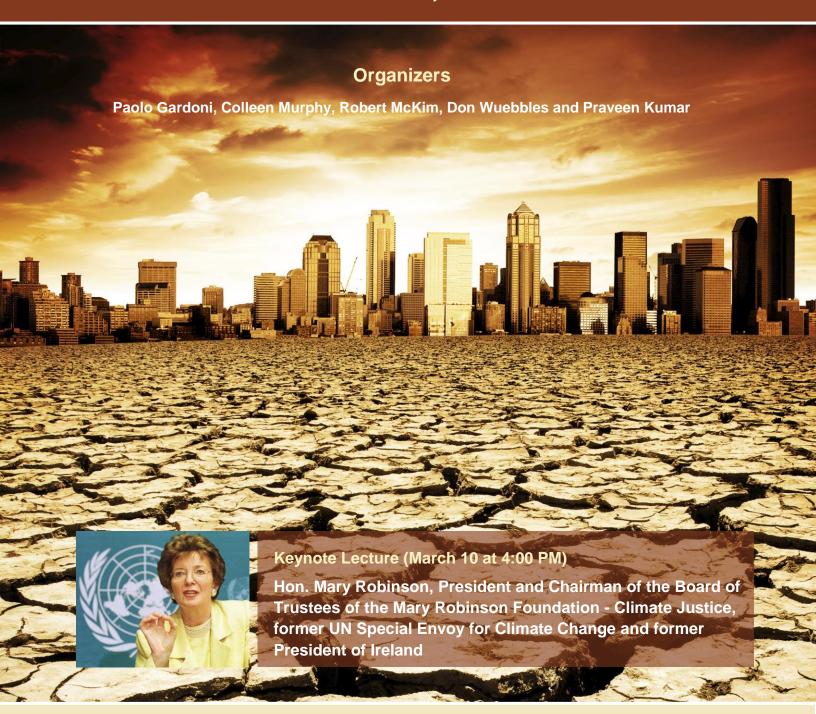
Climate Change and Its Impact: Risks and Inequalities

I Hotel and Conference Center, University of Illinois at Urbana-Champaign

March 10-11, 2016







Introduction

Climate change is one of the most important and pressing global challenges for the international community. The premise of this workshop is that climate change adaptation and mitigation policy must be technically viable as well as socially and culturally acceptable, economically reasonable, environmentally sustainable, and ethically justifiable. Thus climate change policy should draw on the technical expertise of scientists, engineers, architects and urban planners; the legal, cultural, political, and economic expertise of social scientists and legal scholars; and the ethical expertise of philosophers and ethicists. Workshop participants come from these diverse disciplinary backgrounds.

The overarching goal for the workshop is to develop a better understanding of the ways that climate change is affecting society by altering weather patterns, modifying risks such as those from natural hazards, and exacerbating inequalities as well as creating new inequalities among individuals and communities around the world.

The workshop features a number of presentations from scholars and practitioners from diverse national and professional backgrounds.

Organizing Committee

Prof. Paolo Gardoni

Department of Civil and Environmental Engineering MAE Center: Creating a Multi-hazard Approach to Engineering gardoni@illinois.edu

Prof. Colleen Murphy

College of Law and Departments of Philosophy and Political Science Women and Gender in Global Perspectives Program colleenm@illinois.edu

Prof. Robert McKim

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Prof. Don Wuebbles

Department of Atmospheric Sciences wuebbles@illinois.edu

Prof. Praveen Kumar

Department of Civil and Environmental Engineering kumar1@illinois.edu

Workshop Sponsors

This workshop has been made possible through grants from the Department of Civil and Environmental Engineering (CEE) - Research Thrust Development Program, the College of Liberal Arts and Sciences Conference Support Program, and the Illinois International Conference Grant Program.

The Women and Gender in Global Perspectives Program (WGGP) and College of Law are providing additional support.

