

# ENERGY & RESOURCES GROUP

COMMENCEMENT | MAY 15, 2015

310 Barrows | University of California, Berkeley | [erg.berkeley.edu](http://erg.berkeley.edu)

## CONGRATULATIONS ERG GRADUATES!

**Doctor of Philosophy:** Peter Alstone, Zachary Burt, Zoe Chafe, Andrew Crane-Droesch, Julian Fulton, Gang He, Josiah Johnston, Christopher Jones, Joseph Kantenbacher, Autumn Petros-Good, Jalel Sager, Rebekah Shirley, Cleo Woelfle-Erskine

**Master's Degrees:** Nkiruka Avila, Anne-Perrine Avrin, Zubair Dar, Christopher Hyun, Veronica Jacome, Kripa Jagannathan, Victoria Junquera Garcia, Noah Kittner, Hongyou Lu, Peter Marsters, Andrea Mercado, Laura Moreno, Yang Ruan, Ida Sognaes, Monica Testa

**Undergraduate Minors:** Giovanni Castaldo, Emily Szeto, Reza Abedi, Yu Chuan Chen, Julie Juarez, Marissa Moultaq, Pascal Polonik, Angela Shen, Kaela Shiigi, Clifford Wang



ERG Master's Graduates 2015

Photo: Sharada Prasad CS

## ERG ALUM PETER GLEICK TO SPEAK AT COMMENCEMENT PRESIDENT AND CO-FOUNDER OF THE PACIFIC INSTITUTE



Photo: The Pacific Institute

**Dr.** Peter Gleick is renowned as a leading expert, innovator, and communicator on water and climate issues. He co-founded and leads the Pacific Institute in Oakland, an independent NGO in the fields of water and economic and environmental justice and sustainability.

Dr. Gleick's influence on the field of water has been long and deep: he developed the first analysis of climate change impacts on water resources, the earliest comprehensive work on water and conflict, and defined basic human needs for water and the human right to water – work that has been used by the UN and in human rights court cases. He pioneered the concept of the “soft path for water,” developed the idea of “peak water,” and has written about the need for a “local water movement.”

Dr. Gleick received the prestigious MacArthur “genius” Fellowship and was named “a visionary on the environment” by the BBC. He was elected both an Academician of the International Water Academy, in Oslo, Norway and a member of the U.S. National Academy of Sciences. He received his B.S. from Yale University and an M.S. and Ph.D. from the Energy and Resources Group at the University of California, Berkeley. Dr. Gleick serves on the boards of numerous journals and organizations, and is the author of many scientific papers and nine books, including the influential series *The World's Water* and *Bottled and Sold: The Story Behind Our Obsession with Bottled Water*, as well as the 2012 release *A Twenty-First Century U.S. Water Policy*.

# ERG PHD RECIPIENTS

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## PETER ALSTONE

DISSERTATION: INFORMATION-ENERGY NEXUS: THE ROLE OF INFORMATION TECHNOLOGY IN CLEAN POWER TRANSITIONS ON AND OFF THE GRID

I am full of thanks to the ERG community--past and present--for cultivating a group dedicated to solving serious problems while keeping a guiding sense of wonder, humor, and exploration. Jumping off and swimming in those intellectual waters continues to be refreshing and inspiring.

Some of the things I will take with me from my time here: the spirit of challenging the status quo, keeping an open mind for diverse approaches to solving problems, and remembering that well-formed questions are the first step towards useful answers.

Doing a PhD is hard work! I am grateful for the support, collaboration, and encouragement I got along the way from more people than I can name here. And to Andrea, Salvador, and Billie, thank you for keeping me grounded, motivated, and happy.

## ZACHARY BURT

DISSERTATION: DRINKING WATER IN DEVELOPING COUNTRIES: ACCESS, AFFORDABILITY AND ACCEPTANCE

"Nothing is more useful than water; but it will purchase scarce anything; scarce anything can be had in exchange for it." – Adam Smith, Wealth of Nations (1776: 1.4.13)

Inequitable access to clean drinking water cannot be sustained in any just society. I've found that we create water scarcity. Our rules govern access and affordability; our group decisions create healthy ecosystems and healthy humans. The ERG PhD prepares us to help refine, reform and sometimes revolutionize how we allocate finite resources including water. It is a skill which will be called upon more and more in the future. For the graduating class of 2015; let's celebrate today. Tomorrow, we will have an important job to do. I would like to thank my family, Mom and Dad, Laurie and John, Carol and Pat, Chris and Kathy, Tricia, Makenzie and Kathryn, Stephen and Janice, Alicia and Tyler, Mary, Clare, Mathew, Amy, Brendon, Christian and Jared. Thank you to my adviser and mentor, Isha Ray, who has taught me much of what I know about my field and also made me laugh while doing it. Thank you to my community of friends at ERG, for emotional support, intellectual stimulation and constructive criticism. No man is an island; we are a sum of all the people in our lives and it is the people that I have met along the way that have inspired me to continue in my journey.



