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Academic Senate  
2019-20

Distinguished  
Faculty Awards

February 19, 2020

**UCI** University of  
California, Irvine

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The University of California, Irvine's mission is to discover and disseminate knowledge through research, teaching and creative expression in acclaimed academic programs. Our system of governance shared between the Board of Regents, the administration, and the faculty Senate guides the development of our campus and the realization of these goals.

### Awards Presentation

**James Steintrager**  
Academic Senate, Chair

### Award Recipients

Academic Senate Special Award for Impact on Society

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Distinguished Faculty Award for Mentorship

**Anita Casavantes Bradford**

Distinguished Mid-Career Faculty Award for Service

**Lisa Grant Ludwig**

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**Martha Mecartney**

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### Presentation

On the Uncertainties of Projecting Sea Level Rise  
from Melting Ice Sheets

**Eric Rignot**

### Closing Remarks

**Provost and Executive Vice Chancellor Enrique J. Lavernia**

### Reception

## Committee on Scholarly Honors and Awards 2018-19

### Members

Olivier Civelli, Chair	Health Sciences
Barbara Doshier	Social Sciences
Barbara Finlayson-Pitts	Physical Sciences
Marcello Fiocco	Humanities
Michael Goodrich	Information & Computer Sciences

### Ex Officio

Vice Provost Michael Dennin	Division of Undergraduate Education
Vice Chancellor Pramod Khargonekar	Office of Research



**Cornelia (Connie) Pechmann**  
**Academic Senate Special Award  
 for Impact on Society**

*Professor of Marketing  
 Paul Merage School of Business*

I am truly honored to be awarded the inaugural Academic Senate Special Award for Impact on Society. My parents were the children of US immigrants and they suffered

through the Great Depression so they always stressed the importance of helping others and acting in ways that will leave the world a better place than it is now. As an assistant professor of marketing at UCI, I began looking for opportunities to use marketing to save lives, and I was told about California's new Tobacco-Related Disease Research Program, which is funded by a voter-approved tobacco surtax that passed in 1988. I applied for program funding and was awarded my first research grant, which thankfully was followed by many others, eventually including larger grants from the US National Institutes of Health.

I have always been highly motivated to study how to combat tobacco use because of its effects on my own relatives, and tobacco's disproportionate negative impact on the educationally disadvantaged; the #1 predictor of tobacco use in the USA is low education. Moreover, tobacco use remains high in many emerging economies like China where roughly half of adult males still smoke, though only 2% of females do, but the concern is that a Virginia Slims type phenomenon could occur to hook females too.

With my initial grants from the California Tobacco-Related Disease Research Program, I conducted experiments that documented clear causal effects of cigarette ads and smoking scenes in movies on adolescent tobacco use. I conducted my research in Orange County schools including continuation schools where I could reach diverse and economically disadvantaged adolescents and ensure my results would generalize to them. I found that, for example, seeing just one movie that showed young adults smoking doubled adolescents' intent to smoke, but showing a suitable antismoking ad before the movie inoculated them from this effect. This research provoked hearings by the California legislature and the US Congress, and led Governor Schwarzenegger in conjunction with the California Department of Health Services to persuade major movie studios to place antismoking ads before PG movies with smoking.

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I have studied how to create antismoking ads that can persuade adolescents not to start smoking. My experiments show that adolescents are persuaded by ads about immediate social or health effects of tobacco use, such as how their peers view second-hand smoke as offensive and dangerous. The findings have helped to guide anti-smoking and anti-drug ad campaigns in California, the US, and globally.

More recently, my tobacco research has evolved to include the study of adult smokers who are trying to quit. For them, I have developed Tweet2Quit which provides online peer support for quitting using small, private, quit-smoking groups on Twitter that can be accessed using mobile phones. With our targeted online recruiting, we reach smokers who are economically disadvantaged; some can barely pay their bills and others are homeless. Our aim is to perfect the program so it can be offered on the US government's smokefree.gov website free of charge to all smokers who want to quit.

For most of the time I have been a tobacco researcher, US smoking rates have been on the decline. But now with the onset of vaping we are seeing major increases in tobacco use among adolescents. As a result, I plan to renew my efforts; we are not winning the battle; we are losing it again. But as stated in a Chinese proverb, it is better to light one candle than to curse the darkness. On a final note I should point out that my research has been joint work; I have worked with numerous brilliant, hard working and passionate research assistants and co-authors including undergraduates, masters and doctoral students, post docs, and other professors who span academic disciplines and countries. I thank everyone who has helped me on this journey, including the UCI Academic Senate for granting me this special award.

