
Jared A. Lee
Project Scientist II



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RESEARCH INTERESTS

Numerical weather prediction, ensemble prediction, ensemble configuration, wind energy forecasting, solar energy forecasting, cloud microphysics, surface transportation/road weather forecasting, boundary layer meteorology, atmospheric transport & dispersion forecasting, air quality forecasting, atmospheric data assimilation, climate statistics

EDUCATION

The Pennsylvania State University – University Park, PA

- Ph.D., Meteorology, Aug 2012
 - Dissertation topic: Using objective statistical post-processing techniques to configure a numerical weather prediction ensemble for low-level wind forecasting
 - Advisor: Sue Ellen Haupt
- M.S., Meteorology, Aug 2007
 - Thesis topic: Studying the influence of numerical weather prediction uncertainty on atmospheric transport & dispersion uncertainty
 - Advisors: L. Joel Peltier and Sue Ellen Haupt

Gustavus Adolphus College – Saint Peter, MN

- B.A., *cum laude*, Physics, May 2005

Monash University – Clayton, VIC, Australia

- Study abroad student, took three atmospheric science courses, Jul–Nov 2004

Minnesota State University, Mankato – Mankato, MN

- Took two atmospheric science courses, Jun–Dec 2003

RESEARCH EXPERIENCE

- **Project Scientist II**, Research Applications Laboratory, National Center for Atmospheric Research (Boulder, CO). Feb 2018–present (Branko Kosović, supervisor). Applying NWP, data assimilation, and post-processing techniques to a number of research applications, including wind/solar energy forecasting and resource assessment, cloud microphysics, air quality forecasting, and road weather forecasting. Serving in leadership for several projects, including project management, science lead, and task lead roles. I have also been a co-PI on multiple submitted proposals.
- **Project Scientist I**, Research Applications Laboratory, National Center for Atmospheric Research (Boulder, CO). May 2014–Feb 2018 (Branko Kosović, supervisor). Applied NWP, data assimilation, and post-processing techniques to a number of research applications, including wind/solar energy forecasting and resource assessment, road weather forecasting, and cloud microphysics. Assumed leadership for modeling and analysis on several projects (including as science lead and task lead). I was a co-PI on multiple submitted proposals.
- **Postdoctoral Research Scientist**, Research Applications Laboratory, National Center for Atmospheric Research (Boulder, CO). Oct 2013–May 2014. Using ensemble data assimilation for state estimation of parameters in the WRF NWP model that are relevant for marine boundary layer and offshore wind energy forecasting (Luca Delle Monache, advisor).
- **National Research Council Research Associate**, Department of Meteorology, Naval Postgraduate School (Monterey, CA). Oct 2012–Sep 2013. Used ensemble data assimilation to estimate the value of an empirical parameter governing land-atmosphere coupling in the WRF NWP model (Joshua Hacker, advisor.)
- **Graduate Research Assistant**, Research Applications Laboratory, National Center for Atmospheric Research (Boulder, CO). Jun 2011–Sep 2012. Completed my Ph.D. research under Sue Ellen Haupt. Also contributed to other RAL projects, including applying Bayesian model averaging to real-time renewable energy forecasts (Jim Cowie, PI).
- **Visiting Scientist**, Research Applications Laboratory, National Center for Atmospheric Research (Boulder, CO). Dec 2010–May 2011. I moved from PSU to NCAR to continue my Ph.D. research when my advisor, Sue Ellen Haupt, moved from PSU to NCAR in 2010.
- **Graduate Research Assistant**, Applied Research Laboratory and Department of Meteorology, The Pennsylvania State University (University Park, PA). Jun 2006–May 2011. Performed research for my M.S. thesis and Ph.D. dissertation.

PUBLICATIONS & PRESENTATIONS

Book Chapters:

- Haupt, S. E., B. Kosović, J. A. Lee, and P. A. Jiménez, 2019: Mesoscale modeling of the atmosphere. In: Veers, P. (Ed.), *Wind power modeling and simulation: Volume 1: Atmosphere and plant*. IET Publishing, Stevenage, UK, 420 pp., https://doi.org/10.1049/PBPO125F_ch3.
- Jiménez, P. A., J. A. Lee, S. E. Haupt, and B. Kosović, 2019: Solar resource evaluation with numerical weather prediction models. In: J. Polo et al. (Eds.), *Solar resources mapping: Fundamentals and applications*. Green Energy and Technology, Springer Nature, Cham, Switzerland, 367 pp., https://doi.org/10.1007/978-3-319-97484-2_7.

- Haupt, S. E., P. A. Jiménez, J. A. Lee, and B. Kosović, 2017: Principles of meteorology and numerical weather prediction. In: Kariniotakis, G. (Ed.), *Renewable energy forecasting: From models to applications*. Woodhead Publishing, Cambridge, MA, 373 pp., <https://doi.org/10.1016/B978-0-08-100504-0.00001-9>.

Journal Articles:

- Haupt, S. E., T. C. McCandless, S. Dettling, S. Alessandrini, J. A. Lee, S. Linden, W. Petzke, T. Brummet, N. Nguyen, B. Kosović, G. Wiener, T. Hussain, and M. Al-Rasheedi, 2020: Artificial intelligence for improving physics predictions in renewable energy forecasting. Manuscript in preparation, to be submitted to *Energies*.
- Kumar, R., S. Alessandrini, A. Hodzic, and J. A. Lee, 2020: A novel ensemble design for probabilistic predictions of fine particulate matter over the contiguous United States (CONUS). *J. Geophys. Res. Atmos.*, submitted 6 Feb 2020.
- Al-Rasheedi, M. A., C. A. Gueymard, M. H. Al-Khayat, A. H. Ismail, J. A. Lee, and H. J. Al-Duaij, 2020: Performance evaluation of a utility-scale dual-technology photovoltaic power plant at the Shagaya Renewable Energy Park in Kuwait. *Renew. Sustain. Energy Rev.*, submitted 6 Oct 2019.
- Siems-Anderson, A. R., J. A. Lee, B. G. Brown, G. Weiner, and S. Linden, 2020: Using connected vehicles as a source of observations for numerical weather prediction. *Wea. Forecasting*, conditionally accepted and in revision.
- Mitchell, M. J., B. Ancell, J. A. Lee, and N. H. Smith, 2020: Configuration of statistical post-processing techniques for improved low-level wind speed forecasts in west Texas. *Wea. Forecasting*, **35**, 129–147, <https://doi.org/10.1175/WAF-D-18-0186.1>.
- Lee, J. A., P. Doubrawa, L. Xue, A. J. Newman, C. Draxl, and G. Scott, 2019: Wind resource assessment for Alaska's offshore regions: Validation of a 14-year high-resolution WRF data set. *Energies*, **12**, 2780, <https://doi.org/10.3390/en12142780>.
- Kumar, R., J. A. Lee, L. Delle Monache, and S. Alessandrini, 2019: Effect of meteorological variability on fine particulate matter simulations over the contiguous United States. *J. Geophys. Res. Atmos.*, **124**, 5669–5694, <https://doi.org/10.1029/2018JD029637>.
- Haupt, S. E., B. Kosović, T. Jensen, J. K. Lazo, J. A. Lee, P. A. Jiménez, J. Cowie, G. Weiner, T. C. McCandless, M. Rogers, S. Miller, M. Sengupta, Y. Xie, L. Hinkelman, P. Kalb, and J. Heiser, 2018: Building the Sun4Cast system: Improvements in solar power forecasting. *Bull. Amer. Meteor. Soc.*, **99**, 121–136, <https://doi.org/10.1175/BAMS-D-16-0221.1>.
- Lee, J. A., S. E. Haupt, P. A. Jiménez, M. A. Rogers, S. D. Miller, and T. C. McCandless, 2017: Solar irradiance nowcasting case studies near Sacramento. *J. Appl. Meteor. Climatol.*, **56**, 85–108, <https://doi.org/10.1175/JAMC-D-16-0183.1>.
- Lee, J. A., J. P. Hacker, L. Delle Monache, B. Kosović, A. Clifton, F. Vandenberghe, and J. Sanz Rodrigo, 2017: Improving wind predictions in the marine atmospheric boundary layer through parameter estimation in a single column model. *Mon. Wea. Rev.*, **145**, 5–24, <https://doi.org/10.1175/MWR-D-16-0063.1>.
- Jiménez, P. A., S. Alessandrini, S. E. Haupt, A. Deng, B. Kosović, J. A. Lee, and L. Delle Monache, 2016: The role of unresolved clouds on short-range global horizontal irradiance predictability. *Mon. Wea. Rev.*, **144**, 3099–3107, <https://doi.org/10.1175/MWR-D-16-0104.1>.
- Lee, J. A., S. E. Haupt, and G. S. Young, 2016: Down-selecting numerical weather prediction multi-physics ensembles with hierarchical cluster analysis. *J. Climatol. Wea. Forecast.*, **4**, 156, <https://doi.org/10.4172/2332-2594.1000156>.