## ZOE CHAFE

DISSERTATION: PARTING THE HAZE: OUTDOOR AIR QUALITY, HEALTH, AND CLIMATE CHANGE CONSEQUENCES OF HOUSEHOLD HEATING AND COOKING WITH SOLID FUELS

I am so grateful for the many opportunities dissertation chair and mentor Kirk has shared with me over the past seven years: researching, teaching, and officially "assessing" household fuel use, air pollution, climate change and public health. From (household fuel use and air pollution monitoring in) Beijing to (policy work on residential wood heating in) Bonn to (IPCC health chapter team meetings in) Buenos Aires and back to Berkeley, my years at ERG have influenced the way I perceive our world and our future. I still see serious environmental (and health) problems that sometimes seem intractable; but I now look at them through ERG-tinted glasses, which often reveal how system-level thinking, cross-disciplinary collaboration, back-of-the-envelope calculations, an amazing far-reaching network of selfless classmates, and really long nights of Indus Village-fueled writing, can help. I am indebted to the ERG faculty and staff for their generous and unwavering support of my efforts to bridge boundaries between environmental and public health disciplines. I send a gigantic thank you to all of my ERG friends, for your friendship, for indulging my interminable (and incredibly nerdy) metaphors, for essay editing (even when applying for the same fellowship!), for our master's project writing parties, for the international rendezvous, for answering random research queries at all times of the day and night, and most importantly, for all of the groundbreaking work into which you pour your heart and soul. I am so proud to be an ERGie.





# ERG PHD RECIPIENTS

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## ANDREW CRANE-DROESCH

DISSERTATION: BIOCHAR FOR SUSTAINABLE AGRICULTURAL INTENSIFICATION: TECHNICAL/ECONOMIC POTENTIAL, AND TECHNOLOGY ADOPTION



I've always thought that the clearest sign of learning is being embarrassed by what you thought that you knew a few years ago. Over the past six years, I have had much to be embarrassed about. ERG gave me the tools and the freedom to develop myself intellectually in a way that few are privileged to do. I will always be an ERGie, but I have no real idea what that actually means. Perhaps that -- along with a commitment to sustainability and social justice -- is the clearest statement of what binds us into a community.

## JULIAN FULTON

DISSERTATION: CALIFORNIA'S WATER FOOTPRINT: RECENT TRENDS AND FRAMEWORK FOR A SUSTAINABLE TRANSITION



I must bid farewell to all that UC Berkeley has given me as a student of life over the past 35 years. Farewell giant T-Rex skeleton in VLSB, whose teeth looked larger than life on my preschool field trip. Farewell water skeeters on Strawberry Creek, and our swampy adventures under downtown Berkeley. Farewell Blue & Gold summer camp, which taught me the critical life skills of hydration and archery. Farewell former MLK Student Union video game arcade, though you still owe me a lot of quarters. Farewell eucalyptus grove and RSF rooftop, which provided for too much high school mischief. Farewell action figure-loving professor, who recommended me to Undergraduate Admissions. Farewell International Development Studies, which taught me the politics of modern humanity. Farewell Civil and Environmental Engineering, which taught me the power of numbers in a year. Farewell ERG, which taught me to value every life experience as an opportunity for critical thinking, and that disciplinary fences within and around academia are there for hopping. Thank you ERG students, for keeping it real. Thank you ERG staff, for keeping us real. Thank you ERG faculty, especially Dick and Isha, for helping me see that my interest in water is about much more than water. Farewell ERG, farewell Cal, hello world!

## GANG HE

DISSERTATION: DECARBONIZING CHINA'S POWER SECTOR: POTENTIAL, PROSPECTS AND POLICY

I came to ERG in pursuit of an academic career and ERG made my dream come true. Before joining ERG, I have done enough coal research to understand China's energy challenges. Doing my PhD at ERG while working with RAEL and LBNL has led me along an interdisciplinary path to study the solutions with integration of large penetration of renewables, notably wind and solar. Decarbonizing China's power sector will shape how the country and to a large extent the world uses energy and addresses pollution and climate change. I'm lucky to experience a time when China is in its great social economic transition, while contributing to the ongoing U.S.-China collaboration on energy and climate change through the work with LBNL and Asia Society. After ERG, I will join Stony Brook University's Department of Technology and Society as an Assistant Professor on energy policy in Fall 2015. I will miss the ShakesBEER, the ERG camping trip, the ERG kitchen, and ERGies who inspired me during difficult times. Special thanks to my committee (Daniel Kammen, Richard Norgaard, Duncan Callaway, and John Zysman) and the SWITCH team. My family has been incredibly supportive without whom I would not make the journey to ERG. Thank you ERG, and thank you ERGies!



# ERG PHD RECIPIENTS

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## JOSIAH JOHNSTON

DISSERTATION: PLOTTING ELECTRICITY DECARBONIZATION PATHWAYS AND ENABLING COLLABORATIVE RESEARCH

**E**RG provided a supportive and engaging intellectual environment that enabled me to merge my personal passions of making positive impacts on pressing social and environmental problems with my intellectual interests and professional abilities of conducting research and thinking through complex problems. Interactions with students and faculty provided an unexpected bonus of making me less cynical and more optimistic about improving public policy. This education and degree confer privilege and power; I hope to leverage these effectively as a force for good. I have valued the social dimensions of ERG as well. Friendships, camaraderie, engaging dialogue, and collaborative work environments have all been hallmarks of the ERG community. This community is a living dynamic process that is constantly recreated as the set of actors shift. I find it impressive that these qualities have persisted so long and trust that future generations will continue cultivating a diverse, inclusive and supportive culture. I appreciate the opportunity to have been a part of this. I am particularly grateful to Jimmy and Ana for years of collaborative exploration of important and esoteric issues, and am also grateful for the next generation of SWITCH researchers who are carrying our work forward.



## JONATHAN FOLEY

ERG ANNUAL LECTURE: APRIL 9, 2015

Photo: Sharada Prasad CS

## CHRISTOPHER JONES

DISSERTATION: ENABLING LOW CARBON COMMUNITIES: THE ROLES OF SMART PLANNING TOOLS AND PLACE-BASED SOLUTIONS.

