Luca DELLE MONACHE

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EDUCATION

2002 – 2005 **Ph.D. in Atmospheric Sciences**
Atmospheric Science Programme, University of British Columbia, Vancouver, Canada
Thesis: Ensemble-averaged, probabilistic, and Kalman-filtered ozone regional forecasts
Supervisor: Prof. Roland Stull

1999 – 2002 **M.S. in Meteorology**
Department of Meteorology, San José State University, California
Thesis: Aerosol property comparison within and above the ABL at the ARM SGP site
Supervisors: Prof. Kevin Perry and Prof. Robert Bornstein

1991 – 1997 **Laurea (~M.S.) in Mathematics**
Department of Mathematics, University of Rome "La Sapienza", Italy
Thesis: Implementation of CALGRID photochemical model on parallel architecture Quadrics
Supervisor: Prof. Patrizia Mentrasti

PROFESSIONAL EXPERIENCE (Managing, Research and Development – R&D)

05/2015 – Present **Science Deputy Director, National Security Applications Program (National Center for Atmospheric Research, Boulder, Colorado, USA)**

Managing
- Deputy Director of program of approx. 30 staff members (20 scientists, 10 software engineers)
- Scientific strategies, program development, staffing, supervising, budgeting, high-level sponsor interactions
- Leading project teams with staff from NCAR, the academia, federal institutions, and the private sector, both in the U.S. and Europe

R&D
- Probabilistic meteorological forecasting and forecast verification
- Analog-based methods, artificial intelligence
- Modeling systems for meteorology, air-quality, transport and diffusion dispersion and renewable energy applications from meso to micro scales
- Downscaling techniques for weather and climate
- Data assimilation for weather and atmospheric composition, inverse modeling

09/2013 – 04/2015 **Project Scientist III (National Center for Atmospheric Research, Boulder, Colorado, USA)**

Managing
- Program development
- Large, complex multi-year scientific and technical programs
- Leading project teams with staff from NCAR, the academia, federal institutions, and the private sector, both in the U.S. and Europe

R&D
- Probabilistic meteorological forecasting and forecast verification
- Analog-based methods, artificial intelligence
- Modeling systems for meteorology, air-quality, dispersion and renewable energy applications
- Downscaling techniques for weather and climate
- Data assimilation for weather, inverse modeling

03/2009 – 08/2013 **Project Scientist II (National Center for Atmospheric Research, Boulder, Colorado, USA)**

Managing
- Program development
- Large, complex multi-year scientific and technical programs
- Led project teams with staff from NCAR, the academia, federal institutions, and the private sector, both in the U.S. and Europe

R&D
- Probabilistic meteorological forecasting and forecast verification
- Analog-based methods, artificial intelligence
- Integrated/fully coupled modeling systems for groundwater – land-use surface – atmosphere,

meteorology, air-quality, dispersion and wind energy applications
Numerical weather prediction, data assimilation, inverse modeling, and ensemble calibration

11/2006 – 02/2009 **Staff Scientist (Lawrence Livermore National Laboratory, California, USA)**

Managing Complex multi-year scientific and technical projects
Led tasks in diverse scientific and technical teams
R&D Meteorology/air-quality/dispersion modeling, ensemble forecasting and Kalman filtering
Data assimilation and urban parameterizations for meteorology/air-quality/dispersion
Inverse modeling (Bayesian inference/stochastic sampling) for carbon emission estimates

01/2006 – 10/2006 **Postdoctoral Researcher (Lawrence Livermore National Laboratory, California, USA)**

Managing Task lead in complex multi-year scientific and technical project
R&D Meteorology/air-quality/dispersion modeling, ensemble forecasting and Kalman filtering
Data assimilation for meteorology/air-quality/dispersion
Inverse modeling via Bayesian inference and stochastic sampling for source reconstruction

09/2002 – 12/2005 **Graduate Research Assistant (University of British Columbia, British Columbia, Canada)**

Managing Led the development of the first operational ozone prediction system at the mesoscale
R&D Meteorology/air-quality/dispersion ensemble forecasting, and Kalman-filter post-processing