- Reen, B. P., K. J. Schmehl, G. S. Young, J. A. Lee, S. E. Haupt, and D. R. Stauffer, 2014: Uncertainty in contaminant concentration fields resulting from uncertainty in the planetary boundary layer depth. *J. Appl. Meteor. Climatol.*, **53**, 2610–2626, <https://doi.org/10.1175/JAMC-D-13-0262.1>.
- Lee, J. A., W. C. Kolczynski, T. C. McCandless, and S. E. Haupt, 2012: An objective methodology for configuring and down-selecting an NWP ensemble for low-level wind prediction. *Mon. Wea. Rev.*, **140**, 2270–2286, <https://doi.org/10.1175/MWR-D-11-00065.1>.
- Peltier, L. J., S. E. Haupt, J. C. Wyngaard, D. R. Stauffer, A. Deng, J. A. Lee, K. J. Long, and A. J. Annunzio, 2010: Parameterizing mesoscale wind uncertainty for dispersion modeling. *J. Appl. Meteor. Climatol.*, **49**, 1604–1614, <https://doi.org/10.1175/2010JAMC2396.1>.
- Lee, J. A., L. J. Peltier, S. E. Haupt, J. C. Wyngaard, D. R. Stauffer, and A. Deng, 2009: Improving SCIPUFF dispersion forecasts with NWP ensembles. *J. Appl. Meteor. Climatol.*, **48**, 2305–2319, <https://doi.org/10.1175/2009JAMC2171.1>.

Technical Notes and Reports:

- Jacobson, M., C. Draxl, T. Jimenez, B. O'Neill, T. Capozzola, J. A. Lee, F. Vandenberghe, and S. E. Haupt, 2018: Assessing the wind energy potential in Bangladesh. *NREL Tech. Report NREL/TP-5000-71077*, 136 pp., <https://www.nrel.gov/docs/fy18osti/71077.pdf>.
- Haupt, S. E., B. Kosovic, T. Jensen, J. A. Lee, P. A. Jiménez, and Coauthors, 2016: The SunCast™ Solar Power Forecasting System: The results of the Public-Private-Academic Partnership to Advance Solar Power Forecasting. *NCAR Tech. Note NCAR/TN-526+STR*, 307 pp., <https://doi.org/10.5065/D6N58JR2>.

Ph.D. Dissertation:

- Lee, J. A., 2012: Techniques for down-selecting numerical weather prediction ensembles. Ph.D. dissertation, The Pennsylvania State University, 131 pp., <https://doi.org/10.13140/RG.2.2.29268.81280>.

M.S. Thesis:

- Lee, J. A., 2007: Improving predictions of contaminant dispersion with SCIPUFF using meteorological ensemble uncertainty. M.S. thesis, The Pennsylvania State University, 129 pp.

Conference presentations (presenter in bold):

2020

- **Lee, J. A.**, P. A. Jiménez, C. A. Gueymard, G. Thompson, B. Kosović, S. Basart, C. Pérez García-Pando, and M. Al-Rasheedi, 2020: Aerosol optical depth forecasts for solar irradiance forecasting in the Middle East. *11th Conf. on Weather, Water, Climate, and the New Energy Economy*, Boston, MA, Amer. Meteor. Soc., 12.3, <https://ams.confex.com/ams/2020Annual/meetingapp.cgi/Paper/367691>
- **Jiménez, P. A.**, G. Thompson, J. Dudhia, J. A. Lee, and C. Snyder, 2020: MAD-WRF for solar irradiance nowcasting. *11th Conf. of Weather, Water, Climate, and the New Energy Economy*, Boston, MA, Amer. Meteor. Soc., 11.1, <https://ams.confex.com/ams/2020Annual/meetingapp.cgi/Paper/364989>
- **Lee, J. A.**, S. E. Haupt, B. Kosović, G. Wiener, and M. Al-Rasheedi, 2020: Development of the Kuwait Renewable Energy Prediction System (KREPS). *11th Conf. on Weather, Water,*

Climate, and the New Energy Economy, Boston, MA, Amer. Meteor. Soc., 3.1,
<https://ams.confex.com/ams/2020Annual/meetingapp.cgi/Paper/367679>.

- **Nguyen, N.**, W. Petzke, J. A. Lee, T. Brummet, G. Wiener, S. E. Haupt, B. Kosović, M. Al-Rasheedi, T. Hussain, and A. Ismail, 2020: Kuwait Renewable Energy Grid Operator's Display. *11th Conf. on Weather, Water, Climate, and the New Energy Economy*, Boston, MA, Amer. Meteor. Soc., 1.4,
<https://ams.confex.com/ams/2020Annual/meetingapp.cgi/Paper/369015>.