Keynote Lecture Co-Sponsors

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ACDIS Focal Point on Climate Change "Climate Action Policies and International Policy

Negotiations"

Inequality Initiative

Land Conservation Foundation

Scholarship of Sustainability Series

Social Dimensions of Environmental Policy

Events, Locations, and Facilities

Welcome Reception, March 9

All the speakers and paying registrants are invited to a welcome reception on the evening of March 9. The reception will be at 6:00 - 8:00 PM in the Technology Room of the I Hotel and Conference Center.

Lunches, March 10 and 11

There will be lunches for all the speakers and paying registrants and March 10 and 11. The lunches will be in the Quad Room starting at 12:45 PM.

Banquet Dinners, March 10 and 11

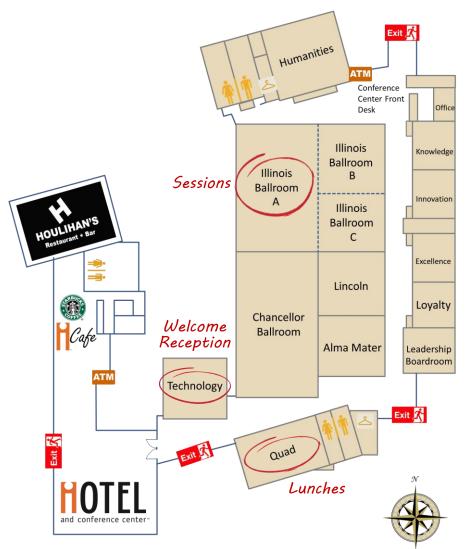
There will be dinners for all the speakers. Transportation from the I Hotel will be provided. On March 10, dinner will be at Classic Events at Stone Creek, we will leave from the main entrance of the I Hotel at 6:45 PM. On March 11, dinner will be at Timpone's, we will leave from the main entrance of the I Hotel at 6:15 PM.

Sessions, March 10 and 11

The symposium has six sessions. Each includes three presentations and a panel discussion. All of the symposium sessions will be held in Illinois Ballroom A of the I Hotel and Conference Center. The detailed schedule of the presentations is provided on Page 6.

Keynote Lecture, March 10

Hon. Mary Robinson will give a keynote lecture on March 10 at 4:00 PM. Hon. Robinson is President and Chairman of the Board of Trustees of the Mary Robinson Foundation - Climate Justice, UN Special Envoy for Climate Change, and former President of Ireland. A bio sketch of Hon. Robinson is provided on the back page of this booklet.



Website and Registration

The conference has a dedicated website where additional information and last minute changes are posted. The link to the conference website is http://inequalityinitiative.illinois.edu/climatechange.

All attendees need to register online. There is no registration fee for UIUC students, faculty and staff. For non-UIUC attendees the workshop registration fee is \$75 per person, which includes lunch March 10 and March 11 and workshop materials. Attendance at Hon. Mary Robinson's keynote lecture is free for all attendees. Inquiries should be directed to Anita Kaiser (Women and Gender in Global Perspectives Program) at arkaiser@illinois.edu.

Presentation Time

Each presentation will be limited to 30 minutes, which includes time to answer a few questions. Each session will end with a 30 minute panel discussion.

Edited Volume

The contributions presented at the workshop will be collected and submitted for publication in an edited volume to be published by a prestigious press. Additional details for the authors, including the deadline to submit the full contribution along with a template and page limit, will be provided shortly after the workshop.

Program

Day 2 March 10, 2016 Day 1

Opening Remarks Paolo Gardoni 8:00 AM

University of Illinois at Urbana-Champaign University of Illinois at Urbana-Champaign Andreas Cangellaris

University of Illinois at Urbana-Champaign Vikram Amar

8:30 AM

Naiyu Wang

Speakers

Colorado State University University of Oklahoma Bruce Ellingwood Session 1

The role of climate change on resilience of communities vulnerable to

Florida State University riverine flooding Shi-Ling Hsu

University of Illinois at Urbana-Champaign "Capital transitioning: A human capital strategy for developing climate Don Wuebbles technologies"

"Climate Change in the 21st century. Looking beyond the Paris Agreement"

Panel Discussion

Session 2 10:45 AM University of Arizona Diana Liverman

"Climate change and justice in the American Southwest"

