



# Scientific Program

Last updated: 8 September 2022

Please refer to the online program for any changes or updates:

<https://agu.confex.com/agu/22chapman4/meetingapp.cgi/Home/0>

# MONDAY, SEPTEMBER 12

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- 7:00 a.m.– 8:00 a.m.      **Registration & Check-In**  
Green Center, Grand Lobby
- 8:00 a.m.– 9:00 a.m.      **Welcome / Introduction / Call to Action**  
Green Center, Friedhoff Hall 1
- 9:00 a.m.– 10:30 a.m.      **Session 1 - Defining and Describing  
Water Availability: Multi-Disciplinary  
and Multi-Sector Perspectives**  
Green Center, Bunker Auditorium
- 9:00 a.m. –9:15 a.m.      **Marc Muller** | Complementary and compatible  
perspectives on coupled human-water systems: a  
typology of disciplines
- 9:15 a.m. –9:30 a.m.      **John C Schmidt** | The Uncertain Future of the  
Colorado River
- 9:30 a.m. –9:45 a.m.      **Kate A Brauman** | Water Availability in Ecology  
and Ecosystem Services
- 9:45 a.m. –10:00 a.m.      **Dawit Mekonnen** | Multi-Disciplinary and Multi-  
Sector Definitions and Descriptions of Water  
Availability: An Economist's Perspective
- 10:00 a.m. –10:15 a.m.      **Philip James Womble** | Oversubscribed: How  
Legal Systems Overallocate Rivers and Aquifers  
and Block Solutions to Fix It
- 10:15 a.m. –10:30 a.m.      **Amanda E Cravens** | Integrating Individual and  
Community Perspectives into Water Availability
- 10:30 a.m.– 11:00 a.m.      **Break**

Green Center, Grand Lobby

11:00 a.m.– 12:00 p.m.

**Q&A/Panel**

Presiding: Justine Joo

Green Center, Bunker Auditorium

12:00 p.m.– 1:00 p.m.

**Lunch**

Green Center, Friedhoff Hall 1

1:00 p.m.– 1:30 p.m.

**Icebreaker Activity: Spectrum Organization**

Green Center, Bunker Auditorium

1:30 p.m.– 3:15 p.m.

**Session 2 - Exploring Relationships Between Culture, Science and Management**

Green Center, Bunker Auditorium

1:30 p.m. –1:45 p.m.

**Nicole Michelle Herman-Mercer** | Session Overview

1:45 p.m. –2:00 p.m.

**Ryan Smith** | Exploring drivers of arsenic contamination in the San Luis Valley, Colorado

2:00 p.m. –2:15 p.m.

**Elizabeth Macpherson** | Rights of Nature and Rivers: Responsibility, Relationships and Reciprocity

2:15 p.m. –2:30 p.m.

**Kaustuv Neupane** | Upstream-downstream interdependencies and water security in Dhulikhel, Nepal

2:30 p.m. –2:45 p.m.

**Andrew Lewis** | Improving Water and Landscape Management with Human Perceptions of the Values of Springs' Ecosystems on the Colorado Plateau National Forests

2:45 p.m. –3:00 p.m.	<b>Katherine James</b>   The Impact of Drought on Diet and Nutrition in Rural Colorado
3:00 p.m. –3:15 p.m.	<b>Holly Brause</b>   When Science Doesn't Change Behavior: An Anthropological Analysis of the Gap Between Water Science and Agricultural Practices
3:15 p.m. –3:30 p.m.	Session Speaker Q&A
3:15 p.m.– 3:45 p.m.	<b>Break</b> Green Center, Grand Lobby
3:45 p.m.– 4:15 p.m.	<b>Lightning Talks Round 1</b> Green Center, Bunker Auditorium
3:45 p.m. –3:47 p.m.	<b>Benjamin Scandella</b>
3:47 p.m. –3:49 p.m.	<b>Matthew Gribble</b>
3:49 p.m. –3:53 p.m.	<b>Kyra Selina Hagge</b>
3:53 p.m. –3:55 p.m.	<b>Emma Chapman</b>
3:55 p.m. –3:57 p.m.	<b>Suzanne Paschke</b>
3:57 p.m. –3:59 p.m.	<b>Norman H Crawford</b>
3:59 p.m. –4:17 p.m.	Discussion
4:15 p.m.– 4:30 p.m.	<b>Day 1 Wrap-Up</b> Green Center, Bunker Auditorium
5:30 p.m.– 7:00 p.m.	<b>Reception at Buffalo Rose</b>

