

A decadal reflection of case studies encompassing the Panta Rhei paradigm

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Abstract

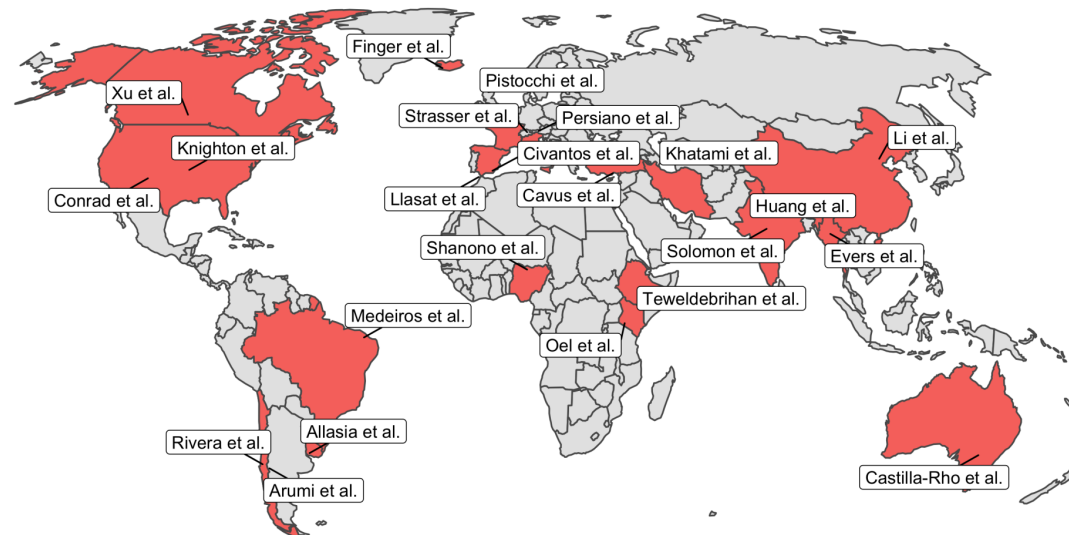
We describe a sampling of over two-dozen sociohydrology case studies that advance our understanding of two-way human-water phenomena. These case studies span broad geographic regions, including over 20 countries, and cover cross-cutting themes such as human behavior, social equity, water security, migration, water resources management, and ecological and environmental phenomena. Collectively, the cases reflect progress within the Panta Rhei decade and suggest new pathways for exciting research in the coming era, in particular by showing how socio-hydrologic modes of study transcend many geographical bounds. We synthesize these insights and describe approaches toward innovative modeling and predictive frameworks that promise to assist in real-world decision-making. We further describe how understanding of diverse and pertinent socio-hydrological phenomena relate to the United Nations' Sustainable Development Goals (UNSDG) and Environment Programme (UNEP) for addressing climate action in a manner that manifests social well-being and resilient communities.

Panta Rhei Chapter 11: Sociohydrology Case Studies

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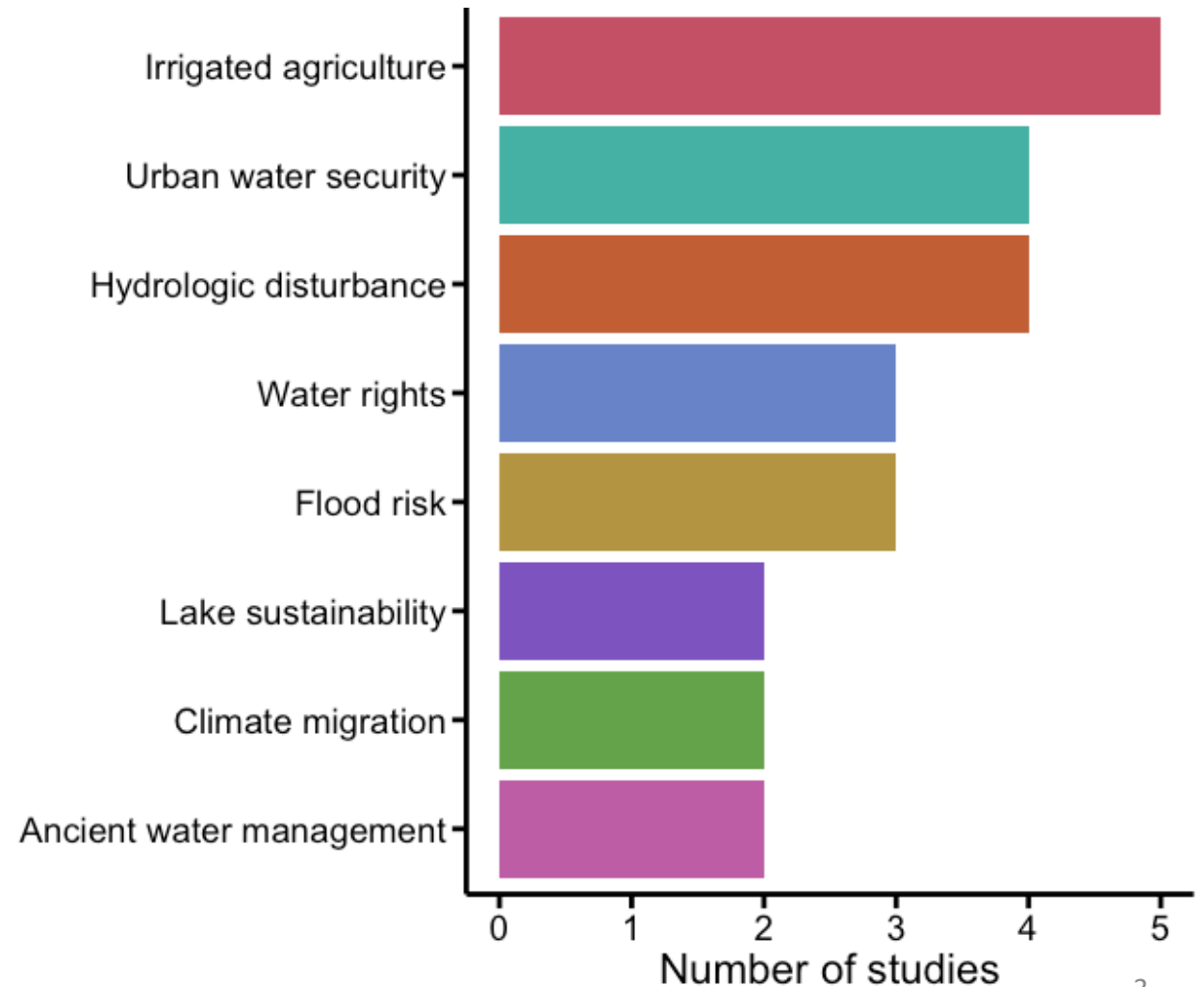
*Chapter lead author

Panta Rhei book

- Chapters 1-10: Foundations, progress, and theory
- Chapter 11: Sociohydrology case studies
- Benefits:
 - Apply theory to real-world cases
 - New and emerging research
 - Synthesis across regions and themes

