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# NCSE DRAWDOWN 2021 CONFERENCE

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**Science & Solutions for  
a Planet Under Pressure**

Hosted by the National Council for Science  
and the Environment and Project Drawdown

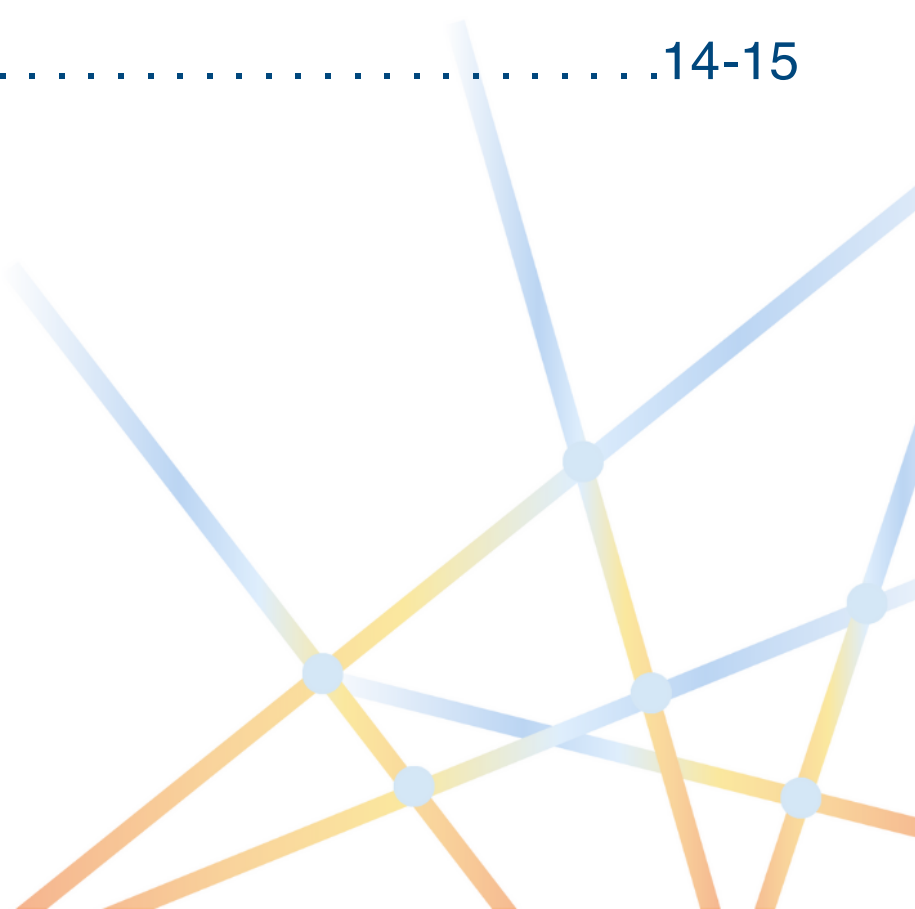


**NCSE**

**PROJECT  
DRAWDOWN.**

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# About Us

## Our Collaboration

This event brought together [Project Drawdown](#) and the [National Council for Science and the Environment \(NCSE\)](#) to present the latest scientific research and real-world actions to achieve the regenerative future we want.

This virtual conference combines the NCSE Annual Conference and the Second International Drawdown Conference. Together NCSE and Project Drawdown brought together their synergistic missions under one cohesive umbrella -- to improve the scientific basis of environmental decision-making and to help the world reach “drawdown”— the point in the future when levels of greenhouse gases in the atmosphere stop climbing and start to steadily decline, thereby stopping catastrophic climate change — as quickly, safely, and equitably as possible. With this joint conference, we will grow and weave together diverse communities of more than 1000 scientists, researchers, decision-makers, innovators, entrepreneurs, industry, and public sector leaders to enhance a global movement founded on the use and application of science to address global complex environmental challenges. In these unprecedented times, we stand stronger together.



### Global Council for Science and the Environment

*Formerly the National Council for Science and the Environment*

The [NCSE](#), now GCSE mission is to improve the scientific basis of environmental policy- and decision-making. NCSE specializes in programs that foster collaboration between the diverse institutions and individuals creating and using environmental knowledge including research, education, environmental, and business organizations.