**I**f the good people of ERG occupied our own planet, there would be no hunger or great social injustice. We'd be just as altruistic, but there'd be no need for great sacrifice. We'd all work a lot less, and play a lot more. There would be no need for the study of Energy and Resources either, because the planet's ecosystems would be in balance. Technology would be appropriate, and resources conserved. Each of us would find our own unique contribution to make. New ideas would be encouraged, even if they shook up the status quo. Committees of volunteers would be formed to make important decisions. When new leaders were selected, great town hall meetings would come together to hear the opinion of any and all. The ideas of younger members would be fostered. Everyone would get their hands dirty.

Thankfully, ERGies don't live on our own planet, but instead are deeply integrated into the world in which we live...a world that badly needs our help. After 40 years there are now about 750 of us out there making unique contributions for the greater good. I am honored to be a member of this remarkable community. I leave my studies with a belief that almost anything is possible, but with my feet planted firmly on the ground, and in the data. ERG is a special place. Everyone will tell you that. I think I'll stick around. Look for me at the CoolClimate Network | RAEL.



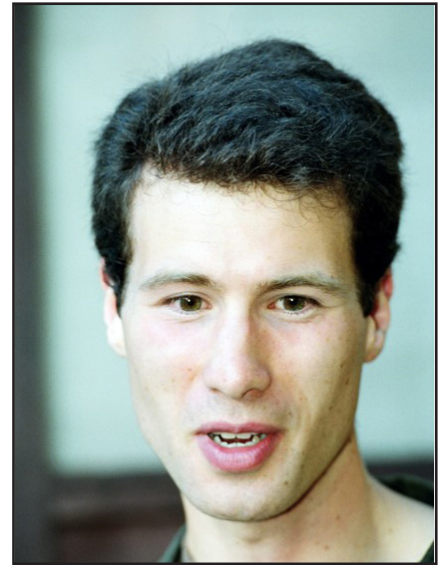


# ERG PHD RECIPIENTS

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## JOSEPH KANTENBACHER

DISSERTATION: IT'S ABOUT TIME: LINKING HAPPINESS AND THE PURSUIT OF SUSTAINABILITY



It has been an honor to be at ERG, taking a pivot in my personal history and finding a way to engage our looming challenges. I suppose every generation believes itself to be blessed or cursed by living at the pivot point of history, claiming the exclusive privilege of redeeming mankind or watching the world burn. While acknowledging that I may be guilty of that same hubris, I nonetheless believe that we have met the tipping point and it is us. Walking among the dedicated individuals of ERG has billowed my sense of what is personally and collectively achievable, and, looking forward, I have every belief that we can realize the necessary and the good. The days in ERG are long, but the years have been short. I am proud to belong to this tribe, and grateful for the bonds I've made as a part of it.



## AUTUMN PETROS-GOOD

DISSERTATION: GRID-LEVEL VALUATION AND IMPACT OF LARGE-SCALE ENERGY STORAGE DEPLOYMENTS

I am incredibly grateful to have met so many amazing, passionate, and giving people during my time here at ERG. The ups and downs of graduate school and life have not been easy, but every time I thought there was no way I could keep going, someone would be there with an encouraging word, a frisbee tossing session, or a tray of baked goods to make everything seem a bit less dire. The selflessness, generosity, and inclusiveness displayed by ERGies in spite of their own personal challenges is awe-inspiring. As I head out to new adventures, I hope I can live up to the example you all have set, and pass on the lessons I have learned from you about being a compassionate and thoughtful member of our species. Thank you for the opportunity to learn them.

## JALEL SAGER

DISSERTATION: THE ECOLOGICAL KEYNESIAN: ENERGY, MONEY, AND THE OIL HARVEST CYCLE

"Evening, when the measure skips a beat/ And then another, one by one, and all/  
To a seething minor swiftly modulate./ Bare night is best. Bare earth is best. Bare,  
bare,/ Except for our own houses, huddled low/ Beneath the arches and their  
spangled air,/ Beneath the rhapsodies of fire and fire,/ Where the voice that is in us makes a  
true response,/ Where the voice that is great within us rises up,/ As we stand gazing at the  
rounded moon."

--Wallace Stevens, "Evening Without Angels"

Thank you to my parents, Tom and Laura, for giving me books. To Dick, who got me into and out of this thing. To Isha, Dan, Paul, John, and Duncan, and all my friends and colleagues at ERG, for daily examples of how to be both absurdly productive and wonderful human beings. ERG is naught but the great people it attracts, this "committee to save the world"—I am humbled by you. Thanks, too, Jiale and Noodle for love and letting me work too many hours, and Jules, for showing me that great trail.



# ERG PHD RECIPIENTS

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## REBEKAH SHIRLEY

DISSERTATION: LOCALLY APPROPRIATE ENERGY STRATEGIES FOR THE DEVELOPING WORLD: A FOCUS ON CLEAN ENERGY OPPORTUNITIES IN BORNEO

**E**RG has pushed and expanded my mind in ways I find difficult to describe. I came here thinking I wanted to understand concepts like barriers to alternative energy integration or sustainable development. Now, looking back, I realize that while I understood what I was saying, each of those words has such different meaning to me now - fuller meaning with depth, layers, shades and angles. ERG has taught me the skill and artistry in asking questions, pursuing answers, reading meaning, and crafting opinion. It has taught me the multi-dimensionality of problems and solutions in meeting people's needs. This wisdom is not all written down in some sagely tome where one may go to read the whole. It's wafting through the air, in all the conversations you have and hear over time within these simple walls. Indeed it is the people – the faculty, the staff, the students, the alumni – that make this such a magical place of learning, and I am thankful to have been a part of it. I have made friends and mentors that I will surely hold dear for the rest of my life. As ERG evolves, I pray continued wisdom, passion, self-reflectance and open-mindedness for its leaders and students and look forward to remaining a part of this special community.