01/2002 – 08/2002 **Research Assistant (Institute of Atmospheric Sciences and Climate, Rome, Italy)**

Managing Designed and executed full project, coordinated team member contributions
R&D Principal components analysis of mixing height, precipitable water and aerosol data

09/1999 – 12/2001 **Graduate Research Assistant (Lawrence Livermore National Laboratory / San José State University, California, USA)**

Managing Contributed to project design and execution, coordinated team member contributions
R&D Vertical structure of aerosol properties analysis
Atmospheric Radiation Measurement program remote sensing data analysis

01/1998 – 08/1999 **Graduate Fellow (Italian Agency for New Technology, Energy and Environment, Italy)**

Managing Contributed to project design and execution, coordinated team member contributions
R&D Tested new parallel platform; developed of a Photochemical Lagrangian Particle Model

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PROFESSIONAL SERVICE

Associate Editor
Monthly Weather Review (2011– 2012)

Committees
AMS Statement on Scientific Uncertainty, Drafting Team Member (2017)
Next Generation Global Prediction System (NGGPS) Program, Post-Processing Strategic Implementation Plan Working Group, Member (2017)
Steering Committee of the Geoinformatics and Earth Observation Laboratory, The Pennsylvania State University, Member (2015 – present)
EnviroComp Institute, Senior Member (2015 – present)
NCAR's Research Applications Laboratory Visitor Fund Committee, Chair (2012 – 2017)
Texas Environmental Research Consortium, Science Advisory Committee (2011 – 2015)
La Mia Aria s.r.l., Scientific Committee (2010 – present)
American Meteorological Society Ad Hoc Committee on Generating and Communicating Forecast Uncertainty (2010 – 2011)
IEEE International Conference on Data Mining, Scientific Committee (2008)

Peer Reviewer
Scientific Journals: Atmospheric Chemistry and Physics, Atmospheric Environment, Geophysical Research Letters, Journal of Applied Meteorology and Climatology, Journal of Geophysical Research, Journal of Air and Waste Management Association, Monthly Weather Review, Science of the Total Environment, SIAMO/ASA Journal of Uncertainty Quantification, Weather and Forecasting
US Government Agencies: Environmental Protection Agency (EPA), National Aeronautics and Space Administration (NASA)

GRANTS & RESEARCH AWARDS (as Principal Investigator – PI, or Co-PI only)

Period	My Role	Title	Agency	Amount (USD)
2017 – 2021	PI	Chemical biological defense modeling and virtual environment development	DTRA **U.S. Defense Threat Reduction**	$3.75-7.5M
2017 – 2018	Co-PI	Evaluation and recommendation of state-of-the-art source term estimation methods for methane emission applications	Exxon Mobil	$240 932
