Measrainsey Meng

measrainsey@gmail.com measrainsey.com /in/measrainsey github/measrainsey

Education

PhD, Environmental Engineering **Expected May 2020**
University of Southern California
Dissertation: "Developing Frameworks to Quantify the Operational and Environmental Performance of Power Systems Within the Context of Climate Change"
Advisor: Professor Kelly T. Sanders

MS, Mechanical Engineering **May 2018**
University of Southern California

BS, Mechanical Engineering **June 2015**
California State University, Los Angeles

Awards & Honors

PyDataLA 2019 Diversity Scholarship	November 2019
National Science Foundation Graduate Research Fellowship Program (NSF GRFP) Fellowship	March 2016
Raul Henderson Spirit Scholarship	March 2015
Xerox Technical Minority Scholarship	January 2015
Boeing Scholarship	September 2014
Victoria Alegria Tracy Memorial Scholarship	September 2014
Joyce Bourke Memorial Scholarship	September 2014
Honors College Scholarship	May 2014
Pratt and Whitney Golden Eagle Award	May 2014

Referred Journal Publications

M. Meng, K.T. Sanders, E. Grubert, R.A.M. Peer. "Spatially allocating life cycle water use for US coal-fired electricity across producers, generators, and consumers." In preparation.

M. Meng, J. Macknick, V.C. Tidwell, K.E. Bennett and K.T. Sanders. "Integrating water, energy, and climate modeling to assess vulnerabilities to the U.S. Southwest power grid." In preparation to be submitted to *Environmental Research Letters*.

M. Meng and K.T. Sanders. (2019). "A data-driven approach to investigate the impact of air temperature on the efficiencies of coal and natural gas generators." *Applied Energy*, 25, 113486. DOI: 10.1016/j.apenergy.2019.113486.

M. Meng, M. Chen, and K.T. Sanders. (2016). "Evaluating the Feasibility of Using Produced Water from Oil and Natural Gas Production to Address Water Scarcity in California's Central Valley." *Sustainability*, 8(12), 1318. DOI: 10.3390/su8121318.

Conference Publications

M. Meng, M. Chen, and K.T. Sanders. (2016). "A Geospatial Feasibility Assessment of Utilizing Produced Water from Oil and Natural Gas Production in California for Beneficial Uses." *World Environmental and Water Resources Congress 2016*, p207-216. DOI: 10.1061/9780784479865.022.

Contributed Talks

M. Meng, K.T. Sanders, and E. Grubert. "Resolving the life cycle water consequences of U.S. coal-fired electricity: A challenge of data availability, spatial attribution, and consumer accountability." 2019 AGU Fall Meeting, Dec 9 – 13, 2019, San Francisco, CA.

M. Meng and K.T. Sanders. "An empirical analysis of the vulnerability of coal and natural gas power plants to rising ambient temperatures." 2019 Le Val Lund Student Symposium, November 15, 2019, Los Angeles, CA.

M. Meng and K.T. Sanders. "A data-driven approach to investigating the impacts of ambient temperature on thermoelectric generators." 2019 Computational Sustainability Doctoral Consortium, October 18 – 20, 2019, Pittsburgh, PA.

M. Meng, J. Macknick, V.C. Tidwell, E.A. Zagona, T.M. Magee, K.E. Bennett, R.S. Middleton, and K.T. Sanders. "Assessing power sector vulnerabilities to climate change using an integrated water, energy, and climate modeling framework." World Environmental and Water Resources Congress 2018, June 3 – 7, 2018, Minneapolis, MN.

M. Meng and M. Chen. "Assessing the Role of Climate Variability on the Efficiency and Cooling Water Requirements of Thermal Power Plants." World Environmental and Water Resources Congress 2017, May 21 – 25, 2017, Sacramento, CA.

M. Meng and M. Chen. "A Geospatial Feasibility Assessment of Utilizing Produced Water from Oil and Natural Gas Production in California for Beneficial Uses." World Environmental and Water Resources Congress 2016, May 22 – 26, 2016, West Palm Beach, FL.

Poster Presentations

M. Meng and K.T. Sanders. "A data-driven approach to investigating the impacts of ambient temperature on thermoelectric generators." 2019 Computational Sustainability Doctoral Consortium, October 18 – 20, 2019, Pittsburgh, PA.

M. Meng, J. Macknick, V.C. Tidwell, E.A. Zagona, T.M. Magee, K. Bennett, and R.S. Middleton. "High-resolution integration of water, energy, and climate models to assess electricity grid vulnerabilities to climate change." 2017 AGU Fall Meeting, Dec 11 – 15, 2017, New Orleans, LA.