## TUESDAY, SEPTEMBER 13

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- 7:00 a.m.– 8:00 a.m.      **Poster Setup**  
Green Center, Grand Lobby
- 7:00 a.m.– 8:00 a.m.      **Registration**  
Green Center, Friedhoff Hall 1
- 8:00 a.m.– 8:15 a.m.      **Welcome Remarks Day 2**  
Green Center, Friedhoff Hall 1
- 8:15 a.m.– 10:00 a.m.      **Session 3 - Drivers and Approaches of Water Availability Assessments**  
Green Center, Friedhoff Hall 1
- 8:15 a.m. –8:30 a.m.      **Lori A. Sprague** | National and Regional Water Availability Assessments in the U.S. Geological Survey
- 8:30 a.m. –8:45 a.m.      **Morgan C Levy** | Identifying hydroclimatic and coastal hydrodynamic drivers of inland salinity pulses into coastal freshwater systems: a California case study
- 8:45 a.m. –9:00 a.m.      **Natalie Collar** | *Challenges of and strategies for quantifying the effect of land disturbance on hydrologic fluxes in the intermountain West*
- 9:00 a.m. –9:15 a.m.      **Gordon E. Grant** | The Future of Summer Streamflow in the Western U.S.: A Critical Zone Perspective
- 9:15 a.m. –9:30 a.m.      **Olivia Cramer** | Using Systematic Operational Analysis for Reservoirs (SOAR) to Determine Water

	Availability in the Tuolumne Watershed and to Maximize the Value of Don Pedro Reservoir
9:30 a.m. –9:45 a.m.	Session Speaker Q&A
10:00 a.m.– 11:00 a.m.	<b>Coffee &amp; Poster Session 2 - Reflect and Collect</b> Green Center, Grand Lobby
TU1	<b>Jason Banegas</b>   Examining Spatial Heterogeneity and Tourism Potential of Water Resources in New Mexico
TU2	<b>Fangfang Yao</b>   Assessing Reservoir Sedimentation in the United States
TU3	<b>Sijae Brown</b>   Assessing Future Water Availability with Machine Learning Models
TU4	<b>Aurora Kagawa-Viviani</b>   The Red Hill Water Crisis: Lessons at the Intersection of Science and Policy
TU8	<b>Sanaz Vajedian</b>   Characterization of Hydrogeological Properties and Land Subsidence in Colorado's San Luis Valley: Constraints from InSAR and Wells Observations
TU10	<b>Bridget Bittmann</b>   Influence of Land Use and Land Cover Change on Water Diversions in Semi-arid Regions
11:00 a.m.– 12:00 p.m.	<b>Lightning Talks Round 2</b> Green Center, Friedhoff Hall 1
11:00 a.m. –11:02 a.m.	<b>Angela Livino</b>
11:02 a.m. –11:04 a.m.	<b>Joe C Yelderman</b>

11:04 a.m. –11:06 a.m.	<b>Kimberly Slinski</b>
11:06 a.m. –11:08 a.m.	<b>Claudia Corona</b>
11:08 a.m. –11:10 a.m.	<b>Abigail Kelly</b>
11:10 a.m. –11:12 a.m.	<b>Shirley Leung</b>
11:12 a.m. –11:14 a.m.	<b>David P Lesmes</b>
11:14 a.m. –11:16 a.m.	<b>Stacie Bender</b>
11:16 a.m. –11:18 a.m.	<b>Tanya Petach</b>
11:18 a.m. –11:20 a.m.	<b>Laura Read</b>
11:20 a.m. –11:22 a.m.	<b>Jacob Knight</b>
11:22 a.m. –11:24 a.m.	<b>William E. Grant</b>
11:24 a.m. –11:26 a.m.	<b>Nathan Bonham</b>
11:26 a.m. –11:28 a.m.	<b>Edgar Guerron Orejuela</b>
11:28 a.m. –11:56 a.m.	Discussion
12:00 p.m.– 1:00 p.m.	<b>Lunch</b> Green Center, Friedhoff Hall 1
1:00 p.m.– 2:35 p.m.	<b>Session 4 - Water Availability Across Socio-Technical Scales</b> Green Center, Friedhoff Hall 1
1:00 p.m. –1:05 p.m.	Introductory Remarks
1:05 p.m. –1:20 p.m.	<b>Claudia Pahl-Wostl</b>   Securing Water for Different Uses and Users in Times of Climate Change – a Multi-Level Governance Challenge