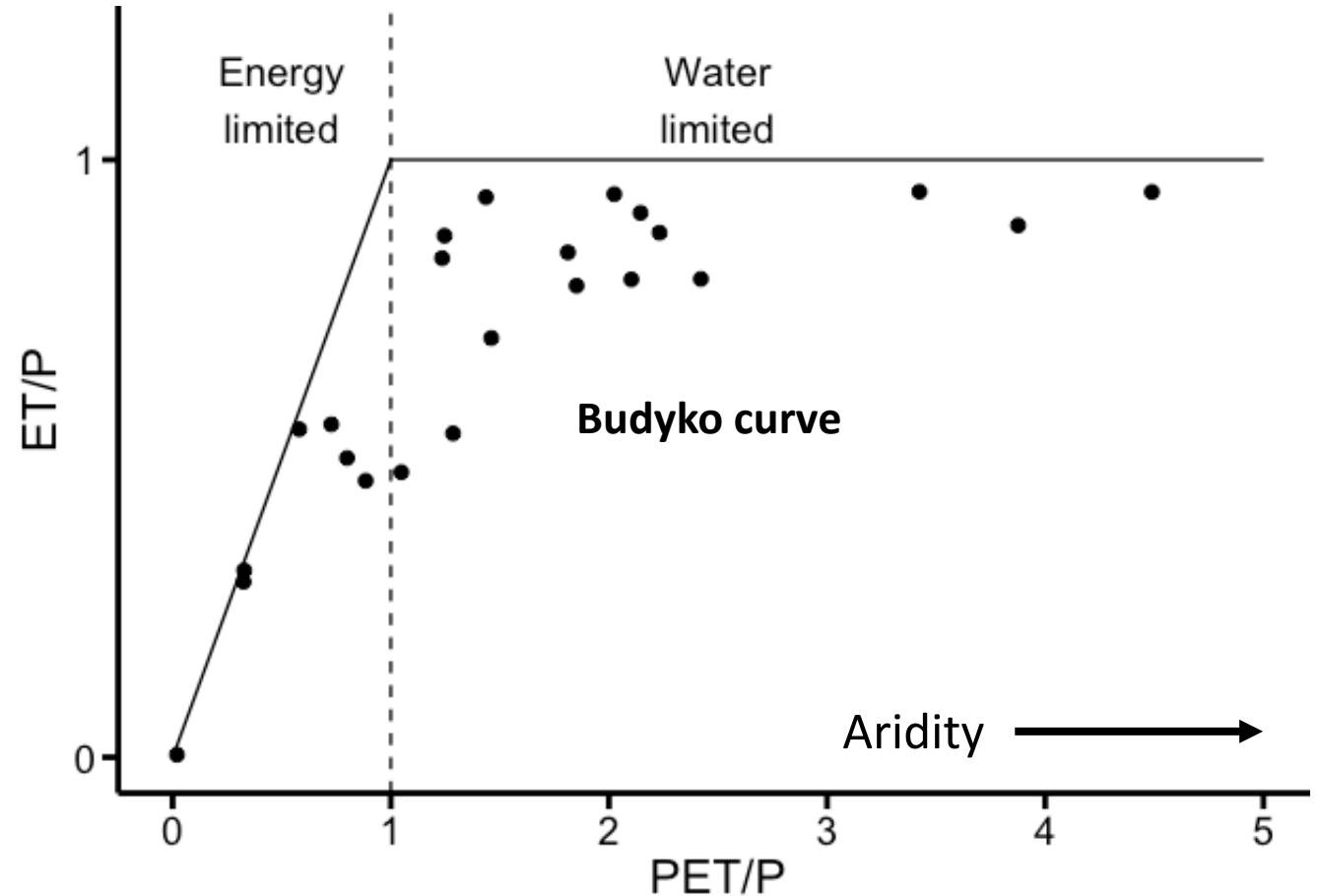
Compiling case studies

- 25 case studies
- Requirements
 - Recent or emerging research
 - Human-water coupling
- Additional criteria
 - Diverse themes



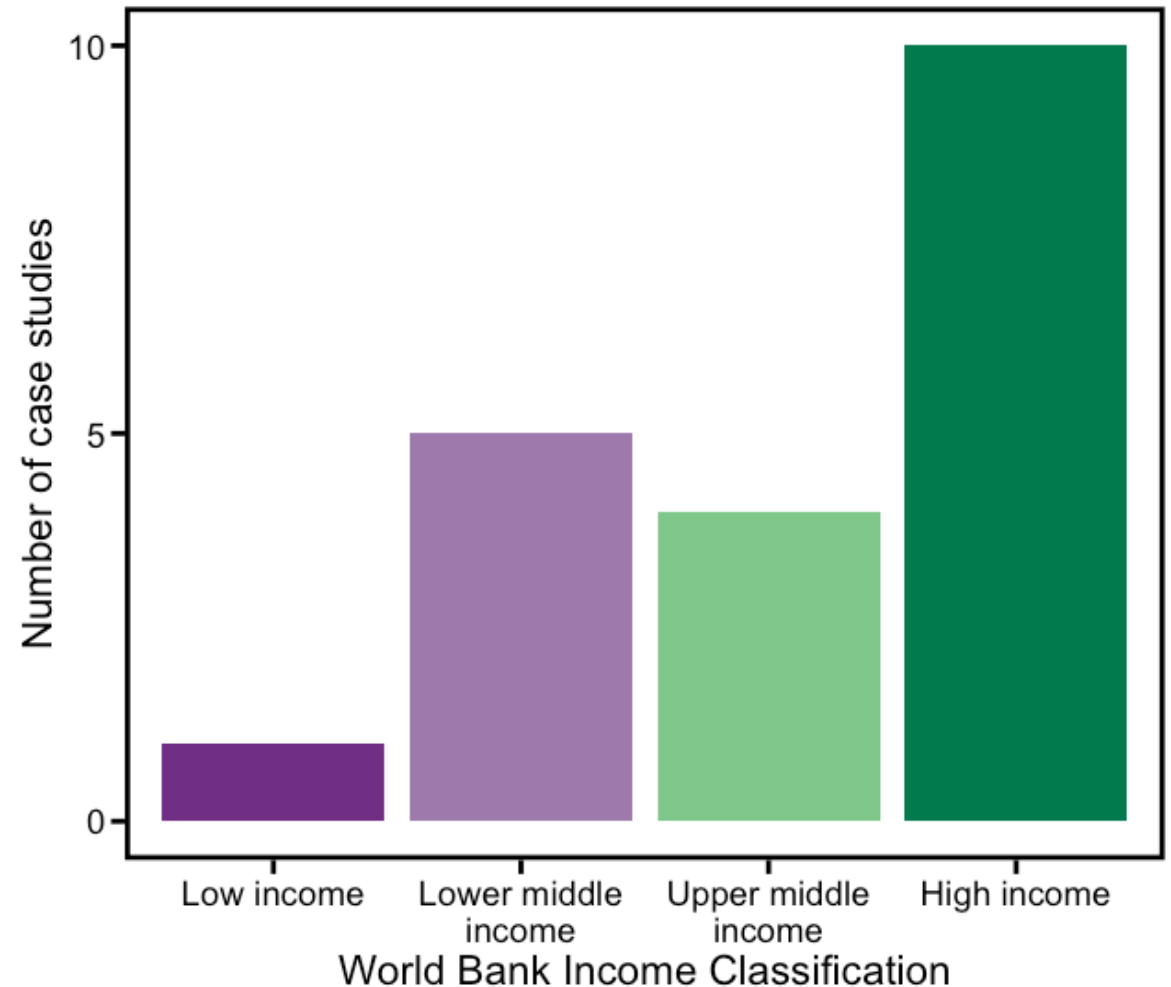
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 - Hydrological diversity