2016 – 2017	PI	Gridded probabilistic predictions with an analog ensemble over Beijing urban area	Chinese Institute of Urban Meteorology	$50 000
2016 – 2018	Co-PI	Probabilistic prediction of tropical cyclone track, intensity, and structure with an analog ensemble	NOAA HFIP	$158 895
2016 – 2019	PI	A novel ensemble design for PM2.5 probabilistic predictions and quantification of their uncertainty	NOAA	$449 249
2015 – 2016	PI	Chemical biological defense modeling and virtual environment development	DTRA U.S. Defense Threat Reduction	$750 000
2015 – 2017	PI	Data assimilation for AFTAC	AFTAC Air Force Technical Applications Center	$370 000
2015 – 2017	PI	Chemical data assimilation and analog-based uncertainty quantification to improve decision-making in public health and air quality	NASA U.S. National Aeronautics and Space Administration	$1 266 168
2014 – 2016	PI	Technology transfer of the analog ensemble to Vattenfall for wind and power predictions and optimal downscaling	Vattenfall	$100 000
2014 – 2016	Co-PI	Probabilistic predictions of hurricane intensity with an analog ensemble	NOAA HFIP U.S. National Oceanic and Atmospheric Administration, Hurricane Forecast Improvement Program	$195 000
2012 – 2017	Co-PI	Analog-based probabilistic predictions of the lower PBL	ATEC U.S. Army Test and Evaluation Command	$916 000
2013	PI	Wind resource assessment with the analog ensemble	NREL U.S. National Renewable Energy Laboratory	$150 000
2012 – 2013	PI	Evaluating the economic value of NASA Earth Science datasets for supporting the Nation's renewable energy infrastructure	NASA	$170 000
2012 – 2013	PI	Wind energy prospecting: using NASA Earth Science data to create improved regional wind power maps	NASA	$354 000
2012	PI	Wind prediction system, tech-transfer	Siemens	$8 500
2012	PI	Analog-based probabilistic predictions for wind energy applications	Vestas Wind Systems	$50 000
2012 – 2015	PI	Investigating marine boundary layer parameterizations by combining observations with models via state estimation	DOE U.S. Department of Energy	$702 000
2011 – 2012	Co-PI	Analog-based methods to improve the accuracy of dispersion predictions and estimate their uncertainty	DTRA	$230 000
2010 – 2012	Co-PI	The vector mosquito Aedes Aegypti at the margins: sensitivity of a coupled natural and human system to climate change	NSF U.S. National Science Foundation's Dynamics of Coupled Natural and Human Systems Program	$1 235 153
2009 – 2011	PI	Ensemble data assimilation for wind forecasts	LLNL U.S. Lawrence Livermore National Laboratory	$132 620
2009 – 2010	PI	Evaluation of IMAAC improvements resulting from NEXRAD data assimilation	LLNL	$75 000
TOTAL				**$11.4 – 15.1M**