1:20 p.m. – 1:35 p.m.	<b>Andrew L Hamilton</b>   How do natural, engineered, and institutional scales impact water availability and infrastructure investment within complex, interconnected water supply systems?
1:35 p.m. – 1:50 p.m.	<b>Rosa Isabella Cuppari</b>   From the Willamette to Canada: Water Scarcity and Hydropower Across the Columbia River Basin
2:05 p.m. – 2:20 p.m.	<b>Gregory W Characklis</b>   Financial risks of water shortage and power market uncertainty for large water providers: a case study of the Central Arizona Project on the Colorado River
2:20 p.m. – 2:35 p.m.	<b>Jose Albiac</b>   Water scarcity and water quality assessment in the Ebro River Basin using an integrated hydroeconomic modeling.
2:35 p.m. – 3:00 p.m.	<b>Break</b> Green Center, Friedhoff Hall 1
3:00 p.m. – 3:45 p.m.	<b>Panel Discussion – Water Availability Across Socio-Technical Scales</b> Green Center, Friedhoff Hall 1
3:45 p.m. – 4:30 p.m.	<b>Poster Session 3 - Reflect and Collect</b> Green Center, Grand Lobby
TU11	<b>Nicholas Potter</b>   Measuring the Implications of Declining Snowpack on Surface Water Availability and Irrigated Agriculture
TU12	<b>Rohini Gupta</b>   Partitioning how natural variability and climate change influence hydrologic response in 12 major California Central Valley watersheds



- TU15                    **Richard B Lammers** | Water markets can accelerate groundwater depletion and increase surface water availability
- TU16                    **Harrison Bray Zeff** | Adaptively managing water scarcity at multiple scales
- TU17                    **Kate Boden** | Impact of forest treatment on water yield in a Sierra Nevada watershed
- TU18                    **Nicole D Jackson** | Projecting Water Scarcity Across Scales: Case Study of the Colorado River Basin
- TU19                    **Mari R Tye** | Towards Actionable Science: Assessing the usability of water availability metrics from Earth system models
- 4:30 p.m.– 5:00 p.m.                    **Keynote: Exploring the Role of Scale in Socio-Environmental Systems Modeling**  
Green Center, Friedhoff Hall 1
- 4:30 p.m. –5:00 p.m.                    **Hsiao-Hsuan Wang** | Exploring the Role of Scale in Socio-Environmental Systems Modeling

## WEDNESDAY, SEPTEMBER 14

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- 7:00 a.m.– 8:00 a.m.      **Poster Setup**  
Green Center, Grand Lobby
- 7:00 a.m.– 8:00 a.m.      **Registration**  
Green Center, Friedhoff Hall 1
- 8:15 a.m.– 8:45 a.m.      **Structured Decision Making: Know what you need to know before deciding on what to measure**  
Green Center, Friedhoff Hall 1
- 8:15 a.m.– 8:45 a.m.      **Karen Jenni | Structured Decision Making: Know what you need to know before deciding on what to measure**
- 8:45 a.m.– 10:45 a.m.      **Session 5 - Water Availability Metrics and Perspectives Used in Decision-Making**  
Green Center, Friedhoff Hall 1
- 8:45 a.m. –9:00 a.m.      **Monica Ainhorn Ainhorn Morrison | The Logic of Actionable Science: Recommendations for Achieving Usefulness and Usability of Earth System Model Products**
- 9:00 a.m. –9:15 a.m.      **Suzanne A Pierce | Intelligent Decision Support Systems: Methods for powering knowledge-driven resilience with collective intelligence, integrated models and user-oriented tools**

- 9:15 a.m. –9:30 a.m. **Rory Nathan** | Assessing Variability and Change: the Problem with Using Standard Modelling Tools Under A Groundhog Day Assumption
- 9:30 a.m. –9:45 a.m. **Lucas Bair** | Consideration Of Plural Values When Selecting Metrics In Integrated Water Availability Assessments
- 9:45 a.m. –10:00 a.m. **Joseph H.A. Guillaume** | Transforming Uncertainty Management in Water Availability Decision Making
- 10:00 a.m. –10:15 a.m. **Madalyn S Blondes** | Integrating oil and gas wastewaters into interdisciplinary water availability models
- 10:15 a.m. –10:45 a.m. Speaker Q&A
- 10:45 a.m.– 11:30 a.m. **Coffee & Poster Session 4 - Reflect and Collect**  
Green Center, Grand Lobby
- W1 **Elizabeth J. Tomaszewski** | A quantitative consideration of sociodemographic factors in water quality research prioritization
- W2 **James M Gilbert** | Managing water availability for fish and farms: An integrated framework to explore opportunities for managing water resources and endangered salmon in California
- W3 **Trent W Biggs** | Integration of hydrological and social survey data to quantify human-water feedbacks in the Brazilian Amazon
- W4 **Noah Heller** | Stacked Dynamic Flow and Water Chemistry Profiling of Long Screened Test Wells in the Search for Groundwater Availability: Delineation of flow and water chemistry in pilot

and slim hole borings to reduce the risk of constructing potable supply wells that fail based on water chemistry.

