

# JUSTIN SHARP, Ph.D.

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Meteorology Ph.D. and weather driven renewables integration subject matter expert with a proven track record.  
Seeking research/though leadership/policy opportunities that drive energy transition to mitigate climate change.

## Key Skills/Attributes

- Over seventeen years of experience in the electric utility industry, with sixteen years specializing in renewable energy
- Atmospheric Sciences Ph.D. from leading graduate program. Excellent Grades. Research focus in numerical weather prediction modeling. Graduate level understanding of climate change science. Experience teaching climate science to undergraduates.
- Experienced and respected leader, known in the industry for thought leadership and advocacy
  - Expert knowledge of how Atmospheric Science and Climate Science are used (and misused) by the sector
  - Broadly versed in the electric utility industry including knowledge of market structure and operating rules of many RTO's and BA's. Considered to be one of the thought leaders in VG grid integration
  - Contributor to, and peer reviewer for IEEE, AMS and Institute of Mechanical Engineers publications on variable generation
  - Well-developed industry contacts with national labs/research entities, technical advocates, operators, utilities, and developers
  - Knows when to delegate, when to engage and when to challenge. Solicits suggestions of others, including subordinates
  - Honed analysis skills enable focused direction of others and individual contribution as appropriate
  - Have briefed congressional staffers, White House OSTP staff, State Department staff, DOE, non-profits and senior NOAA leadership on renewable industry challenges and vision
  - Service on numerous boards and committees including, chairing the American Meteorological Society (AMS) Renewable Energy Committee, and membership of AMS Board on Enterprise and Economic Development, and the NOAA Environmental Information Systems Working Group that reports to congress through the NOAA Science Advisory Board.
- Holistic systems thinker: strongly believes that effective solutions require reconciliation of the big picture
- Experienced in both writing winning grant proposals and reviewing proposals of other
- Self-disciplined; achieving goals within deadlines to a high standard. Communicates effectively in written and verbal form.
- Responds well to challenges, rapidly adapting to new tasks and learning new skills with enthusiasm.
- Extremely computer literate (former software engineer with five years of IT industry experience)

## Education

University of Washington, WA	Ph.D. Atmospheric Sciences (2005). M.S. Atmospheric Sciences (2002). GPA: 3.59	<b>1997-2005</b>
Rutgers University, NJ	M.S. Meteorology. GPA: 3.88	<b>1995-1997</b>
University of Liverpool, UK	B.Sc. Physics and Computer Science Joint Honors ( <b>First Class</b> )	<b>1988-1991</b>
G.M.A.T.	94th Percentile score	<b>January 1993</b>
G.R.E.	91st Percentile score	<b>July 1995</b>

## Career/Experience

### Sharply Focused LLC

### **Principal and Owner**

**March 2012 – Present**

- Founder, owner and Principal of Sharply Focused LLC, a successful consultancy that provides meteorological expertise tailored to the energy sector, especially renewable energy transition needs, forecasting, performance analysis and grid integration.
- Examples of service offerings include: assessing VER grid resiliency impact; sector transition gap analysis for utilities, training in renewable energy meteorology and integration, renewable resource/portfolio assessment and characterization; candidate recruitment and screening for renewable energy meteorology positions; variable generation PPA and trading strategies; VER performance and forecast performance analysis.
- Clients include the NREL, GridLab, Electric Power and Research Institute, Department of Energy, NOAA, Global Weather Corporation, EUCI, Envision Energy, MISO, IBM, United States Energy Association, Center for Resource Solutions/The Energy Foundation of China, Vaisala Inc, Portland General Electric, Lockheed Martin, NaturEner, Meteo Group, and Precision Wind.
- SME on the importance of meteorology in grid policy, planning and operations of weather at high VER penetration. Recent contracts with NREL, GridLab and ESIG have focused in this area
- Presents technical material for US-AID to a diverse range of governments and utilities around the world including China, India, South Africa, and Thailand.
- Major DOE project grants (key roles from proposal forward): The Wind Forecast Improvement Project 2, Solar Forecasting 2, The Impact of Meteorological Tail Events at High Renewable Penetrations
- Active industry spokesperson advocating sound renewable energy integration methods and policy directions and proponent for appropriate application of atmospheric and climate science to drive and optimize the renewable energy transition.