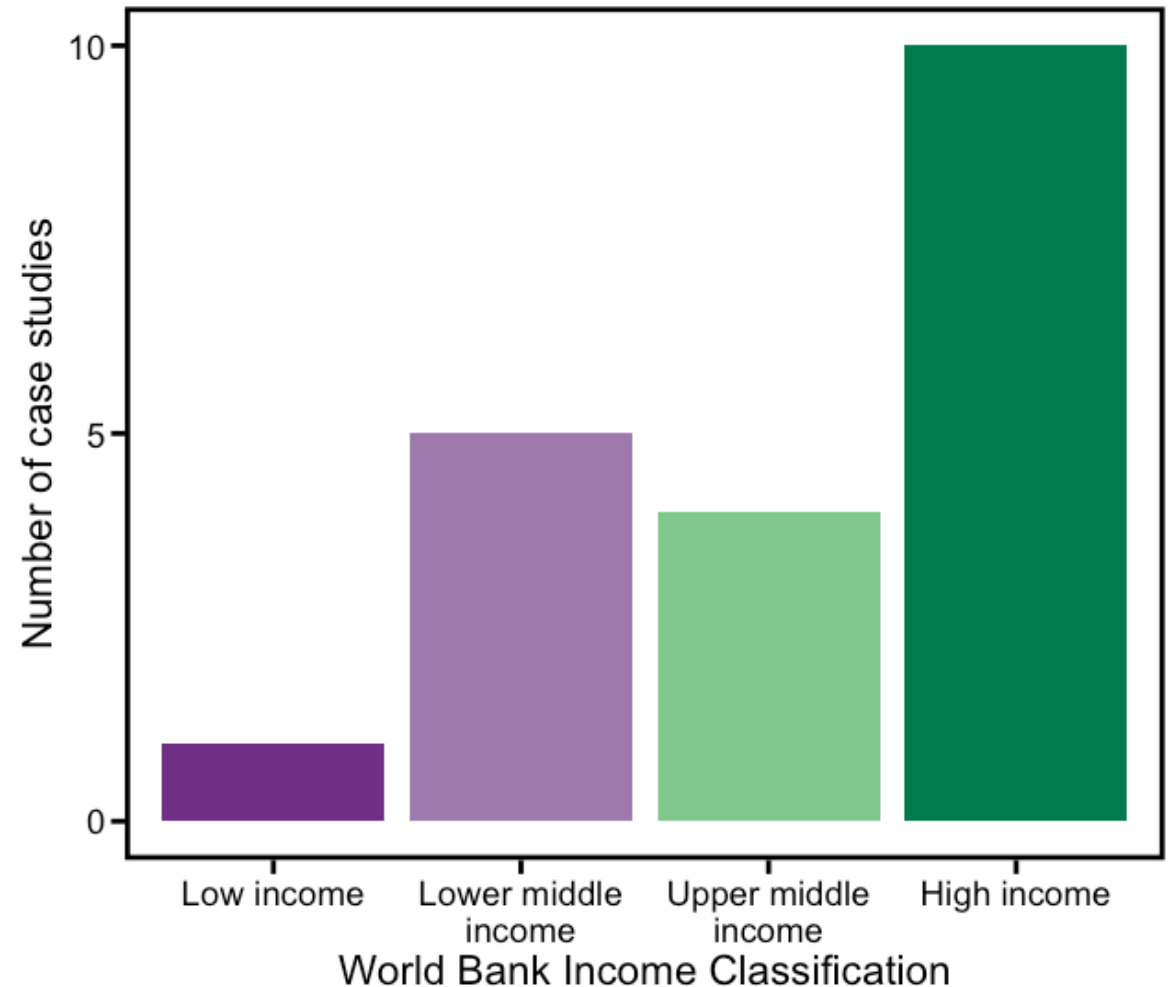
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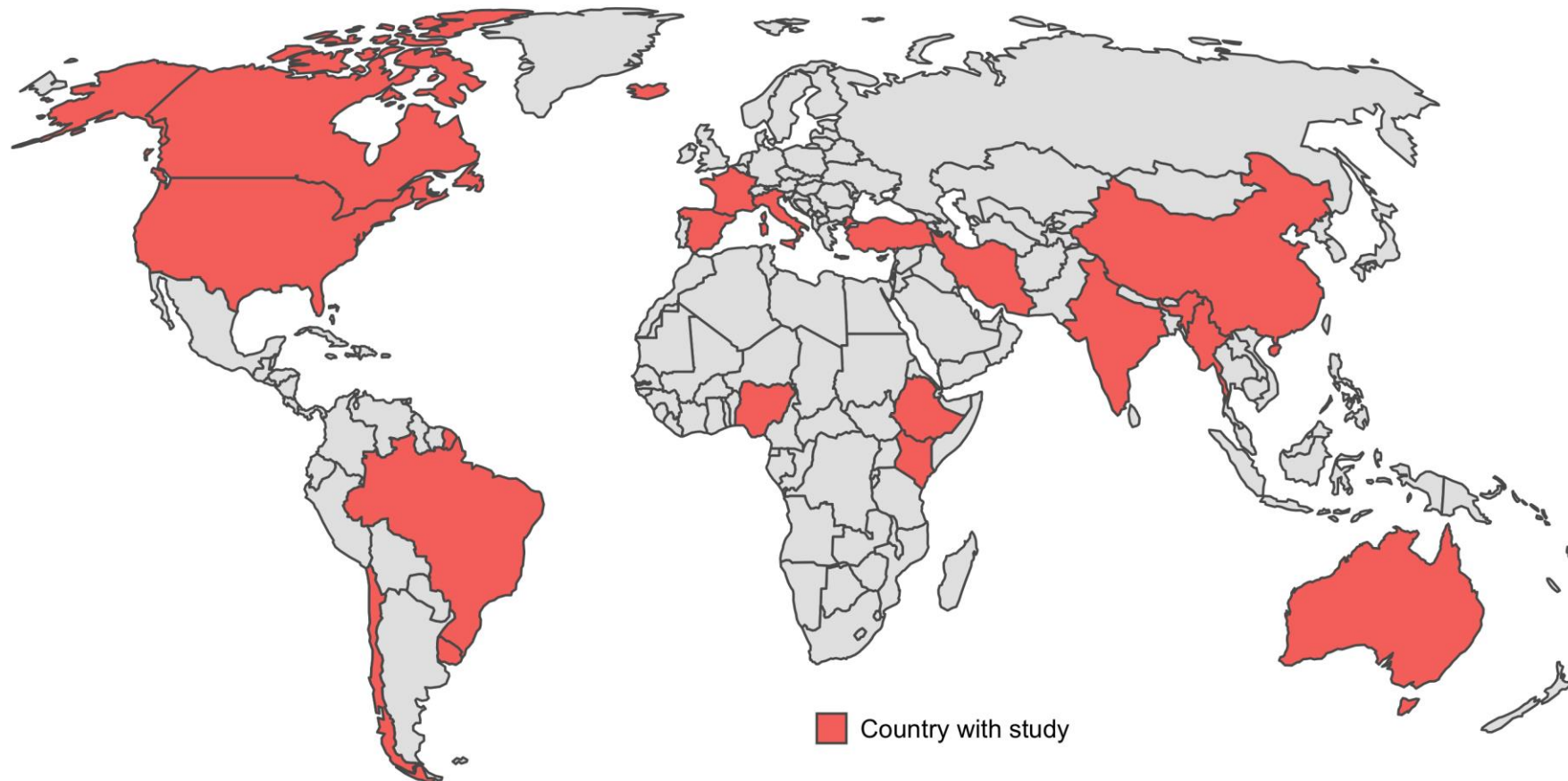
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 - Hydrological diversity
 - Socioeconomic diversity
 - Geographical diversity