**Fun Fact:** *I am the catcher for my teenage daughter who is a fast-pitch softball pitcher.*



## Anita Casavantes Bradford Distinguished Faculty Award for Mentorship

Associate Professor  
Departments of Chicano/Latino  
Studies and History

I am an associate professor of Chicano/Latino Studies and History at the University of California Irvine, where I am also Co-Director of the UC-Cuba Multi Campus

Academic Initiative. I earned my Ph.D. in 2011 in U.S. and Latina/o-Latin American History at the University of California San Diego. I was a University of California Presidents Postdoctoral Fellow from 2011-2013, before joining the faculty at UCI in July 2013. My first book, *The Revolution is for the Children: The Politics of Childhood in Havana and Miami, 1959-1962*, was published by the University of North Carolina Press in 2014; I am hard at work on my second book, *Suffer the Little Children: Unaccompanied Migrant Children and the Geopolitics of Compassion in Postwar America*, which is also under contract to the University of North Carolina Press. I have published articles and essays in the journals *Diplomatic History*, *Journal of American Ethnic History*, *Latin American Research Review*, *American Historical Review*, *Cuban Studies*, *U.S. Catholic Historian*, among others, as well as in *Perspectives on History*, *Inside Higher Ed Magazine*, and the *LA Review of Books*. My teaching focuses on comparative and transnational Latina/o history, Cuban and Cuban American history, the history of immigration, race and ethnicity, the history of childhood, and critical refugee studies.

Since arriving at UCI, I have worked to promote equity and inclusion, especially through campus advocacy on behalf of UCI's first generation, latinx, undocumented and veteran student communities. I served as the faculty advisor to Dreams @ UCI from 2013-2015, was the founding faculty chair of UCI's Committee on Equity and Inclusion for Undocumented Students, and was the founding director of UCI's First Generation Faculty Initiative, which recruits and trains faculty to support the academic success and wellbeing of students who are the first in their family to attend a four year college. In 2018, the First Generation Faculty became a UC systemwide initiative engaging almost one thousand faculty members. I am also the founder and co-faculty director of the School of Social Sciences First Generation First Quarter Challenge, a program which trains third and fourth year first generation students to serve as mentors and coaches to incoming first

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generation freshmen. I have also served as the faculty advisor to Mesa Unida, the umbrella organization which brings together all latinx-serving student organizations at UCI. As the partner and daughter of military veterans, I am also currently working with Dean Bill Mauer to establish a Veterans Studies certificate program that will provide student veterans and non-veterans alike the opportunity to interrogate the experiences of diverse groups of veterans throughout U.S. history and contemporary society. In recognition of my service to the campus, I have received the 2015 Dynamic Womxn of UCI Outstanding Social Justice Award; the 2016 Tom Angell Award; the 2017 Social Science Dean's Award for Outstanding Mentorship; and the 2019 Latino Excellence and Achievement (LEAD) Award for Outstanding Faculty.

As a proud immigrant and Latina—as well as a first generation college graduate and the first woman in my family to graduate from high school—I am honored to play a part in promoting UCI's mission of making the highest quality public education available to talented and motivated students from all backgrounds.

**Fun fact:** I just wrote and produced a musical, *Refugee Songs: A Musical Journey*, which debuted at UCSD's Mandeville Auditorium on October 19th, 2019.



**Lisa Grant Ludwig**  
**Distinguished Mid-Career Faculty  
Award for Service**

*Chair and Professor  
Department of Population Health  
& Disease Prevention*

My research, teaching and service align with an overarching goal to protect society from the potentially devastating effects of earthquakes. This career focus started

around dawn on February 9, 1971 when the Sylmar / San Fernando earthquake jolted me out of bed and tossed my toys on the floor. Our home was undamaged, but our church was a pile of rubble with shards of colorful glass. I remember collapsed bridges, roads, and hospitals. Everyone was concerned about the potential for flooding and loss of water supply if the earthquake-damaged Van Norman dam were to fail and release the water behind it.