United Nations Foundation Thomas Lovejoy

'A wild solution for climate change"

University of Edinburgh Michael Northcott

Time, ecology and ethics: Intergenerational responsibility and climate change mitigation"

Panel Discussion

Session 3 1:45 PM DePaul University Joshua Sarnoff Speakers 'Intellectual Property, inequality and climate change"

University of Tennessee, Knoxville John Nolt

The relation between carbon emissions and harm"

Ross Corotis

'Planning for community resilience under climate uncertainty"

University of Colorado Boulder

Panel Discussion

Keynote Lecture 4:00 PM University of Illinois at Urbana-Champaign University of Illinois at Urbana-Champaign Colleen Murphy Barbara Wilson Introduction

Mary Robinson Foundation-Climate Justice Hon. Mary Robinson

Speaker

March 11, 2016

Session 4 8:30 AM

Speakers

University of Vermont David Rosowsky Developing a coupled wind-rain model to assess climate change impact on the coastal hurricane hazard for the Northeastern United States

Goethe University Frankfurt Darrel Moellendorf

"Justice in climate change policy after Paris"

University of Illinois at Urbana-Champaign Robert B. Olshansky

Recovery after disasters: how adaptation to climate change will occur"

Panel Discussion

Session 5 10:45 AM

Duke University Matt Adler Speakers

"Prioritarianism and climate change"

University of Illinois at Urbana-Champaign/ **Emmanuel Nuesiri**

University of Potsdam, Germany

"Climate change governance and democracy: Synergy or dissonance"

University of Illinois at Urbana-Champaign

The Climate-Change challenge to land boundaries"

Eric Freyfogle

Panel Discussion

Session 6 1:15 PM University of Washington Bothell Eric Salathe Speakers

Changing flood risk: Extreme precipitation, sea level rise, and inundation."

U.S. Army Corps of Engineers Rolf Olsen

Risk-informed decision making for engineering adaptation to climate

change

Cinnamon Piñon Carlarne Ohio State University

Disastrous adaptation. Equity at the intersection of climate change adaptation & disaster risk reduction

Panel Discussion

Closing Remarks 3:15 PM

Robert McKim Speakers

University of Illinois at Urbana-Champaign University of Illinois at Urbana-Champaign

Praveen Kumar

"Climate Justice after Paris: opportunities, challenges, and priorities"

Sessions 2 and 5 will be followed by a lunch for speakers and paying registrants

Sessions 1, 3 and 4 will be followed by a coffee break

Speakers

Bios of Conference Organizers and Speakers

Conference Organizers



Paolo Gardoni

Paolo Gardoni is a professor in the Department of Civil and Environmental Engineering at the University of Illinois at Urbana-Champaign. He is the Director of the MAE Center which focuses on the creating of a Multi-hazards Approach to Engineering, and the Associate Director of the NIST-funded Center of Excellence for Risk-based Community Resilience Planning. He is also the founder and Editor-in-Chief of the international journal *Sustainable and Resilient Infrastructure*, and is a member of a number of national and international committees and associations that focus on risk and reliability analysis. His research interests include reliability, risk and life cycle analysis; decision making under uncertainty; earthquake engineering; performance assessment of deteriorating systems; ethical, social, and legal dimensions of risk; policies for natural hazard mitigation and disaster recovery; and engineering ethics.



Colleen Murphy

Colleen Murphy is an Associate Professor of Law, Philosophy, and Political Science, as well as Director of the Women and Gender in Global Perspectives Program at the University of Illinois at Urbana-Champaign. She is the author of A Moral Theory of Political Reconciliation (Cambridge University Press, 2010) and The Conceptual Foundations of Transitional Justice (Cambridge University Press, forthcoming), as well as co-editor of Engineering Ethics for a Globalized World (Springer, 2015) and Risk Analysis of Natural Hazards (Springer, 2016). Dr. Murphy is an Editor of the Springer book series The International Library of Ethics, Law and Technology (ELTE), an Associate Editor of the Journal of Moral Philosophy, and a member of the Editorial Board of the journal Sustainable and Resilient Infrastructure. She held the Laurance S. Rockefeller Fellowship at Princeton University's Center for Human Values in 2010-2011. Currently, Dr. Murphy is a member of the American Philosophical Association's Committee on the Status of Women.



