Claudia E. Brunner

cbrunner@princeton.edu
+1 (650) 272-1037

PhD student in fluid dynamics, with knowledge
of atmospheric science and energy policy

Princeton University

2019 – present PhD Candidate, Mechanical and Aerospace Engineering

Certificate in Science, Technology and Environmental Policy from the School of Public and International Affairs

2017 - 2019 M.A. Mechanical and Aerospace Engineering

Stanford University – GPA 3.8/4.0

2013 – 2017 B.S. Mechanical Engineering

B.A. International Relations

Research

2017 – present **Princeton University**

As graduate research assistant to Prof. Marcus Hultmark, I

- design and conduct unsteady airfoil experiments in a pressurized wind tunnel
- conducted hot-wire measurements in the atmospheric boundary layer as part of a multi-university field campaign

As environmental policy fellow advised by Prof. Alex Glaser, I study the development of the offshore wind industry in the United States.

Summer 2016 **Stanford University**

As undergraduate research assistant to Prof. John Dabiri, I designed an experiment to study the motions of tree branches in wind using image analysis software.

As undergraduate research fellow at the TomKat Center for Sustainable Energy, I assessed the potential for under-resourced California schools to reduce electricity bills by using state grants to instal solar PV systems.

Awards

	United States Department of Defense
2018	National Defense Science and Engineering Graduate Fellowship
	Princeton University
2019	High Meadows Environmental Institute - Science, Technology and Environmental Policy Fellowship
2017	Upton First-Year Fellowship in Engineering
	Stanford University
2016	Public Service Honor Society
2016	TomKat Energy Impact Fellowship

Peer-reviewed publications

J Kiefer, **C E Brunner**, M O L Hansen and M Hultmark. "Dynamic stall at high Reynolds numbers induced by ramp-type pitching motions" Submitted.

C E Brunner, J Kiefer, M O L Hansen and M Hultmark. "Study of Reynolds number effects on the aerodynamics of a moderately thick airfoil using a high-pressure wind tunnel" *Exp. Fluids* Accepted.

K Y Huang, **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 novel high-resolution sensors" *Exp. Fluids* 62: 76, 2021.

C E Brunner, J Kiefer, M O L Hansen and M Hultmark. "Unsteady effects on a pitching airfoil at conditions relevant for large vertical axis wind turbines" *J. Phys.: Conf. Ser.* 1618: 052065, 2020.

J Kiefer, **C E Brunner**, M Hultmark and M O L Hansen. "Dynamic stall at high Reynolds numbers due to variant types of airfoil motion" *J. Phys.: Conf. Ser.* 1618: 052028, 2020.

Teaching experience

	Princeton University, Dept. of Mechanical and Aerospace Engineering
Spring 2020	**Integrated Engineering Science Laboratory - Fluid Mechanics** As graduate teaching assistant, I taught a weekly three-hour lab session, prepared and delivered an hour-long lecture on aerodynamics, and graded written lab reports.
Fall 2019	**Integrated Engineering Science Laboratory - Thermodynamics** As graduate teaching assistant, I taught a weekly three-hour lab session, created a Github laboratory manual for heat engine experiment, and graded written lab reports.

Spring 2019 **Mechanics of Fluids**
As graduate teaching assistant, I prepared and taught a weekly hour-long precept, provided individual homework assistance, developed exam questions, and graded homework and exams.

2019 – present **McGraw Center for Teaching and Learning**
As graduate coordinator, I oversee undergraduate tutoring sessions two nights per week with up to 50 tutors and up to 100 students, and conduct tutor interviews and training.

Service & leadership

2019 - present **Princeton Energy and Climate Scholars**
As student chair this year, I

- communicate between administrators, students and faculty
- participate in the selection of the new student cohort

As a member, I

- attend bi-monthly interdisciplinary student and faculty talks
- presented my thesis research to an audience of graduate students
- taught sessions on climate science and environmental justice at a local high school

Fall 2020 **Inclusive Leadership Learning Cohort**, Princeton Center for Career Devleopment
I participated in seven sessions on inclusive leadership and anti-racism in the workplace.

2019 - 2020 **Graduate Student Council**, Dept. of Mechanical and Aerospace Engineering, Princeton University
As sustainability representative, I wrote an annual sustainability newsletter to the department, inquired with facility managers about possible energy efficiency improvements in the department, and participated in the department's graduate student recruiting events.

Winter 2016 **Public Service Leadership Program**, Haas Center for Public Service, Stanford University
I participated in leadership training including skill-building workshops and coursework on inclusive leadership practice and ethical service.

Conference presentations

2021	Reduced Frequency Effects on Dynamic Stall at High Reynolds Numbers. 2nd Annual National Defense Science and Engineering Graduate Fellowship Conference
2020	Dynamic stall on an airfoil pitching at very high amplitudes and Reynolds numbers. 73rd Annual Meeting of APS Division of Fluid Dynamics
	Unsteady effects on a pitching airfoil at conditions relevant for large vertical axis wind turbines. The Science of Making Torque from Wind
2019	Dynamic stall experiments on a sinusoidally pitching airfoil at high Reynolds numbers. 72nd Annual Meeting of APS Division of Fluid Dynamics
	Unsteady airfoils at high Reynolds numbers. Thousand Islands Fluid Dynamics Meeting
2018	High-frequency simultaneous temperature and velocity measurements in the atmospheric surface layer. American Geophysical Union Fall Meeting
	Dynamic effects on airfoil performance under unsteady inflow conditions at high Reynolds numbers. 71st Annual Meeting of APS Division of Fluid Dynamics