## **Iberdrola Renewables, USA Director, Operational Meteorology September 2005 – March 2012**

- Director of commercially focused wind meteorology group overseeing all meteorology associated with operations of the US portion of the world's largest wind power portfolio. Manages staff, infrastructure and budget
- Company lead and industry expert on the role of forecasting and meteorological analysis in variable generation integration.
  - Develops and advocates company policy positions on weather driven integration issues. Author of forecasting responses to FERC NOI. Co-author of AWEA forecasting policy white paper.
  - Regular presenter/chair at technical workshops and seminars.
  - Co-author of peer reviewed articles in meteorological and engineering journals. Peer reviewer for several journals.
- Witness in two BPA rates cases. Key participant in developing testimony that helped reduce BPA wind integration charges by over 50% saving Iberdrola over \$20M/year.
- Founded and led Iberdrola's program utilizing NWP to assess wind resource and resource variability
  - Program has saved Iberdrola \$millions in consulting fees, and now provides key input into meteorological and financial analysis of all pipeline and existing projects reducing risk and adding value
  - Built and led team to create an internal system to provide all aspects of this type of analysis that was provided by vendors
- Founded, expanded and led Iberdrola's wind forecaster team providing 24/7 custom forecasts to trading, generation dispatch, and Asset Management. This was the first renewable energy meteorology team in the country and is still one of the largest today
  - Important component of the Iberdrola/BPA customer supplied generation imbalance project
- Manages Iberdrola's relationship with wind energy forecast vendors. Handles contract negotiations and scope of work, including contract changes that have saved Iberdrola several \$100K/year. Oversees ongoing forecast validation/improvement work.
- Manager/technical lead of meteorological analysis for performance reporting and budget analysis of operational wind farms
- Keeps abreast of advancements in NWP. Advocates internally and externally for better forecasts within the energy sector
- **Key Tools:** PI Historian (ProcessBook, Datalink etc), MS-Office, Matlab, Google Earth, WRF.

## **Bonneville Power Administration Meteorologist**

**October 2004 – September 2005**

- Provided temperature and quantitative precipitation forecasts (QPF), under strict deadlines, to support stream flow prediction, load forecasting and power trading operations for the Pacific Northwest's largest producer of hydropower.
- Communicated forecasts and forecast confidence to users, including senior management, in written and verbal form
- Technical authority on NWP and advanced forecasts methods at BPA.
- Maintained the computer systems used for reception, decoding and display of meteorological data:
- Implemented automation methods that improved efficiency and product accuracy
- Worked with outside agencies and research groups to gain access to new data sources. Created code to ingest these data streams
- **Key Tools:** Perl, F77, Matlab script, Shell scripts / Linux / Gempak Suite, LDM, Matlab, MS Office.