PUBLICATIONS

Chapters in Book (3)

1. Kumar, R., Barth, M. C., **Delle Monache, L.**, Ghude, S. D., Pfister, G. G., Naja, M., and G. Brasseur, P., 2016. An overview of air quality modeling activities in South Asia. Chapter in *Air Pollution in Asia*. Pub. Springer, USA
2. **Delle Monache, L.**, and Alessandrini, S., 2014. Probabilistic Wind and Solar Power Predictions. Chapter in *Renewable Energy Integration: Practical Management of Variability, Uncertainty & Flexibility in Power Grids*. Ed Jones, Pub. Elsevier, USA
3. **Delle Monache, L.**, 2010. Ensemble-based Air Quality Predictions. Chapter in *Air Quality Modeling – Theories, Methodologies, Computational Techniques, and Available Databases and Software, Vol. IV – Advances and Updates.* Ed. Zannetti, Pub. Air & Waste Management Association (A&WMA), USA

Peer Review Journal Articles (47 published / in press / accepted)

1. Sperati, S., Alessandrini, S., and **Delle Monache, L.**, 2017. Gridded probabilistic forecasts with an analog ensemble. Conditionally accepted, *Quarterly Journal of the Royal Meteorological Society*
2. Frediani, M., Hopson, T., Hacker., J., Anagnostou, E., **Delle Monache, L.**, and Vandenberghe, F., 2017. Object-based analog forecasts for surface wind speed. Conditionally accepted, *Monthly Weather Review*
3. Cervone, G., Clemente-Harding, L., Alessandrini, S., **Delle Monache, L.**, 2017. Photovoltaic power forecasts using artificial neural networks and an analog ensemble. Accepted to appear on *Renewable Energy*
4. Huang, J., McQueen, J., Wilczak, J., Djalalova, I., Stajner, I., Shafran, P., Allured, D., Lee, P., Pan, L., Tong, D., Huang, H.-C., DiMego, G., Upadhayay, S., and **Delle Monache, L.**, 2017. Improving NOAA NAQFC $PM_{2.5}$ predictions with a bias correction approach. *Weather and Forecasting*, 32, 407–421
5. Keller, J., **Delle Monache, L.**, and Alessandrini, S., 2017. Statistical downscaling of a high-resolution precipitation reanalysis using the analog ensemble method. Conditionally accepted, *Journal of Applied Meteorology and Climatology*
6. Lee, J., Hacker, J., **Delle Monache, L.**, Kosovic, B., Clifton, A., Vandenberghe, F., and Sanz Rodrigo, J., 2017. Improving wind predictions in the marine atmospheric boundary layer through parameter estimation in a single-column model. *Monthly Weather Review*, 145, 5–24
7. Jimenez, P., Alessandrini, S., Haupt, S., Deng, A., Kosovic, B., Lee, J., and **Delle Monache, L.**, 2016. The role of unresolved clouds on short-range global horizontal irradiance predictability. *Monthly Weather Review*, 144, 3099–3107
8. Davo', F., Alessandrini, S., Sperati, S., and **Delle Monache, L.**, Airoldi, D., and Vespucci, M., 2016. Post-processing techniques and principal component analysis for regional wind power and solar irradiance forecasting. Solar Energy, 134, 327–338
9. Sperati, S., Alessandrini, S., and **Delle Monache, L.**, 2016. An application of the ECMWF Ensemble Prediction System for short-term solar power forecasting Solar Energy. Conditionally accepted on *Solar Energy*, 133, 437–450
10. Ferruzzi, G., Cervone, G., **Delle Monache, L.**, Graditi, G., and Jacobone, F., 2016. Optimal bidding strategy in a day-ahead energy market for micro grid under uncertainty in renewable energy production. *Energy*, 106, 194–202
11. Che, Y., Peng, X., **Delle Monache, L.**, Kawaguchi, T., and Xiao, F, 2016. A wind power forecasting system based on the WRF model and Kalman filtering over a wind farm in in Japan. Accepted to appear on the *Journal of Renewable and Sustainable Energy*