- W5                    **Sarpong Hammond Antwi** | Communicating water availability to improve awareness and implementation of water conservation: A study of the 2018 and 2020 drought events in the Republic of Ireland
- W9                    **James Swierc** | Groundwater Resource Assessment of the Southern Fort Belknap Reservation
- W10                  **Yifan Cheng** | Climate impacts on Alaska and Yukon hydrometeorology: a modeling effort guided by Indigenous Knowledge
- 11:30 a.m.– 12:00 p.m.    **Lightning Talks Round 3**  
Green Center, Friedhoff Hall 1
- 11:30 a.m. –11:32 a.m.    **Gregory W Characklis**
- 11:32 a.m. –11:34 a.m.    **Trevor Partridge**
- 11:34 a.m. –11:36 a.m.    **Hyunjun Kim**
- 11:36 a.m. –11:38 a.m.    **Kira Waldman**
- 11:38 a.m. –11:40 a.m.    **Will Brewer**
- 11:40 a.m. –11:42 a.m.    **Fati Aziz**
- 11:42 a.m. –11:44 a.m.    **Ariel O'Callaghan**
- 11:44 a.m. –11:58 a.m.    Discussion
- 12:00 p.m.– 1:00 p.m.    **Lunch**

Green Center, Friedhoff Hall 1

1:00 p.m.– 3:00 p.m.

**Session 6 - Integrative Frameworks, Tools and Practices for Integrated Assessments**

Green Center, Friedhoff Hall 1

1:00 p.m. –1:15 p.m.

**Serena Hamilton** | Benefits, barriers and enablers of integrated modelling

1:15 p.m. –1:30 p.m.

**Sondoss Elsawah** | Guidance on Selecting Socio-environmental Systems Modeling Approaches

1:30 p.m. –1:45 p.m.

**Chelsea Peters** | Groundwater numerical modeling meets economic experimentation: How understanding of risk of saltwater intrusion affects water-user behavior

1:45 p.m. –2:00 p.m.

**Robert J Lempert** | MANAGING WATER RESOURCES UNDER DEEPLY UNCERTAIN CLIMATE AND SOCIO-ECONOMIC CONDITIONS

2:00 p.m. –2:15 p.m.

**Avril Horne** | Legacy issues in integrated assessment modeling

2:15 p.m. –2:30 p.m.

Speaker Q&A

3:00 p.m.– 4:00 p.m.

**Coffee & Poster Session 5 - Reflect and Collect**

Green Center, Grand Lobby

W11

**Adrian Monroe** | Colorado River Basin Integrated Science and Technology: USGS Approach to Convergent Research

W13

**Nicholas Lybarger** | Evaluation of Statistical Downscaling Methods for Precipitation Over CONUS

- W15 **Chiachen Hsu** | The Socio-Economic Benefits of Improving Water Availability: An Integrated Assessment Approach in the Zhuoshui River Basin in Taiwan
- W16 **Hannah Kamen** | Understanding the role of water-availability forecast quality and timing using a physical-economic model in a stream-dominated system.
- W18 **Juan Sebastian Hernandez Suarez** | Trading off: Modeling multi-objective environmental water transactions for fish habitat and Colorado River Compact deliveries
- W19 **Abigail Smith** | Improving our methodologies of selecting Earth System Models for Climate Change Impact Applications
- W20 **Alissa Vera Vera** | Identification of Marine Intrusion Anomalies for Sustainable Management of an Overexploited Aquifer on the Northern Edge of Atacama Desert
- W21 **Ben Livneh** | A systems modeling approach to examine water and environmental sustainability pathways in the southwestern US
- W22 **Melissa Masbruch** | Integrated Surface Water/Groundwater Numerical (GSFLOW) Model of the Upper Colorado River Basin
- W23 **Courtney Crosson** | Net Zero Urban Water from Concept to Applications: Integrating Natural, Built and Social Systems for Responsive and Adaptive Solutions