## PROJECT DRAWDOWN®

[Project Drawdown](#) is a nonprofit organization that seeks to help the world reach “Drawdown”—the future point in time when levels of greenhouse gases in the atmosphere stop climbing and start to steadily decline. Since the 2017 publication of the New York Times bestseller Drawdown, the organization has emerged as a leading resource for information and insight about climate solutions.

# Conference Themes

*\*Each day of the conference featured an overall theme. Hybrid-style sessions associated with each day were sub-categorized.\**

## **Heat, Water, Systems & Solutions: Understanding Where We are Now**

Tuesday, January 5

NCSE Focus: Physical & social realities of a changing climate, Thematic Pathways A-E

- A: Addressing Water Scarcity
- B: Data and Technology Innovation for Climate Solutions and Sustainability
- C: Traversing the Science Policy Interface in the Context of a Changing Climate
- D: Diverse Perspectives and Shared Approaches
- E: Innovative Practices for Sustainability Education

## **Heat, Water, Systems & Solutions: Science to Chart the Path**

Wednesday, January 6

NCSE Focus: Physical & social realities of a changing climate, Thematic Pathways F-I

- F: Improving Water Quality
- G: Colleges Countering Covid
- H: Governance in a Changing World: Food, Energy and Water
- I: Climate & Covid - The Combined Impacts of Multiple Stressors

## **Naming the Future We Want**

Thursday, January 7

Co-host day- material presented by Project Drawdown and NCSE, all Thematic Pathways A-I

## **Solutions for People and Planet**

Friday, January 8

Project Drawdown Focus: Latest knowledge on solutions and actions, Latest Research sessions

## **Creating the Future We Choose**

Saturday, January 9

Project Drawdown Focus: Latest knowledge on solutions and actions, Call to Action Sessions

# *Heat, Water, Systems & Solutions:* **Understanding Where We are Now**

NCSE DRAWDOWN 2021 CONFERENCE

**10:00–11:00 a.m.**

## **Networking**

**11:00–11:45 a.m.**

## **NCSE Welcome**

**Valerie Luzadis**, Chair, NCSE Board of Directors; Professor, The State University of New York, ESF

## **Opening Remarks**

**Michelle Wyman**, Executive Director, National Council for Science and the Environment

**Chad Frischmann**, Vice President & Research Director, Project Drawdown

## **Opening Keynote | Scaling Up Solutions to Global Environmental Challenges: Critical Roles for Scientific Research**

**Inger Andersen**, Under-Secretary-General of the United Nations and Executive Director of the UN Environment Programme

**12:00 am.–12:30 p.m.**

## **Concurrent Panel Live Q&A Sessions**

A: Solutions to Quench the World's Thirst – Solving Water Scarcity

B: Smart Systems to Decarbonize Industry

B: Decision Tools for Systems-of-Systems Approaches to Environmental Security

C: Climate Change Indicators for Agriculture: Understanding Risks and Impacts

C: RISAs, Climate Hubs & CASCs: Federal Coordination Across Regional Networks

D: The Emergence of Local Scale Climate Action and Policy: Why, How, and Who

E: Learning from Living Labs: Regenerative Social-Ecological Research and Teaching

**1:00–2:30 p.m.**

## **Open Engagement Hours**

Open Engagement Hours are an opportunity to explore Flash Talks, Poster Presentations, and Virtual Exhibits. Attendees can “drop in” to ask presenters questions.

## **Flash Talks**

A: Water Reuse in Chile: An Emerging Debate



# Heat, Water, Systems & Solutions: Understanding Where We are Now

NCSE DRAWDOWN 2021 CONFERENCE

1:00–2:30 p.m.