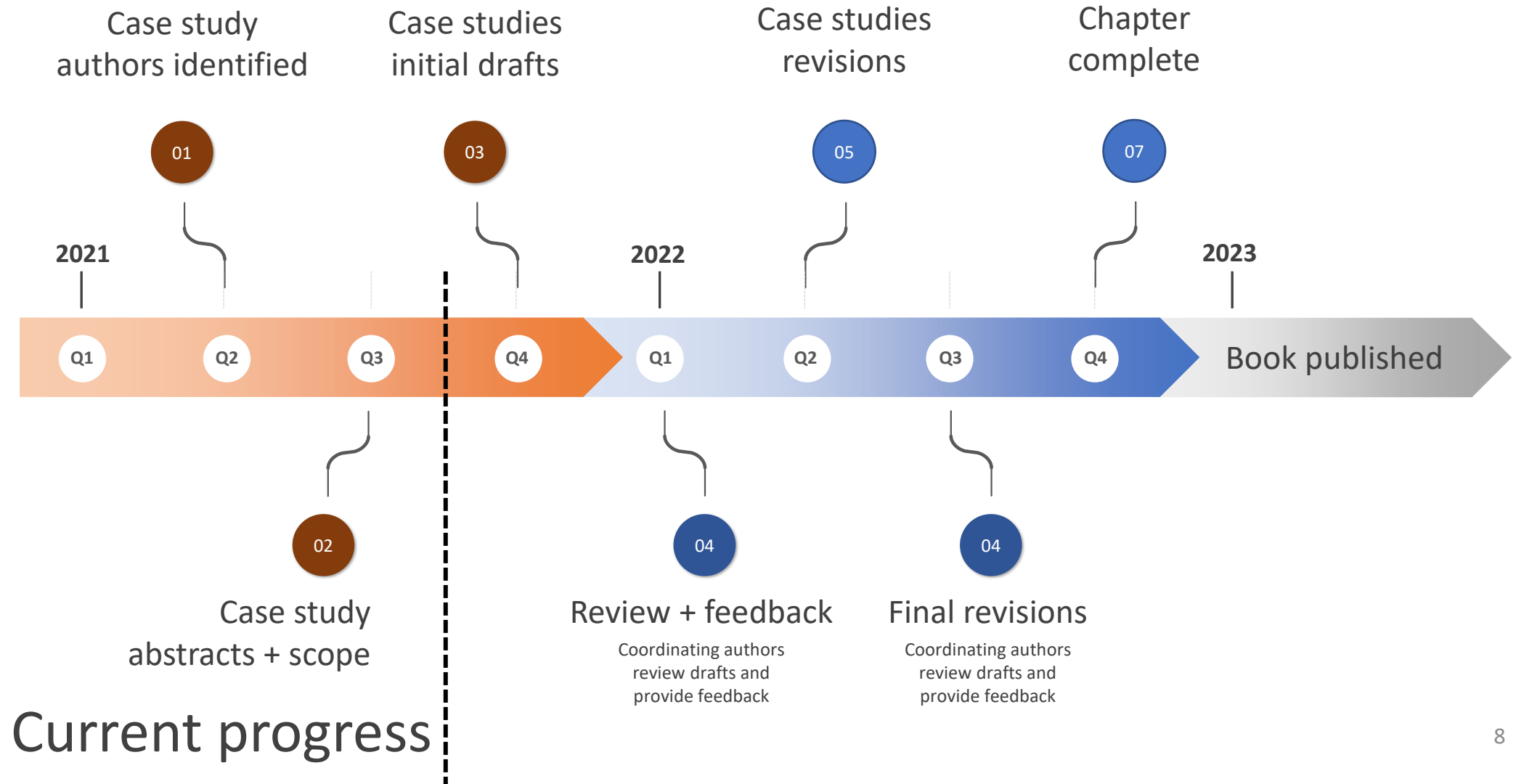


Case studies: map

25 cases, 21 countries



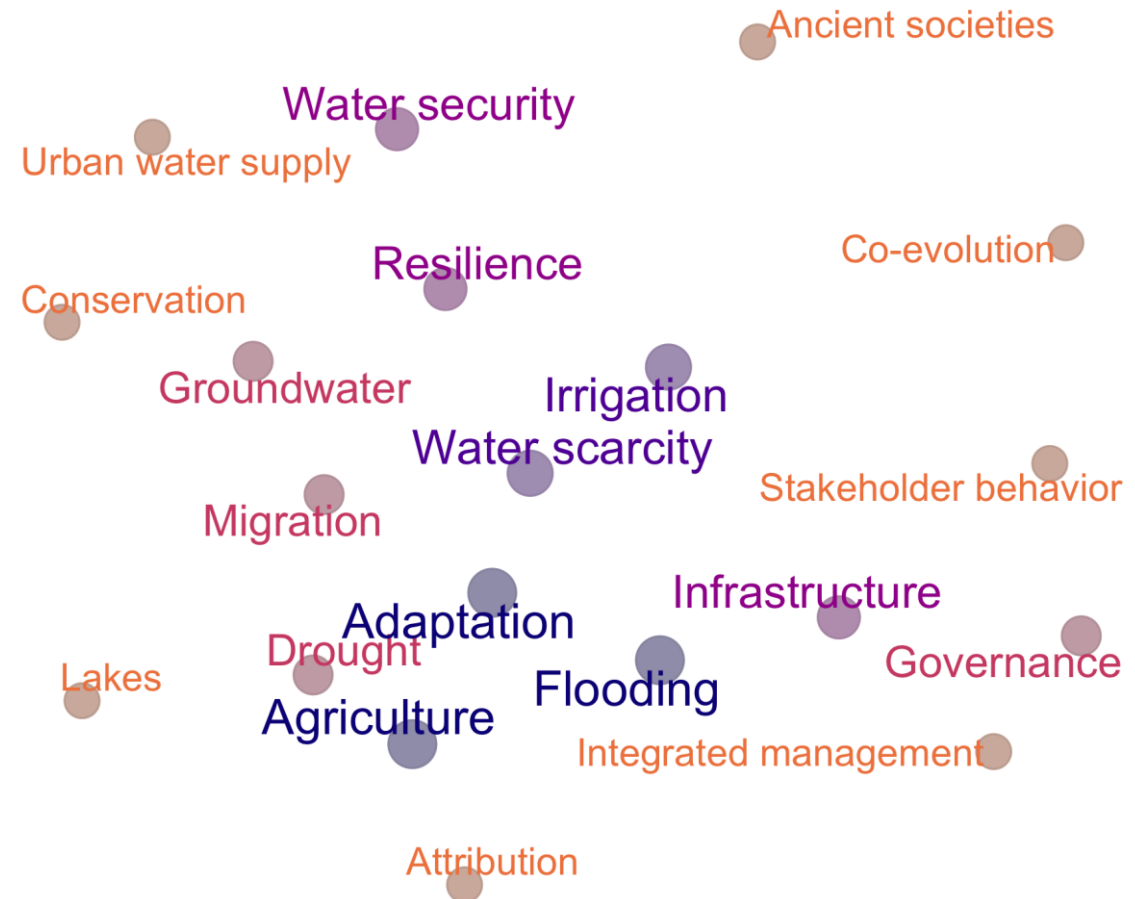