## ERGIES ACROSS COHORTS

SASHA HARRIS-LOVETT, SHARADA PRASAD, REBEKAH SHIRLEY, ZACHARY BURTON, CECILIA SPRINGER

Photo: Rebekah Shirley



## CLEO WOELFLE-ERSKINE

DISSERTATION: WATERSHED COLLABORATIONS: ENTANGLEMENTS WITH COMMON STREAMS

**D**uring my time at ERG, I have felt most affinity with a motley dissident tendency that transcends fields within ERG, and that challenges various hegemonic beliefs widespread in ERG and in contemporary US society: in positivist science, in market-based approaches, and in top-down governance. Though I have cultivated most mentors and colleagues in other departments, I deeply appreciate the generosity and collaborative spirit of students—who are generous with time, skills, and ideas. I came to ERG knowing how my eclectic interests might map onto fields or disciplines; I leave knowing they fall along intersections and overlaps, in fields that are only just emerging. I thank Stephanie Carlson and Laurel Larsen for welcoming me into their labs and dynamic practices of ecological science. I thank Jeff Romm for cutting through to the essence of whatever problem is at hand, and for thinking with me about how race, class, and indigeneity shape environmental governance on the North Coast. I thank Kim TallBear for introducing me to feminist STS, critical conversations on indigenous and local knowledges, and pushing me to write on queer and trans ecologies. I thank Isha Ray for her incisive comments that shaped and clarified my approach to interdisciplinary study. Learning is always a collective effort, and mine is co-constituted with my lab-mates, students, local and agency collaborators, the fish I swam with, colleagues in queer and trans animal studies, and The Water Underground. My deepest thanks to July Cole—poet, lover, conspirator, and so much more.



# ERG MASTER'S DEGREES

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## NKIRUKA AVILA

PROJECT: IMPACTS OF SOLAR PHOTOVOLTAICS ON THE ELECTRICAL DISTRIBUTION SYSTEM

**M**y passion for energy has enriched my life so far and has led me to work with intimidatingly smart people at ERG. Having the opportunity to be here presents me with the best possible advantage and for that I am most grateful. If I may be so bold as to paraphrase a few words from Thomas Henry Huxley: what I know is finite, intellectually, I stand on an island in the midst of an infinite ocean of nature's secrets. My insatiable desire is to reclaim a little more land and it is in this pursuit that I stand proud to be an ERGie.

## ANNE-PERRINE AVRIN

PROJECT: ACCOUNTING FOR FORECAST UNCERTAINTY IN POLICY MAKING: CHINA'S ELECTRICITY PATHWAYS BY 2050

**E**arly days at ERG were challenging. I sometimes felt confused, even lost, about the direction I wanted to give to my research. It was not always easy to be surrounded by busy people who, I thought, could not take the time to share their knowledge and experience with me. Soon, I realized that this freedom in conducting my research is more empowering than confusing. I understood that if ERGies are always busy it is because they belong to the brightest scholars in the world, and that what I learned from chatting with them every day is worth more than any long lecture in any other university. Little by little, I have learned to be part of this community combining excellence and friendship to the highest degree. I used to study at school because I knew it would be useful for my future. At ERG, I have discovered the process of discovery is what I enjoy most. Next fall, I will be continuing for my PhD at ERG, where I will focus on long-term planning for decarbonizing the energy mix in Asia.



## ZUBAIR A DAR

PROJECT: HYDROLOGICAL CHANGE DETECTION IN UPPER JHELMUM WATERSHED THROUGH FLOW RECORD ANALYSIS

**I** came to the Energy and Resources group with several research ideas about detecting hydrological changes taking place in the western Himalayas and transboundary conflicts around water in the Indus basin. I aimed to inform policy through science, and challenge the conflict driven narratives on water distribution between India and Pakistan. But I had little direction to go about exploring any of them. At the Energy and Resources Group, I got the opportunity to put myself through rigorous research training and engage in stimulating conversations on impact of human activities in environmental processes. With time, some of my ideas were translated into fascinating projects whose results I am proud to put on my resume. The past two years have been a steep learning curve. I am delighted to have been a part of such an institution.



# ERG MASTER'S DEGREES

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## CHRISTOPHER HYUN

PROJECT: WHY STREET LEVEL BUREAUCRATS "COMPLY": INSIGHTS FROM AN ICT INTERVENTION IN INDIA'S URBAN WATER SECTOR

ERG does something to you

Right from the start, things transform

Great things happen when you

Integrate

Environmental science, engineering, economics,

Social science and put

Formulas

On the back of envelopes, but

Really, it's the people,

Living and laughing, around and

In and through you, who help you

Forget that things can't be done, for

Even we have made it so far

#ergiesforlife

ERG's been an incredible journey in so many ways and I'm very grateful for those who have been with me on this winding, weird and wind-some trip.

"So keep fightin' for freedom and justice [and the environment], beloveds, but don't you forget to have fun doin' it." --Molly Ivins (as adapted by John Harte)



## VERONICA JACOME

PROJECT: RESHAPING THE ELECTRICITY CONSUMER/PROVIDER RELATIONSHIP IN UNGUJA, TANZANIA: THE ADVENT OF THE PREPAYMENT METER

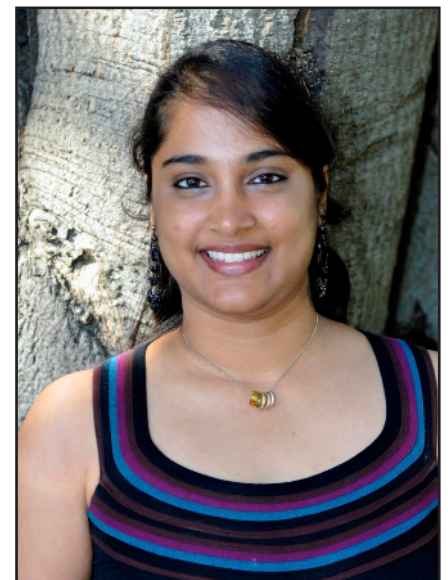
**M**y path in ERG, academia, and life has been far from simple and straightforward. However, I genuinely appreciate that ERG has allowed me to be true to myself while nudging me outside of my comfort zone and providing me with an invaluable breadth of knowledge. It has been a joy to be part of the ERG community of fellow skeptics and fellow optimists, all of us working toward a more sustainable and equitable future. There is no other program that could have kept me challenged, laughing, crying, excited, miserable, and fulfilled all at once. Thanks ERG... No, but really. Thank you.

