



Table Assignments

Climate Change

Dominique van der Mensbrugghe
Uris Baldos
Maksym Chepeliev
Brian Cultice
Matthew Huber
Sisi Meng
Alexander Ruane
Shellye Suttles

Water Resources

Laura Bowling
Jeff Frey
Charlotte Lee
Jing Liu
Christopher Perry
Brian Richter
Tara Troy

Cyberinfrastructure for Sustainability

Carol Song
Venkatesh Merwade
Adnan Rajib
Amy Walton
Shaowen Wang
Michael Witt
Lan Zhao

Digital Agriculture

Keith Cherkauer
Jackie Boerman
Melba Crawford
John Evans
Jake Hosen
Vipin Kumar
Daniel Padrao
Ankita Raturi

Ecosystems and Biodiversity

Jeffrey Dukes
Sylvie Brouder
Abhishek Chaudhary
Alfredo Cisneros Pineda
Justin Johnson
Jingjing Liang
Navin Ramankutty

Governance for Sustainability

David Johnson
Carter Brandon
Iman Haqiqi
Stephen Polasky
Linda Prokopy
Carson Reeling
Kenneth Richards
Jacob Ricker-Gilbert

Unassigned

Elena Irwin and Tom Hertel



Global-Local-Global Analysis of Systems Sustainability
GLASSNET
An International Network of Networks



AN NSF ACCELNET
NETWORK

**Managing the Global Commons: Sustainable
agriculture and use of the world's land and water
resources in the 21st century**



Conference Organizing Committee

Chair: Thomas W. Hertel, Distinguished Professor of Agricultural Economics and Executive Director, Center for Global Trade Analysis (GTAP), Department of Agricultural Economics

Laura Bowling, Professor of Agronomy

Keith Cherkauer, Professor of Agricultural and Biological Engineering

Jeffrey Dukes, Professor of Forestry and Natural Resources, Biological Sciences

Matthew Huber, Professor of Earth, Atmospheric and Planetary Sciences

David Johnson, Assistant Professor of Industrial Engineering and Political Science

Carol X. Song, Director of Scientific Solutions, ITaP Researching Computing (RCAC)

Dominique van der Mensbrugghe, Research Professor and Director, Center for Global Trade Analysis (GTAP), Department of Agricultural Economics

Meeting the UN Global Sustainable Development Goals on a changing planet with limited land and water resources presents significant challenges

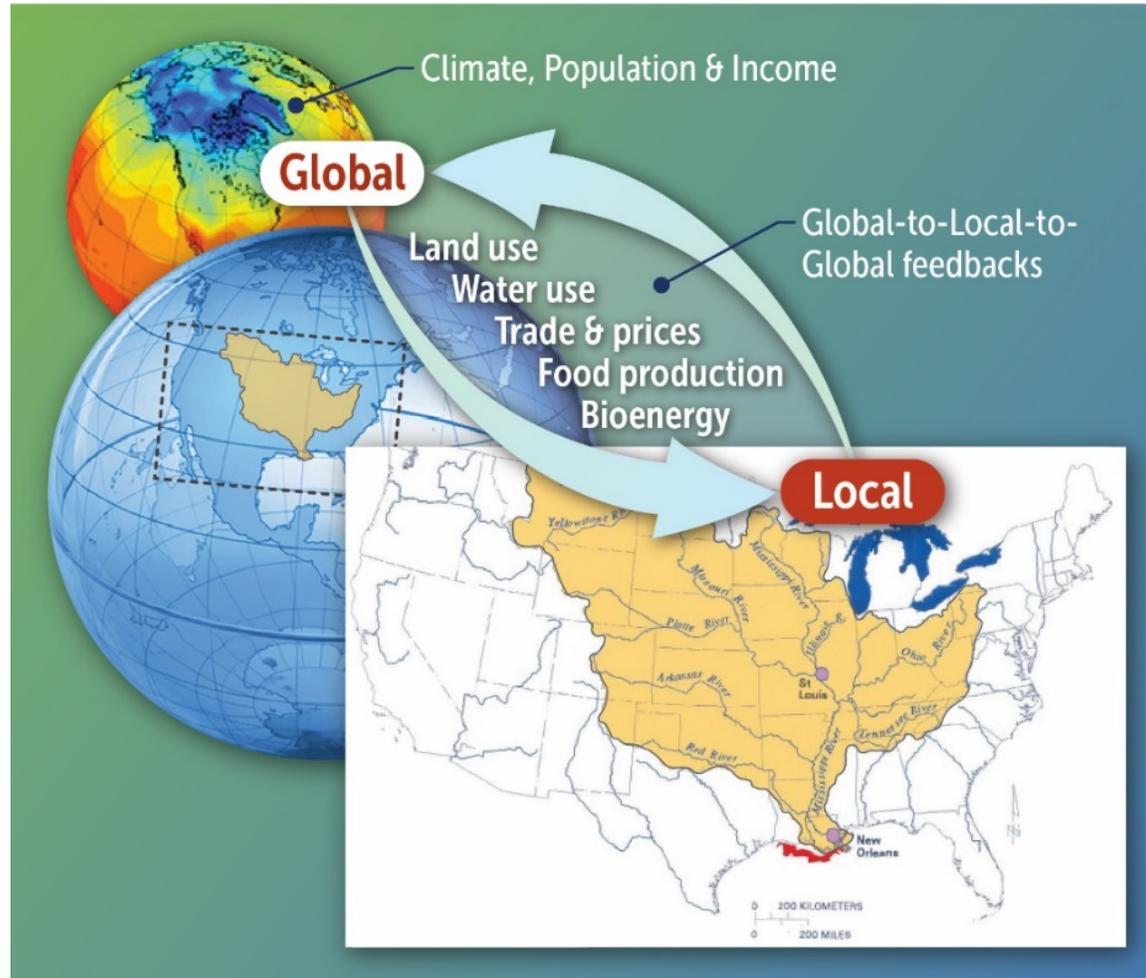
More than half of the UN SDGs relate to land and water resources for which the global food system is key stressor