## **University of Washington**

**Graduate Student & Research Assistant**

**Sept 1997 – Jan 2005**

- *MS/Ph.D. research to improve understanding and forecasting of gapflow, a phenomenon that greatly affects PNW weather*
  - Evaluated Columbia Gorge climatology using climate data, and statistical examination of NCEP reanalysis data
  - Customized the MM5 mesoscale model to investigate the dynamical mechanisms responsible for Columbia Gorge gap flow
  - Published in peer-reviewed scientific journals. Produced and delivered oral and poster presentations at conferences
    - First place student poster at 10th Conference on Mesoscale Processes, June 2003
  - Peer reviewer of papers submitted to professional journals. Contributed material to COMET gapflow module
- *Teaching Activities - Served as a teaching assistant for two academic quarters:*
  - Responsible for developing and delivering recitation and review sessions. Created and graded assignments and exams
  - Designed and performed classroom demonstrations that clarify meteorological and climate science principles. Developer of several class websites
  - Highly commended by professors and students (supervisor professor reports and student evaluations available on request)
    - "...has made a lasting contribution to the teaching of Atmospheric Sciences 101...I suggest that he be in consideration for the department's teaching award" [Prof. R. Houze]; "I was very fortunate indeed to have Justin as my TA...did an outstanding job...pleasant to work with and I recommend him without reservation as a fine teacher." [Prof. C. Leovy]
- *Expert PNW weather forecaster. Highlights include:*
  - Flight scientist on IMPROVE I and II meteorological field projects. Led flight forecast briefings and flew on several missions
  - Chief meteorologist for two record setting hot air balloon flights including only ever traverse of Mount Rainier by balloon
  - Winner of University of Washington forecast contest in 2001 and 2004. Top three placement in 1998 - 2000, 2002 and 2003
- University of Washington Graduate School Fellowship Recipient, 1997-98.
- **Key Tools:** MM5, Matlab, F77, F90, Perl, HTML, Shell scripts, Gempak suite, RIP, MS-Office.

## **Smiths Industries, DSNA**

**Senior Software Engineer**

**February 1997 – September 1997**

- Designed and coded software units for a laser guided air-to-ground missile system

## AeroSystems International

## **Freelance Software Engineer May - Sept. 1996 & June - Dec. 1994**

- Contracted between August 1994 and December 1994 and again during Summer 1996 university recess
  - Technical team lead in the design and coding of the Eurofighter jet Engine Management Monitoring and Setup Unit
  - Tester of Rolls Royce BR710 engine controller software. Safety critical, demanding rigorous analysis of requirements.

## Rutgers University

## **Student And Part-time Lecturer**

## **September 1995 - July 1997**

- Classes and research (*Clear Air Echoes and their Application in the Analysis of Sea-Breezes*) resulting in Meteorology MS
- Part-time calculus lecturer; lecturing, setting and grading assignments and exams.

## Summary of Prior Employment

## **Software engineer (Permanent & Freelance)**

**09/1991 – 09/1995**

*Andersen Consulting (now Accenture)* *IT Solutions Consultant/SW Engineer*

*January 1995 - September 1995*

*Aerosystems International (also 1996 - details above)*

*June 1994 - December 1994*

*Myriad Computer Services,*

*IT Recruitment Professional*

*November 1993 - June 1994*

*Data Sciences LTD (now part of IBM)* *Software Engineer*

*September 1991 - November 1993*

## Professional Affiliations/Service/Honors:

- Environmental Information Systems Working Group – A NOAA Advisory Board reporting to Congress Dec 2015-Present
- American Meteorological Society:
  - Renewable Energy Committee Chair Jan 2016-Present
  - Renewable Energy Committee Board Member Jan 2012-Dec 2015
  - Board on Enterprise Economic Development Board Member Jan 2014-January 2018
  - Forecast Improvement Group Board Member August 2012-2018
  - National Member 1998-Present
  - Oregon Chapter Member 2005-Present
- Energy Systems Integration Group – Individual Consultant Member 2013-Present

## Peer Reviewed Publications:

Novacheck, Joshua, Sharp, Justin, Schwarz, Marty, Donohoo-Vallett, Paul, Tzavelis, Zach, Buster, Grant, and Rossol, Michael. The Evolving Role of Extreme Weather Events in the U.S. Power System with High Levels of Variable Renewable Energy. United States: N. p., 2021. Web. doi:10.2172/1837959

Fox, J., J. Sharp an co-authors, "Forecasting and Market Design Advances: Supporting an Increasing Share of Renewable Energy," in IEEE Power and Energy Magazine, vol. 19, no. 6, pp. 77-85, Nov.-Dec. 2021, doi: 10.1109/MPE.2021.3104132.

Pichugina, Y., J. Sharp, and co-authors, 2020, Evaluating the WFIP2 updates to the HRRR model using scanning Doppler lidar measurements in the complex terrain of the Columbia River Basin. Accepted for publication in Journal of Renewable and Sustainable Energy.