## KRIPA JAGANNATHAN

PROJECT: EXAMINING ADAPTATION PRACTICES THROUGH THE LENS OF ECOSYSTEM-BASED ADAPTATION (EBA) PROJECTS

**D**uring one of my first classes here, Professor John Harte talked about undertaking a project to ban the noisy leaf-blowers in Berkeley. It was the first time I had heard of a leaf-blower, and I had a tough time understanding why leaves had to be 'blown' into a pile. "Isn't blowing the opposite of making a pile?" was my confusion. That was two years ago. I was new to Berkeley, new to Californian culture, and new to academic life in a top US university. Since then I have learned so much – about this country, about life as an ERGie, about myself, and of course leaf-blowers!!!

My cohort has been like family and have kept me sane during all the ups and downs of grad life. From the birthday celebrations, the evenings at Jupiter, working on homework, bollywood dancing, and the trips we took together – every other day has given me cherished memories. The ERG faculty continue to be my role models, and the ERG alumni are an inspiration for me to keep aiming higher. But above all, the last two years have convinced me that this is the group of people I want to be associated with, both academically and personally, for the rest of my life.





# ERG MASTER'S DEGREES

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## VICTORIA JUNQUERA GARCIA

PROJECT: MEASURING DIVERSIFICATION IN AGRICULTURAL LANDSCAPES

**M**easured in absolute time, I have spent very little of it at ERG – just a few semesters. And yet, how it has changed me! What eye-openers, both ERG and Berkeley! After being exposed to a variety of methods, disciplines and perspectives, and to many people who change the world in small and big ways, I come away feeling, in a different way than before, the need to act. Perhaps feeling more prepared, less intimidated.

I came to ERG to acquire new skills and knowledge, to expand my analytical abilities... I come away with some of that, but perhaps more importantly, with the feeling to have been, and continue to be, part of a community – one where I found the freedom to learn and explore, a supportive and caring faculty, Kay and Sandra's never-ending support, inspiring ERGies, the best cohort ever, and friendship. I take with me a treasure. Thank you!

## NOAH KITTNER

PROJECT: SUSTAINABLE ELECTRICITY OPTIONS FOR KOSOVO

**B**efore I came to ERG, I never really expected to be walking along a highway in Albania, surrounded by the Alps, staring at a small-scale mini-hydropower plant during my spring break. But I probably should have realized it was clearly within the realm of possibilities at ERG. For the past two years, I have been incredibly fortunate to study alongside such impassioned scholars. I appreciate the time we had to learn, grow and follow our curiosity to tackle research questions and problems that deal with the relationship between humans, the environment and our energy system. Thanks to my cohort mates; you are all a continuous source of support and inspiration. The ERG faculty added new perspectives and enabled my academic exploration. I have had so much fun at ERG. I have taken classes in electrical engineering, social sciences, public policy and green chemistry. I don't know if many other places would have allowed me the intellectual freedom to simultaneously document a community-owned residential solar project in Thailand and engage with World Bank officials on a proposed coal-fired power plant in Kosovo.



## HONGYOU LU

PROJECT: CAPTURING THE INVISIBLE RESOURCE: ANALYSIS OF WASTE HEAT POTENTIAL IN THE CHINESE INDUSTRY AND POLICY OPTIONS FOR WASTE HEAT TO POWER GENERATION

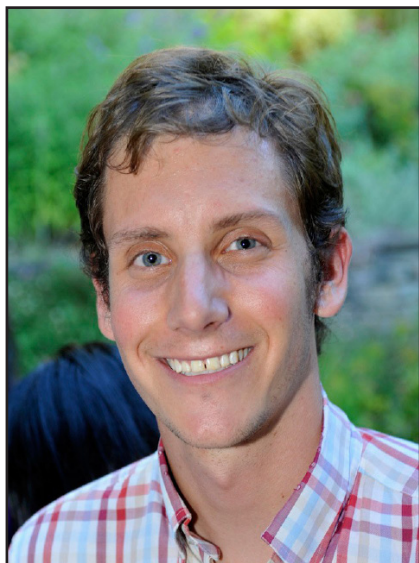
**T**o me, ERG is such a diverse group with so many smart people and huge, open, and welcoming hearts. This is a place never short of challenges, caring, and inspiration. I am so lucky and grateful to be a part of this amazing community. Thank you wonderful professors, your love, compassion, and devotion set the bar high for us. Thank you Kay and Sandra for being so patient, tolerant, and nice. I wish all the graduates all the best in your next adventures – please don't be afraid and enjoy the ride.

"The black night has given me black eyes,  
Yet I use them to search for light."