12. Eckel, F. A., and **Delle Monache, L.**, 2016. A Hybrid NWP-Analog Ensemble. *Monthly Weather Review*, 144, 897–911
13. Junk, C., **Delle Monache, L.**, and Alessandrini, S., 2015. Analog-based ensemble model output statistics. *Monthly Weather Review*, 143, 2909–2917
14. Zhang, J., Draxl, C., Hopson, T., **Delle Monache, L.**, and Hodge, B.-M., 2015. Comparison of numerical weather prediction based deterministic and probabilistic wind resource assessment methods. *Applied Energy*, 156, 528–541
15. Tushaus, S., Posselt, D., Miglietta, M., Rotunno, R., and **Delle Monache, L.**, 2015. Bayesian exploration of multivariate orographic precipitation sensitivity for moist stable and neutral flows. *Monthly Weather Review*, 143, 4459–4475
16. Alessandrini, S., **Delle Monache, L.**, Sperati, S., and Cervone, G., 2015. An analog ensemble for short-term probabilistic solar power forecast. Applied *Energy*, 157, 95–110
17. Junk, C., Späth, S., von Bremen, L., **Delle Monache, L.**, 2015. Comparison and combination of regional and global ensemble prediction systems for probabilistic predictions of hub-height wind speed. *Weather and Forecasting*, 30, 1234–1253
18. Djalalova, I., **Delle Monache, L.**, and Wilczak, J., 2015. PM2.5 analog forecast and Kalman filtering post-processing for the Community Multiscale Air Quality (CMAQ) model. *Atmospheric Environment*, 119, 431–442
19. Junk, C., **Delle Monache, L.**, Alessandrini, S., von Bremen, L., and Cervone, G., 2015. Predictor-weighting strategies for probabilistic wind power forecasting with an analog ensemble. *Meteorologische Zeitschrift*, 24, 361-379
20. Nagarajan, B., **Delle Monache, L.**, Hacker, J., Rife, D., Searight, K., Knievel, J., and Nipen, T., 2015. An evaluation of analog-based post-processing methods across several variables and forecast models. *Weather and Forecasting*, 30, 1623–1643
21. Alessandrini, S., **Delle Monache, L.**, Sperati, S., and Nissen, J, 2015. A novel application of an analog ensemble for short-term wind power forecasting. *Renewable Energy*, 76, 768-781
22. Vanvyve, E., **Delle Monache, L.**, Rife, D., Monaghan, A., Pinto, J., 2015. Wind resource estimates with an analog ensemble approach. *Renewable Energy*, 74, 761-773
23. Alessandrini, S., Davo', F., Sperati, S., Benini, M., **Delle Monache, L.**, 2014. Comparison of the economic impact of different wind power forecast systems for producers. *Advance in Science and Research*, 11, 49-53
24. Archer, C., **Delle Monache, L.**, and Rife, D., 2014. Airborne wind energy: Optimal locations and variability. *Renewable Energy*, 64, 180-186
25. Pinto, J., Monaghan, A., Vanvyve, E., **Delle Monache, L.**, and Rife, D., 2014. Regional assessment of a targeted random sampling technique for more efficient dynamical climate downscaling. *Journal of Climate*, 27, 1524-1538
26. Archer, C. L., Colle, B., **Delle Monache, L.**, Dvorak, M., Lundquist, J., Bailey, B. H., Beaucage, P., Churchfield, M. J., Fitch, A. C., Kosovic, B., Lee, S., Moriarty, P. J., Simao, H., Stevens, R. J. A. M., Veron, D., and Zack, J., 2014. Meteorology for coastal/offshore wind energy in the United States: Recommendations and research needs for the next 10 years. *Bulletin of the American Meteorological Society*, 95, 515-519
27. Williams, J., Maxwell, R., **Delle Monache, L.**, 2013. Improving wind energy forecasts using an Ensemble Kalman Filter data assimilation technique in a fully coupled hydrologic and atmospheric model. *Journal of Advances in Modeling Earth Systems*, 5, 1-16
28. **Delle Monache, L.**, Eckel, T., Rife, D., Nagarajan, B., and Searight, K., 2013. Probabilistic weather prediction with an analog ensemble. *Monthly Weather Review*, 141, 3498-3516
29. Lozano-Fuentes, S., Hayden, M.-H., Welsh-Rodriguez, C., Ochoa-Martinez, C., Tapia-Santos, B., Kobylinski, K. C., Uejio, C. K., Zielinski-Gutierrez, E., **Delle Monache, L.**, Monaghan, A. J., Steinhoff, D. F., and Eisen, 2012: Dengue virus mosquito vectors at high elevation in Mexico. *Am. J. Trop. Med. Hyg.*, 87, 902-909
30. Lozano-Fuentes, S., Welsh-Rodriguez, C., Hayden, M. H., Tapia-Santos, B., Ochoa-Martinez, C., Kobylinski, K. C., Uejio, C. K., Zielinski-Gutierrez, E., **Delle Monache, L.**, Monaghan, A. J., Steinhoff, D. F., Eisen, L., 2012. *Aedes (Ochlerotatus) epactius* Dyar & Knab along an elevation

and climate gradient in Veracruz and Puebla States, México. *Journal of Medical Entomology*, 49, 1244-1253