V.C. Tidwell, K.E. Bennett, R.S. Middleton, S. Behery, J. Macknick, A. Corning-Padilla, G. Brinkman, and **M. Meng**. "Energy-Water-Land-Climate Nexus: Modeling Impacts from the Asset to Regional Scale." 2016 AGU Fall Meeting, Dec 12 – 16, 2016, San Francisco, CA.

M. Meng, J. Claggett, M. He, and M. Schueller. "Experimental Investigation of Scuffing Resistance of Aluminum-Silicon Alloys." 2014 Mid-Michigan Symposium for Undergraduate Research Experiences, July 23, 2014, East Lansing, MI.

Professional Experience

National Renewable Energy Laboratory June 2017 – August 2017
Graduate Intern
Developed multi-model framework to integrate electricity market simulation model (PLEXOS) with outputs from climate, hydrological, and basin management models. Built regression model relating capacity and efficiency of thermal power plants to climate conditions.

National Renewable Energy Laboratory June 2016 – August 2016
Graduate Intern
Applied locally weighted regression to predict generator heat rate and emission factor as a function of generator load/capacity factor during steady-state and ramping processes

Research Experience

Sanders Sustainable Systems Group, University of Southern California August 2015 – Present
Doctoral Researcher
Using nationally-reported data to spatially resolve the life cycle water impacts of coal-sourced electricity consumption in the US. Developing a regression model to predict the vulnerability of coal and natural gas power plants to changes in ambient temperatures using empirical data. Assessing the feasibility of using produced water from oil and natural gas production to address water scarcity in California's Central Valley.

Automotive and Energy Research and Industrial Mentorship Program, Oakland University May 2014 – July 2014
Undergraduate Researcher
Studied the scuffing resistance of aluminum-silicon alloys for automotive industry applications

Center for Energy and Sustainability, California State University, Los Angeles June 2012 – April 2014
Undergraduate Researcher
Collected polycyclic aromatic hydrocarbons (PAHs) emissions from engines to study fuel combustion processes

Neuro-engineering Technology Lab, California State University, Los Angeles June 2011 – December 2011
Undergraduate Researcher
Aided in research related to biomedical engineering by performing deep-simulation tests on spinally-contused rats

Teaching Experience

Civil and Environmental Engineering, University of Southern California August 2015 – May 2017

Teaching Assistant

- *ENE 505: Energy and the Environment* | Assisted students in learning topics and completing assignments relating to topics such as energy extraction, environmental social costs of fossil fuel consumption, and energy efficiency
- *CE 225: Mechanics of Deformable Bodies* | Taught weekly discussion classes to 30 students on topics such as shear stress, torsion, and deflection

Science Outreach Club, University of Southern California August 2015 - December 2015

Mentor

Taught weekly science lessons to fourth and fifth graders at local elementary schools

Other Experience

Seed Consulting Group September 2019 – December 2019

Consultant

Provided pro bono consulting for non-profit Friends of the Los Angeles River (FoLAR) to refine the key performance indicators (KPIs) to measure impact and internal health of the organization. Analyzed donor and volunteer data to identify target groups and develop marketing campaign.

Department of Mechanical Engineering – California State University, Los Angeles September 2014 – June 2015

Senior Design Student

Worked with non-profit Community First for capstone project to build a transportable aquaponics system to address agriculture concerns in rural Cambodia. Designed, modeled, and tested the structural and fluid components of the aquaponics project in SolidWorks.

Associated Students, Inc., – California State University, Los Angeles September 2014 – June 2015

College Representative

Elected to serve as the representative for the school of Engineering, Computer Science, and Technology for CSULA's student government organization. Represented the interests of engineering, computer science, and technology students in committee meetings and served as a liaison between students, administration, and faculty.

Skills

Programming languages	Python • R • Matlab • SQL • JavaScript • CSS • HTML
Data visualization	R (ggplot2) • Python (Matplotlib, Seaborn) • D3.js • Tableau • Adobe Photoshop
Geographic information systems	ArcGIS • qGIS
Engineering modeling software	PLEXOS • PowerWorld • RiverWare • SolidWorks • AutoCAD

Service

Consultant, Seed Consulting Group	September 2019 – Present
Volunteer, 2019 Women in Green Forum	August 2019
Volunteer, International Conference on Machine Learning (ICML) 2019	June 2019
Volunteer, VerdeXchange 2019 Conference	January 2019
Mentor, Arsalyn Policy Seminar: Climate Change and Policy Options	April 2018
Mentor, USC Science Outreach Club	August 2015 - December 2015
College Representative, CSULA Associated Students, Inc.	September 2013 – June 2014
Volunteer, CSULA Boeing Day	October 2013, October 2014