Joseph Cheuk Yi Lee

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Interests

With a passion for weather and its applications to society, I seek to apply my meteorological expertise and computational skills towards advancing green technologies. My career goals include optimizing renewable energy production via forecast model improvements and passing on weather and climate concepts through classroom teaching and public education.

Education

August 2013 to present	**University of Colorado Boulder**, Boulder, CO. Ph.D. Candidate, Advisor: Prof. Julie K. Lundquist Atmospheric and Oceanic Sciences (ATOC) Expected to graduate in May 2018
December 2015	**University of Colorado Boulder**, Boulder, CO. Master of Science, in Atmospheric Science
May 2013	**Cornell University**, College of Agriculture and Life Sciences, Ithaca, NY. Bachelor of Science, *Magna Cum Laude* with Distinction in Research Majoring in Atmospheric Science and minoring in Applied Economics Cumulative GPA: 3.96

Research Experience

2014 to present	**Department of Atmospheric and Oceanic Sciences**, University of Colorado Boulder Investigate wind turbine wakes during the evening transition, by analyzing observations from the Crop and Wind Energy Experiment in 2011 (CWEX-11) and performing numerical simulations using the Weather Research and Forecasting (WRF) model. Verify the wind power production of the WRF Wind Farm Parameterization (WFP) with the power data from the CWEX-13. Participate in various field campaigns, including deploying LiDARs at the National Renewable Energy Laboratory (NREL), launching radiosondes and installing surface weather stations at the Boulder Atmospheric Observatory (BAO) during the eXperiemental Planetary boundary layer Instrumentation Assessment (XPIA) in spring 2015, setting up LiDARs and calibrating radiometers in the Wind Forecast Improvement Project 2 (WFIP2) in fall 2015.
2011 to 2013	**Undergraduate Honor Thesis**, Cornell University Topic: *Verification on tropical storm track prediction in SE Asia using GFS model.* Investigated the accuracy of the Global Forecast System (GFS) model on tropical storm forecasts in the East Pacific Ocean. Calculated errors of forecasted storm tracks and intensities. Concluded the GFS model has North and East bias on storm positions and tends to underestimate the central pressure of storms.
2012	**New York State Water Resources Institute**, Cornell University Examined the correlation between different meteorological variables in different forested watersheds. Conducted field work and collected water samples from river streams near sewage treatment plants around Ithaca, NY to analyze the variations of nitrogen concentration and bacterial activities.

Work Experience

Summer 2016   **Technical EID Intern**, *General Electric Renewable Energy*, Greenville, South Carolina
Evaluated data in prototype wind turbines using linear regressions and Principal Component Analysis (PCA). Diagnosed problems caused by wind turbine operation tests, and summarized my findings in a report. Prepared syllabus and lecture slides for an internal atmospheric science class.

2014 to 2015   **Lead Graduate Teacher**, *University of Colorado Boulder*, Boulder, CO
Served as administrative liaison between the Graduate Teacher Program and the ATOC department (60 graduate students in total). Prepared pedagogy workshops for graduate students to attend. Carried out videotape consultations with graduate teachers. Conducted research project on student textbook usage with a group of leads and presented poster at capstone event.

Summer 2011   **Intern**, *World Meteorological Organization*, Geneva, Switzerland
Proposed an advanced coding method to store upper air data collected by ships under the Observation department. Consulted specialists and colleagues to gather innovative ideas for the proposed code. Resolved contradictions between different guidelines on marine weather observations. Assisted my supervisor in organizing meetings with meteorologists and technicians around the world.

Teaching Experience

2013 to 2014   **Graduate Teaching Assistant**, University of Colorado Boulder
Taught and graded two lab sections in introductory meteorology for undergraduates for two semesters (80 students in total). Average Faculty Course Questionnaire instructor rating: 5.25 (of a maximum 6.0)

2012 to 2013   **Undergraduate Teaching Assistant**, Cornell University
Taught and graded a lab class in introductory meteorology and a lecture class in weather and forecasting for first year students in the major (20 students in total).

Publications

2016   **Lee, J. C. Y.** and J. K. Lundquist. Observing and Simulating Wind Turbine Wakes During the Evening Transition. *Boundary-Layer Meteorology*. In review.