I was fascinated, dismayed, and frightened by the immense power of that earthquake and subsequent seismic experiences. Years later, in my first week of graduate school at Caltech, I was in the shower when the Whittier Narrows earthquake struck, toppling nearly every brick chimney in my neighborhood. I made it to my Applied Mechanics class, where the professor lectured through aftershocks, telling us that the Engineering Building was designed and built to withstand earthquakes. He insisted the “real problem” was not earthquakes, but the unwillingness of decision-makers to pay for earthquake safe buildings. I vividly remembered his comment a few years later during the Landers earthquake, when I was in labor with my first child. She was born during the aftershock sequence. As the care team took cover with each aftershock, I was immobile and vulnerable with my baby. I wondered desperately about earthquake safety of the hospital and the critical infrastructure that allowed it to function. Less than 2 years later, my grandmother died in a hospital during the Northridge earthquake, probably due to temporary power loss and subsequent equipment failure. Since those early experiences with earthquakes, my work has been multi-disciplinary, problem-focused, and aligned with the mission of Public Health as “the fulfillment of society’s interest in assuring the conditions in which people can be healthy” (Institute of Medicine, 1988).

As I reflect on my career, I think my biggest impact has been through service that led to the development and implementation of science-based earthquake risk reduction and resilience policies. I served on several National Academy committees concerned with earthquakes and disaster resilience, including committees within the National Academy of Medicine and National Academy of Sciences. As President of the Seismological Society of America, I testified in Congress about the threat from “the terrorist beneath our feet” and the inevitable loss of life that will occur if we neglect to strengthen buildings and infrastructure. Through service on the federal Advisory Committee for Earthquake Hazard Reduction (ACEHR), I was able to work with a multi-disciplinary team to advise policymakers on earthquake hazard, risk reduction, and resilience. This work culminated in a major revision of national earthquake policy through the National Earthquake Hazard Reduction Program (NEHRP) Reauthorization Act of 2018. NEHRP Reauthorization passed with bipartisan support in a divided Congress, and signed into law (P.L. 115-307) by the President on December 11, 2018. I am grateful to the University of California Irvine for supporting my engagement in national service that will benefit all Californians, as part of my duties as a Professor of Public Health.

**Fun Fact:** *In college, I had a summer job working for the National Park Service as a Backcountry Information Specialist in Yosemite National Park. I issued wilderness camping permits, filed bear reports, and hiked the trails to check on campers. After graduation, I hiked 105 miles along the John Muir trail through the beautiful Sierra Nevada mountain wilderness.*

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**Martha Mecartney**  
**Daniel G. Aldrich, Jr.**  
**Distinguished University  
Service Award**

*Professor*  
*Department of Materials Science & Engineering*

Professor Mecartney completed her B.S. in Metallurgical Engineering & Materials Science and her B.A. in Classics at Case Western Reserve University, and her M.S.

and Ph.D. in Materials Science & Engineering at Stanford University, after which she accepted a post-doctoral position at the Max-Planck-Institute in Stuttgart, Germany. Her first faculty position was in Chemical Engineering and Materials Science at the University of Minnesota, where she was selected as a Packard Fellow for Science and Engineering before she was recruited to join the Mechanical Engineering department at UC Irvine in 1990. Subsequently she was an inaugural member of a new Department of Chemical Engineering and Materials Science, and then the new Department of Materials Science & Engineering. Professor Mecartney is a Fellow of the American Ceramic Society and was selected as Chair for the 2012 Gordon Research Conference on Solid State Studies in Ceramics. She has current funding of over \$800,000 as PI from two NSF programs for studies on the influence of defects on thermal conductivity and flash sintering and she is the PI for a \$885,345 graduate fellowship GAANN grant from the US Department of Education.

All through her career at UC Irvine, Professor Mecartney has demonstrated commitment to service by championing the inclusion of those underrepresented at UCI. She led the proactive Faculty Women's Association (FWA), which served as a platform for promoting networking and raising equity issues for women faculty prior to establishment of the NSF ADVANCE program. In that position, she also effectively advocated for the formation of the first UCI Childcare Advisory Committee for faculty, staff, and students to give input to the Provost on campus needs, and served as the first chair of that committee and then as a member for seven more years.