31. Mahoney, B., Parks, K., Wiener, G., Liu, Y., Myers, W., Sun, Juanzhen, **Delle Monache, L.**, Hopson, T., Johnson, D., Haupt, S., 2012. A wind power forecasting system to optimize grid integration. *IEEE Transactions on Sustainable Energy*, 3, 670-682
32. Hirschberg , P., Abrams, E., Bleistein, A., Bua, W., **Delle Monache, L.**, Dulong, T., Gaynor, J., Glahn, B., Hamill, T., Hansen, J., Hilderbrand, D., Hoffman, R., Morrow, B., Philips, B., Sokich, J., Stuart, N., 2011. A weather and climate enterprise strategic implementation plan for generating and communicating forecast uncertainty information. *Bulletin of the American Meteorological Society*, 92, 1651-1666
33. **Delle Monache, L.**, Nipen, T., Liu, Y., Roux, G., Stull, R., 2011. Kalman filter and analog schemes to post-process numerical weather predictions. *Monthly Weather Review*, 139, 3554-3570
34. Djalalova, I., Wilczak, J., McKeen, S., Grell, G., Peckham, S., Pagowski, M., **Delle Monache, L.**, McQueen, J., Lee, P., Tang, Y., McHenry, J., Gong, W., Bouchet, V., Marthur, R., 2010. Ensemble and bias-correction techniques for probabilistic forecast of surface O3 and PM2.5 during the TEXAQS-II experiment of 2006. *Atmospheric Environment*, 44, 455-467
35. **Delle Monache, L.**, Weil, J., Simpson, M., Leach, M., 2009. A new urban boundary layer and dispersion parameterization for the LLNL modeling system: tests with the Joint Urban 2003 data set. *Atmospheric Environment,* 43, 5807-5821
36. **Delle Monache, L.**, 2009. Ricostruzione di una sorgente atmosferica a partire da misure sottovento: un metodo basato su inferenza Bayesiana e Markov Chain Monte Carlo sampling. *Rivista di Meteorologia* (in Italian), 1, 12-21
37. **Delle Monache, L.**, Lundquist, J., Kosovic, B., Johannesson, G., Dyer, K., Aines, R., Chow, F., Belles, R., Hanley, W., Larsen, S., Loosmore, G., Nitao, J., Sugiyama, G., Vogt, P., 2008. Bayesian inference and Markov Chain Monte Carlo to reconstruct a contaminant source at continental scale. *Journal of Applied Meteorology and Climatology*, 47, 2600-2613
38. Pryor, S. C., Barthelmie, R. J., Schoof, J. T., Binkowski, F. S., **Delle Monache, L.**, and Stull, R. B., 2008. Modeling the impact of sea-spry on particle concentrations in a coastal city. *Science of the Total Environment*, 391, 132-142
39. **Delle Monache, L.**, Wilczak, J., McKeen, S., Grell, G., Pagowski, M., Peckham, S., Stull, R., McHenry, J., and McQueen, J., 2008. A Kalman-filter bias correction of ozone deterministic, ensemble-averaged, and probabilistic forecasts. *Tellus B*, 60, 238-249
40. Monforti, F., Vitali, L., Pagnini, G., Lorenzini, R., **Delle Monache, L.**, and Zanini, G., 2006. Testing Kernel density reconstruction in Lagrangian photochemical modelling. *Atmospheric Environment*, doi:10.1016/j.atmosenv. 2006.07.046
41. **Delle Monache, L.**, Hacker, J. P., Zhou, Y., Deng, X., and Stull, R. B., 2006. Probabilistic aspects of meteorological and ozone regional ensemble forecasts. *Journal of Geophysical Research*, 111, D24307, doi:10.1029/ 2005JD006917
42. Pagowski, M., Grell, G. A., Devenyi, D., Peckham, S. E., McKeen, S. A., Gong, W., **Delle Monache, L.**, McHenry, J. N., McQueen, J., and Lee, P., 2006. Application of dynamic linear regression to improve the skill of ensemble-based deterministic ozone forecasts. *Atmospheric Environment*, doi:10.1016/j.atmosenv. 2006.02.006
43. **Delle Monache, L.**, Deng, X., Zhou, Y., and Stull, R. B., 2006. Ozone ensemble forecasts: 1. A new ensemble design. *Journal of Geophysical Research*, 111, D05307, doi:10.1029/2005JD006310
44. **Delle Monache, L.**, Nipen, T., Deng, X., Zhou, Y., and Stull, R. B., 2006. Ozone ensemble forecasts: 2. A Kalman filter predictor bias-correction. *Journal of Geophysical Research*, 111, D05308, doi:10.1029/2005JD006311
45. **Delle Monache, L.**, Perry, K. D., Cederwall, R. T., and Ogren, J. A., 2004. In situ aerosol profiles over the Southern Great Plains CART site. Part II: effects of mixing height on aerosol properties. *Journal of Geophysical Research*, 109, D06209, doi:10.1029/2003JD004024
46. **Delle Monache, L.**, Stull, R. B., 2003. An ensemble air-quality forecast over Western Europe during an Ozone episode. *Atmospheric Environment*, 37, 3469-3474