# ERG MASTER'S DEGREES

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## PETER MARSTERS

PROJECT: OIL AND GAS LOCK-IN: EXPLORING THE RELATIONSHIP BETWEEN INVESTMENT, PRODUCTION, AND CARBON EMISSIONS

**S**hoot for the moon; if you miss you will land among the stars.

## ANDREA MERCADO

PROJECT: THE BUILDING EFFICIENCY NETWORK: A SOCIAL MEDIA APPROACH TO INCREASING MARKET ADOPTION OF EFFICIENT TECHNOLOGIES AND REDUCING CONSUMPTION BY THE BUILDING SECTOR

**M**y time spent at ERG will never seem like enough; I will always wish I had taken more classes and spent more time with ERGies. The challenges I faced these past two years were well worth the company though! I have learned how to think broadly about the state of our world and how to find simple solutions. Here is where my ERG journey ends and I am parting with a full heart, and a thirsty mind. #ERGiesforlife



## LAURA MORENO

PROJECT: THE TRANSFORMATION OF FOOD TO 'WASTE' IN HOUSEHOLDS

**D**espite my intention to become a microbial biologist, my undergraduate years were spent digging through garbage and recycling bins. All of my internships and much of my free time was spent promoting waste reduction, recycling, and composting. Much to my surprise, after college I was able to turn my hobby into a job. Thankfully, the ERG community not only supported and encouraged me, but pushed me to really entrench myself in my passion instead of running away from it. I cannot thank the ERG community enough for talking and advising me about food waste despite it being distinctly different from their own research. It has truly been a mind-expanding experience and I am so glad I get to continue my journey at ERG for a PhD.

To my cohort: I remember reading your profiles the summer before we started and being super intimidated! I knew I would be surrounded by some of the most intelligent and dedicated people I would ever meet. What I didn't know is that you would be much more than your biographies could ever capture. You are truly amazing individuals who never cease to amaze me with your insight, compassion, and humor. I love you all.



# ERG MASTER'S DEGREES

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## YANG RUAN

PROJECT: REDUCING CORPORATE EMISSIONS INTENSITIES

I am so honored to be part of such a great community! I really appreciate the thoughtfulness, dedication, energy, and talent of students, faculty, and staff. Thanks to ERG, I had the freedom to explore intellectually and grow professionally on my own terms. I'm still going to be in the Bay Area so I'm sure I'll be in touch!



Photo: Rebekah Shirley

## MONICA TESTA

PROJECT: DRIVING OFF THE RAMP: CAN PLUG-IN ELECTRIC VEHICLES RESOLVE CALIFORNIA'S RAMPING PROBLEM?

I fling myself into the deep end before I have a plan. My landings are rarely graceful. I howl when it hurts. Sometimes, the failed attempts click into a coherent understanding, where I move forward fluidly in the world around me. There is no greater joy than succeeding at a seemingly impossible task and feeling what it means to learn and grow. ERG is the deep end. ERG is not a comfortable place, nor a home. There are no benchmarks: everyone starts from a different place and is aiming for a different destination. It is a place that has demanded my most extreme effort, determination, and resolve. ERG has called my strengths and weaknesses into the light, taught me how to improve the latter with humility, and given me a clear-eyed sense of myself. I am profoundly grateful for the network that has weaved itself around me. To my cohort – thank you for showing me new approaches so that I may land softer. I am impressed by your collective brilliance and leadership. To my teachers – thank you putting me up to the challenge and asking hard questions. To my family – thank you for your unwavering confidence, especially when I wasn't confident of myself. To my friends – thank you for the laughter and for teaching me to live life lightly.



# AWARDS & FELLOWSHIPS

COMMENCEMENT | MAY 15, 2015

Albert Newman Fellowship	Link Fellowship
Anna Kantenbacher	Ranjit Deshmukh
Areva PhD Award	National Defense Science and Engineering Graduate Fellowship
Anne-Perrine Avrin	Ian Bollinger
Arthur Rosenfeld Award for Energy Efficiency	National Go Solar Foundation Award
Noah Kittner	Noah Kittner
Veronica Jacome	National Science Foundation
Arthur Rosenfeld Postdoctoral Fellowship at Lawrence Berkeley National Laboratory	Michael Cohen
Peter Alstone	Dimitri Gershenson
BECAS Chile Fellowship	Jessica Goddard
Felipe Castro	Rachel Golden
Berkeley Fellowship	Pierce Gordon
Ian Bollinger	Sasha Harris-Lovett
Michael Cohen	Patricia Hidalgo-Gonzalez
Grace Wu	Veronica Jacome
Berkeley Food Institute Community Engagement Fellowship	Noah Kittner
Laura Moreno	Laura Moreno
Charles K. Birdsall Fellowship	Erica Newman
Jalel Sager	Jalel Sager
Conacyt	Daniel Sanchez
Juan Pablo Carvallo Bodelon	Froylan Sifuentes
Diego Ponce de Leon	Cecilia Springer
Development Impact Lab Explore Fellowship	Michaelangelo Tabone
Noah Kittner	Emily Woods
DOW Innovation Award	Grace Wu
Emily Woods	Outstanding GSI Award
EPA STAR	Josiah Johnston
Lara Cushing	SAGE-IGERT
Imran Sheikh	Noah Kittner
FLAS	Cecilia Springer
Christopher Hyun	Switzer Fellowship
Veronica Jacome	Lara Cushing
Jalel Sager	Rachel Golden
Fullbright Mexico	Joseph Rand
Jessica Reilly	UC Berkeley Food Institute Community Engagement Fellowship
Graduate Division Parent Grant and Student Award	John Romankiewicz
Zubair Dar	UC Chancellor's Fellowship
Graduate Opportunity Program Award	Nkiruka Avila
Patricia Hidalgo-Gonzalez	Pierce Gordon
Graduate Training in Cooperative Extension Program	Froylan Sifuentes
Adrienne Marshall	Daniel Sanchez
Kripa Jagannathan	UC Global Food Initiative Student Fellowship
Hellman Graduate Award	Kripa Jagannathan
Michaelangelo Tabone	US AID Water Management Fellowship
Hydropower Research Foundation Award	Sharada Prasad CS
Joseph Rand	US Department of Energy Advanced Research Projects - Energy Innovation Summit Scholarship
I-House Gateway Fellowship	Monica Testa
Veronica Jacome	Visiting Researcher Fellowship at University of Hawaii Manoa
Institute of International Studies Pre-Dissertation Fellowship	Josiah Johnston
Christopher Hyun	



