Climate Intervention in an Earth Systems Science Framework: A Workshop

Committee

James W. Hurrell

Chair

Dr. James (Jim) W. Hurrell is the Scott Presidential Chair of Environmental Science and Engineering at Colorado State University. Previously, Dr. Hurrell served as the Director of the National Center for Atmospheric Research (NCAR), where he was also a Senior Scientist in the Climate and Global Dynamics Laboratory (CGD). He formerly served as Chief Scientist of the Community Earth System Model, and Director of CGD as well. Dr. Hurrell's research has centered on empirical and modeling studies and diagnostic analyses to better understand climate, climate variability, climate predictability. His current research includes analyzing the possible risks and benefits of climate intervention strategies. Dr. Hurrell has received numerous professional awards, including the Warren Washington Research and Leadership Medal from the American Meteorological Society (AMS). He is a Fellow of the AMS, the U.K. Royal Meteorological Society, and the American Geophysical Union. Dr. Hurrell received a Ph.D. in Atmospheric Science from Purdue University (1990). He has served on several National Academy committees, including Reflecting Sunlight: Recommendations for Solar Geoengineering Research and Research Governance (2021).

Christopher B. Field

Member

Dr. Christopher Field is the Perry L. McCarty Director of the Stanford Woods Institute for the Environment and Melvin and Joan Lane Professor for Interdisciplinary Environmental Studies. Dr. Field's research focuses on climate change, especially solutions that improve lives now, decrease the amount of future warming, and support vibrant economies. Recent projects emphasize decreasing risks from coastal flooding and wildfires. Dr. Field was the founding director of the Carnegie Institution's Department of Global Ecology, a position he held from 2002 to 2016. He was co-chair of Working Group II of the Intergovernmental Panel on Climate Change from 2008-2015, where he led the effort on the IPCC Special Report on "Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation" (2012) and the Working Group II contribution to the IPCC Fifth Assessment Report (2014) on Impacts, Adaptation, and Vulnerability. Dr. Field's widely cited work has earned many recognitions, including election to the National Academy of Sciences, the American Academy of Arts and Sciences, and the American Philosophical Society, as well as the Heinz Award, the Max Planck Research Award, the BBVA Frontiers of Knowledge Award, the Roger Revelle Medal, and the Japan Prize.

Sonali Shukla McDermid

Member

Dr. Sonali Shukla McDermid is an Associate Professor and climate scientist in the Dept. of Environmental Studies at New York University (NYU), and currently serves as Editor-in-Chief for the American Meteorological Society journal Earth Interactions. Dr. McDermid's research focuses on both climate change impacts on agriculture and food security, and the impacts of agricultural land management on the environment. She is a Climate Co-Lead for the Agricultural Intercomparison and Improvement Project's Regional Integrated Assessments (www.agmip.org), evaluating climate change impacts on food security across South Asia and Sub-Saharan Africa. She is also affiliated with the NASA Goddard Institute for Space Studies, where she contributes to development of the land surface model to improve representations of agriculture and its feedbacks to the climate system. Furthermore, she is a recent Andrew Carnegie Fellow (2021) and Fulbright-Kalam Fellow awardee (2020), which support her research investigating pathways for combined climate mitigation and adaptation in rice-based agricultural systems. She holds a B.A. in Physics from NYU and a Ph.D. from the Department of Earth and Environmental Sciences at Columbia University, focusing on Atmospheric Science and Climatology. Prior to NYU, she was a NASA Postdoctoral Fellow at the Goddard Institute for Space Studies.

Manjana Milkoreit

Member

Dr. Manjana Milkoreit is a Postdoctoral Researcher at the University of Oslo's Department of Sociology and Human Geography. Prior to joining the University of Oslo, Dr. Milkoreit was an Assistant Professor at the Department of Political Science at Purdue University. Her research integrates global environmental governance and cognitive theory to study actor motivations, agency, and institutional effectiveness related to climate change. Dr. Milkoreit is also interested in challenges at the science-policy-society interface, including the use of scientific knowledge in environmental decision-making and the role of ideologies in advancing or preventing effective responses to climate change. Currently, Dr. Miloreit's research focuses on collective future thinking (imagination) in climate change governance and the challenges associated with climate and social tipping points. Dr. Milkoreit holds a Ph.D. in Global Governance from the University of Waterloo (Canada) and a Master's in Public Policy from the Harvard Kennedy School.

Dr. Milkoreit served as a panelist for the Norwegian Institute of Foreign Affairs (NUPI) seminar series on climate policy entitled "Is delay the new denial in climate policy?" and spoke on carbon dioxide removal as a tool in climate policy.

