USGCRP Advisory Committee Fall 2024 Meeting: Speakers

Discussion Framing and Foundation

Alaa Al Khourdajie is a Research Fellow at Imperial College London, leading Work Package 4 in the EU Horizon project IAM COMPACT. His research focuses on Integrated Assessment Models (IAMs), their multidisciplinary applications, and data analytics to explore climate change mitigation strategies. Alaa's interest encompasses various mitigation approaches, including carbon capture and storage (CCS) and carbon dioxide removal (CDR) technologies. Alaa is particularly focused on exploring long-term mitigation scenarios, investigating the impacts of disruptive events and tipping points, while utilising combinatorial approaches to explore scenario spaces. His expertise in scenarios data analytics includes decomposition methods, Principal Component Analysis (PCA), clustering techniques, and vetting of scenarios data. Alaa is also interested in applications of models' linking, and currently exploring role of finance sector dynamics in IAMs. Drawing from his past experience with the IPCC, Alaa has broader interests including enhancing climate change assessments by promoting FAIR data principles and carefully leveraging artificial intelligence techniques to augment scientific assessment processes. Alaa earned his Ph.D. in economics (applied game theory on climate change cooperation) from the University of Bath in 2017.
Web: https://sites.google.com/site/akhourdajie/

Quynh Nguyen, PhD, MSPH, is an intramural investigator at the National Institute of Nursing Research (NINR). Dr. Nguyen is a social epidemiologist focusing on contextual and economic factors as they relate to health. She leverages technology and big data sources to investigate and address health disparities. She served as principal investigator of a career development grant (K01) and two R01s from the National Institutes of Health to pursue this research program. Specifically, she leveraged geotagged Twitter data to characterize the neighborhood social environment (K01ES025433; K01ES025433-03S1) and Google Street View data to characterize the neighborhood built environment (R01LM012849). Her team is currently building a question-and-answer chatbot for pregnant and parenting mothers.

David Reidmiller is the Director of the Climate Center at the Gulf of Maine Research Institute (GMRI) where he leads a team focused on delivering climate services to coastal and marine stakeholders. Prior to joining GMRI, Dave served in a number of climate science policy positions in the federal government, including as Director of the Fourth National Climate Assessment. Dave has also served as a Fellow with the U.S. Senate and the National Academies. He received a Ph.D. in atmospheric sciences from the University of Washington, a BA in chemistry from Colgate University.

Daniel S. Weld is Professor Emeritus at the Paul G. Allen School of Computer Science & Engineering and the General Manager & Chief Scientist of Semantic Scholar at the Allen Institute of Artificial Intelligence. Weld received bachelor's degrees in both Computer Science and Biochemistry at Yale University in 1982 and a Ph.D. from the MIT Artificial Intelligence Lab in 1988. He received a Presidential Young Investigator's award in 1989, an Office of Naval Research Young Investigator's award in 1990, was named AAAI Fellow in 1999, deemed ACM Fellow in 2005, and selected to be an AAAS Fellow in 2020. Dan was a founding editor for the Journal of AI Research, was area editor for the Journal of the ACM, guest editor for Computational Intelligence and Artificial Intelligence, and was Program Chair for AAAI-96. Dan is an active entrepreneur with several patents and technology licenses. He co-founded Netbot, creator of Jango Shopping Search (acquired by Excite), AdRelevance, a monitoring service for internet advertising (acquired by Nielsen NetRatings), and data integration company Nimble Technology (acquired by Actuate). Dan is a Venture

Partner and member of the Scientific Advisory Board at the Madrona Venture Group. Dan is an active entrepreneur with several patents and technology licenses. He co-founded Netbot, creator of Jango Shopping Search (acquired by Excite), AdRelevance, a monitoring service for internet advertising (acquired by Nielsen NetRatings), and data integration company Nimble Technology (acquired by Actuate). Dan is a Venture Partner and member of the Scientific Advisory Board at the Madrona Venture Group.

Dr. Heng Xu is a professor in the Warrington College of Business at the University of Florida, where she also directs the Center for AI Ethics, Cyber Governance, and Privacy Management. She currently serves as the Editor-in-Chief for the ACM Transactions on Management Information Systems. Her research is at the intersection of data privacy, digital ethics, and fairness in machine learning, with her interdisciplinary work published across fields such as Business, Computer Science, Law, and Psychology. Before joining the University of Florida, she had a mix of academic and government background, serving as a faculty member at Penn State and American University, as well as being a program director at the National Science Foundation. She has also served on a broad spectrum of national leadership committees including serving on the National Academies' Board on Human-Systems Integration (2024-present), co-chairing the Federal Privacy R&D Inter-agency Working Group (2016), and serving on the National Privacy Research Strategy Working Group (2014-2016).

