Curriculum Vitae: Dr. John R. Lawson

Senior Air Quality Scientist, Bingham Research Center, Utah State Univ., Vernal UT 84078

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Education

Ph.D, Meteorology, 2016, Iowa State University, Ames, United States.

> Dissertation Title: *Butterflies and Bow Echoes: Addressing Poor Forecasts with Ensemble Simulations.*

M.S., Meteorology, 2013, University of Utah, Salt Lake City, United States.

> Dissertation Title: *Analysis and Predictability of the 1 December 2011 Wasatch Windstorm.*

MMet, Meteorology (with a year in Oklahoma), 2011, University of Reading, United Kingdom.

> Dissertation Title: *Analysis of Frontal Passages over Wales using MST Radar Data.*

· *Secondary/Tertiary education included Astronomy, Latin, Philosophy/Ethics, Music, Media, French, German*

· *Diploma in classical piano; two Diocese of Durham (UK) awards for singing*

Employment and training

- Senior Air Quality Scientist, **2023**–, Bingham Research Center, Utah State University
  - *Supervisor*: Dr. Seth Lyman
- Staff Meteorologist (laboratory technician; instructor), **2022**–**2023**, Dept. of Geography and Meteorology, Valparaiso University, Indiana, USA
  - *Supervisor*: Dr. Teresa Bals-Elsholz
- Meteorologist and Data Analyst, **2021**–**2022**, Met-Set and The Weather Perspective, Alton, UK
- Postdoctoral research associate, **2018**–**2020**, Cooperative Institute for Mesoscale Meteorological Studies (CIMMS)/National Severe Storms Laboratory (NOAA/NSSL), Norman, Oklahoma, USA
  - *Supervisor*: Dr. Corey K. Potvin
- Postdoctoral research associate, **2016**–**2017**, *ditto*.
  - *Supervisors*: Drs. Nusrat Yussouf and John D. Kain
- Founder and Director, **2014**–**2016**, Bolt Forecast Limited (reg. in England and Wales), UK
- Ph.D Meteorology candidate & Research Assistant, **2013**–**2016**, Dept. of Geological and Atmospheric Sciences, Iowa State University, USA (also *teaching assistant, undergraduate advisor*)
  - *Supervisor*: Prof. William A. Gallus, Jr
- M.S. Meteorology candidate & R.A., **2011**–**2013**, Dept. of Meteorology, Univ. of Utah, USA
  - *Supervisor*: Prof. John D. Horel
- Research Assistant, Summers of **2009** and **2010**, Centre for Atmospheric Science, University of Manchester, United Kingdom
  - *Supervisors*: Profs. David Schultz and Geraint Vaughan
- M.Met Meteorology Candidate, **2007**–**2011**, Dept. of Meteorology, University of Reading, UK
  - *Supervisor*: Prof. Daniel Kirshbaum
  - This includes senior classes at the University of Oklahoma for **2009**–**2010**

Teaching, Mentoring, and Service

- Led a forecasting class in Utah, where students issued forecasts for the university's website

- Performed two-day training at Campbell Scientific, Logan, Utah
- Teaching assistant for mesoscale-meteorology class at Iowa State University
- Undergraduate mentor and advisor at ISU resulting in collaboration for thesis chapter
- Oversaw maintenance and construction of meteorological stations and sensors at Valparaiso Univ.
- Attended national two-day workshop in 2022 on mentoring historically underrepresented students
- Developed teaching materials for a Univ. of Manchester three-day course in cloud computing
- Written user guides for WRF-users site and colleagues for troubleshooting of software
- Lead forecaster for PECAN research field campaign whilst at ISU
- TV appearances in UK and US, explaining topics to viewers such as Hurricane Andrew and destructive winds in Utah, extreme weather in Siouxland, and judging nature photos for the BBC.
- Judge at the 2019 Oklahoma State Univ. Native American Indian Science & Engineering Fair
- Coach of internationally diverse soccer team for Norman Youth Soccer Association
- Given many seminar talks and numerous smaller talks at informal interest groups
- Former Associate Editor, WAF, and frequent reviewer for MDPI and AMS publishers
- Developer of numerous open-source Python packages: www.github.com/johnrobertlawson.