Joellen L. Russell

Member

Dr. Joellen Russell is a Distinguished Professor at the University of Arizona (UA) and is the Thomas R. Brown Distinguished Chair in Integrative Science. Dr. Russell is an oceanographer and climate scientist who uses robot floats, supercomputers and satellites to observe and predict the ocean's role in climate and the carbon cycle. Dr. Russell is the lead for the modeling theme of the Southern Ocean Carbon and Climate Observations and Modeling project (SOCCOM) including its Southern Ocean Model Intercomparison Project (SOMIP). She currently serves as Co-Chair of the NOAA Science Advisory Board's Climate Working Group and on the National Center for Atmospheric Research's Community Earth System Model Advisory Board. Before joining UA, Dr. Russell was a Research Scientist at Princeton University and the National Ocean and Atmospheric Administration's Geophysical Fluid Dynamics Laboratory (NOAA/GFDL). Dr. Russell received her A.B. in Environmental Geoscience from Harvard and her PhD in Oceanography from Scripps Institution of Oceanography, University of California, San Diego.

Simone Tilmes

Member

Dr. Simone Tilmes is a Project Scientist III at National Center for Atmospheric Research (NCAR) and the co-chair of the Community Earth System Model (CESM) chemistry-climate working group. Dr. Tilmes scientific interests cover the understanding and evaluation of chemical, aerosol and dynamical processes in chemistry-climate models. She has investigated past, present and future evolution of the ozone hole in both hemispheres based on models and observations. Currently, Dr. Tilmes research focuses on troposphere chemistry, aerosols, air quality, long-range transport of pollutants, and of tropospheric ozone. She further studies the impact of climate interventions in particular stratospheric aerosol intervention, on the Earth's climate system, the hydrological cycle, and the impact of solar radiation management on dynamics and chemistry in both troposphere and stratosphere. Dr. Tilmes serves on several panels, including the Geoengineering Modeling Intercomparison Project Steering Committee and the Geoengineering Modeling Research Consortium Steering Committee, and will be the next co-chair of the Gordon Research Conference for Climate Engineering in 2024. She is further one of the PIs of the Community Climate Intervention Strategies Program at NCAR and served as a chapter lead author on the recent WMO2022 ozone assessment report with the title: "Stratospheric aerosol injection and its potential effects on the stratospheric ozone layer". Dr. Tilmes holds a M.S. in Geophysics from the University of Cologne and a Ph.D. in Geophysics and Geography from Johann Wolfgang Goethe University.

Lili Xia

Member

Dr. Lili Xia is an Assistant Research Professor in the Department of Environmental Sciences at Rutgers University. She is co-director of Rutgers Impact Studies of Climate Intervention (RISCI). Currently, Dr. Xia is serving as a research collaborator in the Developing Country Impact Modelling Analysis for Solar Radiation Management (DECIMALS) project to help teams from the Philippines, Jamaica, West Africa, and South Africa since 2017. Dr. Xia is also a steering committee member of the Geoengineering Modeling Research Consortium from 2019 to 2022. She has been working on climate change impact on agriculture, ecosystem, and air pollutants. Dr. Xia research focuses on two climate scenarios, stratospheric aerosol intervention and nuclear war. In 2022, Dr. Xia received the Global Peace and Health Award from the International Physicians for Prevention of Nuclear War and the Boston Chapter of Physicians for Social Responsibility. In 2022, she served in a NOAA review panel for the Earth's Radiation Budget Program "Atmospheric aerosols and their potential roles in solar climate intervention methods". Dr. Xia received her Ph.D. in Atmospheric Sciences Graduate Program at Rutgers University–New Brunswick.

Phoebe Zarnetske

Member

Dr. Phoebe Lehmann Zarnetske is Associate Professor of spatial and community ecology in the Department of Integrative Biology at Michigan State University (MSU) and is Director of the Institute for Biodiversity, Ecology, Evolution, and Macrosystems (IBEEM). Dr. Zarnetske co-leads the NSF-funded Climate Intervention Biology Working Group, bringing together experts in climate science and ecology to research the potential ecological impacts from solar radiation modification. Her research on climate change ecology has elucidated important roles of biotic interactions among species, and how these interactions can exacerbate the impacts of climate change on biodiversity. Dr. Zarnetske's research integrates insights from climate change experiments with macrosystems science and modeling of big data in ecology across spatial scales. She received the Early Career Research Award (MSU College of Natural Science), is lead PI of NSF Macrosystems NEON and NASA grants, and is a Co-PI of the Kellogg Biological Station Long-Term Ecological Research (LTER) site. Dr. Zarnetske was a Yale Climate and Energy Institute Postdoctoral Fellow in the Yale School of the Environment, a NSF IGERT Fellow during her Ph.D. in Integrative Biology, Ecosystem Informatics, Statistics at Oregon State University, and received her M.S. in Ecology from Utah State University and B.A. in Biology and Environmental Science from Colby College.