Principles for Scientific Assessments

Alison Appling studies the movement of energy, carbon, and nutrients through rivers, lakes, and floodplains to better predict and understand variations in water quality over space and time. As a machine learning modeler and biogeochemist, she seeks modeling advances that bring together scientific knowledge and data-driven models. “Process-guided deep learning” and “differentiable hydrology” are two approaches on which she collaborates. As a data scientist, she conducts analyses in ways that are reproducible, efficient, and transparent, and she has developed tools and workflows to support others in these goals. In her leadership roles, she facilitates fluid skill sharing within teams and communities of practice, challenges individuals to excel in their projects and careers, and coordinates across projects to realize the Water Mission Area’s vision of broadly reusable, integrated tools for predicting water quantity and quality across the nation. Alison is based in State College, PA, and is a member of the Analysis and Prediction Branch in the Integrated Modeling and Prediction Division in the Water Mission Area. She is on the USGS career track called Equipment Development Grade Evaluation (EDGE).

Ann Bostrom is the Weyerhaeuser endowed Professor in Environmental Policy at the Evans School of Public Policy and Governance, University of Washington. Until 2007 she was Professor of Public Policy and Associate Dean for Research of the Ivan Allen College of Liberal Arts at Georgia Institute of Technology. She co-directed the Decision, Risk and Management Science Program at the National Science Foundation (NSF) from 1999 to 2001. Bostrom studies risk perceptions, risk communication, and mental models of hazards: how people understand and make decisions under uncertainty about, for example, climate change, extreme weather, and earthquakes. She currently co-directs the NSF-funded Cascadia Coastlines and Peoples Hazards Research Hub and co-leads risk communication in the NSF Artificial Intelligence (AI) Institute for research on Trustworthy AI in Weather, Climate and Coastal Oceanography. Bostrom served as the task team co-lead for the National Oceanic and Atmospheric Administration’s Science Advisory Board 2021 “Priorities for weather research” report. She is a Fellow and former President of the Society for Risk Analysis, and recipient of its Chauncey Starr and Distinguished Educator Award. She is also a Fellow of the American Association for the Advancement of Science, and a Fellow and elected member of the Board of

Directors of the Washington State Academy of Sciences. Bostrom received a Ph.D. in policy analysis from Carnegie Mellon University, an M.B.A. from Western Washington University, and a B.A. in English from the University of Washington. She co-chaired the National Academies of Sciences, Engineering, and Medicine consensus report on Integrating Social and Behavioral Sciences Within the Weather Enterprise and contributed to Communicating Science Effectively: A Research Agenda.

Anthony Broccoli is Distinguished Professor of Atmospheric Science in the Department of Environmental Sciences at Rutgers University. His primary research interest is climate dynamics, especially the simulation of past climates and climate change. He has recently served as Co-Chief Editor of the *Journal of Climate*, and he is currently the Publications Commissioner of the American Meteorological Society. He has also served as Co-Director of the Rutgers Climate Institute. Prior to coming to Rutgers, Dr. Broccoli spent 21 years at the National Oceanic and Atmospheric Administration (NOAA) Geophysical Fluid Dynamics Laboratory in Princeton, one of the leading climate modeling centers in the world. He is a Fellow of the American Meteorological Society and the American Association for the Advancement of Science.

Katie Shilton is a professor in the College of Information at the University of Maryland, College Park. Her research focuses on technology and data ethics. She is a co-PI of the NSF Institute for Trustworthy Artificial Intelligence in Law & Society (TRAILS), and a co-PI of the UMD Values-Centered Artificial Intelligence (VCAI) initiative. She was also recently the PI of the PERVADE project, a multi-campus collaboration focused on big data research ethics. Other projects include improving online content moderation with human-in-the-loop machine learning techniques; analyzing values in audiology technologies and treatment models; and designing experiential data ethics education. She was recently the founding co-director of the University of Maryland's undergraduate major in social data science. Katie received a B.A. from Oberlin College, a Master of Library and Information Science from UCLA, and a Ph.D. in Information Studies from UCLA.

Lauren Kmec joined the Science staff in 2005 and became the Deputy Executive Editor in 2024. In this position, she serves as the primary administrative officer of the journals and is responsible for managing budgets and contracts, liaising with AAAS leadership on initiatives that affect journal staff, and orchestrating projects related to editorial policy and technology. She also oversees the copyediting of Science content and the administration of Science-sponsored awards for researchers. She has a BS in chemistry from Bucknell University and is a member of the Council of Science Editors and the Society for Scholarly Publishing.

Lily Xu is a computer scientist developing AI methods across machine learning, optimization, and causal inference for planetary health challenges, particularly to address environmental challenges such as biodiversity conservation. She will join as an assistant professor at Columbia University in fall 2025, in the department of Industrial Engineering and Operations Research. Until then, she'll be a postdoc at the University of Oxford with the Leverhulme Centre for Nature Recovery, working with Alex Teytelboym. She co-directs the EAAMO research initiative, which advances computational techniques to improve access to opportunity for historically marginalized communities. Additionally, she partners closely with NGOs to bridge research and practice, serving as AI Lead for the SMART Partnership, where she helps build computational and research solutions for effective conservation management. She received her PhD in computer science from Harvard University.