GLASSNET aims to:

- Enable transformative analysis to facilitate decision making for sustainable development
- Develop diverse human capital for analysis of tradeoffs and synergies among SDGs
- Form a network of networks, facilitating integration across research teams to advance knowledge and identify sustainable pathways

GLASSNET: Global-to-Local-to-Global Analysis of Systems Sustainability



- Recognizes that global forces are driving local sustainability stresses
- Yet the character of these stresses & solutions vary by locality
- Furthermore, local responses can have global consequences
- Trans-disciplinary, trans-national collaboration is essential





Meeting the Global Sustainable Development Goals on a Changing Planet with Limited Land and Water Resources

FOUNDING NETWORKS

PARTNER NETWORKS

TEST BEDS

Stakeholder Advisory Board

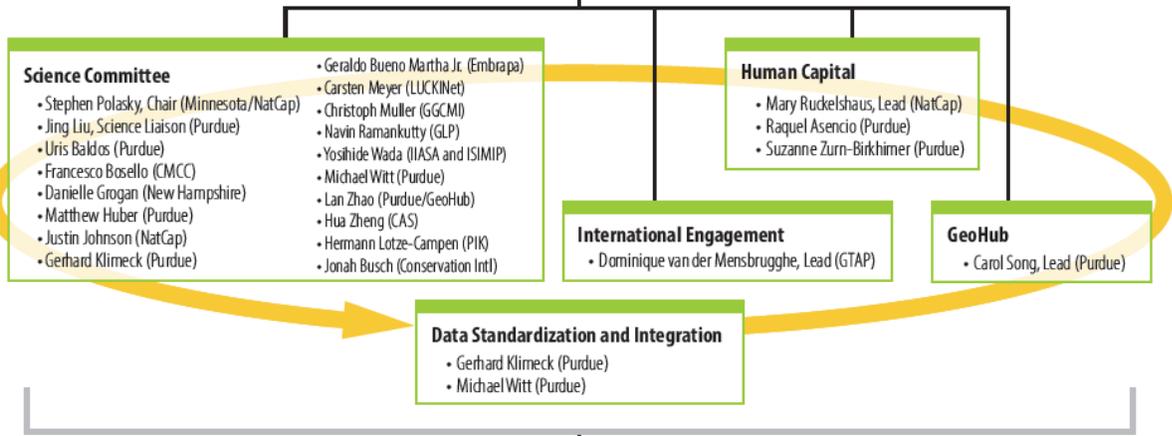
- Channing Arndt (International Food Policy Research Institute)
- Carter Brandon (World Resource Institute)
- Maximo Torero Cullen (UN Food and Agriculture Organization)
- Diana Dalbotten (Geoscience Alliance)
- Raffaello Cervigni (World Bank)
- Roger Pulwarty (NOAA and Co-Chair for SDG 6)
- Toby Roxburgh (WWF)
- Eric Sanderson (Wildlife Conservation Society)
- Jennifer Molnar (The Nature Conservancy)

Project Leadership

- Thomas Hertel, Director (Purdue)
- Danielle Grogan (New Hampshire)
- Matthew Huber (Purdue)
- Stephen Polasky (Minnesota/NatCap)
- Mary Ruckelshaus (NatCap)
- Carol Song (Purdue/GeoHub)
- Dominique van der Mensbrugge (Purdue/GTAP)

Network Council

- Jared Bales (CUAHSI)
- Gretchen Daily (Stanford University/NatCap)
- Katja Frieler (ISIMIP)
- Silvia Massruha (Embrapa)
- Peter Messerli (GLP)
- Massimo Tavoni (CMCC)
- Ouyang Zhiyun (CAS)



Domain Specialists

- Climate Science
- Crop Science
- Ecology
- Economics
- Geography
- Hydrology

User Communities

- State and Local Planners
- National Policy Makers
- Private Sectors
- Non-Government Organizations
- Integrated Assessment Community