After chairing and serving on Graduate Council, as Associate Graduate Dean for UCI she wrote the first NSF Minority Graduate Education (renamed Alliance for Graduate Education and the Professoriate) grant which was designed to increase underrepresented (URM) PhD enrollment in STEM. URM PhD

students tripled at UC Irvine during the 10 years of funding. The AGEPEP summer Competitive Edge program she established as part of that original grant is still in existence 20 years later, now extended to all disciplines at UCI and widely viewed as one of the successful models for many campuses. She also established and chaired the first UC-wide Coordinating Council of the UC AGEPEP Consortium and helped define the future UC LEADS. In the School of Engineering, Professor Mecartney worked to increase diversity and promote inclusion by creating the first Diversity Advisory Board for Engineering and ICS Deans in her role as Faculty Director, Program for Diversity in Engineering Education and ADVANCE Equity Advisor. She also established the Engineering DECADE graduate student council and Graduate Women's Group to offer networking opportunities for students interested in supporting diversity. Her four federal GAANN grants brought > 40 full fellowship for graduate students in Chemical Engineering and Materials Science, where she served as MSE graduate advisor for seven years and DECADE mentor for two. The GAANN program changed the department from 75-80% international PhD students to 75-80% domestic student in the entering cohorts including approximately 25% URM, and 40-50% women. In recognition for her mentoring and outstanding efforts to increase diversity, Professor Mecartney was awarded the NSF/White House Presidential Award for Excellence in Science, Math, and Engineering Mentoring.

Lastly, she also served as Vice-Chair and Chair of the Academic Senate, and created the ad-hoc committee on Diversity that recommended including diversity activities on all promotion and merit reviews to acknowledge the critical importance of this role for UC Irvine faculty.

**Fun Fact:** *I have a B.A. in Classics as well as a B.S. in Engineering.*

*Photo credit: D. Cody, Portland Event Photography*



**Angela Jenks**  
**Distinguished Early-Career Faculty  
 Award for Teaching**

*Associate Professor of Teaching  
 Department of Anthropology*

I am an anthropologist because of a GE course. I had planned to study biochemistry and become a physician, but in my first semester in college, I registered for Introduction to

Archaeology on a whim. While the course turned out to be a bit different than I expected (as most of my previous knowledge was based on Indiana Jones movies), it introduced me to a new way of looking at the world and at human history. I began to explore other courses in the anthropology department, and I discovered a broader perspective on my interests in health and medicine. More than a decade after spontaneously registering for that archaeology course, I completed a PhD in Medical Anthropology from UC Berkeley/UCSF.

My research focuses on health inequity and efforts to improve the “cultural competence” of US health care. As an anthropologist, I spent time observing activities at medical schools, managed care organizations, and hospitals, exploring the understandings of culture and race that are incorporated into efforts to address health disparities. One of my favorite parts of graduate school, however, was getting to know students and promoting the same sense of discovery that I experienced in my first anthropology class. I worked as a teaching assistant at Berkeley and then started teaching my own classes while I finished my dissertation.

After earning my PhD, I sought opportunities to develop a career focused on teaching, working with students first at Los Angeles Southwest College and then at UCI as an Assistant Professor of Teaching. Building on my research interests, I am especially concerned with the way anthropological insights (like the culture concept) are communicated to broad audiences, particularly physicians and health professionals. I therefore approach teaching as a form of public scholarship. Many of the students I meet today are just like I was--interested in medicine and public health but not sure what anthropology actually is. Whether teaching undergraduate students in the Medical Anthropology minor, graduate students in UCI's MA in Medicine, Science, and Technology Studies program, or medical students in the

School of Medicine's Program in Medical Education for the Latino Community (PRIME-LC), my aim is to make anthropological concepts, methods, and theoretical approaches accessible to students and to help them develop the tools they need to apply what they are learning to their own lives and to the world around them.

At UCI, I have also focused on strengthening pedagogy across the field of anthropology. I design workshops, learning communities, and seminars for graduate students to help future faculty develop their teaching skills. As the scholar-in-residence for the Teaching Tools section of the journal *Cultural Anthropology*, I published a series of online articles illustrating fundamental pedagogical concepts and advocating for inclusive and evidence-based teaching practices. And I am a founding editor of a new journal, *Teaching and Learning Anthropology*, the first peer-reviewed publication focused on the exchange of teaching-related ideas and materials in American anthropology.

It has been a privilege to work with and learn from so many outstanding students over the last decade, and I am honored to receive this award.

