

Kelly Yi-Chun Huang

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atlas-uh.github.io

Assistant Professor in Mechanical Engineering, University of Houston

Education

Jul 2021	Ph.D.	Mechanical and Aerospace Engineering	Princeton University
Jan 2018	M.A.	Mechanical and Aerospace Engineering	Princeton University
Dec 2015	B.S.	Mechanical Engineering	Cornell University

Research Interests

Environmental Fluid Mechanics ■ Turbulence ■ Sensing Techniques ■ Surface-Atmosphere Interactions ■ Boundary-Layer Meteorology ■ Experiments

Research Experience

University of Notre Dame

2021 — 2023 **Postdoctoral Researcher** supervised by Prof. Harindra J. S. Fernando
■ fog and turbulence interactions in the marine atmosphere

Princeton University

2016 — 2021 **Graduate Research Assistant** advised by Prof. Marcus Hultmark
■ nano-scale measurements in the atmospheric surface layer
■ active grid for studying mosquito tracking behavior

Cornell University

2015 — 2016 **Undergraduate Research Assistant** advised by Prof. Charles Williamson
■ tested innovative blade designs for urban vertical-axis wind turbines

National Renewable Energy Laboratory

Summer 2015 **Science Undergraduate Laboratory Intern** advised by Dr. Katherine Dykes
■ developed a Python toolbox that optimizes the spar supporting structure of off-shore wind turbines

Fellowships

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| 2017 | National Defense Science and Engineering Graduate Fellowship (~ \$153k)
United States Department of Defense |
| 2016 | Francis Robbins Upton Fellowship in Engineering (~ \$105k)
School of Engineering and Applied Science, Princeton University |

Honors and Awards

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| 2020 | Excellence in Teaching Award
Engineering Council, Princeton University |
| 2019 | The Luigi Crocco Award for Teaching Excellence
Mechanical and Aerospace Engineering, Princeton University |
| 2015 | Undergraduate Student of the Year
Diversity Programs in Engineering, Cornell University |

Service

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| | Princeton University |
| 2017 – 2020 | MAE Graduate Student Council Representative, Chair |
| | Referee/Reviewer |
| 2021 – present | Experiments in Fluids |

Invited Presentations

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| 2023 | U.S. Naval Academy, USA— Department of Mechanical Engineering
<i>Measuring, Modeling, and Mimicking Atmospheric Turbulent Processes.</i>

National Taiwan University, Taiwan — Hydrotech Research Institute
<i>Measuring, Modeling, and Mimicking Atmospheric Turbulent Processes.</i>

National Central University, Taiwan — Department of Civil Engineering
<i>Measuring, Modeling, and Mimicking Atmospheric Turbulent Processes.</i> |
| 2021 | University of Notre Dame, USA — Environmental Fluid Dynamics Seminar
<i>Experimental Methods for Understanding Turbulence in the Lower Atmosphere.</i>

University of California, Davis, USA — Environmental Dynamics Lab Seminar
<i>Experimental Methods for Studying Turbulence in the Lower Atmosphere.</i> |
| 2020 | Cooper Union, USA — Albert Nerken School of Engineering Invited Lecture
<i>From Mosquitos to Weather Models — Understanding Turbulence in the Lower Atmosphere.</i> |

Select Presentations

- 2022 [Talk] American Physical Society: Division of Fluid Dynamics
The role of environmental turbulence in the lifecycle of marine fog.
- 2022 [Talk] American Meteorological Society Annual Meeting
The Super Combo Probe for simultaneous high-resolution measurement of velocity and temperature fluctuations in atmospheric turbulence.
- 2020 [Poster] American Geophysical Union: Fall Meeting
Velocity and Temperature Dissimilarity in the Surface Layer Uncovered by the Telegraph Approximation.
- 2018 [Poster] American Geophysical Union: Fall Meeting
Simultaneous and Well-resolved Velocity and Temperature Measurements in the Atmospheric Surface Layer.
- 2018 [Talk] American Physical Society: Division of Fluid Dynamics
Mimicking Atmospheric Flow Conditions to Examine Mosquito Orientation Behavior.