2019

- **Lee, J. A.**, S. E. Haupt, B. Kosovic, G. Wiener, P. A. Jiménez, and M. Al-Rasheedi, 2019: Renewable energy forecasting for Kuwait: A progress update. *6th International Conf. Energy & Meteorology*, Copenhagen, Denmark, World Energy & Meteorol. Council,
<http://icem2019-abstract-submission.p.wemc.currinda.com/days/2019-06-27/abstract/783>.
- **Lee, J. A.**, P. A. Jiménez, C. Gueymard, G. Thompson, B. Kosovic, J. Dudhia, and C. Pérez García-Pando, 2019: Modeling aerosol optical depth over the Arabian Desert for solar irradiance forecasting. *6th International Conf. Energy & Meteorology*, Copenhagen, Denmark, World Energy & Meteorol. Council, <http://icem2019-abstract-submission.p.wemc.currinda.com/days/2019-06-27/abstract/779>.
- **Haupt, S. E.**, T. C. McCandless, J. A. Lee, B. Kosović, S. Alessandrini, G. Wiener, and M. Al-Rasheedi, 2019: Advances in wind power forecasting for Kuwait using artificial intelligence. *Wind Energy Science Conf. 2019*, Cork, Ireland, Euro. Acad. of Wind Energy,
<https://www.wesc2019.org/technical-programme>.
- **Brasseur, J. G.**, B. Jayaraman, J. A. Lee, and S. E. Haupt, 2019: Nonequilibrium responses of microscale atmospheric turbulence to the passage of typical weather fronts at the mesoscale. *Wind Energy Science Conf. 2019*, Cork, Ireland, Euro. Acad. of Wind Energy,
<https://www.wesc2019.org/technical-programme>.
- **Jiménez, P. A.**, G. Thompson, J. Dudhia, and J. A. Lee, 2019: The MAD-WRF solar irradiance nowcasting model: model overview and evaluation of the cloud initialization system. *Joint WRF/MPAS Users' Workshop 2019*, Boulder, CO,
<https://www2.mmm.ucar.edu/wrf/users/workshops/WS2019/workshop19agenda.php>.
- **Brummet, T.**, J. A. Lee, and G. Wiener, 2019: The relationship between GHI and power in Kuwait. *10th Conf. on Weather, Climate, and the New Energy Economy/18th Conf. on Artificial and Computational Intelligence and its Applications to the Environmental Sciences*, Phoenix, AZ, Amer. Meteor. Soc., J3.4,
<https://ams.confex.com/ams/2019Annual/meetingapp.cgi/Paper/350578>.
- **Lee, J. A.**, M. Jacobson, T. Capozzola, C. Draxl, F. Vandenberghe, T. Jimenez, and S. E. Haupt, 2019: Assessment of the wind energy potential in Bangladesh. *10th Conf. on Weather, Climate, and the New Energy Economy*, Phoenix, AZ, Amer. Meteor. Soc., 9.2,
<https://ams.confex.com/ams/2019Annual/meetingapp.cgi/Paper/353210>.
- **Lee, J. A.**, S. Dettling, S. E. Haupt, and T. Brummet, 2019: Advancing solar irradiance nowcasts on Long Island: Blending WRF-Solar with observations. *10th Conf. on Weather, Climate, and the New Energy Economy*, Phoenix, AZ, Amer. Meteor. Soc., 4.2,
<https://ams.confex.com/ams/2019Annual/meetingapp.cgi/Paper/353194>.

2018

- **Lee, J. A.**, M. Barlage, and G. Thompson, 2018: Impacts of background albedo dataset on WRF model simulations. *25th Conf. on Numerical Weather Prediction*, Denver, CO, Amer.

Meteor. Soc., 9B.2,

<https://ams.confex.com/ams/29WAF25NWP/webprogram/Paper344761.html>.

- **Lee, J. A.**, R. Kumar, L. Delle Monache, S. Alessandrini, and P. Lee, 2018: A novel ensemble design for probabilistic predictions of PM_{2.5} for the NAQFC. *20th Joint Conf. on the Applications of Air Pollution Meteorology with the A&WMA*, Austin, TX, Amer. Meteor. Soc., 9.3, <https://ams.confex.com/ams/98Annual/webprogram/Paper324799.html>.
- **Lee, J. A.**, L. Xue, A. J. Newman, A. J. Monaghan, P. Doubrawa, C. Draxl, L. Kilcher, and G. Scott, 2018: Validation of a 14-year high-resolution WRF dataset for wind resource assessment over Alaska. *9th Conf. on Weather, Climate, and the New Energy Economy*, Austin, TX, Amer. Meteor. Soc., 1.3, <https://ams.confex.com/ams/98Annual/webprogram/Paper327317.html>.
- **Haupt, S. E.**, D. J. Gagne II, J. Cowie, S. Linden, G. Weiner, and J. A. Lee, 2018: NCAR's Gridded Atmospheric Forecast System (GRAFS). *17th Conf. on Computational and Artificial Intelligence and its Applications to the Environmental Sciences*, Austin, TX, Amer. Meteor. Soc., 5.1, <https://ams.confex.com/ams/98Annual/webprogram/Paper336367.html>.

2017

- Lee, J. A., **R. Kumar**, L. Delle Monache, S. Alessandrini, and P. Lee, 2017: Probabilistic predictions of PM_{2.5} using a novel ensemble design for the NAQFC. *AGU Fall Meeting 2017*, New Orleans, LA, Amer. Geophys. Union, A33L-06, <https://agu.confex.com/agu/fm17/meetingapp.cgi/Paper/216082>.
- **Brasseur, J. G.**, A. W. Lavelly, T. Nandi, G. Vijayakumar, B. Jayaraman, S. E. Haupt, J. A. Lee, and J. Keller, 2017: Wind turbine response across scales: Simulation and experiment. *International Conf. for Future Technologies in Wind Energy (WindTech 2017)*, Boulder, CO, <http://windtechconferences.org/wp-content/uploads/2017/10/Brasseur-James-Abstract.pdf>.
- **Lee, J. A.**, T. Eidhammer, and G. Thompson, 2017: Addressing a high-altitude cirrus deficit in the Thompson & Eidhammer aerosol-aware microphysics scheme. *28th Conf. on Weather Analysis and Forecasting / 24th Conf. on Numerical Weather Prediction*, Seattle, WA, Amer. Meteor. Soc., 4B.1, <https://ams.confex.com/ams/97Annual/webprogram/Paper313156.html>.
- Vigh, J. L., C. M. Ammann, **J. A. Lee**, and P. Naveau, 2017: The NCAR Climate Risk Management Engine (CRMe). *12th Symp. On Societal Applications: Policy, Research, and Practice*, Seattle, WA, Amer. Meteor. Soc., 3.5, <https://ams.confex.com/ams/97Annual/webprogram/Paper315972.html>.
- **Hacker, J.**, R. Lorente-Plazas, N. Collins, and J. A. Lee, 2017: An approach to reduce systematic representativeness errors of surface observations in ensemble data assimilation. *21st Conf. on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface*, Seattle, WA, Amer. Meteor. Soc., 4.2, <https://ams.confex.com/ams/97Annual/webprogram/Paper309206.html>.

2016

- **Jayaraman, B.**, J. G. Brasseur, S. E. Haupt, and J. A. Lee, 2016: Deviations from equilibrium in daytime atmospheric boundary layer turbulence arising from nonstationary mesoscale forcing. *69th Annual Meeting of the APS Division of Fluid Dynamics*, Portland, OR, Amer. Phys. Soc., <http://meetings.aps.org/link/BAPS.2016.DFD.M13.3>.