Julie K. Lundquist, Rochelle P. Worsnop, Larry K. Berg, James M. Wilczak, Darren L. Jackson, Garrett Wedam, Yelena Pichugina, Justin Sharp, Duli Chand: Mountain waves impact wind power generation. Wind Energy Science (2020 Preprint form)

Robert M. Banta, Yelena L. Pichugina, W. Alan Brewer, Aditya Choukulkar, Kathleen O. Lantz, Joseph B. Olson, Jaymes Kenyon, Harindra J.S. Fernando, Raghu Krishnamurthy, Mark J. Stoelinga, Justin Sharp, Lisa S. Darby, David D. Turner, Sunil Baidar, and Scott P. Sandberg: Characterizing NWP Model Errors Using Doppler-Lidar Measurements of Recurrent Regional Diurnal Flows: Marine-Air Intrusions into the Columbia-River Basin. *Mon. Wea. Rev.* (2020) **148** (3): 929–953.

McCaffrey, K.; James Wilczak; Laura Bianco; Eric Gritmit; Justin Sharp; Robert Banta; Katja Friedrich; Harinda J.S. Fernando; Raghu Krishnamurthy; Laura Leo; Paystar Muradyan: Identification and Characterization of Persistent Cold Pool Events from Temperature and Wind Profilers in the Columbia River Basin. *J. Appl. Meteor. Climatol.* (2019) **58** (12): 2533–2551

Wilczak, J.M., M. Stoelinga, L.K. Berg, J. Sharp, C. Draxl, K. McCaffrey, R.M. Banta, L. Bianco, I. Djalalova, J.K. Lundquist, P. Muradyan, A. Choukulkar, L. Leo, T. Bonin, Y. Pichugina, R. Eckman, C.N. Long, K. Lantz, R.P. Worsnop, J. Bickford, N. Bodini, D. Chand, A. Clifton, J. Cline, D.R. Cook, H.J. Fernando, K. Friedrich, R. Krishnamurthy, M. Marquis, J. McCaa, J.B. Olson, S. Otarola-Bustos, G. Scott, W.J. Shaw, S. Wharton, and A.B. White, 2019: The Second Wind Forecast Improvement Project (WFIP2): Observational Field Campaign. *Bull. Amer. Meteor. Soc.*, **100**, 1701–1723, <https://doi.org/10.1175/BAMS-D-18-0035.1>

Shaw, W.J., L.K. Berg, J. Cline, C. Draxl, I. Djalalova, E.P. Gritmit, J.K. Lundquist, M. Marquis, J. McCaa, J.B. Olson, C. Sivaraman, J. Sharp, and J.M. Wilczak, 2019: The Second Wind Forecast Improvement Project (WFIP2): General Overview. *Bull. Amer. Meteor. Soc.*, **100**, 1687–1699, <https://doi.org/10.1175/BAMS-D-18-0036.1>

C. W. Hansen et al., "The Solar Forecast Arbiter: An Open Source Evaluation Framework for Solar Forecasting," 2019 IEEE 46th Photovoltaic Specialists Conference (PVSC), 2019, pp. 2452-2457, doi: 10.1109/PVSC40753.2019.8980713.

James McCalley, Jay Caspary, Chris Clack, Wayne Gali, Melinda Marquis, Dale Osborn, Antje Orths, Justin Sharp, Vera Silva, Peter Zeng, 2017, Wide-Area Planning of Electric Infrastructure: Assessing Investment Options for Low-Carbon Futures, *IEEE Power and Energy Magazine*, Vol. 15, no. 6, pp. 83-93.

Aidan Tuohy, John Zack, Sue Ellen Haupt, Justin Sharp, Mark Ahlstrom, Skip Dise, Eric Gruit, Corinna Mohrlen, Matthias Lange, Mayte Garcia Casado, Jon Black, Melinda Marquis, Craig Collier, 2015: Solar Forecasting: Methods, Challenges, and Performance, *IEEE Power and Energy Magazine*, Vol. 13, No. 6, p50-59.