Chapter timeline



Keywords in multiple studies

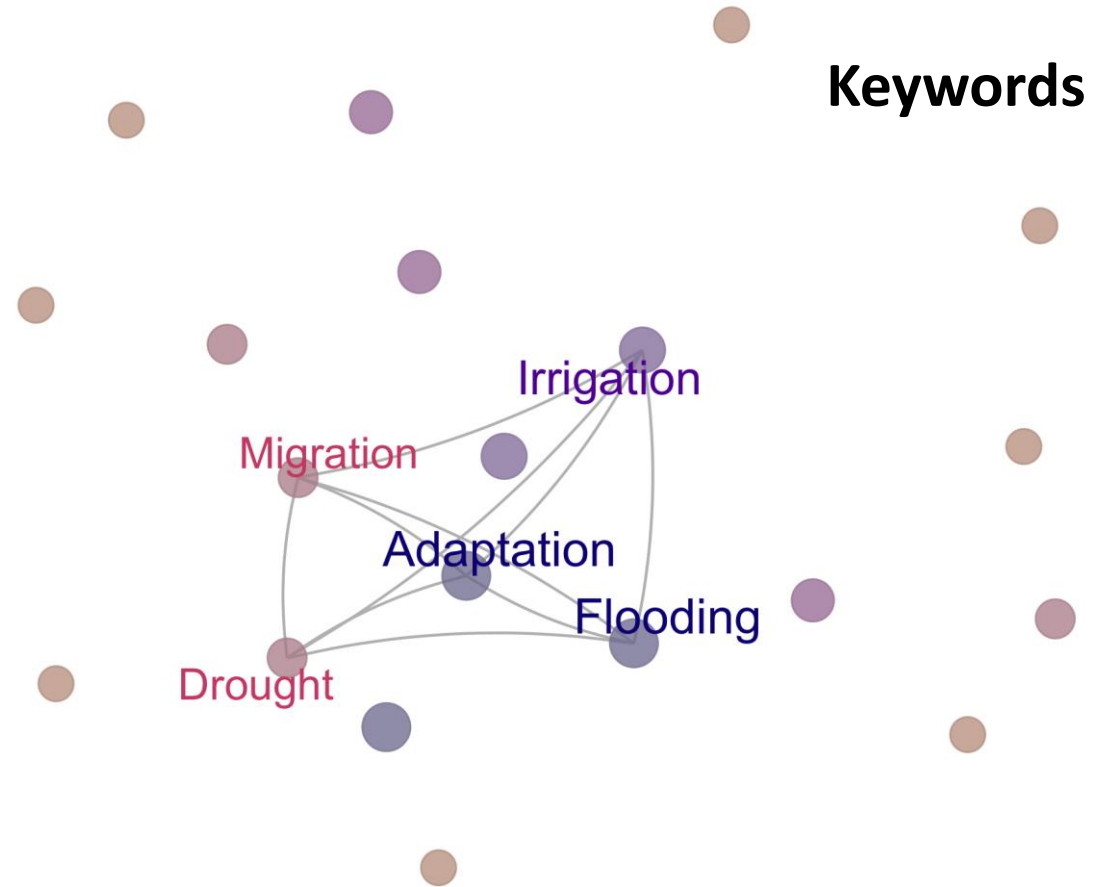
Examples:

1. Agricultural adaptation
2. Urban water security
3. Rural migration and crop choices



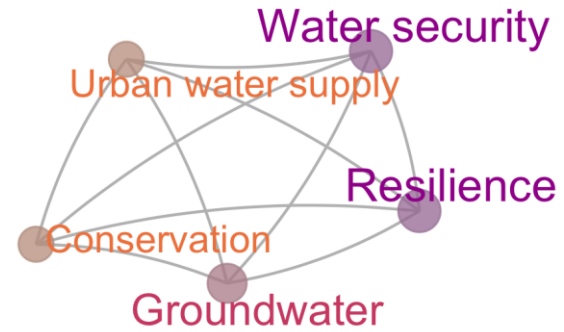
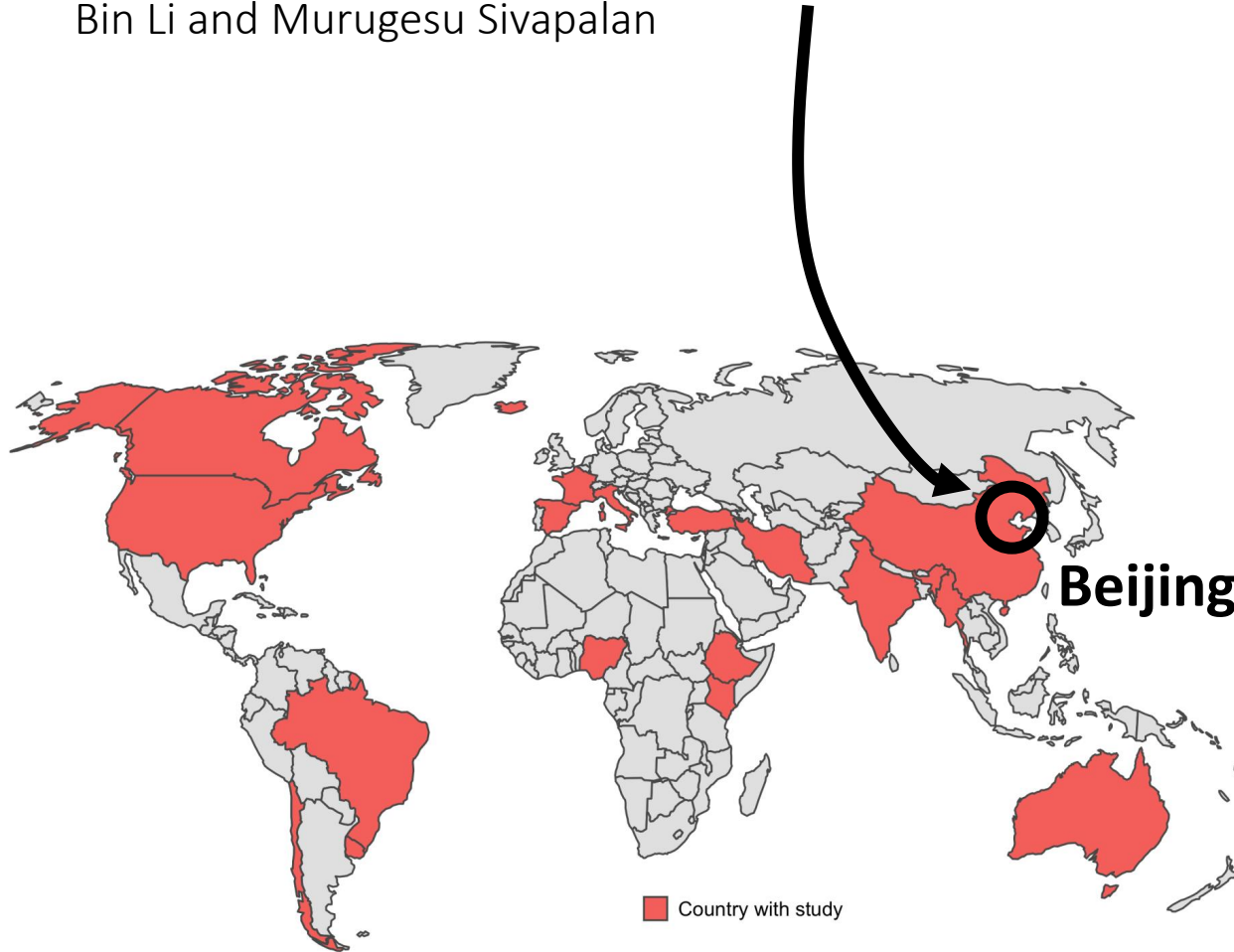
Alluvial farming along Ayeyarwady - coping with spatio-temporal hydrological dynamics in Myanmar's central dry zone

Mariele Evers, Khin Kyu Kyu, Htike Htike, Linda Taft, Adrian Almoradie, Michelle Zülich



Coping with Beijing's water scarcity challenges through balancing the dynamics of population growth and groundwater health

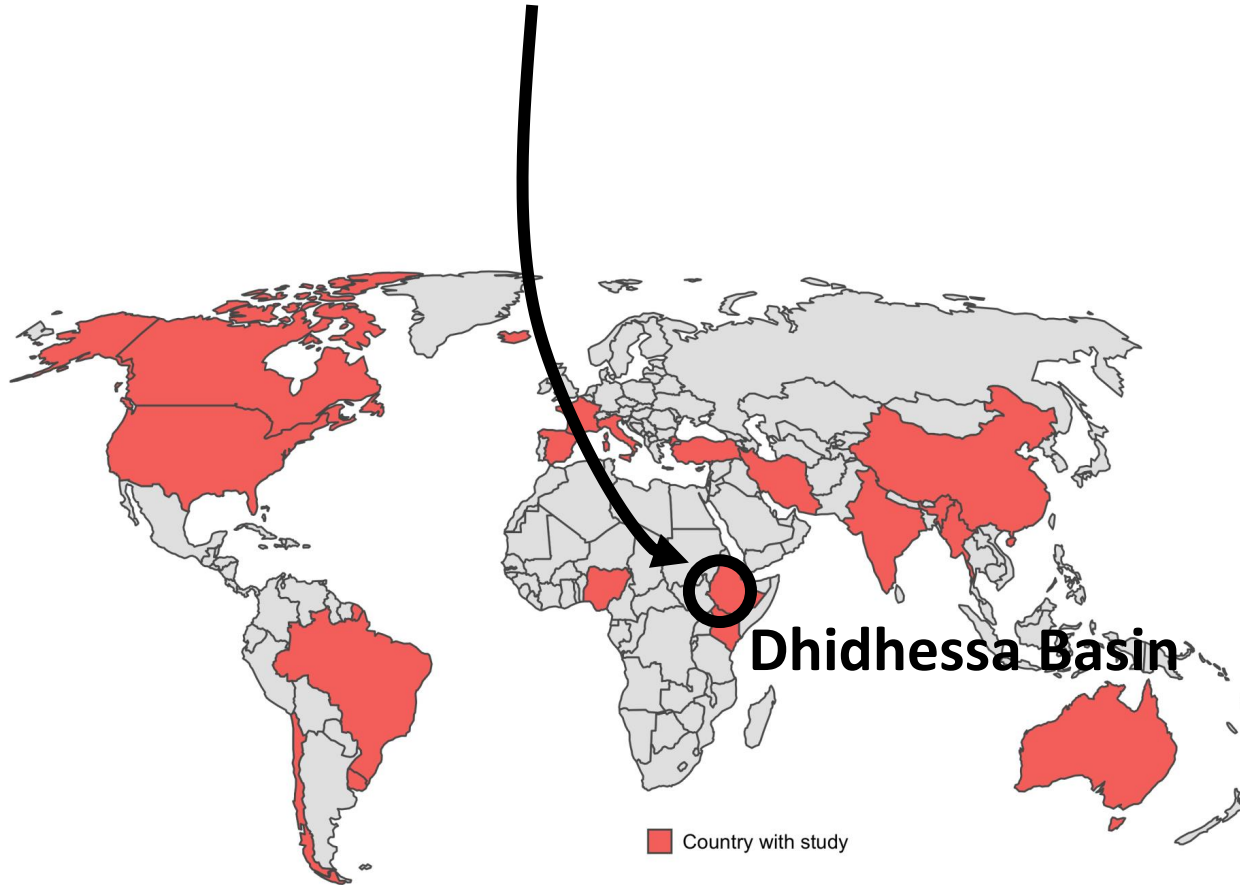
Bin Li and Murugesu Sivapalan



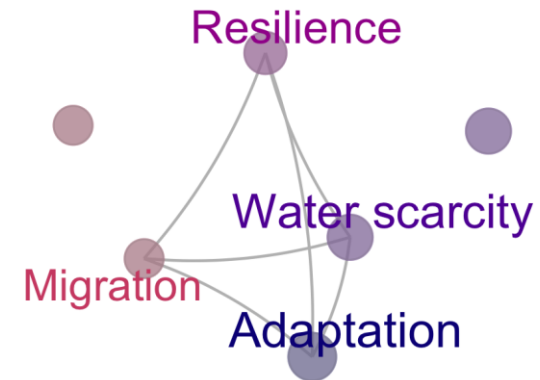
Keywords

On climate-insensitive migration and agricultural expansion in the Dhidhessa River Basin, Ethiopia