- **Lee, J. A.**, S. E. Haupt, P. A. Jiménez, M. A. Rogers, S. D. Miller, and T. C. McCandless, 2016: Nowcasting case studies with Sun4Cast™. *Utility Variable-Generation Integration Group 2016 Forecasting Workshop*, Denver, CO.
- **Lee, J. A.**, T. Eidhammer, and G. Thompson, 2016: Investigating cloud ice nucleation in the Thompson aerosol-aware microphysics scheme. *17th WRF Users' Workshop*, Boulder, CO, http://www2.mmm.ucar.edu/wrf/users/workshops/WS2016/short_abstracts/8.4.pdf.
- **Lorente-Plazas, R.**, J. Hacker, and J. A. Lee, 2016: Bias estimation for near-surface observations in ensemble Kalman filter with WRF model over complex terrain. *19th Joint Conf. on the Applications of Air Pollution Meteorology with the A&WMA*, New Orleans, LA, Amer. Meteor. Soc., 10.4, <https://ams.confex.com/ams/96Annual/webprogram/Paper289209.html>.
- Brown, B. G., M. Billmire, N. French, J. D. Horel, N. Lucke, J. Wang, J. Zeng, **A. R. S. Anderson**, J. A. Lee, L. Sturges, and P. Pisano, 2016: Experimental applications of mobile vehicle observations: Scientific and technical challenges associated with the utilization of vehicle probe data. *32nd Conf. on Environmental Information Processing Technologies*, New Orleans, LA, Amer. Meteor. Soc., 11B.2, <https://ams.confex.com/ams/96Annual/webprogram/Paper290760.html>.
- **Anderson, A. R. S.**, J. A. Lee, B. G. Brown, G. Weiner, S. Linden, L. Sturges, R. Patterson, and P. Pisano, 2016: Using mobile vehicle observations to improve numerical weather prediction forecasts. *20th Conf. on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (IOAS-AOLS)*, New Orleans, LA, Amer. Meteor. Soc., 5.3, <https://ams.confex.com/ams/96Annual/webprogram/Paper287459.html>.
- **Lee, J. A.**, S. E. Haupt, P. A. Jiménez, T. C. McCandless, M. A. Rogers, S. D. Miller, and X. Zhong, 2016: Nowcasting case studies with SunCast. *7th Conf. on Weather, Climate, Water, and the New Energy Economy*, New Orleans, LA, Amer. Meteor. Soc., 1.2, <https://ams.confex.com/ams/96Annual/webprogram/Paper288480.html>.

2015

- **Lee, J. A.**, S. E. Haupt, P. A. Jiménez, T. C. McCandless, M. A. Rogers, and S. D. Miller, 2015: Solar energy nowcasting case studies near Sacramento. *27th Conf. on Weather Analysis and Forecasting/23rd Conf. on Numerical Weather Prediction*, Chicago, IL, Amer. Meteor. Soc., 16A.2, <https://ams.confex.com/ams/27WAF23NWP/webprogram/Paper273565.html>.
- Anderson, A. R. S., **J. A. Lee**, B. G. Brown, G. M. Weiner, S. D. Drobot, P. Pisano, and L. Sturges, 2015: Connected vehicles: Filling in the observation gap for data assimilation. *27th Conf. on Weather Analysis and Forecasting/23rd Conf. on Numerical Weather Prediction*, Chicago, IL, Amer. Meteor. Soc., 5A.8, <https://ams.confex.com/ams/27WAF23NWP/webprogram/Paper273566.html>.
- Anderson, A. R. S., **J. A. Lee**, B. G. Brown, G. M. Weiner, S. D. Drobot, P. Pisano, and L. Sturges, 2015: Connected vehicles: Filling in the observation gap for data assimilation. *16th WRF Users' Workshop*, Boulder, CO, http://www2.mmm.ucar.edu/wrf/users/workshops/WS2015/short_abstracts/6a.5.pdf.
- **Anderson, A. R. S.**, J. A. Lee, S. D. Drobot, and P. Pisano, 2015: Using connected vehicle data to fill in the observations gap for data assimilation. *19th Conf. on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (IOAS-AOLS)*, Phoenix, AZ, Amer. Meteor. Soc., TJ7.2, <https://ams.confex.com/ams/95Annual/webprogram/Paper267813.html>.
- **Lee, J. A.**, S. E. Haupt, P. Jimenez, T. C. McCandless, M. Rogers, and S. Miller, 2015: Comparison of solar energy nowcasting techniques. *6th Conf. on Weather Climate, and the*

New Energy Economy, Phoenix, AZ, Amer. Meteor. Soc., 4.3,

<https://ams.confex.com/ams/95Annual/webprogram/Paper264080.html>.

- **Delle Monache, L.**, J. P. Hacker, B. Kosovic, J. A. Lee, F. Vandenberghe, Y. Wu, A. Clifton, S. Hawkins, J. N. Nissen, and D. Rostkier-Edelstein, 2015: Investigating marine boundary layer parameterizations for improved off-shore wind predictions by combining observations with models via state estimation. *6th Conf. on Weather, Climate, and the New Energy Economy*, Phoenix, AZ, Amer. Meteor. Soc., 7.7, <https://ams.confex.com/ams/95Annual/webprogram/Paper263145.html>.
- **Gagne, D. J.**, S. E. Haupt, J. K. Williams, A. McGovern, J. A. Lee, and T. C. McCandless, 2015: Scaling machine learning models to produce high resolution gridded solar power forecasts. *13th Conf. on Artificial Intelligence/31st Conf. on Environmental Information Processing Technologies/Special Symposium on Model Postprocessing and Downscaling*, Phoenix, AZ, Amer. Meteor. Soc., TJ1.1, <https://ams.confex.com/ams/95Annual/webprogram/Paper269813.html>.

2014

- Delle Monache, L., **J. P. Hacker**, J. A. Lee, B. Kosovic, F. Vandenberghe, Y. Wu, A. Clifton, S. Hawkins, J. Nissen, and D. Rostkier-Edelstein, 2014: Towards improved off-shore wind predictions by combining observations with models through state estimation – An analysis of marine boundary layer parameterizations. *2014 AGU Fall Meeting*, San Francisco, CA, Amer. Geophys. Union, GC41H-08, <https://agu.confex.com/agu/fm14/meetingapp.cgi#Paper/14173>.
- **Lee, J. A.**, L. Delle Monache, J. P. Hacker, B. Kosovic, F. Vandenberghe, Y. Wu, A. Clifton, S. Hawkins, J. Nissen, and D. Rostkier-Edelstein, 2014: Using data assimilation and state estimation in marine boundary layer parameterizations to improve offshore wind energy prediction. *15th WRF Users' Workshop*, Boulder, CO, <http://www2.mmm.ucar.edu/wrf/users/workshops/WS2014/abstracts/3.4.pdf>.
- Delle Monache, L., **J. P. Hacker**, B. Kosovic, J. A. Lee, F. Vandenberghe, Y. Wu, A. Clifton, S. Hawkins, J. Nissen, and D. Rostkier-Edelstein, 2014: Investigating marine boundary layer parameterizations for improved off-shore wind predictions by combining observations with models via state estimation. *European Geophysical Union General Assembly 2014*, Vienna, Austria, 15003, <http://meetingorganizer.copernicus.org/EGU2014/EGU2014-15003.pdf>.
- **Lee, J. A.** and J. P. Hacker, 2014: Using DART and state augmentation to update a surface layer parameter in WRF. *26th Conference on Weather Analysis and Forecasting/22nd Conference on Numerical Weather Prediction/18th Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface*, Atlanta, GA, Amer. Meteor. Soc, J5.3, <https://ams.confex.com/ams/94Annual/webprogram/Paper239153.html>.