- 4:00 p.m.– 5:00 p.m.      **Preview of Integration Workshop & Introduction of Case Study Basins**  
Green Center, Friedhoff Hall 1
- 4:00 p.m. –4:15 p.m.      **Kate A Brauman** | Introduction
- 4:15 p.m. –4:20 p.m.      **Aubrey L Dugger** | Progress and Challenges in Integrated Human-Hydro-Terrestrial Modeling to Understand Drought Vulnerability in the Delaware River Basin
- 4:20 p.m. –4:25 p.m.      **Matthew P Miller** | Regional Scale Water Availability Assessment in the Upper Colorado River Basin
- 4:25 p.m. –4:30 p.m.      **Randall Hunt** | Identifying appropriate scales for regional water availability assessment in the Illinois River Basin
- 4:30 p.m. –4:35 p.m.      **Howard S. Wheeler** | The Saskatchewan River Basin, Canada – water security and the science agenda
- 4:35 p.m. –4:40 p.m.      **Joseph H.A. Guillaume** | Managing together: A social learning approach for linking science-policy-stakeholders in resource dilemma situations - Willunga case
- 4:40 p.m. –5:00 p.m.      Q&A

## THURSDAY, SEPTEMBER 15

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- 7:00 a.m.– 8:00 a.m.      **Poster Setup**  
Green Center, Grand Lobby
- 7:00 a.m.– 8:00 a.m.      **Registration**  
Green Center, Friedhoff Hall 1
- 8:00 a.m.– 8:30 a.m.      **Keynote: Challenges and Lessons in Integrated Assessments**  
Green Center, Friedhoff Hall 1
- 8:00 a.m. –8:30 a.m.      **Anthony John Jakeman** | Challenges and Lessons in Integrated Assessments
- 8:30 a.m.– 9:00 a.m.      **Poster Session 6 - Reflect and Collect (Data and Methods)**  
Green Center, Grand Lobby
- TH2      **Patrick Kormos** | Paths forward to improve operational water supply forecasts in the Eastern Great and Colorado River Basins, USA
- TH3      **Carleton Bern** | Flow-Generating Storage in the Upper Colorado River Basin as Estimated Using Tritium
- TH6      **Erin Towler** | Evaluating and Benchmarking Continental-Scale Hydrologic Performance for a Long-Term Retrospective
- 9:00 a.m.– 9:30 a.m.      **Break**  
Green Center, Grand Lobby



- 9:30 a.m.– 9:45 a.m.      **Workshop Introduction and Marching Orders**  
Green Center, Friedhoff Hall 1
- 9:45 a.m.– 11:00 a.m.      **Breakout Groups I - Introduction to Case Study Basins**  
Green Center, Friedhoff Hall 1
- 4:15 p.m. –4:20 p.m.      **Aubrey L Dugger** | Progress and Challenges in Integrated Human-Hydro-Terrestrial Modeling to Understand Drought Vulnerability in the Delaware River Basin
- 4:20 p.m. –4:25 p.m.      **Matthew P Miller** | Regional Scale Water Availability Assessment in the Upper Colorado River Basin
- 4:25 p.m. –4:30 p.m.      **Randall Hunt** | Identifying appropriate scales for regional water availability assessment in the Illinois River Basin
- 9:45 a.m. –11:00 a.m.      **Howard S. Wheeler** | The Saskatchewan River Basin, Canada – water security and the science agenda
- 9:45 a.m. –11:00 a.m.      **Joseph H.A. Guillaume** | Managing together: A social learning approach for linking science-policy-stakeholders in resource dilemma situations - Willunga case
- 11:00 a.m.– 12:30 p.m.      **Breakout Groups II - Developing Conceptual Maps**  
Green Center, Friedhoff Hall 1
- 12:30 p.m.– 1:15 p.m.      **Lunch**  
Green Center, Friedhoff Hall 1

- 1:15 p.m.– 3:00 p.m.      **Breakout Groups III - Implications for Modeling & Measuring**  
Green Center, Friedhoff Hall 1
- 3:00 p.m.– 4:00 p.m.      **Coffee and Flash Presentations from Breakout Groups**  
Green Center, Friedhoff Hall 1
- 4:00 p.m.– 5:00 p.m.      **Breakout Groups IV - Incorporating Insights**  
Green Center, Friedhoff Hall 1

## FRIDAY, SEPTEMBER 16

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- 8:00 a.m.– 10:00 a.m.     **Breakout groups: Key conference themes**  
Green Center, Friedhoff Hall 1
- 10:00 a.m.– 10:30 a.m.     **Break**  
Green Center, Friedhoff Hall 1
- 10:30 a.m.– 11:30 a.m.     **Breakout groups: Products and New Collaborations**  
Green Center, Friedhoff Hall 1
- 11:30 a.m.– 12:00 p.m.     **Next Steps & Adjourn**  
Green Center, Friedhoff Hall 1