

MultiSector Dynamics Community

Welcome to the newsletter of the MultiSector Dynamics Community

INSIDE THIS ISSUE

- [Urban Systems Working Group organized event](#)
- [Researcher Highlight: Chris Vernon](#)
- [MSD community sessions at AGU's Fall Meeting 2021](#)
- [MSD Special Issue at Earths' Future: Deadline extended!](#)
- [MSD publications](#)
- [MSD job listings](#)

Hello MultiSector Dynamics (MSD) Community!

In this issue we are featuring the work of Chris Vernon (PNNL) on reproducible research for the MSD community and provide a debrief from the recent virtual MultiSectoral Urban Interactions workshop that took place this month. We are also glad to announce that the deadline for our Special Issue at Earth's Future has been **extended to January 1st, 2022**. Finally, we present the sessions organized by members of our community in this year's AGU Fall Meeting.

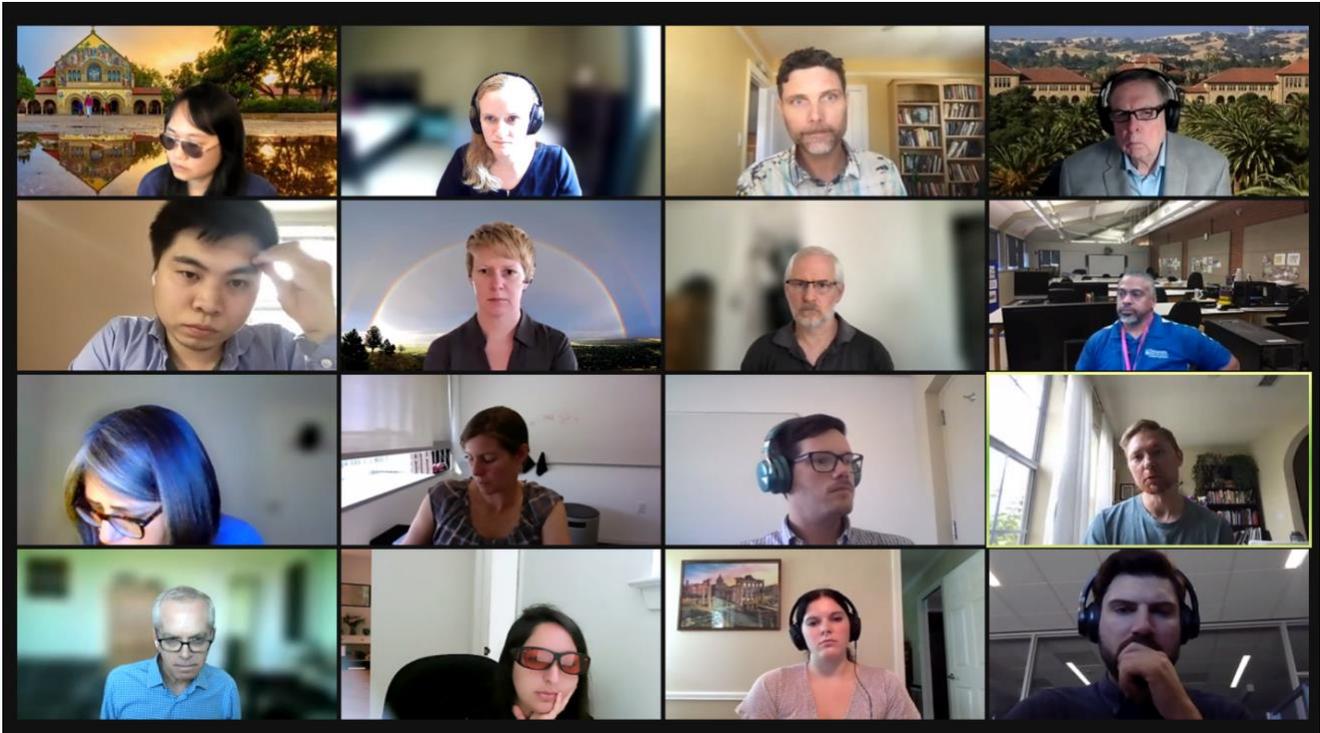
www.multisectordynamics.org

Working Group organized event: **MultiSectoral Urban Interactions: Fundamental Science Needs to Inform Pathways to More Resilient Communities in a Changing Climate**

The Urban Systems working group has recently organized a virtual workshop on MultiSectoral Urban Interactions. Below, the workshop organizers, Christa Brelsford and Andy Jones, provide a roundup of the three-day workshop, its major emerging topics, and participants.