2013

- **Lee, J. A.**, S. E. Haupt, and G. S. Young, 2013: Investigating seasonal impacts on clustering and ensemble down-selection. *11th Conference on Artificial and Computational Intelligence and its Applications to the Environmental Sciences*, Austin, TX, Amer. Meteor. Soc., 3.4, <https://ams.confex.com/ams/93Annual/webprogram/Paper222060.html>.
- **Myers, W.**, J. Cowie, T. C. McCandless, and J. A. Lee, 2013: Probabilistic forecasts based on statistically-improved forecasts. *11th Conference on Artificial and Computational*

Intelligence and its Applications to the Environmental Sciences, Austin, TX, Amer. Meteor. Soc., 2.1, <https://ams.confex.com/ams/93Annual/webprogram/Paper224564.html>.

2012

- Lee, J. A., **S. E. Haupt**, G. S. Young, W. C. Kolczynski, and T. C. McCandless, 2012: Evaluating methods for down-selecting NWP multiphysics ensembles for wind prediction. *10th Conference on Artificial Intelligence*, New Orleans, LA, Amer. Meteor. Soc., 1.1, <https://ams.confex.com/ams/92Annual/webprogram/Paper199939.html>.

2011

- **Lee, J. A.**, S. E. Haupt, G. S. Young, W. C. Kolczynski, and T. C. McCandless, 2011: Statistical post-processing methods for down-selecting numerical weather prediction multiphysics ensembles for wind forecasting. *2011 AGU Fall Meeting*, San Francisco, CA, Amer. Geophys. Union.

2010

- Lee, J. A., W. C. Kolczynski, **T. C. McCandless**, S. E. Haupt, D. R. Stauffer, and A. Deng, 2010: Evaluating NWP ensemble configurations for AT&D applications. *14th GMU Conf. on Atmospheric Transport & Dispersion Modeling*, Fairfax, VA.
- **Lee, J. A.**, W. C. Kolczynski, T. C. McCandless, K. J. Long, S. E. Haupt, D. R. Stauffer, and A. Deng, 2010: Evaluating NWP ensemble configurations for AT&D applications. *16th Conference on Air Pollution*, Atlanta, GA, Amer. Meteor. Soc., 12.3, <https://ams.confex.com/ams/pdfpapers/162494.pdf>. **Best Overall Presentation.**

2009

- **Long, K. J.**, S. E. Haupt, M. Hendrickson, J. Keay, D. Miller, M. Coslo, J. A. Lee, and L. M. Rodriguez, 2009: Smoke plume characterization using photogrammetry techniques. *13th GMU Conf. on Atmospheric Transport & Dispersion Modeling*, Fairfax, VA.
- **Lee, J. A.**, S. E. Haupt, D. R. Stauffer, L. J. Peltier, A. Deng, B. J. Gaudet, and J. C. Wyngaard, 2009: Toward an NWP ensemble configuration for AT&D applications. *13th GMU Conf. on Atmospheric Transport & Dispersion Modeling*, Fairfax, VA.
- **Haupt, S. E.**, J. C. Wyngaard, K. J. Long, J. A. Lee, D. R. Stauffer, A. Deng, and F. Zajackowski, 2009: Modeling the stable boundary layer for dispersion. *13th GMU Conf. on Atmospheric Transport & Dispersion Modeling*, Fairfax, VA.
- **Lee, J. A.**, L. J. Peltier, S. E. Haupt, J. C. Wyngaard, D. R. Stauffer, and A. Deng, 2009: Impacts on dispersion prediction resulting from different types of NWP ensembles. *11th Conference on Atmospheric Chemistry*, Phoenix, AZ, Amer. Meteor. Soc., 8.5, https://ams.confex.com/ams/89annual/techprogram/paper_150267.htm. **Third Place Student Oral Presentation.**

2008

- **Lee, J. A.**, L. J. Peltier, S. E. Haupt, J. C. Wyngaard, D. R. Stauffer, and A. Deng, 2008: Impact of types of NWP ensembles on dispersion prediction. *Chemical & Biological Defense Physical Science & Technology Conf.*, New Orleans, LA.
- **Lee, J. A.**, L. J. Peltier, S. E. Haupt, J. C. Wyngaard, D. R. Stauffer, and A. Deng, 2008: Improving SCIPUFF dispersion forecasts with meteorological ensemble uncertainty information. *12th GMU Conf. on Atmospheric Transport & Dispersion Modeling*, Fairfax, VA.

- Peltier, L. J., **S. E. Haupt**, J. C. Wyngaard, D. R. Stauffer, A. Deng, and J. A. Lee, 2008: Parameterization of NWP uncertainty for dispersion modeling. *15th Joint Conf. on the Applications of Air Pollution Meteorology with the A&WMA*, New Orleans, LA, Amer. Meteor. Soc., 8.1, https://ams.confex.com/ams/88Annual/techprogram/paper_133385.htm.

2007

- **Lee, J. A.**, L. J. Peltier, S. E. Haupt, J. C. Wyngaard, D. R. Stauffer, A. Deng, and J. R. Zielonka, 2007: Using NWP ensembles to improve dispersion forecasts using SCIPUFF. *11th GMU Conf. on Atmospheric Transport & Dispersion Modeling*, Fairfax, VA.
- **Peltier, L. J.**, J. C. Wyngaard, S. E. Haupt, D. R. Stauffer, A. Deng, J. A. Lee, and B. P. Reen, 2007: Assessing the impact of meteorological model uncertainty on SCIPUFF AT&D predictions. *2007 Chemical Biological Information Systems Conf. & Exhibition*, Austin, TX.

Seminars, workshops, and other invited presentations:

2019

- “Alternative ways to communicate science: A view from NCAR.” Workshop: Making the technical accessible: Ideas on how to tailor your talks for public and school audiences. *6th International Conf. Energy & Meteorology*, Copenhagen, Denmark, World Energy & Meteorol. Council, <https://www.wemcouncil.org/wp/icem2019-workshop-session-presentation-skills/>.
- “Religion and renewables: How my faith and research enrich each other.” WattMeet, *6th International Conf. Energy & Meteorology*, Copenhagen, Denmark, World Energy & Meteorol. Council, http://www.wemcouncil.org/wp/icem2019_original/wattmeet/. Recorded presentation available at 35:30 mark of <https://www.youtube.com/watch?v=lqYfzCUoZA>.

2018

- “Validation and modeling results.” Technical presentation at the Results Sharing Workshop for the USAID/NREL Bangladesh Wind Resource Mapping Project, Dhaka, Bangladesh, 30 May 2018.

2015

- “SunCast case studies near Sacramento.” Presentation at the NCAR/RAL Retreat, Boulder, CO, 7 Dec 2015.
- “From ‘The Hill’ to the Foothills: My early career as an atmospheric scientist.” Invited seminar, Gustavus Adolphus College Sigma Pi Sigma Induction Banquet, Saint Peter, MN, 4 May 2015.