Kirsten D. Orwig, Mark Ahlstrom, Venkat Banunayanan, Justin Sharp, James M. Wilczak, Jeffrey Freedman, Sue Ellen Haupt, Joel Cline, Obadiah Bartholomy, Hendrik F. Hamann, Bri-Mathias Hodge, Catherine Finley, Dora Nakafuji, Jack Peterson, David Maggio, Melinda Marquis, 2015: Recent Trends in Variable Generation Forecasting and Its Value to the Power System. *IEEE, Transactions on Sustainable Energy*. Vol. 6, No. 3 (Early Access Pre-print Published Dec 23, 2014)

Mark Ahlstrom and Drake Bartlett, Craig Collier, Jacques Duchesne, David Edelson, Alejandro Gesino, Marc Keyser, David Maggio, Michael Milligan, Corinna Möhrlein, Jonathan O’Sullivan, Justin Sharp, Pascal Storck, Miguel de la Torre, 2013: Knowledge is Power – Efficiently Integrating Wind Energy and Wind Forecasts. *IEEE, Power and Energy*, Vol. 11, No. 6

Somnath Baidya Roy, Justin Sharp, 2013: Why Atmospheric Stability Matters in Wind Assessment. *North American Wind Power*, Vol.9 No.12

Mark Ahlstrom, James Blatchford, Matthew Davis, Jacques Duchesne, David Edelson, Ulrich Focken, Debra Lew, Clyde Loutan, David Maggio, Melinda Marquis, Michael McMullen, Keith Parks, Ken Schuyler, Justin Sharp, and David Souder, 2011: Atmospheric Pressure: Weather, Wind Forecasting, and Energy Market Operations, *IEEE, Power and Energy*, Vol.9 No.6

Melinda Marquis, Jim Wilczak, Mark Ahlstrom, Justin Sharp, Andrew Stern, J. Charles Smith, Stan Calvert, 2011: Forecasting the Wind to Reach Significant Penetration Levels of Wind Energy, *Bulletin of the American Meteorological Society*, 92, p1159–1171.

Sharp, J., 2005: *The Structure and Dynamics of Columbia Gorge Gap Flow Revealed by High-Resolution Numerical Modeling*, Doctoral Dissertation, University of Washington. 190pp.

Sharp, J. and C. F. Mass, 2003: The Climatological Influence and Synoptic Evolution Associated with Columbia Gorge Gap Wind Events, *Weather and Forecasting*, 83, p970-992.

Sharp, J. and C. F. Mass, 2002: Columbia Gorge Gap Flow: Insights from Observational Analysis and Ultra-High Resolution Simulation, *Bulletin of the American Meteorological Society*, 83, p1757–1762.

Sharp, J., 2002: *The Mesoscale Meteorology of the Columbia Gorge*, Masters Thesis, University of Washington. 248pp.

Sharp, J., 1997: *Clear-air Radar Observations and their Application in Analysis of Sea Breezes*, Masters Independent Study Paper, Rutgers University 52pp.

### **Selected Conference, Workshop and Symposia Presentations:**

Sharp, J.: Climate Change, Extreme Weather, and the Evolving Grid: Separating Facts, Myths and Speculation, IEEE PES General Meeting Climate Change on the Power Grid Super-Session, Online, July 29, 2021.

Sharp, J.: The February 2021 Texas Coldwave: Unprecedented...Or Not? ESIG Meteorology and Market Design for Grid Services Workshop, Online, June 4, 2021.

Sharp, J.: Keynote: The Importance of Effective Use of Meteorology in the Energy Transition, American Meteorological Society Washington Forum, Online, May 6, 2021. Invitation to repeat Washington Forum talk for DOE/SETO Solar Forecasting workshop

Sharp, J.: The Importance of Effective Use of Meteorology in the Energy Transition, American Meteorological Society Washington Forum, Online, April 28, 2021.