Lundquist J. K., **J. C. Y. Lee**, ... , and 5 other coauthors. Can Wind Farms in Inner Mongolia Affect the Air Quality in Beijing? *National Renewable Energy Laboratory Technical Report*. NREL/TP-5000-65925

2015   Lundquist J. K., ... , **J. C. Y. Lee**, ... , and 34 other coauthors. Assessing State-of-the-art Capabilities for Probing the Atmospheric Boundary Layer: the XPIA Field Campaign. *Bulletin of the American Meteorological Society*. In Press.
DOI: http://dx.doi.org/10.1175/BAMS-D-15-00151.1

Presentations

June 2016	**Lee, J. C. Y.** and Lundquist, J. K., Observing and Simulating Wind Turbine Wakes in the Evening Transition, Oral Presentation, *American Meteorological Society 22nd Symposium on Boundary Layers and Turbulence*, Salt Lake City, UT.
March 2016	**Lee, J. C. Y.**, Evening Wind Power Production, Oral Presentation, *SwitchCU~*, Boulder, CO.
June 2015	**Lee, J. C. Y.**, Wind Turbine Wake Variations with Atmospheric Stability as Measured in CWEX-11, Oral Presentation, *3rd International Conference Energy and Meteorology*, Boulder, CO.
April 2015	Lundquist, J. K. and **Lee, J. C. Y.**, Assessing Impacts of Wind Turbines and Wind Farms, Oral Presentation, *Institute of Geophysics, Planetary Physics and Signatures Days*, Los Alamos National Laboratory, Los Alamos, NM.
January 2013	**Lee, J. C. Y.** and Wysocki, M. W., Verification on Tropical Storm Track Prediction in SE Asia using GFS model, Poster 855, Special Symposium on Advancing Weather and Climate Forecasts: Innovative Techniques and Applications, *American Meteorological Society Annual Conference 2013*, Austin, TX.

Activities and Services

2011 to present	Student member, *American Meteorological Society (AMS)*
2014 to present	Volunteer dinner server, *Boulder Shelter for the Homeless*, Boulder, CO
2016 to present	Graduate student mentor, *Graduate Peer Mentoring Program*, University of Colorado Boulder
2016 to present	Mentor, *Science Research Seminar Program*, Broomfield High School, Broomfield, CO
Fall 2016	Mentor, *Earch Explorers*, Westview Middle School, Longmont, CO
Fall 2016	Student committee member, *ATOC Academic Review and Planning Advisory Committee*, University of Colorado Boulder
April 2016	Volunteer, *Expand Your Horizons*, the American Association of University Women, Boulder, CO
March 2016	Science camp cabin leader, *YMCA Camp Campbell*, Boulder Creek, CA
February 2015, 2016	Volunteer judge, *Boulder Valley School District Corden Pharma Colorado Regional Science Fair*, Boulder, Colorado
2013 to 2016	Volunteer participant, *Alternative Breaks*, Cornell University; University of Colorado Boulder
Fall 2015	Student committee member, *ATOC Comprehensive I Exam Committee*, University of Colorado Boulder
August 2015	Volunteer, *Colorado Learning and Teaching with Technology Conference*, Boulder, Colorado
June 2015	Volunteer, *I Have A Dream Foundation Science Workshops*, Boulder, Colorado
Fall 2014	Student committee member, *ATOC Major Committee*, University of Colorado Boulder
2013 to 2014	Graduate student committee member, *ATOC Club Committee*, University of Colorado Boulder
2012 to 2013	Co-president, *The Cornell Chapter of the American Meteorology Society (CCAMS)*, Cornell University
2012 to 2013	Member, *Ho-Nun-De-Kah (HNDK)*, Honor Society of the College of Agriculture and Life Sciences, Cornell University

Academic Background

Meteorology Related

Meteorological Observations and Instrumentations ● Atmospheric Thermodynamics and Hydrostatics ● Physical Meteorology ● Synoptic Meteorology ● Statistical Methods in Meteorology & Climatology ● Atmospheric Dynamics ● Microclimatology ● Mesoscale Meteorology ● Air Pollution ● Advanced Forecasting ● Advanced Atmospheric Dynamics ● Radiative Transfer and Remote Sensing ● Atmospheric Chemistry ● Wind Energy Meteorology ● Physics and Chemistry of Clouds and Aerosols ● Mountain Meteorology ● IPCC Report Review Seminar

Mathematics Related

Ordinary and Partial Differential Equations • Linear Algebra • Applied Multivariate Statistics •
Advanced Data Analysis

Energy Related

Energy Science and Technology • Renewable Energy Policy • Business of Sustainable Energy

IT Skills

Unix, Fortran, Python, GrADS, MATLAB, R, IDL, NCL, HTML, LaTeX, Microsoft Office

Languages

Fluent spoken and written in English, Cantonese and Mandarin

Last updated on 6 November 2016