**Fun Fact:** *My first job was scooping ice cream at a dairy in my hometown in rural Pennsylvania. Ice cream is still one of my favorite desserts.*





**Valerie Jenness**  
**Distinguished Faculty Award  
 for Teaching**

*Professor*  
*Department of Criminology, Law & Society*

As a Professor in the Department of Criminology, Law and Society in the School of Social Ecology, I have spent my career producing research on prostitution, hate crime, prison violence, transgender prisoners, prison grievance systems, and correctional policy and practice. Recognition of that work—complete with invitations to give presentations in the U.S. and abroad, state and federal funding, and a smorgasbord of awards from professional societies, non-profit organizations and community groups—is gratifying precisely because it is a testament to the promise and impact of public education. Indeed, for me, the thrill of engaging in knowledge production begins with public education.

I'm a proud product of public education. Public schools in California and Washington State—as institutions anchored by superb teachers committed to the experience and welfare of their students—transformed my life, and I am forever grateful. It's the gift that keeps on giving and, as such, a debt I can never repay. Still, I try to pay down the debt by giving back through teaching and mentoring at UCI and beyond. It's both my obligation and my privilege to do so.

When I taught my first undergraduate course in 1987, I was an advanced graduate student in sociology at UC Santa Barbara (where I earned my Ph.D. in 1991), nervous about doing well and fearing failure, and (on any given day) simply hoping I had enough material to fill a 50-minute lecture in a way that did not expose me as an imposter. In other words, it was all about me and, I'm embarrassed to admit, I didn't think about pedagogy. Now, over three decades and approximately 150 courses and thousands of students later, my perspective has shifted 180 degrees: I have come to understand that teaching is in fact all about the students, each of whom is someone's child and a member of our community. They deserve our best, most informed, innovative and proven effort. It is this deservedness that has led me to appreciate a comment on teaching from Benjamin Franklin: "Tell me and I forget. Teach me and I remember. Involve me and I learn." For me, it is this sort of best effort that requires thinking about research

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on pedagogy, cultivating a willingness to try new things and occasionally fail (sometimes in public!), routinely assessing my method and approach, and then starting the process again. Most recently, I have invigorated my teaching by learning about and committing to "best practices" that enable active learning and inclusionary teaching. Doing so reminds me of what I have come to appreciate over the years: My evolution as a teacher is inextricably connected to my own evolution as a learner with a deeper understanding of how teaching and learning are inseparable, especially if we want our educational institutions to be as diverse, equitable, and inclusive as we promise them to be.

There are many reasons that Nelson Mandela is a hero of mine, including his view of education. He said: "Education is the most powerful weapon which you can use to change the world." Telling words from a man who was imprisoned for over a quarter of a century and then become the first democratically elected leader of his country as well as a Nobel Prize winner. He reminds me that the stakes are high for us in the education business and inspires me to do the best I can to get it as right as I can each time I try. To celebrate that unending process, it gives me great pleasure to join my many talented and accomplished colleagues at UCI to serve the public interest in this profound way.

**Fun Fact:** *People who know me well will attest to the fact that I often go overboard. So, three fun facts: I was born in San Antonio, Texas and still consider myself a Texan; I enjoy stand-up comedy as a dependable source of sociological insight; and having my peers in the Academic Senate deem me an award-winning teacher is incredibly affirming—a real honor.*



**Jenny Yang**  
**Distinguished Early-Career Faculty  
 Award for Research**

*Associate Professor  
 Department of Chemistry*

I was born and raised in San Fernando Valley, making me a bonafide 'Valley girl'. One of my favorite subjects in high school was chemistry. I loved learning about coordination

geometries and the different colored solutions we used in our lab experiments.

When I took freshman chemistry at UC Berkeley, I had a great TA who encouraged me to look for undergraduate research opportunities. After a summer working in a geochemistry lab at Lawrence Berkeley National Laboratory (LBNL), I found a position on campus doing synthetic inorganic chemistry. I fell in love with the work — there is something magical about being about to create new molecules. It was amazing to me that as an undergraduate student I could hold a vial containing molecules that didn't exist anywhere else in the universe! I worked in the lab of Jeff Long (then an assistant professor) and graduate student mentor Matt Shores (now a professor at Colorado State University). Both have continued to provide career advice and support.

My future research program was inspired by a summer internship at the National Renewable Energy Laboratory (NREL) after my sophomore year. I worked on developing new carbon nanomaterials for hydrogen fuel storage. My experience at the NREL cemented my desire to work on science relevant to renewable energy technology.