2014

- “What Do Atmospheric Scientists Do? An Overview of Research at NCAR.” Presentation given at the Arvada Estates retirement home for World Meteorological Day, Arvada, CO, 22 Mar 2014.

2012

- "Exploring Techniques for Down-selecting NWP Ensembles." Seminar given at the National Center for Atmospheric Research, Research Applications Laboratory, Boulder, CO, 20 Sep 2012.
- "Exploring Techniques for Down-selecting NWP Ensembles." Seminar given at Naval Postgraduate School, Monterey, CA, 6 Sep 2012.

2010

- "Down-Selection of NWP Ensemble Configurations." Seminar given at The Centre for Australian Weather and Climate Research, Docklands, VIC, Australia, 12 Aug 2010.
- "Down-Selection of NWP Ensemble Configurations." Seminar given at The University of Melbourne, Parkville, VIC, Australia, 11 Aug 2010.
- "Down-Selection of NWP Ensemble Configurations." Seminar given at Monash University, Clayton, VIC, Australia, 6 Aug 2010.
- "Quantifying Uncertainty for a Numerical Weather Prediction Ensemble." Seminar given at PSU Applied Research Lab/Garfield Thomas Water Tunnel, University Park, PA, 30 Jul 2010.

2009

- Research presentation to Maj. Gen. Randy Manner (Deputy Director, Defense Threat Reduction Agency) and Ms. Joan Pierre (Director, Defense Threat Reduction Agency Basic and Applied Sciences Directorate), University Park, PA, 23 Oct 2009.

Selected poster presentations:

2017

- Mitchell, M. J., B. Ancell, J. A. Lee, S. Haupt, and L. Delle Monache, 2017: Development of statistical post-processing techniques for improved low-level wind speed forecasts in west Texas. *28th Conf. on Weather Analysis and Forecasting / 24th Conf. on Numerical Weather Prediction*, Seattle, WA, Amer. Meteor. Soc., 1211, <https://ams.confex.com/ams/97Annual/webprogram/Paper305882.html>.

2016

- Vigh, J. L., C. M. Ammann, and J. A. Lee, 2016: An efficient workflow environment to support the collaborative development of actionable climate information using the NCAR Climate Risk Management Engine (CRMe). *2016 AGU Fall Meeting*, San Francisco, CA, Amer. Geophys. Union, A13I-0400, <https://agu.confex.com/agu/fm16/meetingapp.cgi/Paper/197594>.

2014

- Hacker, J. P., J. A. Lee, and L. Lei, 2014: Parameter estimation in ensemble data assimilation to characterize model errors in surface-layer schemes over complex terrain. *European Geosciences Union General Assembly 2014*, Vienna, Austria, <http://meetingorganizer.copernicus.org/EGU2014/EGU2014-14216.pdf>.

2013

- Lee, J. A. and J. P. Hacker, 2013: Using data assimilation and state augmentation to update a numerical weather prediction model parameter. *2013 AGU Fall Meeting*, San Francisco, CA, Amer. Geophys. Union,

<http://abstractsearch.agu.org/meetings/2013/FM/sections/A/sessions/A11F/abstracts/A11F-0121.html>.

2011

- Lee, J. A., W. C. Kolczynski, T. C. McCandless, S. E. Haupt, D. R. Stauffer, A. Deng, and K. J. Schmehl, 2011: Down-selection of NWP ensemble configurations. *24th Conf. on Weather Analysis and Forecasting/20th Conf. on Numerical Weather Prediction*, Seattle, WA, Amer. Meteor. Soc., 129, <https://ams.confex.com/ams/91Annual/webprogram/Paper182877.html>.
- Schmehl, K. J., B. P. Reen, A. J. Annunzio, J. A. Lee, and S. E. Haupt, 2011: Impact of uncertainty in planetary boundary layer depth on concentration predictions. *9th Conf. on Artificial Intelligence and its Applications to the Environmental Sciences*, Seattle, WA, Amer. Meteor. Soc., 260, <https://ams.confex.com/ams/91Annual/webprogram/Paper185399.html>.

2010

- Lee, J. A., W. C. Kolczynski, T. C. McCandless, S. E. Haupt, D. R. Stauffer, A. Deng, and K. J. Schmehl, 2010: Down-selecting NWP ensemble configurations for AT&D applications. *Chemical & Biological Defense Physical Science & Technology Conf.*, Orlando, FL.

2009

- Lee, J. A., S. E. Haupt, D. R. Stauffer, W. C. Kolczynski, L. J. Peltier, A. Deng, and J. C. Wyngaard, 2009: Sources of uncertainty in an NWP ensemble for AT&D applications. *Chemical & Biological Defense Physical Science & Technology Conf.*, Dallas, TX.
- Lee, J. A., S. E. Haupt, L. J. Peltier, D. R. Stauffer, J. C. Wyngaard, and A. Deng, 2009: Impacts of NWP model configurations on atmospheric transport & dispersion predictions. *PSU Graduate Exhibition*, University Park, PA.
- Lee, J. A., S. E. Haupt, L. J. Peltier, D. R. Stauffer, J. C. Wyngaard, and A. Deng, 2009: Impacts of NWP model configurations on atmospheric transport & dispersion predictions. *PSU Institute for CyberScience Day*, University Park, PA.

2007

- Lee, J. A., L. J. Peltier, S. E. Haupt, J. C. Wyngaard, D. R. Stauffer, and A. Deng, 2007: Improving contaminant dispersion and concentration predictions using SCIPUFF. *PSU Graduate Exhibition*, University Park, PA.

2006

- Lee, J. A., A. E. Goss, L. J. Peltier, S. E. Haupt, and J. C. Wyngaard, 2006: Dispersion uncertainty from meteorological sources. *PSU EMS Graduate Student Poster Exhibition*, University Park, PA.
- Lee, J. A., A. E. Goss, L. J. Peltier, S. E. Haupt, and J. C. Wyngaard, 2006: Dispersion uncertainty from meteorological sources. *10th GMU Conf. on Atmospheric Transport & Dispersion Modeling*, Fairfax, VA.

FUNDED PROPOSALS

- “Phase 3: Solar Forecasting for New York.” Sponsor: New York Energy Research & Development Authority (NYSERDA). Prime: New York Power Authority (NYPA).

Subcontractor to Electric Power Research Institute (EPRI). \$550k/3 years. POP: Nov 2019–Jun 2022. (Proposal submitted to NYSERDA PON 3770 in 2018.)

NCAR & LABORATORY REPORTS

- 2019 RAL Annual Report, Renewable Energy section lead author (<https://nar.ucar.edu/2019/ral/renewable-energy>).
- 2018 RAL Annual Report, Renewable Energy section lead author (<https://nar.ucar.edu/2018/ral/renewable-energy>).

