Department of Marine, Earth, and Atmospheric Sciences, NCSU, Raleigh, NC
04/2009	CHMI (Czech Hydro-Meteorological Institute) Severe Thunderstorm Workshop, Praha, Czech Republic
02/2005	DWD (German Weather Service) Tornado Workshop, Langen, Germany
05/2003	ORF/Ö3 (Austrian TV and radio network) Extreme Weather Workshop, Krumbach, Austria

10/2000 The Berlin Hailstorms of 19 August 2000, Free University of Berlin, Berlin, Germany

COURSES TAUGHT

2019-present	GPH 5310 Geophysical Fluid Dynamics, Department of Geosciences, Texas Tech University, Lubbock, TX
2013-present	ATMO 1300 Introduction to Atmospheric Science, Department of Geosciences, Texas Tech University, Lubbock, TX
2014-present	ATMO 5328 Synoptic/Mesoscale Dynamics, Texas Tech University, Lubbock, TX
Summer 2015	Forecasting Severe Convection II, short course (5 days), European Severe Storms Laboratory, Wiener Neustadt, Austria
Fall 2012	MEA/PY 463 Fluid physics (classes and labs), Department of Marine, Earth, and Atmospheric Sciences, NCSU
2004 – 2006	3534 L 865 IV Flight Guidance (classes and labs), Technical University of Berlin, Germany; (the class covered the normal procedures to operate a modern airliner using a full-flight simulator.)

RESEARCH INTERESTS

- Dynamics of convective storms, especially supercell and tornado dynamics
- Fluid physics, especially vortex/vorticity dynamics
- Cloud-scale and mesoscale numerical modeling
- Synoptic/mesoscale dynamics
- Atmospheric gravity waves

SERVICE

01/2021– present	Editor , <i>Journal of the Atmospheric Sciences (AMS)</i>
08/2019 – present	Co-Editor , <i>Weather and Climate Dynamics (EGU)</i>
01/2014 – 12/2022	Associate Editor , <i>Weather and Forecasting (AMS)</i>
10/2018 – 11/2019	Chair , Scientific Program Committee, <i>10th European Conference on Severe Storms</i> , Krakow, Poland, 4-8 November 2019

01/2015 – 12/2018	Associate Editor for <i>Monthly Weather Review (AMS)</i>
03/2017 – 09/2017	Scientific Program Committee of the 9 th <i>European Conference on Severe Storms</i> , Pula, Croatia, 18-22 September 2017
09/2015	Session chair: Climatology of Severe Storms; 8 th <i>European Conference on Severe Storms</i> , Wiener Neustadt, Austria, 14-18 September, 2015
08/2014 – 09/2015	Co-Chair (with David Schultz and Bogdan Antonescu), 8 th <i>European Conference on Severe Storms</i> , Wiener Neustadt, Austria, 14-18 September, 2015
10/2012 – 06/2013	Scientific Program Committee Member (Numerical Modeling of Storms) for the 7 th <i>European Conference on Severe Storms</i> , Helsinki, Finland, 3-7 June 2013
06/2013	Session chair: Numerical Modeling of Storms; 7 th <i>European Conference on Severe Storms</i> , Helsinki, Finland, 3-7 June 2013
01/2012 – 12/2013	Associate Editor for <i>Monthly Weather Review</i>
11/2002 – present	Co-founder and steering committee member of the European Storm Forecast Experiment (ESTOFEX; http://www.estofex.org)

Reviewed manuscripts for

- Atmosphere
- Atmospheric Research
- Atmospheric Chemistry and Physics
- Bulletin of the American Meteorological Society
- Electronic Journal of Severe Storms
- Encyclopedia of Natural Hazards
- Geophysical Research Letters
- IEEE Computing in Science and Engineering
- Journal of Atmospheric and Oceanic Technology
- Journal of the Atmospheric Sciences
- Monthly Weather Review
- Nature Geosciences
- Quarterly Journal of the Royal Meteorological Society
- Weather and Forecasting