# ERG ALUMNI NEWS 2015

COMMENCEMENT | MAY 15, 2015



ERG'S BIG EVENT WAS A REMARKABLE GATHERING PUT TOGETHER BY A MOST AMAZING GROUP OF ALUMS AND CURRENT STUDENTS

Photo: Richard Norgaard

## THE BIG EVENT

**T**he weekend of April 9-12, nearly 300 ERGies and their significant others gathered on campus for the first ERG Big Event. At least one member of each of the 40 entering classes since 1975 was in attendance, as well as alumni from far-flung locales in Europe, South America, and most of the US states. Jon Foley, ED of the CA Academy of Sciences, kicked off the weekend with the Annual Lecture on the interplay of risk management and sustainability. John Holdren, President Obama's Science Advisor and ERG's co-founder and first professor, delivered the keynote address, reminding us of ERG's founding principles and describing how they apply to his work at the White House today. We participated in field trips, breakout sessions, plenary discussions, speed networking, late-evening dancing, and cohort brunches. Many thanks to ERGAN Big Event Chair Jim Downing (MA'00), ERGAN Board President Stacy Jackson (MS'08, PhD'12), and the entire Big Event planning team for a terrific time!

## ERG ALUMNI NEWS UPDATE

THE GROWTH OF ERG'S ALUMNI NETWORK: THEN AND NOW

**CONNECT WITH ERG  
STUDENTS, ALUMNI,  
FACULTY,  
AND AFFILIATES  
@ ERGIES.ORG**



**I**t's been a big year for the ERG Alumni Network (ERGAN)! As of this time last year, we were just assembling our first board and leadership team members and evaluating different technology platforms. Now, we are coming off of our first ERG Big Event, the [ergies.org](http://ergies.org) platform is well-established and well-used, and we held our first State of ERG webcast. Many thanks to the 215 alumni who have paid the voluntary \$10/year dues that make our operations possible, and to the the 40 Charter Members who have put our launch on solid financial footing with their \$100 contributions! Thanks to the [ergies.org](http://ergies.org) team led by Ben Mandel (MS'14) the Big Event team led by Jim Downing (MA'00) the By-Laws Team / ERGAN Officers

Sam Arons (MS'07) Debbie Cheng (MA'08, PhD'13), Bill Golove (MA'95, PhD'06), Stacy Jackson (MS'08, PhD'12), and the full ERGAN Board and Leadership Team. Upcoming this year – you'll be hearing more about ERG Fundraising from Jason Anderson (MS'98) mentoring & other Alumni/Student activities from Ranjit Deshmukh, and local/conference meet-ups from several alumni. The Intellectual Networking Team will also be getting underway (webinars, discussion groups), Ask-an-ERGie will soon launch as a discussion forum in [ergies.org](http://ergies.org), and we'll be promoting the [ergies.org](http://ergies.org) job board. Thanks to everyone for your energy & participation – we're off to a great start!

ALUMNI PROFILES CAN BE FOUND AT [ERG.BERKELEY.EDU](http://ERG.BERKELEY.EDU)

# ERG FACULTY NEWS 2015

COMMENCEMENT | MAY 15, 2015

UNIVERSITY OF CALIFORNIA, BERKELEY

BERKELEY • DAVIS • IRVINE • LOS ANGELES • MERCED • RIVERSIDE • SAN DIEGO • SAN FRANCISCO



SANTA BARBARA • SANTA CRUZ

Congratulations to our graduates! The faculty and I are proud of your accomplishments and look forward to seeing the difference you make as leaders in creating a sustainable and equitable world. This has been an action-packed and achievement-filled year at ERG. We've remodeled the student work area to promote peer learning; engaged new strategies for fundraising for student fellowships; begun a strategic plan for equity, inclusion and diversity in ERG; presented a great ERG Annual Lecture; and the Big Event was a huge success, activating our network of alumni.

As for myself, this year I taught the Master of Urban Design students (Fall) and first year Architecture undergrads (Spring) as well as continuing as the Ax:son Johnson Guest Professor in the Sustainable Urban Design (SUDes) program at Lund University, Sweden. I served as a Panel Member reviewer on the Research Grants Council for the City of Hong Kong and have been developing the Oakland EcoBlock proposal, an innovative and ambitious collaboration with others in ERG (Profs. Kammen and Callaway) and several external partner organizations.

I thank all of our extraordinary students, faculty, staff and alumni for your commitment and contributions to ERG. I look forward to bringing the momentum from this year into the next.

Professor Harrison Fraker  
Chair, Energy and Resources Group

## DAVID ANTHOFF

ASSISTANT PROFESSOR



During the last year, David Anthoff taught a course on the economics of climate change and the ERG master seminar. His research focuses on climate policy, and how the tools of economics can be used to inform climate policy design.

Last year, he continued to focus on integrated assessment models of climate change, and how distributional equity considerations can be incorporated into cost-benefit analysis of climate policies. During the spring semester, he initiated a cross-campus climate change economics lunch that brings together faculty, post-docs and students from across campus to exchange research ideas.