In the keynote panel on July 21st, Karen Seto highlighted that urbanization is a large enough and widespread enough phenomena that urban change is global change and should be treated as an integral component of all global change research. Luis Bettencourt emphasized the role that cities play as concentrators of cross-sector dynamics, playing an outside role in broader scale changes. He argued that cities exist to solve a connectivity problem; they function by facilitating multisectoral cost-benefit trade-offs; and they create change by creating and communicating new information through

innovation, long term economic growth, and human development. He also made a compelling case that focusing research on individuals and households is a fruitful avenue for understanding how multiple sectors and systems interact to shape the experiences of urban inhabitants. Anu Ramaswami demonstrated that urban decarbonization is possible. She also emphasized that attention to within city heterogeneity is critical for urban decarbonization to be socially sustainable. Paul Waddell demonstrated mechanisms through which fine scale urban data, machine learning, and cross-sectoral modeling can better inform urban planning and design. Finally, all four speakers highlighted the importance of multi-scale perspectives in understanding cities and the opportunities for research that have been enabled by the recent explosion data available about human behavior and social processes.



Urban workshop discussion session held on July 22nd, 2021.

The discussion sessions, held on July 22nd and 23rd were organized around the idea of research ‘fault lines’ –methodological strategies, research objective, physical processes, hazard type. By acknowledging what is often implicit, our aim was to better address the interactions across different ways of understanding cities. This can create space for integration and fundamental insights into the systems, sectors, scales, and processes that cities are composed of. The four breakout sessions were organized around 1) earth system hazards, 2) social scales, 3) urban sectors and systems, and 4) research epistemologies and methodological strategies.

The keynote panel on July 21st had about 100 participants from 36 institutions including attendees from five DOE national laboratories, the DOE, and many universities. There were international participants from institutions in New Zealand, Germany, India, and the Netherlands.

The in-depth discussion sessions on July 22nd and 23rd had about 50 participants, also from a range of DOE national laboratories, universities, and international institutions. Participants in these interactive sessions were about 30% women, and also included a large fraction of early-to-mid career researchers. A “speed dating” session provided a unique opportunity for participants to get to know one another and build community in the virtual meeting format.

Creating reproducible research in this manner will also have side-effects. When used in combination with well-documented, open-source software and data, reproducibility can cause 1) an unusual amount of time to surface for use in conducting new research, 2) quick on-boarding of new staff to a project, 3) a deeper understanding of the science we are communicating, 4) a decrease in spending on duplicative efforts, and 5) a general feeling of value knowing that you have supported those who will continue where you have left off.

Chris Vernon is a senior data scientist at Pacific Northwest National Laboratory. Chris specializes in all things geospatial and is a noisy proponent of open-source software and reproducibility within integrated science. Chris is engrained in MSD research as the lead software engineer for the Integrated Multisector Multiscale Modeling (IM3) project and the Enabling and Foundational Capabilities task lead for the Global Change Intersectoral Modeling System (GCIMS) project.



Source: www.AGU.org

MSD community sessions at AGU's Fall Meeting 2021

Following the successful launch of our community in the AGU Fall Meeting 2020, we are continuing to expand our presence at the conference with several proposed sessions for this year's Fall Meeting. We invite all members of our community to submit abstracts for either **in-person** or **hybrid** presentation to one of the following sessions convened by members of our community at this year's AGU conference:

Session	Conveners	Abstract and more information
<i>GC060 - MultiSector Dynamics: Extreme Weather and Society</i>	Deeksha Rastogi (ORNL), Erwan Monier (UC Davis), Gabriele Messori (Uppsala University)	https://agu.confex.com/agu/fm21/prelim.cgi/Session/123405
<i>GC063 - MultiSector Dynamics: Science & Modeling for Societal Transformations</i>	Pat Reed (Cornell); Jennifer Morris (MIT); Enayat Moallemi (Deakin U); Jan Kwakkel (TU-Delft)	https://agu.confex.com/agu/fm21/prelim.cgi/Session/117559
<i>GC064 - MultiSector Dynamics: Uncertainty Characterization for Coupled Natural-Human Systems</i>	Vivek Srikrishnan (Cornell); Jon Lamontagne (Tufts), Stefano Galleli (Singapore SUTD), Riddhi Singh (IIT Bombay)	https://agu.confex.com/agu/fm21/prelim.cgi/Session/118791
<i>GC061 - MultiSector Dynamics: Modeling Advances for Representing Adaptive Human Systems Response to Change</i>	Jim Yoon (PNNL), Patricia Romero-Lankao (NREL), Christian Klassert (UFZ), Evelina Trutnevyte (University of Geneva)	https://agu.confex.com/agu/fm21/prelim.cgi/Session/121767
<i>GC059 - MultiSector Dynamics: Energy-Water-Land Interactions at Multiple Scales</i>	Tom Wild (PNNL/UMD), Zarrar Khan (PNNL), Adriano Vinca (IIASA), Makoto Taniguchi (RIHN)	https://agu.confex.com/agu/fm21/prelim.cgi/Session/123182
<i>GC062 - MultiSector Dynamics: MultiSector Impacts of Energy Transitions</i>	Stuart Cohen (NREL), Michael Craig (U.Michigan), Ana Dyreson (Mich. Tech), Jochen Markard (ETH)	https://agu.confex.com/agu/fm21/prelim.cgi/Session/122398
<i>ED031 - Preparing next generation researchers to meet the transdisciplinary challenges of climate change (including MultiSector Dynamics)</i>	Ana Dyreson (Michigan Tech), Tom Wild (PNNL/UMD), Ryna Cui (UMD), Morgan Edwards (UW-Madison)	https://agu.confex.com/agu/fm21/prelim.cgi/Session/123793
<i>Modeling MultiSector Dynamics to Understand Adaptive Pathways</i>	Nathalie Voisin (PNNL), Klaus Keller (Penn State), Yoshihide Wada (IIASA), Jan Kwakkel (TU-Delft)	https://agu.confex.com/agu/fm21/prelim.cgi/Session/122538
<i>GC058 - MultiSector Dynamics: Convergent Approaches for Environmental Change, Resilience, and Society in Urban Areas</i>	Pouya Vahmani (LBL), Christa Brelsford (ORNL), Deeksha Rastogi (ORNL), Andrew Jones (LBL)	https://agu.confex.com/agu/fm21/prelim.cgi/Session/123771
<i>GC057 - MultiSector Dynamics: Bridging systems modelling advances across socio-ecological domains</i>	Megan Lickley (MIT), Amanda Giang (UBC), Morgan Edwards (U. Wisconsin), Sarah Fletcher (Stanford)	https://agu.confex.com/agu/fm21/prelim.cgi/Session/120735

MSD Special Issue at Earths' Future: Deadline extended!



Our Community of Practice is leading a [Call for Papers at Earth's Future](#) and encourages the members of our community to submit their contributions.

The submission deadline has now been extended to January 1, 2022.

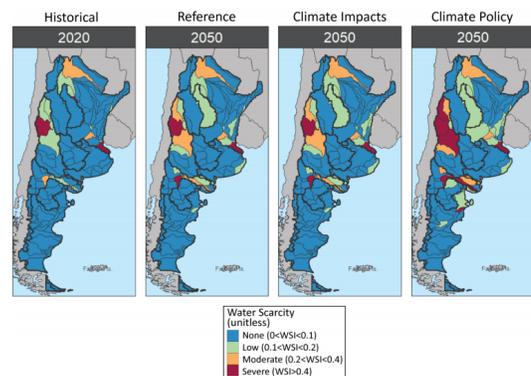
Special Issue Organizers:

Patrick Reed, Cornell University
 Jan Kwakkel, Technical University at Delft
 Julie Rozenberg, World Bank
 Jennifer Morris, Massachusetts Institute of Technology
 Jordan Macknick, National Renewable Energy Laboratory (NREL)