My research interests led me to doctoral research at MIT with Prof. Daniel Nocera, who is focused on developing catalysts for artificial photosynthesis and fuel cells. My doctoral work centered on the importance of hydrogen-bonding in making and breaking oxygen bonds. I then pursued the complementary reaction of making and breaking hydrogen bonds in a postdoctoral position with Dr. Daniel Dubois at Pacific Northwest National Laboratory (PNNL).

After my postdoctoral appointment ended, I was hired as a senior research scientist and group lead at PNNL. I gained a lot of valuable experience in mentoring postdoctoral associates, writing research proposals and papers, and working on an interdisciplinary team. After 5 years at PNNL (two as a postdoc, three as a scientist), I was hired as a research scientist at the Joint Center for

Artificial Photosynthesis at Caltech. Not long after I arrived at Caltech, I was invited to give a seminar at UCI. My (now) colleagues mentioned that they would be hiring in my area and encouraged me to apply.

UCI was the perfect department for me to start my career. My senior colleagues were welcoming, supportive, and provided valuable mentorship on running a group and developing a scientific program. I was also part of a cohort of assistant professors with whom I could exchange helpful information, celebrate successes, and commiserate on the inevitable proposal or paper rejections. I owe much of my success to my junior and senior colleagues.

I have had the privilege of working with great students at UCI. The graduate students are talented and motivated to make a positive difference in society. I feel as if I learn as much from them as they do from me. They drive my research program and make every day exciting and fun. Because I found my passion for research while I was an undergraduate, I try to provide similar opportunities to undergraduate students. I am proud of the over 20 undergraduate researchers that have worked in my lab and their research contributions. My favorite part of my job is discussing science with my group.

My research program is focused on the fundamental chemistry necessary to generate carbon-neutral chemical fuels using renewable electricity. Most renewable energy sources, such as solar, are intermittent and diffuse. Widespread implementation can only be achieved with efficient and energy dense methods of storage. An effective solution is to store renewable energy in the form of chemical bonds to generate fuels, a strategy which is mirrored in nature by photosynthesis. Our goal is to understand how to make efficient catalysts for these reactions from abundant metals. My research program includes related projects on new materials for direct solar-to-fuel conversion and CO<sub>2</sub> capture.

When I teach, I try to instill enthusiasm for chemistry. One of my goals in teaching students is getting them interested in the subject, often by discussing how what they are learning is relevant to current scientific problems. I also believe in teaching through story-telling and through curiosity-based inquiry.

**Fun Fact:** I learned to play ice hockey in graduate school at MIT and was captain of the women's club team for two years.



**Timothy Tait**  
**Distinguished Mid-Career Faculty  
 Award for Research**

*Chair and Professor  
 Department of Physics & Astronomy*

For as long as I can remember, I have been drawn to knowledge of all kinds. When I was six years old, my father woke up one morning to find that I had every volume of

our family set of encyclopedias open, and was teaching myself how to write the alphabet in ancient Egyptian hieroglyphs. “I think he’s going to grow up to be an Egyptologist,” he joked to my Mom. But my real passion was always the sciences. Visiting my grandparents on Vancouver Island, I used to follow my grandmother around their garden while she worked. She was patient, and would always explain which plants we were looking at and what they were good for. Her pet name for me was “Professor”. At the time, I didn’t know what that meant, but it turned out to be an accurate prediction.

I was drawn to Physics because of its reductionist philosophy. Biology and chemistry can describe more complicated systems, and I matriculated at UCSD as a major in biochemistry. But even before arriving, I had become enchanted with the way in which Physics boils the world down to a few relatively simple rules, and shows how everything around us gets built out of them. I switched majors within weeks of arriving, and never seriously looked back. My early courses impressed upon me the joy of successfully describing the physical world with a mathematical model. That joy, plus an aptitude for breaking things in the laboratory, convinced me to pursue theoretical physics.

My research in the field of theoretical particle physics is aimed at unraveling the new physics needed to amend our current understanding of Nature. With the discovery of the Higgs boson in 2012, our current description of Nature at the smallest scales, a theory that goes by the unassuming name of the “Standard Model” is a complete and self-consistent description of three of the four known forces, and how they act on the identified subatomic particles. However, there are clues that the Standard Model is not yet complete: observations such as the need for dark matter to keep galaxies from flying apart, the fact that the

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Universe seems to be made of matter and not anti-matter, the observation that neutrinos have mass, and even the need to for a quantum mechanical theory of gravity, all point to the need for more ingredients. In pursuing the answers to these mysteries, I seek to build mathematical models to describe the necessary fundamental constituents, and see what they predict for the next round of experimental searches to discover.