Robert McKim

Robert McKim is Professor of Religion and of Philosophy at the University of Illinois at Urbana-Champaign. He has published extensively in philosophy of religion, the history of philosophy, and applied ethics, and he has taught courses at all levels in all of these areas. His publications include these books with Oxford University Press: Religious Ambiguity and Religious Diversity; On Religious Diversity; and The Morality of Nationalism, which was co-edited with Jeff McMahan. Religious Perspectives on Religious Diversity is forthcoming in 2017. Recent and forthcoming journal articles include "On Comparing Religions in the Anthropocene," "Environment and Ecology in Religions," "The Future of Philosophy of Religion, the Future of the Study of Religion, and (even) the Future of Religion," "Why pluralism is not evil and is in some respects quite good," and "Religious Pluralism." His current research includes additional work on religious diversity and on its implications and on the relevance of religion to environmental thought.



Don Wuebbles

Donald J. Wuebbles is the Harry E. Preble Professor of Atmospheric Science at the University of Illinois. Dr. Wuebbles is an expert in numerical modeling of atmospheric physics and chemistry, with over 500 scientific publications. He has caoauthored international assessments by the Intergovernmental Panel on Climate Change (IPCC), which was awarded the Nobel Peace Prize in 2007. He helped lead the 2013 IPCC assessment and the 2014 U.S. National Climate Assessment. He has received many awards, including the Cleveland Abbe Award from the American Meteorological Society, the Stratospheric Ozone Protection Award from the U.S. Environmental Protection Agency, and is a Fellow of three major professional science societies, the American Association for the Advancement of Science, the American Geophysical Union, and the American Meteorological Society. He recently received the Cozzarelli Prize from the Proceedings of the National Academy of Sciences and the 2014 Choice Award. Dr. Wuebbles is currently on assignment as Assistant Director with the Office of Science and Technology Policy at the Executive Office of the President in Washington DC.



Praveen Kumar

Praveen Kumar holds a B.Tech. (Indian Institute of Technology, Bombay, India 1987), M.S. (Iowa State University 1989), and Ph.D. (University of Minnesota 1993), all in civil engineering, and has been on the UIUC faculty since 1995. He is also a faculty in the Institute for Sustainability, Energy, and Environment and an Affiliate Faculty in the Department of Atmospheric Science. His research focus is on complex hydrologic systems bridging across theory, modeling, and informatics. He presently serves as the Director of the NSF funded Critical Zone Observatory for Intensively Managed Landscapes, which is part of a national and international network. He has been an Associate of the Center for Advanced Studies, and twotimes Fellow of the National Center for Super Computing Applications. He is an AGU Fellow and the recipient of the Xerox Award for Research, and Engineering Council Award for Excellence in Advising. From 2002-2008, he served as a founding Board member for CUAHSI, a consortium of over 110 universities for the advancement of hydrologic science. From 2009-2013 he served as the Editor-in-Chief of Water Resources Research. Prior to that he also served as the Editor of Geophysical Research Letters, a leading journal for inter-disciplinary research.

Conference Speakers (in the same order of the presentations)



Bruce Ellingwood

Dr. Ellingwood received his graduate education at the University of Illinois at Urbana-Champaign, and his career of more than forty years has spanned federal agencies and academe. His research and professional interests involve the application of methods of probability and statistics to structural engineering and risk-informed decision-making. He is internationally recognized as an authority on the analysis of structural loads and load combinations, performance of structures under occupancy, environmental and abnormal load conditions, reliability and risk analysis of engineered facilities, and as a leader in the technical development and implementation of probability-based codified design standards. He is the author of over 400 technical publications, has held numerous leadership positions in professional societies and is recipient of numerous awards from ASCE and other professional organizations.