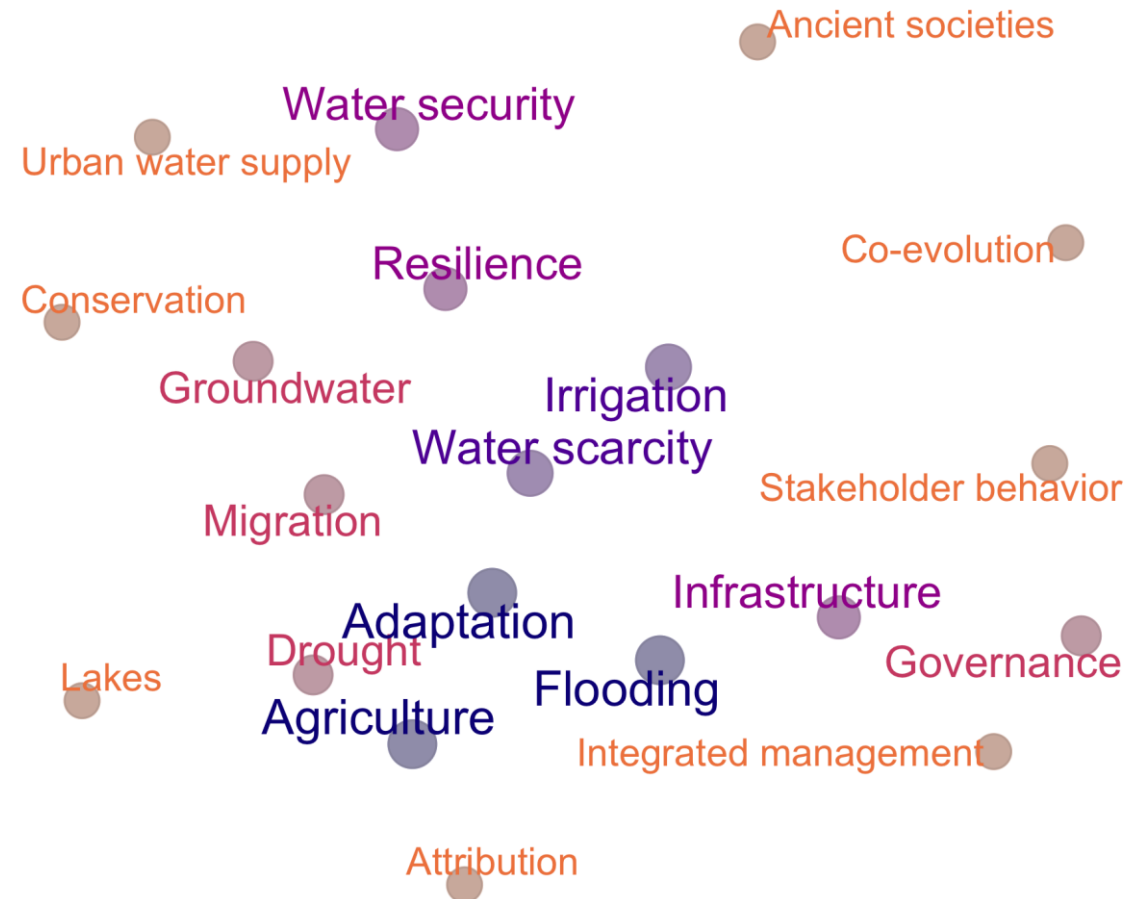
Meseret Teweldebrihan, Haoyang Lyu, Saket Pande, and Michael McClain