GLASSNET Activities

- Conferences
- Network-wide virtual workshops
- Training: Short courses aimed at bridging disciplinary boundaries
- Early career researcher development:
 - Travel fellowships
 - ECR workshops
- Network-driven use cases: South America, Southern Africa, UK
- Research coordination
- Research into effective networking activities and tools; evaluation of what works and what doesn't work!
- Biannual meetings: Next on is in 2023 at U. Minnesota

Day One: Panel Presentations

Thursday, April 7, 2022

8:30-9 a.m. **Welcome and Introduction**
Tom Hertel, Purdue University
Overview and objectives of the conference

9-10 a.m. **Theme 1: Climate Change**
(Dominique van der Mensbrugge, Purdue University)
Matthew Huber, Purdue University
Topic: Heat stress on humans
Alexander Ruane, NASA
Topic: Modeling Climate Impacts on Agriculture Global
Laura Bowling, Purdue University
Topic: Climate impacts on agriculture
Maksym Chepeliev, Purdue University
Topic: Local impacts of global climate policies

10:00-10:15 a.m. 15 minute break

10:15-11:15 a.m. **Theme 2: Digital Agriculture** (Keith Cherkauer, Purdue University)
Vipin Kumar, University of Minnesota
Topic: Artificial Intelligence as a tool for global sustainanc
Daniel Padrao, Solinftec
Topic: Digital agriculture in Brazil
Melba Crawford, Purdue University
Topic: Frontiers of remote sensing and sustainability
Ankita Raturi, Purdue University
Topic: Design for Sustainable Agriculture Systems

11:15-11:30 a.m. 15 minute break

11:30-12:30 p.m. **Theme 3: Water Resources** (Laura Bowling, Purdue University)
Brian Richter, Sustainable Waters
Topic: Irrigated Agriculture's Role in Water Scarcity
Tara Troy, University of Victoria
Topic: Infrastructure for sustainable water use
Jeff Frey, US Geological Survey
Topic: Nutrient transport in the Midwest
Jing Liu, Purdue University
Topic: Multiscale Analysis of Nutrient Management in the Corn Belt

12:30-2 p.m. Working lunch

2-3 p.m. **Theme 4: Cyberinfrastructure for Sustainability** (Carol Song, Purdue University)
Amy Walton, NSF Office of Cyberinfrastructure
Topic: Future directions for cyberinfrastructure
Shaowen Wang, University of Illinois
Topic: Spatial temporal modeling in a supercomputer environment
Michael Witt, Purdue University
Topic: Distributed data curation for interdisciplinary resear
Venkatesh Merwade, Purdue University
Topic: Engaging the user community with shared computing platforms

3-3:15 p.m. 15 minute break

Thursday, April 7, 2022

3:15-4:15 p.m. **Theme 5: Ecosystems and Biodiversity** (Jeff Dukes, Purdue University)
Navin Ramankutty, University of British Columbia
Topic: Global perspectives on biodiversity
Rebecca Shaw, World Wildlife Fund
Topic: Providing ecosystem services for the future
Jeff Dukes, Purdue University
Topic: Ecosystems in the face of climate change
Sylvie Brouder, Purdue University
Topic: Ecosystem and biodiversity stresses from agriculture

4:15-4:30 p.m. 15 minute break

4:30-5:30 p.m. **Theme 6: Governance for Sustainability** (David Johnson, Purdue University)
Stephen Polasky, University of Minnesota
Topic: Local to global policy design Issues for ecosystem services and biodiversity
Kenneth Richards, Indiana University
Topic: Property rights and governance of environmental resources
Linda Prokopy, Purdue University
Topic: Engaging farmers in sustainability initiatives
David Johnson, Purdue University
Topic: Governance and policy design in the presence of uncertainty

5:30-7 p.m. **Reception**

7-8:30 p.m. **Dinner**

Day Two: GLASSNET-inspired talks and Panel Working Sessions

Friday, April 8, 2022

8:30-10:00 a.m. **GLASSNET Themes** (*Thomas Hertel, Purdue University*
Justin Johnson, University of Minnesota
Topic: Linking global and local sustainability models with improved meso-level analysis

Elena Irwin, Ohio State University
Topic: Spatially explicit economic interactions within and across sub-national regions

Carter Brandon, World Resources Institute
Topic: Landing Change: Top-down Policy-Making Using Bottom-up Science

10:00-10:15 a.m. 15 minute break

10:15-12 p.m. *Panels develop outlines for integrative papers*

12-1 p.m. Working lunch

1-2:30 p.m. *Panels finalize outlines and writing assignments*

2:30-3:30 p.m. *Working groups report out (10 min. each)*

3:30 p.m. *Next steps and timetable*

4:00 p.m. *Buses depart for Indianapolis Airport*

Important notes: please check out of your rooms in the morning – confer with Ginger if your transport to the airport is not yet organized

Environmental Research Letters Special Issue: Publication Schedule

- Friday afternoon (tomorrow!): Detailed outline of integrative papers and writing assignments
- August 15: submission of papers to ERL
- October 1 (or earlier): reviews returned
- November 15: submission of revised paper
- December (or as soon as accepted): publication on line
- ERL contact: Lauren Carter lauren.carter@ioppublishing.org
- Lauren will be in touch with lead authors immediately following this conference