Naiyu Wang

Dr. Naiyu Wang joined the School of Civil Engineering and Environmental Science at the University of Oklahoma in 2013. She earned her Ph.D. degree in Civil Engineering, with an emphasis in Structural Engineering, from Georgia Institute of Technology in 2010. Her research interests include applications of statistics and probability in civil engineering; structural safety and reliability; reliability-based condition assessment; risk-informed sustainable decisions for civil infrastructure; resilience of civil infrastructure systems; analysis and mitigation of competing hazards and risks; and impact of climate change on risk mitigation of civil infrastructure exposed to natural hazards.



Shi-Ling Hsu

Shi-Ling Hsu is the John W. Larson Professor of Law and the Associate Dean for Environmental Programs at the Florida State University College of Law. Professor Hsu has a J.D. from Columbia Law School, and an M.S. in Ecology and Ph.D. in Agricultural and Resource Economics, both from the University of California, Davis. Professor Hsu teaches and writes in the areas of environmental and natural resource law, climate change law and policy, law and economics, quantitative methods, and property.



Donald J. Wuebbles

Donald J. Wuebbles is the Harry E. Preble Professor of Atmospheric Science at the University of Illinois. Dr. Wuebbles is an expert in numerical modeling of atmospheric physics and chemistry, with over 500 scientific publications. He has caoauthored international assessments by the Intergovernmental Panel on Climate Change (IPCC), which was awarded the Nobel Peace Prize in 2007. He helped lead the 2013 IPCC assessment and the 2014 U.S. National Climate Assessment. He has received many awards, including the Cleveland Abbe Award from the American Meteorological Society, the Stratospheric Ozone Protection Award from the U.S. Environmental Protection Agency, and is a Fellow of three

major professional science societies, the American Association for the Advancement of Science, the American Geophysical Union, and the American Meteorological Society. He recently received the Cozzarelli Prize from the Proceedings of the National Academy of Sciences and the 2014 Choice Award. Dr. Wuebbles is currently on assignment as Assistant Director with the Office of Science and Technology Policy at the Executive Office of the President in Washington DC.



Diana Liverman

Diana Liverman is the Co-Director of Institute of the Environment and Regents Professor of Geography and Development, University of Arizona. She is also Visiting Professor of Environmental Policy and Development, School of Geography and Environment, and Senior Research Fellow, Environmental Change Institute, Oxford University. Her expertise and research interests focus on the human dimensions of environmental change, connecting earth and social sciences to understand challenges of drought and climate change, climate policy, climate change communication, food security, land use, and international environmental governance. She is best known for her research on climate vulnerability, climate assessment, carbon offsets and climate and development, and have also published on NAFTA and the environment, planetary boundaries and climate governance. She has advised a wide range of government committees, NGOs and businesses on climate issues. She is the founder of the Carson Fellows program at the University of Arizona which trains students to better communicate their research and was the codesigner of the new international research program Future Earth.



Thomas Lovejoy

Thomas Lovejoy is an innovative and accomplished conservation biologist who coined the term "biological diversity". He serves as Senior Fellow at the United Nations Foundation. In 2010 he was elected University Professor in the Department of Environmental Science and Policy at George Mason University. He served as President of the Heinz Center for Science, Economics, and the Environment from 2002-2008 and was the Biodiversity Chair of the Center from 2008-2013. Before assuming this position, Lovejoy was the World Bank's Chief Biodiversity Advisor and Lead Specialist for Environment for Latin America and the Caribbean as well as Senior Advisor to the President of the United Nations Foundation. Dr. Lovejoy has served on science and environmental councils under the Reagan, Bush, and Clinton administrations. With two co-edited books (1992 and 2005), he is credited with founding the field of climate change biology. He also founded the series Nature, the popular long-term series on public television. In 2001, Lovejoy was awarded the prestigious Tyler Prize for Environmental Achievement. In 2009 he was the winner of BBVA Foundation Frontiers of Knowledge Award in the Ecology and Conservation Biology Category. In 2009 he was appointed Conservation Fellow by the National Geographic. In 2012 he was recognized by the Blue Planet Prize.