Awards and Invitations
- The inaugural Tim Samaras award for best student oral presentation at the 19th Annual NWA Severe Storms and Doppler Radar Conference.
- Twice recipient of "highly commended" for best student presentation at conference sessions.
- Student winner of Reading, Calif., WxChallenge weather-forecasting competition city in 2015.

Complete publication and presentation list
Peer-reviewed papers and citation statistics also listed at https://tinyurl.com/y2nhraev

In preparation or review (*journal ranking* quartile *listed*)
Lawson, J.R., Nelson, K., and Potvin, C.K., in prep., *MDPI Meteorology*: Decoding the atmosphere: optimising ensemble forecasting with information theory (*invited paper in support of new journal*).

Lawson, J.R., proposal accepted in *AMS Bulletin of the American Meteorological Society (BAMS)*: A probabilistic *WxChallenge* proposal.

Stratman, D., Yussouf, N., Kerr, C. A., Matilla, B. C., **Lawson, J.R.**, and Wang., Y., in review, *Monthly Weather Review*: Testing stochastic physics perturbation methods in an experimental 1-km Warn-on-Forecast system using NSSL's phased-array radar observations.

Peer-reviewed Publications
Lawson, J., 2022: Weather in my life. *Weather*, **66**, 10-13 **(Q3)**

Lawson, J.R., Potvin, C.K., Skinner, P.S., and Reinhart, A.E., 2021: The vice and virtue of increased horizontal resolution in ensemble forecasts of tornadic thunderstorms in low-CAPE, high-shear environments. *Monthly Weather Review*. **(Q1)**

Lawson, J. R., Gallus, Jr., W.A., and Potvin, C.K., 2020: Sensitivity of a mesoscale convective system to horizontal grid spacing in a convection-allowing ensemble. (Invited publication) *MDPI-Atmosphere* **(Q2)**

Lawson, J.R., 2019: Predictability of idealized thunderstorms in buoyancy–shear space. *Journal of the Atmospheric Sciences*, **76** (9), 2653-2672 **(Q1)**

Lawson, J.R., J.S. Kain, N. Yussouf, D.C. Dowell, D.M. Wheatley, K.H. Knopfmeier, and T.A. Jones, 2018: Advancing from Convection-Allowing NWP to Warn-on-Forecast: Evidence of Progress. *Weather and Forecasting*, 33, 599–607 **(Q1)**

Lawson, J. R., and Gallus Jr, W.A., 2016.: Adapting the SAL method to evaluate reflectivity forecasts of summer precipitation in the central United States. *Atmospheric Science Letters*, **17** (10), 524–530. **(Q2)**

Lawson, J., and Gallus Jr, W.A., 2016: On contrasting ensemble simulations of two Great Plains bow echoes. *Weather and Forecasting*, **31**, 787–810. **(Q1)**

Lawson, J., and Horel, J. D., 2015: Ensemble forecast uncertainty of the 1 December 2011 Wasatch downslope windstorm. *Weather and Forecasting*, **30**, 1749–1761. **(Q1)**

Lawson, J., and Horel, J. D., 2015: Analysis of the 1 December 2011 Wasatch downslope windstorm. *Weather and Forecasting*, **30**, 115–135. **(Q1)**

Lawson, J., Schultz, D.M., Vaughan, G., and Kirshbaum, D., 2013: Multiple bands near fronts in VHF wind-profiling radar and radiosonde data. *Atmospheric Science Letters*, **14**, 146-152 **(Q2)**

Lawson, J., Vaughan, G., and Schultz, D.M., 2011: Classifying fronts in data from a VHF wind-profiling radar. *Atmospheric Science Letters*, **12**, 375-380 **(Q2)**

Lawson, J., 2011: Snow and Gales in eastern England from a North Sea polar low: 6/7 January 2010. *Weather*, **66**, 10-13 **(Q3)**

Conference Presentations

John R. Lawson, Corey K. Potvin, and Kenric Nelson, 2023: A Probabilistic WxChallenge Proposal. *The 103rd AMS Annual Meeting, Denver, CO, United States*, American Meteorological Society.