AWARDS AND SCHOLARSHIPS

- **2018 Cumberland High School Graduate of Achievement**, Cumberland, WI
- **2017 Utility Variable-Generation Integration Group (UVIG) Award for Major Contributions in Advancing State-of-the-Art Solar Energy Forecasting**, team member, Sun4Cast Solar Power Forecasting System
- **2016 NCAR Research Applications Laboratory Scientific & Technical Achievement Award**, team member, Sun4Cast Solar Power Forecasting System.
- Nominated for **Gustavus Adolphus College First Decade Award** for early career achievement, awarded to one male and one female annually. Nominated in Oct 2014.
- **National Research Council Research Associateship Award**. Postdoctoral research fellowship at the Naval Postgraduate School in Monterey, California, 22 Oct 2012 – 25 Sep 2013.
- **NSF Student Travel Fellowship/NCAR Field Student Position** to participate in the DYNAMO (Dynamics of the Madden-Julian Oscillation) field project as a student assistant for sounding operations on the Indian Ocean island of Diego Garcia, 25 Oct – 23 Nov 2011.
- **Exploratory & Foundational Program Fellowship**, Penn State University Applied Research Laboratory, Jan 2008 – May 2011.
- **DTRA Student Travel Scholarship** to attend the Chemical & Biological Defense Physical Science & Technology Conference, Orlando, FL, 15–19 Nov 2010.
- **Best Overall Presentation**, 16th Conference on Air Pollution Meteorology at the 90th AMS Annual Meeting, Atlanta, GA, 18–21 Jan 2010.
- **Third Place Student Oral Presentation**, 11th Conference on Atmospheric Chemistry at the 89th AMS Annual Meeting, Phoenix, AZ, 11–15 Jan 2009.
- **Chi Epsilon Pi Travel Award**, to attend the 89th AMS Annual Meeting, Phoenix, AZ, 11–15 Jan 2009.
- **DTRA Student Travel Scholarship** to attend the Chemical & Biological Defense Physical Science & Technology Conference, New Orleans, LA, 17–21 Nov 2008.

TEACHING EXPERIENCE

- **Technical Tailored Short Course on Renewable Energy Forecasting**, Aug 2017, NCAR, for four visitors from Kuwait. Co-organized the 2.5-week workshop and taught sessions on the WRF model and case studies for solar energy forecasting.
- **Graduate Teaching Assistant**, Aug 2005 – May 2006, The Pennsylvania State University Course: METEO 003 – Introduction to Meteorology (Lab portion)
- **Lab Assistant**, Feb 2004 - May 2004, Gustavus Adolphus College

Course: PHY 171 - General Physics II Laboratory

- **Lab Assistant**, Sep 2003 - Dec 2003, Gustavus Adolphus College
Course: PHY 121 - General Physics I Laboratory

CONTRIBUTIONS TO COMMUNITY MODELS/SOFTWARE

- **WRF v3.8.1**, Thompson-Eidhammer aerosol-aware microphysics scheme: “A set of changes to ice initiation, particularly removal of Phillips parameterization and return to DeMott et al. (2010) dust scheme, trying to improve near-tropopause ice clouds for RAP/HRRR” (<http://www2.mmm.ucar.edu/wrf/users/wrfv3.8/updates-3.8.1.html>).
- **NCL v6.4.0**, provided a script to identify a bug in the cd_string function (http://ncl.ucar.edu/current_release.shtml#DateConversionsBugsFixed6.4.0).
- **NCL v6.5.0**, provided a script to identify a bug in the ut_string_fix function (http://ncl.ucar.edu/Document/Functions/User_contributed/ut_string_fix.shtml).
- **NCL v6.5.0**, submitted a new function, str_match_bool, which is included in v6.5.0 release (https://www.ncl.ucar.edu/Document/Functions/Built-in/str_match_bool.shtml).
- **NCL v6.5.0**, modified the function cd_inv_string (http://ncl.ucar.edu/Document/Functions/User_contributed/cd_inv_string.shtml).

CONTRIBUTIONS TO UNIVERSITY EDUCATION

- **Provided an NWP ensemble dataset** for Dr. George Young’s undergraduate METEO 474 (Computer Methods of Meteorological Analysis and Forecasting) class at Penn State University, to illustrate various issues with verification and ensemble calibration. Fall 2016.

FIELD RESEARCH EXPERIENCE

- **NCAR Student Assistant for Sounding Operations** for the Dynamics of the Madden-Julian Oscillation (DYNAMO) field project on the island of Diego Garcia in British Indian Ocean Territory, 25 Oct–23 Nov 2011. Responsibilities included launching radiosondes every three hours, logging observations, and monitoring the scientific equipment. (Supervisors William Brown and Heather McIntyre, NCAR/EOL.)
- **Photographer** for a project led by Sue Ellen Haupt and Janice Keay of the PSU Applied Research Lab, using photogrammetry techniques to estimate the concentration of plumes from smoke grenades, spring 2009.

PRIMARY PROGRAMMING LANGUAGE EXPERIENCE

- NCL
- Python
- Fortran 90
- Bash
- C-shell
- R
- Matlab

ATMOSPHERIC MODELING AND COMPUTING EXPERIENCE

- Numerical weather prediction: WRF-ARW (compiling/debugging; modifying source code; configuring, initializing, and executing model runs), WPS, MPAS-A. Completed the WRF Tutorial in Jan 2008. Completed the MPAS-Atmosphere Tutorial in Sep 2019.
- Contributed changes to the Thompson-Eidhammer aerosol-aware microphysics scheme that were released in WRF v3.8.1 in fall 2016
- Data assimilation: DART (WRF-DART), NCAR RT-FDDA, OBSGRID
- Transport and dispersion: SCIPUFF
- Graphing packages: Python, NCL, RIP, Matlab, TecPlot
- Assimilation or verification observation formats: LITTLE_R, MADIS, ASCII, DART
- Verification tools: Codes and scripts written in several languages (see above)
- Cluster queuing systems: PBS, LSF

PROFESSIONAL MEMBERSHIPS

- World Energy & Meteorology Council, joined Jan 2018
- American Geophysical Union, joined Aug 2011
- American Meteorological Society, joined Sep 2006
- Chi Epsilon Pi (meteorology), joined Mar 2006
- Sigma Pi Sigma (physics), joined May 2005

JOURNAL ARTICLE REVIEWS

- Reviewer, *Applied Sciences*, 2019
- Reviewer, *Atmosphere*, 2017, 2019 (x2)
- Reviewer, *Bulletin of the American Meteorological Society*, 2008
- Reviewer, *Energies*, 2019
- Reviewer, *IEEE Transactions on Geoscience and Remote Sensing*, 2019, 2020
- Reviewer, *International Journal of Climate*, 2016
- Reviewer, *Journal of Applied Meteorology and Climatology*, 2013, 2017, 2018 (x2), 2019
- Reviewer, *Journal of Atmospheric and Oceanic Technology*, 2017
- Reviewer, *Journal of Geophysical Research: Atmospheres*, 2011, 2018 (x2), 2019 (x2)
- Reviewer, *Meteorological Applications*, 2020
- Reviewer, *Monthly Weather Review*, 2012, 2013 (x2), 2014 (x3), 2017 (x2)
- Reviewer, *Solar Energy*, 2017 (x2), 2018 (x2), 2019
- Reviewer, *Weather and Forecasting*, 2016 (x2), 2018
- Reviewer, *Wind Energy*, 2017

JOURNAL ARTICLE TECHNICAL EDITING SERVICES

- Yano, J.-I., and B. Jakubiak, 2016: Wavelet-based verification of the quantitative precipitation forecast. *Dynamics of Atmospheres and Oceans*, **74**, 14–29.
<https://doi.org/10.1016/j.dynatmoce.2016.02.001>.