Sharp, J. and Holmgren, W.: Solar Forecast Arbitrator: An Open-Source Evaluation Framework for Solar Forecasting, IEA Wind Forecasting Task 36 Conference, Online, June 25, 2020

Sharp, J.: Extreme Weather and the Grid of the Future. ESIG Meteorology & Market Design for Grid Services Workshop, Online, June 18, 2020

Sharp, J.: Course planner, organizer, and lead instructor of 1½-day Meteorology for Renewable Energy course offering from EUCI. Denver, CO. September 2019

Sharp, J.: Weather Events in NREL’s Wind and Solar Datasets. ESIG Meteorology & Market Design for Grid Services Workshop, Denver, CO. June 2019

Sharp, J. (presenter), Holmgren, W., Tuohy, A., Hansen, C: An Open Source Evaluation Framework for Solar Forecasting. ESIG Meteorology & Market Design for Grid Services Workshop, Denver, CO. June 2019

Sharp, J. (invited): A primer in the use of Meteorology and Forecasting in Power Systems Operations. Colorado Rural Electric Association Energy Innovations Summit, Denver, CO. October 2018.

Sharp, J.: Session Chair: Solar and Wind R&D Advances. ESIG Forecasting Workshop, St. Paul, MN, June 2018

Sharp, J.: It's the Meteorology, Stupid...Planning for High Penetration Renewable Energy. EUCI Intermediate Resource Planning Summit, Portland, OR, April 2018.

Sharp, J.: Course planner, organizer and lead instructor of 1½-day Meteorology for Renewable Energy course offering from EUCI. Denver, CO. February 2018

Sharp, J., Aidan Touhy: Organizer and Co-Chair for Themed Joint Session: Communicating Information and Risk in the Energy Sector. 9<sup>th</sup> AMS Conference on Weather, Climate and the New Energy Economy. Austin, TX, January 2018.

Sharp, J., Aidan Touhy: Research to Operations Needs in Renewable Energy Forecasting. 9<sup>th</sup> AMS Conference on Weather, Climate and the New Energy Economy. Austin, TX, January 2018.

Sharp, J.: Soup to Nuts: Meteorology for Renewable Energy. EUCI Renewable Energy Grid Operations Conference. Austin, TX, September 2017.

Sharp, J.: The Importance of Atmospheric Science in the Renewable Energy Revolution. UVIG Forecasting Workshop, Atlanta, GA, June 2017

Sharp, J.: The Core Role of Atmospheric Science in the Renewable Energy Transition. Session organizer, chair and intro speaker. Successfully secured a heavy weight panel of executives, including a keynote from Congressman Earl Blumenauer. American Meteorological Society Washington Forum, May 2017

Sharp, J.: The Role of Forecasting and Resource Assessment in the Power System of the Future. UVIG Spring Technical Workshop. Tucson, AZ. March 2017.

Benjamin, S., Justin Sharp, Skip Dise: Forecasting Applications for Power Systems. Panel member in UVIG webinar. February 2017

Sharp, J.: The Role of Atmospheric Science in Enabling the Renewable Energy Revolution. AMS 8Energy/5Climate Joint Session Symposium. Seattle, WA January 2017

Sharp, J.: The Politicization of Science and Scientific Integrity at NOAA. Meeting of the Environmental Information Systems Working Group under the NOAA Science Advisory Board. Washington DC, December 2016.

Sharp, J.: System Planning for a High Renewables Future, Intro Presentation and Session Moderator, UVIG Forecasting Workshop, Denver, CO, September 2016

Sharp, J: Integrating and Implementing Forecasting of Variable Renewable Energy, USAID Greening the Grid Boot Camp, New Delhi, India, July 2016. Co-instructor through 3-day workshop and consultant to POSOCO. Developed for about 25% of the course content material together with other industry specialists

Sharp, J., Christopher Clack, Melinda Marquis, John Moore: Webinar to NRDC staff on the importance of weather informed grid policy. May 2016.