## DUNCAN CALLAWAY

ASSISTANT PROFESSOR

Duncan Callaway is an assistant professor in ERG. He teaches courses in electric power systems ("the grid") and energy efficiency in buildings. His research focuses on these topics as well. Right now he and his students are focusing on how to make the grid better equipped for wind and solar generation, and how in this era of "big data" we can identify energy efficiency opportunities without leaving the comfort of our own office chairs. A few updates from this year: He received a National Science Foundation Faculty Early Career Development Award, which will go in part to supporting ERG's awesome graduate students; he gave talks in a bunch of places including Ann Arbor, Ithaca, Santa Fe, Singapore, and Washington DC; he chaired the admissions committee again and easily convinced 90 percent of admittees to come (with the help of our fearless Graduate Affairs Officer Kay Burns); and he beamed in the back of the seminar room when the second year masters students presented their stellar work last week.



# ERG FACULTY NEWS 2015

COMMENCEMENT | MAY 15, 2015

## JOHN HARTE

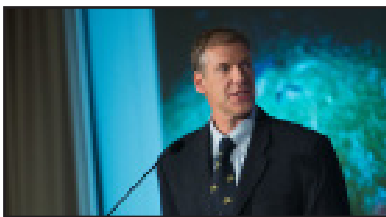
PROFESSOR



Toward the end of May John Harte will be returning, for his 39th consecutive summer, to the Rocky Mountain Biological Laboratory to continue his field research on climate-ecosystem interactions. Harte spent the fall semester in the Cape Town region of South Africa and in southern Chile on sabbatical, collaborating in ecological research with colleagues, giving lectures, and seeing lots of new birds. Also, this year he participated in and in two cases co-organized, five international workshop/conferences on topics ranging across ecology and economics, theoretical ecology, the role of information theory in biology, ecology and evolution, and global change ecology. He was honored this winter with election to Fellowship in the American Association for the Advancement of Science. Finally, Harte continued doing numerous public outreach talks and media interviews on global warming and its causes, consequences and cures.

## DAN KAMMEN

PROFESSOR



Professor Daniel Kammen has been appointed by UC System President Napolitano to serve on the President's Global Climate Leadership Council from 2014 to 2016. Kammen travelled to Kosovo, Albania along with ERG PhD student Noah Kittner in March 2015 to chair a regional council on decarbonization supported by the UN to transform the region into a clean energy leader. In the first half of 2015, Kammen was named an Einstein Professor for 2015 by the Chinese Academy of Sciences. Additionally the new RAEI website was launched, [rael.berkeley.edu](http://rael.berkeley.edu). This May, Kammen is set to keynote the United Nations Sustainable Energy for All conference. He also published two new papers in Nature Climate Change on biomass energy and on off-grid energy access that has drawn considerable attention.

## CATHERINE KOSHLAND

PROFESSOR, VICE CHANCELLOR FOR UNDERGRADUATE EDUCATION

Cathy Koshland assumed a new role on campus on July 1, 2014 as the first Vice-Chancellor, Undergraduate Education. This division has the campus lead responsibility on supporting innovation and change to improve the undergraduate experience. Major projects include working on the Berkeley Global Campus at Richmond Bay; new ventures with UC Extension, EdX, and OLLI; working on how best to leverage and integrate technology into teaching and courses; supporting advising initiatives and the new student systems implementation project; and working with all the units that support the undergraduate experience. On the research front, a study of air quality, health and the built environment in Xi'An, China is being completed. Koshland is delighted to have her five grandchildren in the Bay Area and to be able to enjoy Open Field Farm in Petaluma - an organic bodydynamic on farm pick-up CSA - that her daughter Sarah (Cal'99) runs with her husband. Maggie (Cal'02) works for IDEO and lives in San Mateo with her family, and son Jake will be married this Memorial Day weekend.

## ISHA RAY

ASSOCIATE PROFESSOR

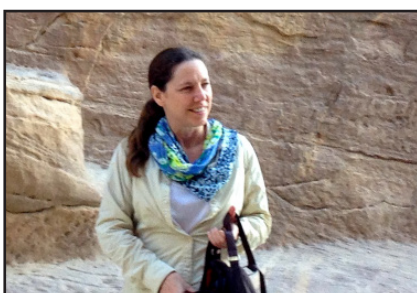


In 2014, Isha Ray was a contributing author on UN Women's World Survey on the Role of Women in Development 2014, which was presented at UN Headquarters, New York. She and ERG Affiliate Professor Kara Nelson were Principal Investigators on a proposal that won a 2014 Obama-Singh 21st Century Knowledge Initiative Award. They lead a UCB-IIT (Bombay) team to develop a systems approach to water infrastructure in small- and medium-sized towns in India.

Photo: Isha Ray, Second from right, at the UN Women's World Survey on the Role of Women in Development 2014

## MARGARET TORN

ADJUNCT ASSOCIATE PROFESSOR



Margaret Torn co-leads the masters seminar and is excited to see the masters class graduate! She is also an Energy and Resources Group alumna (Ph.D. class of '94), so the recent Big Event to celebrate ERG's 40th anniversary was a wonderful opportunity to connect with the past and appreciate what is ERG is now. When not at ERG, Margaret co-heads the Climate and Carbon Sciences Program at Berkeley Lab, measuring and modeling ecosystems and climate change. With collaborators from Berkeley to Europe, Margaret published 11 peer-reviewed papers. The most important of these papers was published in the international journal Nature, confirming the theory of the greenhouse effect and was featured in over 150 newspapers, radio shows, and online forums around the world. She was a member of the US Country team of the UN Deep Decarbonization Pathways Project, which showed that it is possible to reduce US greenhouse gas emissions by 80% by 2050—enough to avoid dangerous climate change—while still supporting strong economic growth (report can be downloaded from SDSN.org). Margaret attended the UN Climate Summit last September, where these results were presented. In April, Margaret was awarded an honorary doctorate at the University of Zurich, Switzerland.