Caleb Oosterhouse, Noah Lang, and **John R. Lawson**, 2023: Using Random Forests to predict lake breeze passages near Lake Michigan. *The 103rd AMS Annual Meeting, Denver, CO, United States*, American Meteorological Society.

John R. Lawson, Corey K. Potvin, Patrick S. Skinner, and Antony E. Reinhart, 2020: Vice and Virtue of Increased Resolution of Thunderstorm Objects. *The 100th AMS Annual Meeting, Boston, MA, United States*, American

Meteorological Society.

John R. Lawson, 2020: Conditional Predictability of Idealized Thunderstorms in CAPE–Shear Space. *The 100th AMS Annual Meeting, Boston, MA, United States*, American Meteorological Society.

John R. Lawson, Corey K. Potvin, Patrick S. Skinner, and Montgomery L. Flora, 2020: The Information Gain of NWP Models, 2020. *The 100th AMS Annual Meeting, Boston, MA, United States*, American Meteorological Society.

John R. Lawson, Corey K. Potvin, Nusrat Yussouf, John S. Kain, 2020: Single-Suite Stochasticity for Thunderstorms: Can It Beat a Mixed-Physics Suite? *The 100th AMS Annual Meeting, Boston, MA, United States*, American Meteorological Society.

John R. Lawson, Corey K. Potvin, Patrick S. Skinner, and Antony E. Reinhart, 2019: Effect of increased horizontal resolution on thunderstorm objects. *Joint VORTEX-SE/NWA 2019 session, Huntsville, Alabama, United States*, National Weather Association and VORTEX-SE.

John R. Lawson: Estimating Thunderstorm Predictability Horizons in Strongly Forced, Straight-Shear Environments, 2019. *The 18th Conference on Mesoscale Processes, Savannah, Georgia, United States*, American Meteorological Society.

John R. Lawson, Corey K. Potvin, Nusrat Yussouf, John S. Kain, 2019: Stochasticity, Thunderstorms, and a Call for Creativity. *The 18th Conference on Mesoscale Processes, Savannah, Georgia, United States*, American Meteorological Society.

John R. Lawson and C. K. Potvin, 2018: Impact of Increased Resolution on Ensemble Forecasts of Thunderstorm Objects in the US Southeast. *29th Conference on Severe Local Storms, Stowe, Vermont, United States*, American Meteorological Society.

John R. Lawson, C. K. Potvin and M. L. Flora, 2018: Information, Predictability, and Verification at the Thunderstorm Scale. *29th Conference on Severe Local Storms, Stowe, Vermont, United States*, American Meteorological Society.

John R. Lawson, J. S. Kain, N. Yussouf, D. C. Dowell, D. M. Wheatley, K. H. Knopfmeier, and T. A. Jones, 2018: Evidence of Progress: Precipitation Forecasts from the Warn-on-Forecast Ensemble System. *29th Conference on Severe Local Storms, Stowe, Vermont, United States*, American Meteorological Society.

Patrick S. Skinner, K. H. Knopfmeier, J. J. Choate, B. T. Gallo, **J. R. Lawson**, A. E. Reinhart, T. A. Jones, N. Yussouf, D. C. Dowell, K. A. Wilson, L. J. Wicker, and P. L. Heinselman, 2018: Development of Verification Techniques for the NSSL Experimental Warn-on-Forecast System for Ensembles (NEWS-e). *29th Conference on Severe Local Storms, Stowe, Vermont, United States*, American Meteorological Society.

John R. Lawson, N. Yussouf and J. Kain, 2018: Uncertainty[2]: Stochastic Perturbations in a Convective-Scale

Ensemble. *25th Conference on Numerical Weather Prediction, Denver, Colorado, United States*, American Meteorological Society.

John R. Lawson and C. K. Potvin, 2018: Impact of Increased Resolution on Storm-Scale Ensemble Performance in the US Southeast. *25th Conference on Numerical Weather Prediction, Denver, Colorado, United States*, American Meteorological Society.

Lawson, J. R., and Gallus, Jr., W. A., 2017: On the sensitivity of bow-echo ensemble forecasts to grid spacing. *The 97th AMS Annual Meeting, Seattle, WA, United States*, American Meteorological Society.