Michael Northcott

Michael Northcott's teaching and research is in the areas of Christian Ethics, ecology and religious ethics, and economy and ethics. He has published 12 books and over 70 academic papers. He has been visiting professor at the Claremont School of Theology, Dartmouth College, Duke University, Flinders University, and the University of Malaya. He has successfully supervised 28 doctoral students since coming to Edinburgh in 1989 with a majority of those students from Asia and North America. He welcomes enquiries from potential PhD students in Christian ethics, ecology and religion, the environmental humanities, and environmental and economic ethics.



Joshua D. Sarnoff

Joshua D. Sarnoff is a Professor of Law at DePaul University College of Law, where he teaches patent law, advanced patent law, and other courses. He is a registered patent attorney and a former member of the Boards of the Federal Circuit Bar Association and the IP Law Association of Chicago. He has filed amicus briefs on many important patent law issues, and was a consultant to UNCTAD on international IP, trade, and environmental issues. From 2014 to 2015, Professor Sarnoff was a Thomas A. Edison Distinguished Scholar at the United States Patent and Trademark Office.



John Nolt

John Nolt is Professor and Co-head of the Philosophy Department at the University of Tennessee and a Research Fellow in the Energy and Environment Program at the Howard H. Baker, Jr. Center for Public Policy. His research centers on environmental ethics, intergenerational ethics (especially climate ethics), formal value theory, and philosophical logic. He has written seven books and many articles in these areas. His most recent book is Environmental Ethics for the Long Term (Routledge 2015). For over a decade he has chaired UT's Committee on the Campus Environment, which advises the campus administration on environmental matters.



Ross B. Corotis

Ross B. Corotis, NAE, ASCE Distinguished Member, is the Denver Business Challenge Professor of Engineering at the University of Colorado at Boulder, where he was formerly Dean of the College of Engineering and Applied Science. He studies the application of probabilistic concepts and decision perceptions, particularly societal tradeoffs for hazards in the built environment, emphasizing framing and communicating long-term risks and resiliency. He has chaired committees on structural safety for ASCE and ACI, was Editor of the journals Structural Safety and ASCE Journal of Engineering Mechanics, served on the Building Research Board and the steering committee of the Disasters Roundtable.



David V. Rosowsky

David V. Rosowsky is Provost and Senior Vice President of the University of Vermont. Before UVM he was Dean of Engineering at Rensselaer Polytechnic Institute and Head of the Department of Civil Engineering at Texas A&M University. Dr. Rosowsky earned BS and MS degrees in civil engineering from Tufts University, and a PhD from Johns Hopkins University. An internationally recognized expert in structural reliability, design for natural hazards, and modeling of structural and environmental loads, Dr. Rosowsky has authored or co-authored more than 140 articles and over 150 conference proceeding papers. He is a member of several editorial boards and is a registered Professional Engineer.



Darrel Moellendorf

Darrel Moellendorf is Cluster Professor of International Political Theory at the Excellence Cluster Normative Orders and Professor of Philosophy at Johann Wolfgang Universität Frankfurt am Main. He is the author of Cosmopolitan Justice (2002), Global Inequality Matters (2009), and The Moral Challenge of Dangerous Climate Change: Values, Poverty, and Policy (2014). He co-edited (with Christopher J. Roederer) Jurisprudence (2004), (with Gillian Brock) Current Debates in Global Justice (2005), (with Thomas Pogge) Global Justice: Seminal Essays (2008) and (with Heather Widdows) The Routledge Handbook of Global Ethics (2014). He has been a Member of the School of Social Sciences at the Institute for Advanced Study (Princeton), a Senior Fellow at Justitia Amplificata at Goethe Unviersität-Frankfurt and the Forschungskolleg Humanwissenschaften (Bad Homburg), and the recipient of NEH (USA) and DAAD (German) grants.