Professional Development

- Fall 2020 **Inclusive Leadership Learning Cohort**
GradFutures, Princeton University

Professional Memberships

- American Physical Society (APS)
American Geophysical Union (AGU)

Publications

In Prep	<u>K. Y. Huang</u> , T. J. Hintz, and H. J. S. Fernando, “Turbulent equilibrium radius in fog droplet formation,” (in prep).
	T. J. Hintz, <u>K. Y. Huang</u> , S. W. Hoch, J. Ruiz-Plancarte, and H. J. S. Fernando, “A mechanism for coastal fog genesis at evening transition,” <i>Quarterly Journal of the Royal Meteorological Society</i> (under review).
Peer- Reviewed	<u>K. Y. Huang</u> , G. G. Katul, T. J. Hintz, J. Ruiz-Plancarte, and H. J. S. Fernando, “Fog intermittency and critical behavior”, <i>Atmosphere</i> (2023).
	H. J. S. Fernando, S. Wang, <u>K. Y. Huang</u> , and E. Creegan, “Fog-laden density staircases in marine atmospheric boundary layer”, <i>Environmental Fluid Mechanics</i> (2023).
	<u>K. Y. Huang</u> , M. K. Fu, C. P. Byers, A. D. Bragg, and G. G. Katul, “Logarithmic scaling of higher-order temperature moments in the atmospheric surface layer”, <i>International Journal of Heat and Fluid Flow</i> .
	<u>K. Y. Huang</u> and G. G. Katul, “Profiles of high-order moments of longitudinal velocity explained by the random sweeping decorrelation hypothesis”, <i>Physical Review Fluids</i> (2022).
	<u>K. Y. Huang</u> , C. E. Brunner, M. K. Fu, K. Kokmanian, T. Morrison, A. O. Perelet, M. Calaf, E. Pardyjak, and M. Hultmark, “Investigation of the Atmospheric Surface Layer Using a Novel High-resolution Sensor Array”, <i>Experiments in Fluids</i> (2021).
	<u>K. Y. Huang</u> , G. G. Katul, and M. Hultmark, “Velocity and temperature dissimilarity in the surface layer uncovered by the telegraph approximation”, <i>Boundary-Layer Meteorology</i> (2021).
Conference Proceedings	<u>K. Y. Huang</u> , M. K. Fu, C. P. Byers, and G. G. Katul, “Logarithmic scaling of higher-order temperature moments in the atmospheric surface layer”, <i>12th Int. Symp. on Turbulence and Shear Flow Phenomena, Osaka, Japan</i> (2022).

Teaching

Princeton University

2017 – 2021 Graduate Coordinator for the McGraw Learning and Tutoring Center

Assistant in Instruction

- Fall 2019 ■ MAE 305/MAT 391 – Mathematics in Engineering I
- Spring 2019 ■ MAE 222 – Introduction to Fluid Mechanics
- Spring 2018 ■ MAE 224 – Integrated Engineering Science Laboratory
- Fall 2017 ■ MAE 335 – Fluid Dynamics

Guest Lecturer

- Fall 2022 ■ MAE 551 – Fluid Dynamics
- Spring 2022 ■ MAE 553 – Turbulence

Cornell University

Undergraduate Teaching Assistant

- Fall 2015 ■ MAE 3230 – Introduction to Fluid Mechanics
- Fall 2015 ■ MAE 6510 – Advanced Heat Transfer
- Spring 2015 ■ MAE 2250 – Mechanical Synthesis
- Fall 2014 ■ ENGRD 2020 – Statics and Mechanics of Solids

University of Notre Dame

Guest Lecturer

- Fall 2021 & 2022 ■ CE/AME 40465/60465 – Mechanics of Environmental Motions
- Fall 21 – Spr 23 ■ CE 62400 – Environmental Fluid Dynamics Practicum
- Spring 2023 ■ CE 60430 – Fundamentals of Turbulence Theory

Student Thesis Supervision

- 2018 – 2019 Ramesh, Gayatri & Huang, Whitney — B. S., Princeton University
Controlling Unmanned Aerial Vehicles in High Wind Speeds Using Nano-Scale Thermal Anemometry Probes
- 2021 – 2023 Hintz, Thomas J. — M. S., University of Notre Dame
A Mechanism for Coastal Fog Genesis at Evening Transition