Lawson, J. R., and Gallus, Jr., W. A., 2017: Adaptation of an object-based verification method for moist convection. *The 97th AMS Annual Meeting, Seattle, WA, United States*, American Meteorological Society.

Schoonover, M. R., Crown, G., and **Lawson, J. R.**, 2017: Breaking the cap: using Amazon Web Services and modern Web practices in an operational weather-forecasting framework. *The 97th AMS Annual Meeting, Seattle, WA, United States*, American Meteorological Society.

Lawson, J. R., 2017: A Python-driven workflow to automate and process many numerical simulations. *The 97th AMS Annual Meeting, Seattle, WA, United States*, American Meteorological Society.

Lawson, J. R., Yussouf, N., Kain, J., and Clark, A., 2016: NEWS-e: Evaluation of real-time Warn-on-Forecast precipitation forecasts. *The 28th Conference on Severe Local Storms, Portland, Oregon, United States*, American Meteorological Society.

Lawson, J. R., and Gallus, Jr., W. A., 2016: Mapping the convective watersheds: Assessing the predictability of convective evolution with idealized numerical simulations. *The 28th Conference on Severe Local Storms, Portland, Oregon, United States*, American Meteorological Society.

Gallus, Jr., W.A., **Lawson, J.**, Squitieri, B., 2016: On the sensitivity of convective system structure and propagation in convection-allowing runs to horizontal grid spacings. *The European Geosciences Union General Assemble 2016, Vienna, Austria*, European Geosciences Union. [2]

Gallus, Jr., W.A., **Lawson, J.**, Squitieri, B., 2016: On the predictability of mesoscale convective systems: Experiences of the Plains Elevated Convection At Night (PECAN) forecasting team. *The 96th AMS Annual Meeting, New Orleans, LA, United States*, American Meteorological Society. [2]

Lawson, J., Gallus, Jr., W. A., and Krocak, M., 2015: Butterflies and Bow Echoes: Addressing Poor Forecasts with Ensemble Simulations. *The 27th Conference on Weather Analysis and Forecasting, Chicago, IL, United States*, American Meteorological Society.

Gallus, Jr., W. A., and **Lawson, J.**, 2015: On the predictability of convective mode in high resolution WRF

ensembles. *European Geosciences Union General Assembly 2015, Vienna, Austria*, European Geosciences Union. [1]

Lawson, J., and Gallus, Jr., W. A., 2015: It's not you, it's me: the difficulty of forecasting bowing structures within mesoscale convective systems. *The 19th Annual NWA Severe Storms and Doppler Radar Conference, Ankeny, IA, United States,* Central Iowa NWA Chapter [2]

Lawson, J., and Gallus, Jr., W. A., 2014: Sensitivity of bow-echo forecasts to ensemble and model configuration. *The 27th Conference on Severe Local Storms, Madison, Wisconsin, United States*, American Meteorological Society.

Lawson, J., and Horel, J. D., 2014: Using Python to pre- and post-process GEFS/WRF ensembles. *The 94th AMS Annual Meeting, Atlanta, GO, United States,* American Meteorological Society.

Lawson, J., and Gallus, Jr., W. A., 2014: Simulating convective mode of mesoscale phenomena with a WRF–GEFS ensemble. *The 94th AMS Annual Meeting, Atlanta, GO, United States,* American Meteorological Society.

Lawson, J., and Horel, J.D., 2014: Predictability and error growth in medium-range forecasts of the 1 December 2011 Wasatch Windstorm. *The 16th Conference of Mountain Meteorology, San Diego, CA, United States,* American Meteorological Society. [3]

Lawson, J., and Horel, J. D., 2014: Analysis and Predictability of the Wasatch Windstorm of 1 December 2011. *The 94th AMS Annual Meeting, Atlanta, GO, United States,* American Meteorological Society. [4]

Lawson, J., and Horel, J., 2012: Wasatch Windstorm of 1 December 2011. *The 15th Conference of Mountain Meteorology, Steamboat Springs, CO, United States,* American Meteorological Society.

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[1] Presentation given by Prof. Gallus.
[2] Winner of the inaugural Tim Samaras award for best student oral presentation.
[3] Presentation given by Prof. Horel.
[4] Awarded "Honorable Mention" in the Outstanding Poster Presentation category for the NWP/WAF conference.