Sharp, J. (Invited Speaker): The Role of Atmospheric Science in Mitigating Challenges of the Renewable Energy Revolution. University of Washington Colloquium Series, April 2016

Sharp, J., Melinda Marquis: A New Framework For A New Power System. Co-organizer, chair and presenter. American Meteorological Society Washington Forum Renewables Session, April 2016

Sharp, J: Integrating and Implementing Forecasting of Variable Renewable Energy, USAID Greening the Grid Boot Camp, Bangkok, Thailand, February 2016. Co-instructor through 3-day workshop. Developed for about 25% of the course content material together with other industry specialists

Sharp, J: Integrating and Implementing Forecasting of Variable Renewable Energy, USAID Greening the Grid Boot Camp, Mexico City, Mexico, January 2016. Co-instructor through 3-day workshop. Developed for about 25% of the course content material together with other industry specialists

Sharp, J. (Invited Speaker): Weather Forecasting for Load and Renewables – A primer, North American Energy Markets Association, Las Vegas, October 2015

Sharp, J.: The Value of (Improved) Renewable Energy Forecasts to Operational and Market Stakeholders, AWEA WindPower 2015, Orlando, FL, May 2015

Sharp, J.: Session Chair - How to Run a Forecasting Trial and How to Get the Most Value from a Set of Multiple Forecast Vendors, UVIG Forecasting Workshop, Denver, CO, February 2015

Sharp, J., K. Barr: The Case for Long-Range Scanning Lidar in Offshore and Complex Terrain WRA - Does it Pencil?, AWEA Wind Resource and Energy Assessment Workshop, Orlando, FL, December 2014

Sharp, J., K. Barr: The Potential of Long Range Scanning Lidar in Very Short Term Wind Power Forecasting - A Scientific and Economic Evaluation, UVIG Spring Workshop, Anchorage, AK, May 2014

Sharp, J., K. Barr: A Comparison of Lidar Wind Vector Retrievals with In-Situ and Vertical Lidar Measurements Pt 2, AWEA Windpower Expo, Las Vegas, NV, May 2014

Sharp, J.: The Role of Forecasting in Market and System Operation, Evolving Approaches to RE Generation Forecasting and Integration Workshop, ESKOM Academy of Learning, Johannesburg, South Africa, December 2013

Sharp, J.: Session Chair - Forecasting, Reserves and Efficient Market Operation: What Have We Learned, UVIG Forecasting Workshop, Salt Lake City, Utah, February 2013

Sharp, J.: Seminar containing four units on wind and solar energy forecasting ranging from introductory to advanced topics, China Meteorology Administration Wind and Solar Energy Resources Center International Seminar on Wind and Solar Energy Prediction, Beijing, China, December 2012.

Sharp, J., with contributions from John Zack, Mark Ahlstrom and Eric Grimmit: US Weather Prediction (invited), An Alternative Model. American Meteorological Society Board on Enterprise Communication Discussions on the Future of the Weather Enterprise, Silver Spring, MD, November 2012

Sharp, J.: The Enabling Role of Variable Energy Forecasting and Load Forecasting in an Energy Imbalance Market. EUCI Energy Imbalance Concepts in the Western Interconnect Market, Portland, OR. August 2012.

Sharp, J.: Renewable Generation Data: Who needs it? How much is enough? Presenter and Session Chair, UVIG Spring Meeting, San Diego, CA. April 2012.

Sharp, J.: Atmospheric Science Breakthroughs That Impact Renewable Energy Viability: An Industry Perspective, AGU Annual Meeting, San Francisco, CA. December 2010.

Sharp, J.: Wind Ramp Forecasting: What's at Stake, The State of the Science, Priorities and Ways Forward, UWIG Spring Forecasting Workshop, Albuquerque, NM. February 2010.

Sharp, J.: The Meteorological Challenges For Renewable Energy, AGU Annual Meeting, San Francisco, CA. December 2009.

Sharp, J.: Meeting the Needs of the Renewable Energy Industry: Understanding Sector Roles, AMS Summer Community Meeting, Norman, OK. August 2009.

### **Interests**

- Renewables advocacy, Weather and forecasting, Traveling, Skiing, Forecasting for special projects (e.g. balloonists).