Keywords

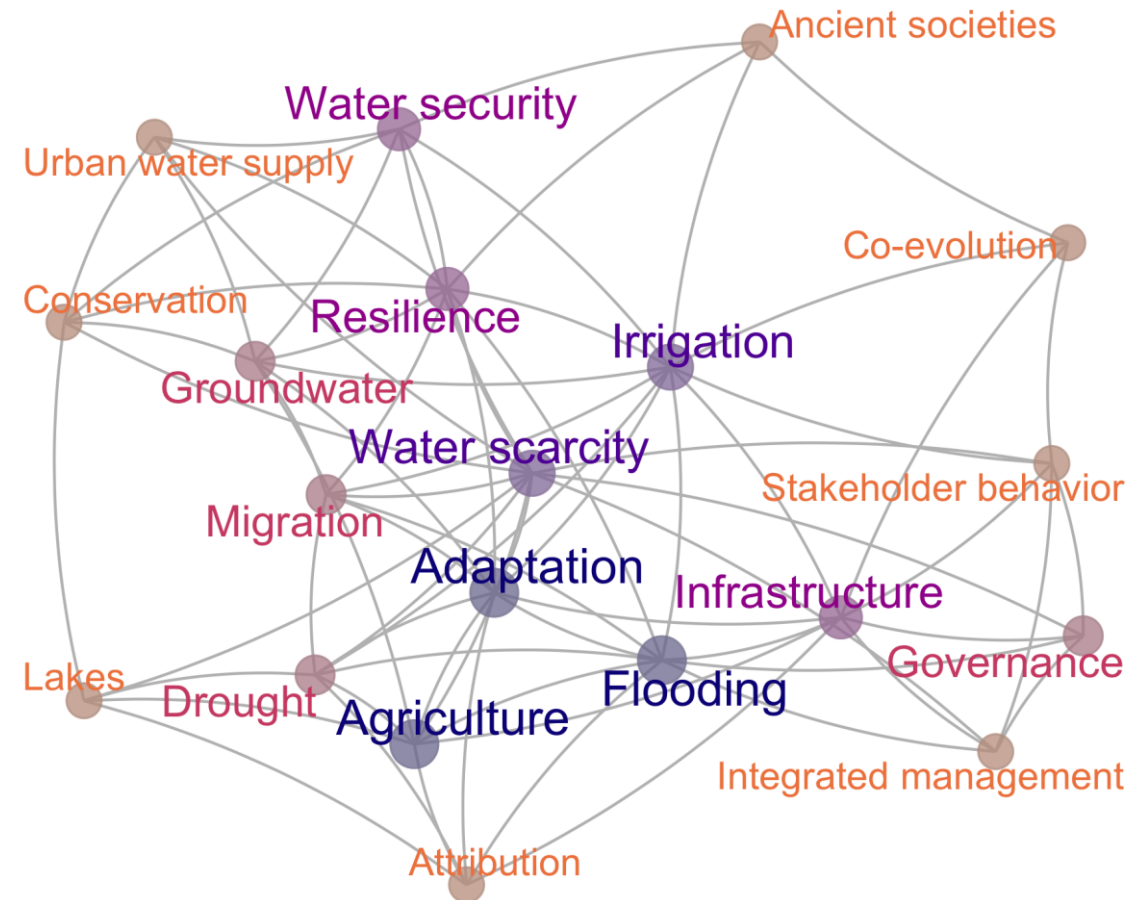


Keywords in multiple studies



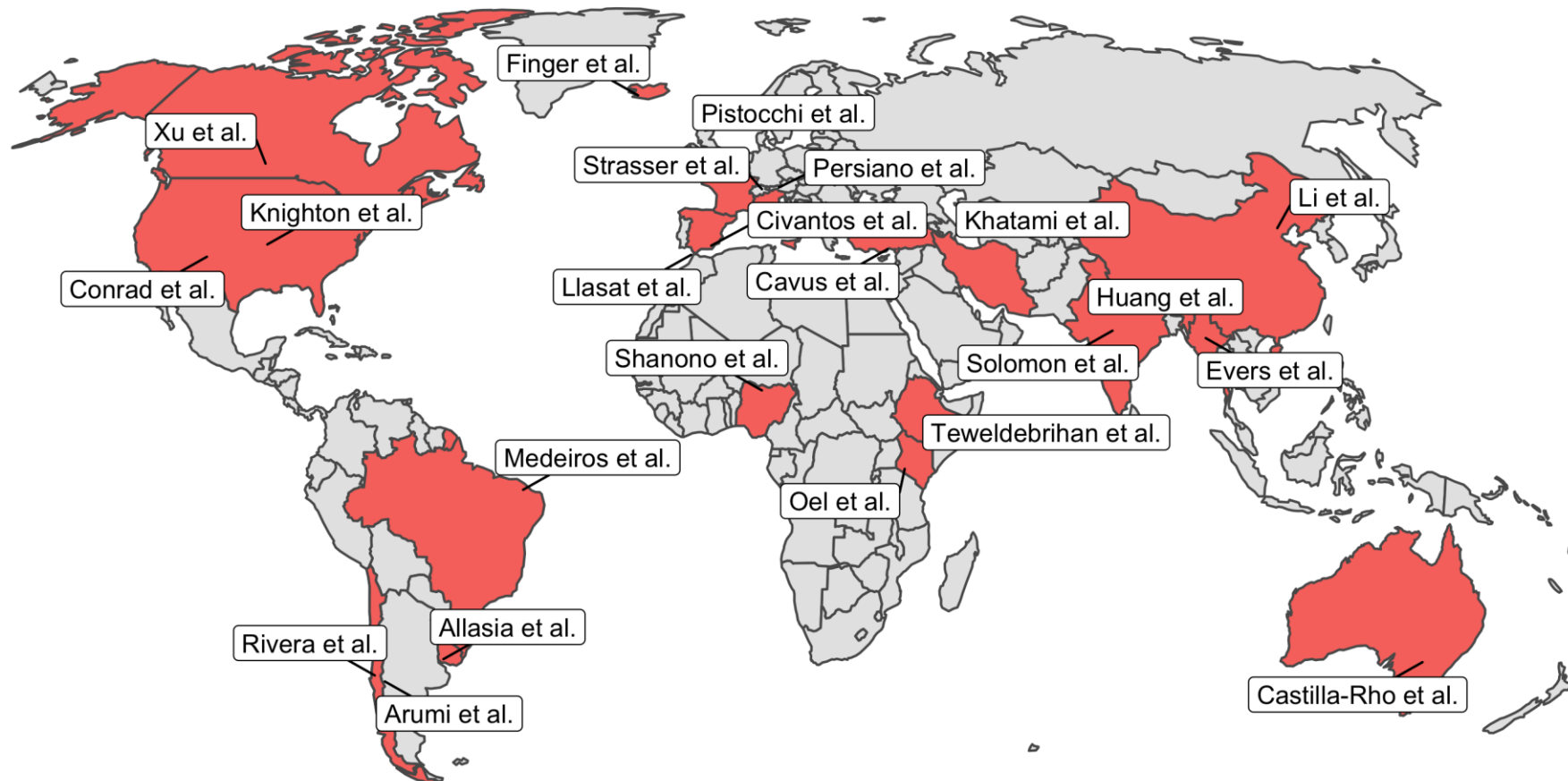
Keywords in multiple studies

Sociohydrological systems are complex and highly interconnected



Case study authors

25 cases, 21 countries



Thank you

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- Mariele Evers, Khin Kyu Kyu, Htike Htike, Linda Taft, Adrian Almoradie, Michelle Zülich, Nura Jafar Shanono, Nuraddeen Mukhtar Nasidi, Habibu Ismail, Jose Luis Arumi, Enrique Muñoz, Jorg Dietrich, Veronica Delgado, Jan Boll, Meseret Dawit Teweldebrhan, Haoyang Lyu, Saket Pande, Michael McClain, Bin Li, Murugesu Sivapalan, Pedro Medeiros, José Carlos de Araújo, David Finger, Sina Khatami, Zahra Kalantari, James Knighton, Christian Guzman, Daniel Gustavo Allasia Piccilli, Bibiana Peruzzo Bulé, Elzon Rippel, Rutineia Tassi, Nicolas Failache Gallo, Jean Paolo Gomes Minella, Olivier Evrard, Latif Kalin, Claudia Alessandra Peixoto De Barros, Rafael Ramon, Tales Tiecher, Miguel Losada, M.J. Polo, M. Díez-Minguito, E. Contreras, G. Navarro, J. Ruiz-Segura, Diego Rivera, Alex Godoy, Camila Boettiger, Pieter Oel, Vincent O. Odongo, Francis K. Muthoni, Dawit W. Mulatu, Charles N. Wamucii, Maria Carmet Llasat, José A. Jiménez, Dimmie Hendricks, Lily M. Conrad, Alexander G. Fernald, Yan Huang, Shan Yu, Juan Castilla-Rho, Li Xu, James Famiglietti, John W. Pomeroy, Jose Martin Civantos, Maria Jose Polo, Alberto Pistocchi, Daniele Ganora, Ulrich Strasser, Samuel Morin, Simone Persiano, Katja Schmölz, Giacomo Bertoldi, Alessio Pugliese, Erich Tasser, Attilio Castellarin, Yonca Cavus, Hafzullah Aksoy