47. Campanelli, M., **Delle Monache, L.**, Malvestuto, V., and Olivieri, B., 2003. On the correlation between the depth of the boundary layer and the columnar aerosol size distribution. *Atmospheric Environment*, 37, 4483-4492

Peer Review Journals Articles (6 submitted / in preparation)

1. Alessandrini, S., **Delle Monache, L.**, Rozoff, C., and Lewis, W., 2017. Probabilistic prediction of tropical cyclone intensity with an analog ensemble. Submitted, *Monthly Weather Review*
2. Odak Plenkovic, I., **Delle Monache, L.**, Horvarth, K., and Hrastinski, M., 2017. Deterministic wind speed predictions with analog-based methods over complex topography. Submitted, *Journal of Applied meteorology and Climatology*
3. Kumar, R., Barth, M., Pfister, G., **Delle Monache, L.**, Lamarque, J. F., Archer-Nicholas, S., Tilmes, S. Ghude, D., Wiedinmyer, C., Jones, B., Neill, B. O., Naja, M., and Walters, S., 2017. How will air quality change by 2050 in South Asia? Submitted, *Journal of Geophysical Research*
4. Yang, J., Astitha, M., **Delle Monache, L.**, and Alessandrini, A., 2017. An analog technique to improve storm wind speed prediction using a dual NWP model approach. In preparation, *Monthly Weather Review*
5. **Delle Monache, L.**, Alessandrini, S., Djalalova, I., Wilczak, J., and Knievel, J., 2017. Probabilistic air quality predictions with an analog ensemble. In preparation, *Journal of Atmospheric Chemistry and Physics*
6. Kosovic, B., Haupt, S. H., Bartlett, D., Adriaansen, D., Alessandrini, S., Jensen, T., Wiener, G., **Delle Monache, L.**, Liu, Y., Linden, S., Cheng, W., and Politovich, M., 2017. Scientific advances in wind power forecasting. In preparation, *IEEE Transactions on Sustainable Energy*

INVITED PRESENTATIONS

1. *Ensemble methods' design and calibration for renewable energy*, World Meteorological Organization's working group on Predictability, Dynamics and Ensemble Forecasting (Bern, Switzerland, 3 July 2017)
2. *NCAR's recent advances in wind power forecasting*, Vattenfall HQ (Kolding, Denmark, 5 July 2016)
3. *Chemical data assimilation and analog-based uncertainty quantification to improve decision-making in public health and air quality*, Air and Waste Management Association, NASA Session (New Orleans, Louisiana, USA, 23 June 2016)
4. *Probabilistic predictions and uncertainty quantification with an analog ensemble*, University of Connecticut (Storrs, Connecticut, USA, 12 February 2016)
5. *Ensemble predictions and downscaling with an analog-based method for weather and renewable energy*, Bonn University (Bonn, Germany, 3 June 2015)
6. *Ensemble predictions and downscaling with an analog-based method for weather and renewable energy*, German Meteorological Service, DWD (Frankfurt, Germany, 3 June 2015)
7. *Probabilistic predictions for renewable energy with an analog ensemble*, Utility Variable-Generation Integration Group Meeting (Denver, Colorado, USA, 18 February 2015)
8. *Probabilistic weather and renewable energy predictions, and wind resource assessment with an analog ensemble*, The Pennsylvania State University (State College, Pennsylvania, 13 Nov. 2014)
9. *An analog ensemble for probabilistic weather and renewable energy predictions and wind resource assessment*, University of British Columbia (Vancouver, Canada, 6 November 2014)
10. *Probabilistic weather and renewable energy predictions and wind resource assessment with an analog ensemble*, ForWind, Carl von Ossietzky University (Oldenburg, Germany, Sept. 2014)
11. *NCAR wind forecasting system*, Vattenfall Weather Impacts Workshop (Amsterdam, Netherlands, Aug. 2014)
12. *Probabilistic weather and power predictions and wind resource assessment with an analog ensemble* University of Zagreb (Zagreb, Croatia, 3 June 2014)