**Fun Fact:** *My favorite place to think about my research is while taking a walk along the beach at Crystal Cove.*



## Eric Rignot Distinguished Senior Faculty Award for Research

*Chair, Donald Bren Professor,  
and Chancellor's Professor  
Department of Earth System Science*

### Achievements

During the past three decades, my research has focused on the response of glaciers and ice sheets in Greenland and Antarctica to climate change and their impact on sea level rise. These studies have revealed that ice sheets are changing sooner and faster to climate change than anticipated.

I have used a range of techniques including satellite remote sensing (radar interferometry), airborne remote sensing (radar sounding, gravity), field work (multi-beam echo sounding, ocean probe, ground penetrating radar, automated weather station), and numerical modeling (ice sheet model, ocean model, regional atmospheric climate model) to study the interaction of glacier with their environment. A pivotal moment was the advent of satellite radar interferometry in the 1990s to look at ice sheets at an unprecedented level of spatial detail, comprehensively, and independent of cloud and solar illumination. In the last fifteen years, I have focused on the critical role of ice-ocean interaction in driving the rapid evolution of Antarctic and Greenland glaciers and associated uncertainties in sea level projections.

My research has been published in high profile papers, 250 papers (h-index of 79), in the press, medias, and documentary films.

### Positions and Honors

Positions: After graduating as an engineer from Ecole Centrale Paris, France in 1985, I earned a Master in Astrophysics at the University Pierre et Marie Curie, France in 1986, Master degrees in Aerospace and Electrical Engineering at USC (1987-1988) before joining Caltech's Jet Propulsion Laboratory, Pasadena in 1988 and earning my PhD in Electrical Engineering in 1991 from USC. I moved to the University of California, Irvine as a Full Professor in 2007, became Chancellor's Professor in 2015, and Donald Bren Professor in 2016. I have maintained a Faculty Part Time Position as a Senior Research Scientist at JPL since 2007.

Honors: Fellow AAAS (2019), Thomson Reuters Highly Cited Researcher (2014-2019), Member of the National Academy of Sciences (2018), NASA Group Achievement Awards (2019, 2017, 2013, 2011, 2010), Louis Agassiz Medal of EGU

(2016); John F. Nye Lecture AGU (2015); Fellow AGU (2013), NASA Outstanding Leadership Medal (2012), NSF's Antarctic Service Medal (2009), William Bowie Lecture AGU (2008), NASA Exceptional Scientific Achievement Medal (2007); Contributing Author IPCC AR4 awarded the Nobel Peace Prize (2007); JPL Director Award for Outstanding Research Publication (2005, 2003).

**Fun Fact:** *As a youngster I got interested in polar exploration thanks to Jules Verne's "Adventures of Capitaine Hatteras"; there is now a "Rignot" glacier in Antarctica.*

### Presentation: On the Uncertainties of Projecting Sea Level Rise from Melting Ice Sheets

The ice sheets that blanket Greenland and Antarctica have been waxing and waning over millennial time scales in response to Milankovitch cycles. At present, ice sheets respond to an unprecedented rate of climate warming caused by human disturbances. Back in the 1990s, we had no indication of whether they were gaining or losing mass as a result of climate change, but satellite and airborne data and other observations revealed that they were changing sooner and faster than anticipated. Over the last 30 years, the mass loss of the ice sheets has increased six fold and now dominates the present-day rate of sea level rise. While projections by the Intergovernmental Panel on Climate Change estimate half a meter to 1 meter sea level rise by 2100, the potential exists for larger values. Satellite data have revealed the full extent of glaciers controlling the flow of ice into the ocean and how vigorously ocean waters melt them from below at the margins. As changes in wind regime caused by climate change push more ocean heat toward the ice sheets, the glaciers melt faster than normal, lose their stability, speed up, and retreat. In places where glaciers retreat in deeper ground, the retreat becomes unstoppable. While adaptation strategies are in order to prepare ourselves for the upcoming changes in our coastlines, mitigation strategies remain possible to avoid a commitment to multiple meters of sea level rise.