Reviewed grant proposals for

- Japanese Society for the Promotion of Science

- National Science Foundation

THESIS COMMITTEES

Jessica Souza (Ph.D.)
Joshua Ostazewski (M.Sc.)
Nicholas Smith (M.Sc.)
Lydia Bunting (M.S., chair)
Jessica McDonald (Ph.D.)
Roberto Espinoza (M.S., chair)
Alexander Schueth (Ph.D.)
Jannick Fischer (Ph.D.; chair)
Vicente Salinas (Ph.D.)
Taylor Adams (M.S., chair)
Abby Hutson (Ph.D.)
Andrew Wade (Ph.D.)
Cameron Nixon (M.S.)
Christian Boyer (M.S., chair)
Tyler Wixtrom (M.S.)
Jessica McDonalds (M.S.)
Jake Vancil (M.S.; chair)
Alexander Schueth (M.S.)
Shelby Robertson (M.S.; chair)
Matthew Brothers (M.S.)
Kaitlin Rutt (M.S.)
Abby Hutson (M.S.)
Samantha Berkseth (M.S.)
Vanna Chmielewski (Ph.D.)
Brice Coffey (Ph.D.)
Casey Griffin (M.S.)
Matthew Mahalik (M.S.; chair)
Vicente Salinas (M.S.)
Mark Savin (M.S.; chair)
Andrew Vande Guchte (M.S.; chair)
Phillip Ware (M.S.)

ADVISEES (CURRENT AND PAST)

Nicholas Camp (M.Sc.)
Divya Viswanath (Ph.D)
Jonathan Stevenson (B.Sc.)
Eda Oz (M.Sc.)
Kyle Watson (M.Sc.)
Robert Commodari (M.Sc.)
Lydia Bunting (M.Sc.)
Roberto Espinoza (M.Sc.)
Jannick Fischer (Ph.D.)
Taylor Adams (M.Sc.)
Morten Kretschmer (B.Sc.)
Christian Boyer (M.Sc.)
Tyler Hudson (B.Sc.)
Mark Eslick (B.Sc.)
Jake Vancil (M.Sc.)
Shelby Robertson (M.Sc.)
Jannick Fischer (B.Sc.)
Mark Savin (M.Sc.)
Andrew Vande Guchte (M.Sc.)
Matthew Mahalik (M.Sc.)

INTERNSHIPS

04/2000 – 05/2000 National Severe Storms Laboratory / Storm Prediction Center in Norman, Oklahoma. Supervised by Dr. Harold Brooks.

MEMBERSHIPS

American Meteorological Society (AMS)
European Severe Storms Laboratory (ESSL)
German Meteorological Society (DMG)

FIELD EXPERIENCE

Spring 2016 Texas Tech spring experiment, West Texas, USA:

- PI and navigator for dual-Doppler TTUKa deployment

VORTEX-SE, Alabama, USA:

- Co-PI and driver/navigator for StickNet deployments
- Launched mobile radiosondes
- LMA deployments

Spring 2014

Texas Tech spring experiment

- Co-PI and navigation on TTUKa radars

05/201 – 006/2010

VORTEX2 – The Second Verification of the Origin of Rotation in Tornadoes Experiment.

- Launched mobile radiosondes (and instructed students)

09/2008 – 10/2008

T-PARC – THORPEX Pacific Asian Regional Campaign, Atsugi, Japan.

- Provided forecasts supporting the operation of the German Aerospace Center's FALCON research aircraft

06/2007 – 07/2007

COPS – The Convectively and Orographically Induced Precipitation Study, Karlsruhe, Germany.

- Provided forecasts and daily weather briefings
- Assisted with operating the Doppler on Wheels radars

OTHER WORK EXPERIENCE

03/2002 – 10/2004

Weather observer / technician at the weather station WMO 10381 (Berlin-Dahlem)

08/1999 – 08/2000

Nursing home for the mentally disabled (Caritas Berlin)

OTHER QUALIFICATIONS

Certified Flight Instructor (CFI/CFII) | Commercial pilot (single-engine/multiengine instrument)