Robert B. Olshansky

Robert B. Olshansky is Professor and Head of the Department of Urban and Regional Planning at UIUC. He has studied recovery planning and management after several major disasters in the U.S., Japan, China, India, Indonesia, and Haiti. His research has been supported by several NSF grants and by two years as a Visiting Professor at Kyoto University's Disaster Prevention Research Institute. He is the co-author of Opportunity in Chaos: Rebuilding after the 1994 Northridge and 1995 Kobe Earthquakes, Clear as Mud: Planning for the Rebuilding of New Orleans, and a forthcoming book with the Lincoln Institute of Land Policy on recovery management. In 2014 he co-edited a special issue of the Journal of the American Planning Association on Planning for Disaster Recovery.



Matthew Adler

Matthew Adler is the Richard Horvitz Professor of Law and Professor of Economics, Philosophy, and Public Policy at Duke University. His scholarship is interdisciplinary, drawing on both normative ethics and welfare economics. Adler's current work focuses on the "social welfare function" as a systematic methodology for incorporating distributive considerations into policy analysis. He is the author of Well-Being and Fair Distribution: Beyond Cost-Benefit Analysis (Oxford University Press, 2012) and, with Eric Posner, of New Foundations of Cost-Benefit Analysis (Harvard University Press, 2006). He is the editor, with Marc Fleurbaey, of the forthcoming Oxford Handbook of Well-Being and Public Policy. Adler holds undergraduate and law degrees from Yale University and a master's in history from Oxford University, where he was a Marshall Scholar.



Emmanuel O. Nuesiri

Emmanuel O. Nuesiri is a climate change governance expert. He holds a PhD in environmental governance from St. Antony's College and the School of Geography and the Environment (SoGE), University of Oxford. His research interests are in the area of natural resources management, climate change governance, and democracy. He is presently a Research Affiliate at the Cline Center for Democracy at the University of Illinois Urbana Champaign, and also a Marie Curie BRAIN Research Fellow in the Faculty of Economic and Social Sciences, University of Potsdam, Germany.



Eric T. Freyfogle

Professor Eric Freyfogle, a Swanlund Chair at the University of Illinois at Urbana-Champaign. He is the author or editor of a dozen books dealing with issues of humans and nature, some focused on legal aspects, others reaching to larger cultural and social issues. His work is broadly interdisciplinary — drawing upon history, philosophy, biological sciences, economics, and literature — and is guided by a conservation ethic that seeks better ways for humans to live in nature.



Eric Salathe

Eric Salathe is an Associate Professor for Climate Science in the School of Science Technology Engineering and Mathematics at the University of Washington Bothell, and the UW Director for the Department of the Interior Northwest Climate Science Center. He conducts research on regional climate change and the impacts of climate change on human and natural systems. This research supports climate impacts applications in many fields including air quality, hydrology, agriculture, and human health with a focus on the U.S. Pacific Northwest. His current research focuses on how local weather and land-surface processes can affect the regional response to the increased risk of flooding as a result of climate change.



J. Rolf Olsen

J. Rolf Olsen is a water resources systems engineer and senior technical lead at the U.S. Army Corps of Engineers (USACE) Institute for Water Resources (IWR) in Alexandria, Virginia. He initiated and then managed the USACE Responses to Climate Change program. Rolf has led multiple studies involving climate change and water resources, flood risk management, and drought management. Rolf is a member of the American Society of Civil Engineers (ASCE) Committee on Adaptation to a Changing Climate (CACC) and was lead coordinating author of their paper "Adapting Infrastructure and Civil Engineering Practice to a Changing Climate." He has a Ph.D. in Systems Engineering from the University of Virginia.



Cinnamon Piñon Carlarne

Cinnamon Piñon Carlarne is a Professor of Law at the Ohio State University Moritz College of Law. Carlarne's scholarship focuses on the evolution of system of domestic and international environmental governance and includes a book on comparative climate change law and policy with Oxford University Press; a forthcoming text, the Oxford Handbook of International Climate Change Law; a series of journal articles and book chapters exploring questions of domestic and international environmental law; and a textbook on oceans and human health and human well-being. She is on the editorial board Transnational Environmental Law (Cambridge University Press) and she is on the Academic Board for Climate Law (IOS Press). Carlarne earned her law degree from the University of California at Berkeley. She also holds a B.C.L. and a M.A. in Environmental Change and Management from the University of Oxford.