13. *Wind speed predictions in complex topography with an analog ensemble*, Croatian Meteorological and Hydrological Service (Zagreb, Croatia, 2 June 2014)
14. *Analog-based methods for probabilistic weather and power predictions and wind resource assessment*, Food and Agriculture Organization of the United Nations (Rome, Italy, 30 May 2014)
15. *Probabilistic wind and power predictions and wind resource assessment with an analog ensemble*, U.S. National Oceanic and Atmospheric Administration (Boulder, Colorado, USA, 16 May 2013)
16. *Probabilistic wind and power predictions with an analog ensemble*, Meteostar (Englewood, Colorado, USA, 10 May 2013)
17. *Ensemble power predictions*, International Energy Agency Topical Expert Meeting on Forecasting Techniques (Milan, Italy, 23 April 2013)
18. *NCAR's wind forecasting system*, Winterwind (Östersund, Sweden, 13 February 2013)
19. *Analog-based wind resource assessment and power predictions*, University of Delaware (Newark, Delaware, USA, 27 February 2013)
20. *Weather and power predictions and wind resource assessment with an analog ensemble*, European Union Joint Research Center (Ispra, Italy, 4 February 2013)
21. *Probabilistic power predictions with an analog ensemble*, Gestore Servici Energetici (Rome, Italy, 9 November 2012)
22. *An analog ensemble for probabilistic weather predictions,* Developmental Testbed Center & National Unified Operational Prediction Capability Ensemble Design Workshop (Boulder, Colorado, USA, 11 September 2012)
23. *Probabilistic weather and power predictions with an analog ensemble*, Risø Technical University of Denmark (Risø, Denmark, 19 June 2012)
24. *Probabilistic weather and power predictions with an analog ensemble*, Vestas Wind Systems (Aarhus, Denmark, 18 June 2012)
25. *A new and computationally efficient technique for quantifying uncertainty in downscaled wind resource datasets*, Texas Tech University (Lubbock, Texas, USA, 28 March 2012)
26. *Analog-based methods to post-process numerical weather predictions*, National Renewable Energy Laboratory (Golden, Colorado, USA, 1 August 2011)
27. *Kalman filter and analog-based procedures to post-process NWP*, Juelich Research Centre (Juelich, Germany, 18 May 2011)
28. *Ensemble data assimilation: challenges and new ideas*, Bonn Univ. (Bonn, Germany, 17 May 2011)
29. *Data assimilation and ensemble predictions for air quality and dispersion applications*, Transregional Collaborative Research Centre Annual Meeting (Bonn, Germany, 16 April 2008)
30. *Ensemble air quality forecasting over the Pacific Northwest*, NOAA/EPA Golden Jubilee Symposium on Air Quality Modeling and Its Applications (Research Triangle Park, North Carolina, USA, 20 September 2005)

AWARDS

2016 **RAL Scientific & Technology Advancement Award:** "Sun4Cast Solar Power Forecasting System"
2014 **CO-LABS Governor's Award for High Impact Research, Sustainability Category**
2011 **UCAR, Outstanding Accomplishment Award for Scientific/Technical Advancement**
2008 **LLNL, Global Security Silver Award**: "In recognition of exemplary technical accomplishments, which have resulted in an outstanding publication record, including nine peer-reviewed journal papers in the last two years"
2008 **LLNL, CMELS Spot Award**: "Outstanding achievement reviving and organizing the atmospheric science seminar series"

SPORT ACTIVITIES

2005	1st place Field Hockey Canadian Championship
1991-1997	63 official international matches with the Italian Field Hockey National Team
1996	1st place Field Hockey Italian Cup
1991	1st place Field Hockey Italian Championship

PROFESSIONAL AFFILIATIONS

American Meteorological Society, American Geophysical Union, Italian Association of Atmospheric Sciences and Meteorology

TEACHING EXPERIENCE

2016	Lecture on ensemble forecasting: theory and applications (IUM, Beijing, China)
2014	Lecture on solar power short-term forecasting methodologies (EU COST Action, France)
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1995 – 2005	Math, physics, meteorology, air pollution and computer science (tutoring)

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