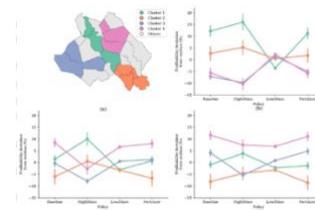
Abstract:

Designing dynamic and adaptive strategies for navigating the challenges of the Anthropocene hinges on a sound understanding of the interdependent co-evolution of our technological (e.g., water supply, energy, transport, etc.), societal (population, health, economy), natural (watersheds, wetlands, forests, coasts) and managed (water resources, agriculture, forestry) systems. Understanding and projecting the dynamic interaction of these systems, and inherent systematic risks, is a grand scientific challenge that requires integration of concepts, data, methods, and insights from many disciplines in novel ways. The field of Multisector Dynamics (MSD) aims to advance our understanding of the co-evolution of human and natural systems in response to environmental, technological and societal changes and shocks; and to build the next generation of tools that bridge across sectors, scales, and disciplines. This special issue seeks state-of-the-art contributions that provide new insights and technical innovations that advance the emerging field of MSD.

Recently published in this issue:



[The Implications of Global Change for the Co-Evolution of Argentina's Integrated Energy-Water-Land Systems](#)



[Accounting for multisectoral dynamics in supporting equitable adaptation planning: A case study on the rice agriculture in the Vietnam Mekong Delta](#)

MSD job listings

Our website is featuring a [careers page](#) that lists available MSD-focused positions at all ranks. If you'd like to post a position to be featured in this page, please email us at: contact@multisectordynamics.org. Currently, we have the following positions posted and many more:

Postdoctoral Research Associate: Climate Vulnerability and Adaptation

The Civil and Environmental Engineering Department (CEE) at the University of California, Davis invites applications for a Postdoctoral Research Associate focusing on climate adaptation for water resources systems, under the supervision of Professor Jon Herman. The successful candidate will join an interdisciplinary team that includes Cornell University, the U.S. Army Corps of Engineers, and the U.S. Environmental Protection Agency. [Read more ...](#)

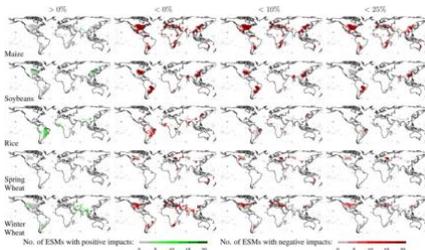
Job Vacancy: 2 PhD Positions on Multi-Hazard Risk Assessment

The Institute for Environmental Studies of the Vrije Universiteit Amsterdam, is advertising two PhD positions to work on the upcoming H2020-funded MYRIAD-EU project, which focuses on multi-hazard risk assessment and decision-making in the EU. [Read more ...](#)

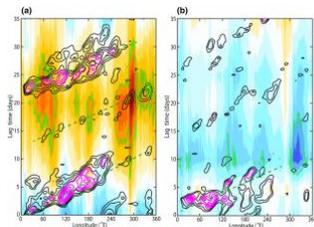
MSD publications

We have been posting and will be regularly updating select MSD publications on the website, under the [Publications](#) page. If you have any publications you would like us to highlight, please email contact@multisectordynamics.org.

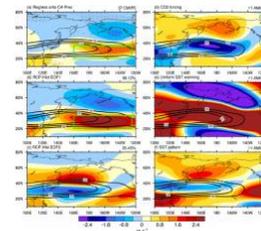
Below you can find some of the publications posted most recently:



[Global vulnerability of crop yields to climate change](#)



[Evidence for Coupling Between the Subseasonal Oscillations in the Southern Hemisphere Midlatitude Ocean and Atmosphere](#)



[Winter Precipitation Changes in California Under Global Warming: Contributions of CO2, Uniform SST Warming, and SST Change Patterns](#)

This newsletter has been edited by Rohini Gupta, Antonia Hadjimichael and the Community of Practice Facilitation Team. This and all previous newsletters can be accessed at the [Newsletters](#) page of our website. If you have any suggestions, concerns or other feedback about this newsletter or the MSD website, please email contact@multisectordynamics.org.