LEADERSHIP, VOLUNTEER, AND OUTREACH ACTIVITIES

Project Leadership:

- **Principal Investigator**, NCAR/RAL, Solar Forecasting for New York, Phase 3 (Sponsor: NYSERDA/NYPA/EPRI).
- **Project Manager**, NCAR/RAL, Renewable Energy Forecasting for Kuwait (Sponsor: KISR), Apr 2018 – present
- **Science Lead**, NCAR/RAL, Solar Power Forecasting for New York (Sponsor: NYPA/EPRI): Phase 1, Aug–Nov 2017; Phase 2, Jan 2018–May 2019. Led WRF modeling and analysis, and also led writing NCAR’s section of all project reports.
- **Task Lead**, NCAR/RAL, Renewable Energy Forecasting for Kuwait (Sponsor: KISR), Aug 2017 – present. Leading tasks on NWP and on case studies and resource assessment. Co-lead a task on organizing the technical tailored short course to start the project (Aug 2017).

Academic:

- **AMS Planning Commission**, Member, Oct 2017–Jan 2023 (current members: <https://www.ametsoc.org/ams/index.cfm/about-ams/ams-commissions-boards-and-committees/planning-commission/>)
- **AMS Task Force on Early Career & Students in Governance**, Member, Feb 2018–Jan 2020
- **NCL Advisory Panel**, Member, summer 2018 (report: [https://www.ncl.ucar.edu/Document/Pivot to Python/NCL Advisory Panel Final Report Aug 2018.pdf](https://www.ncl.ucar.edu/Document/Pivot%20to%20Python/NCL%20Advisory%20Panel%20Final%20Report%20Aug%202018.pdf))
- **AMS Energy Committee Webinar**, “Building a Career in Energy Weather: Perspectives from Rookies and Veterans”, panelist, 24 Apr 2018, <https://www.youtube.com/watch?v=6E0mZfaY-pA>.
- **Session Co-Chair**, Session 4B, 25th Conf. on Numerical Weather Prediction, Denver, CO, Amer. Meteor. Soc., 4 Jun 2018, <https://ams.confex.com/ams/29WAF25NWP/webprogram/Session46507.html>.
- **Session Chair**, Joint Session 59, 20th Joint Conf. on Applications of Air Pollution Meteorology with the A&WMA and 20th Conf. on Atmospheric Chemistry, Austin, TX, Amer. Meteor. Soc., 11 Jan 2018 (<https://ams.confex.com/ams/98Annual/webprogram/Session42935.html>).
- **M.S. Thesis Committee Member**, Meghan Mitchell (Texas Tech University), Aug 2017
- **SOARS Mentor**, NCAR, Summer 2016 (Meghan Mitchell) (<https://soars.ucar.edu/>)

Grad school:

- **Chair**, Graduate Advisory Council, PSU Department of Meteorology, May 2010–Nov 2010
- **Grad Student Representative**, PhD Candidacy Exam Implementation Subcommittee, Graduate Academic Program, PSU Department of Meteorology, Oct 2009
- **Liaison to the Faculty**, Graduate Advisory Council, PSU Department of Meteorology, May 2009–May 2010
- **Undergraduate Academic Program Representative**, Graduate Advisory Council, PSU Department of Meteorology, Aug 2008–Jul 2009
- **Tutor** (several courses), Chi Epsilon Pi (PSU chapter), Sep 2006–May 2009
- **Secretary/Historian**, Chi Epsilon Pi (PSU chapter), May 2006–May 2007

Non-academic/Service:

- **Church Treasurer**, Broomfield CO, Oct 2018–present
- **Church Elder**, Broomfield CO, Jun 2016–present

- **Church pianist/keyboardist/vocalist**, State College PA, Boulder CO, & Broomfield CO, Sep 2006–present
- **“Interview a Meteorologist” by an 8th grader**, Dassel MN, Jan 2020
- **Reading/Homework Tutor for Refugee Children**, K-12 children from the Karen and Kareni ethnic groups (Burma/Myanmar), Lafayette CO, Oct 2017–present
- **Super Science Saturday “NCAR Wizard”**, Boulder CO, annually Nov 2017–present
- **Science fair judge at Ryan Elementary School**, Lafayette CO, annually spring 2012, 2014–2018
- **Weather & Climate Q&A via FaceTime/Zoom with 6th graders at Cumberland Middle School**, Cumberland WI, annually Jan 2016–present
- **Presentation to Ryan Elementary School “Summer Explorers Club” students at NCAR Mesa Lab**, 30 Jul 2014
- **Presentation about atmospheric science at senior center**, Arvada CO, 22 Mar 2014
- **Mentor to two high school students**, Boulder CO, Feb 2012–Jun 2012
- **President**, Penn State Christian Grads, May 2007–Jul 2010
- **Hurricane Katrina clean-up** in Louisiana with church group, Mar 2007
- **Campus Weather Service volunteer**, behind the scenes for the public TV show “Weather World”, PSU Department of Meteorology, Sep 2005–Dec 2006

PHOTOGRAPHY CREDITS

- Photos and video of a hailstorm at NCAR Foothills Lab. Several media outlets, including broadcasts of 9News (Denver) and CBS4 (Denver). 17 Jun 2019. Denver Post article at <https://www.denverpost.com/2019/06/17/colorado-weather-hail-lightning-heavy-rain/>. AccuWeather article at <https://www.accuweather.com/en/weather-news/rounds-of-severe-storms-flash-flooding-to-culminate-with-tornado-threat-in-central-us/70008572>.
- Bellware, D., and Dr. Richard Gardiner, 2014: The Genesis of the Memorial Day Holiday in America. Columbus State University, Columbus, GA, 194 pp. [Photo by Jared Lee on p. 113, of a Memorial Day sign in Boalsburg, PA.]
- Photos of a railroad tie fire in Longmont, CO, published by 9News Denver, both on television and the Internet. 16 Apr 2014. News story available at: <http://www.9news.com/story/news/local/2014/04/16/railroad-tie-fire-visible-from-i-25/7805763/>.
- Franck, Karen A., and Teresa von Sommaruga Howard, 2010: Design through Dialogue: A Guide for Clients and Architects. John Wiley & Sons, Ltd., Chichester, West Sussex, United Kingdom. 208 pp. [Photos by Jared Lee on pp. 176 and 194, of Te Papa Tongarewa (The National Museum of New Zealand), located in Wellington, New Zealand.]

VIDEOGRAPHY CREDITS

- Seven seconds of footage by Jared Lee from a sporting event (George Mason at Penn State men’s basketball game, NIT First Round, 17 Mar 2009) was used in a 30-second PSA for Big Ten Conference Men’s Basketball entitled “Magic Number.” This PSA aired during television broadcasts of Big Ten games throughout the 2009-10 basketball season on multiple networks, including CBS, ESPN, and BTN. The PSA can be viewed at this URL: <http://www.youtube.com/watch?v=H5oZ3wMAvtY>.