## Flash Talks (Continued)

- A: Fresh Water in Decline: Nature-Based Solutions to the Rescue
- B: Re-Energize Disaster Risk Reduction and Resilience (DR3) Data Processes
- C: Visioning a Cooler City: Participatory Planning for Extreme Heat Resilience
- C: Frequently Asked Questions in NCA5: Input From the NCSE Community
- C: Expanding the Scope of Drawdown
- D: Midwest Climate Summit- Multi-Sectoral Acceleration of Climate Action
- D: Cooling The Waters: A Mindful Approach To Sustainability Transformations During COVID-19
- D: COEXIST: Actionable Stories for Sustainable Change
- E: The Rationale for Economic Literacy in Sustainability Education
- E: Building Drawdown Research Experiences: Informing Action, Developing Leaders

## Poster Presentations

- A: Watershed Conservation for Water Provision in Rural Chilean Patagonia
- C: Considering Hazardous Ecosystems in Education Programs and Policy
- D: A Sustainable Industrial Model for Bioethanol Production in Puerto Rico
- D: Relocalization: Challenges and Strategies
- D: Indoor Environmental Dust Collection Techniques for Accurate Microbial Exposure
- E: It Is Out of Sight, but Can No Longer Be Out of Mind
- E: Exploring Agrophotovoltaics in Guatemala to Foster Positive Change
- E: Can Recycling Education Programs Promote Recycling Rates in the U.S.?

3:00–4:00 p.m.

## John H. Chafee Memorial Lecture

### *Indigenous Knowledge & Western Science: Collaboration, Relationship, and Climate Solutions*

Introductory Remarks by **Valerie Luzadis**, Chair, NCSE Board of Directors; Professor, The State University of New York, ESF

**Sherri Mitchell**, (Weh'na Ha'mu Kwasset), Indigenous rights activist, lawyer, and spiritual teacher

**Darren Ranco**, Chair, Native American Programs and Director of Native American Research, University of Maine

Moderated by **Laura Weiland** Senior Advisor for Special Projects, National Council for Science and the Environment

4:00–5:00 p.m.

## Networking and Pathway Synthesis Workshops (A, B, C, D & E)

# *Heat, Water, Systems & Solutions:* **Science to Chart the Path**

NCSE DRAWDOWN 2021 CONFERENCE

**10:00–11:00 a.m.**

**Networking**

**10:45–11:00 a.m.**

**Opening Keynote | Science & Local Water Solutions**

Lynda Hopkins, District 5 Supervisor, County of Sonoma, CA

**11:00–11:50 a.m.**

**Plenary Panel | Risk, Stress, and Scarcity: Water Challenges on a Planet Under Pressure**

Sandra Postel, Director, Global Water Policy Project

Karim Ahmed, Secretary-Treasurer, NCSE Board of Directors; Adjunct Professor, University of Connecticut Health Center

Moderated by J. Carl Ganter, Founder, Circle of Blue

**12:00 am.–12:30 p.m.**

**Concurrent Panel Live Q&A Sessions**

G: Evolution of Scientific Response in the Wake of a Pandemic

G: After COVID-19, What? Community Colleges from 4 U.S. Regions Respond

H: Food, Energy and Water in a Warming World: Individual and Collective Action

H: Vision for the Future: How to Steward the American West for the Next 100 Years

I: Business Disruption, COVID-19, and Climate: Impacts of Disasters on Resilience

I: COVID-19 in Indian Country: Challenges and Innovations

I: Research and Practice Connecting Hazard Mitigation and Adaptation Planning

**1:00–2:30 p.m.**

**Open Engagement Hours**

Open Engagement Hours are an opportunity to explore Flash Talks, Poster Presentations, and Virtual Exhibits. Attendees can “drop in” to ask presenters questions.

**Flash Talks**

F: Advanced Modelling and Water Quality Monitoring Techniques

F: Source Tracking Metabolically-Active Bacteria From Rainwater

F: Nitrogen and the Anthropocene: Health and Sustainability Issues

G: An Arboretum-University Educational Partnership Via Virtual Podcast Discussions

G: Cultivating Key Competencies for Sustainability in an Era of Digital Learning

G: Campus Sustainability Education, Research, and Outreach in the Time of COVID-19

# Heat, Water, Systems & Solutions: Science to Chart the Path

NCSE DRAWDOWN 2021 CONFERENCE

1:00–2:30 p.m.

## Flash Talks (Continued)

- H: Adaptive Governance of Rivers: All About the Capacity to Reallocate Water?
- H: Adaptive Water Governance and the Food-Energy-Water Nexus
- H: Food, Energy, and Water (FEW) Nexus in a City in Times of Climate Change
- H: The Role of Boundary Organizations in Agriculture-Environmental Governance
- I: The Impacts of the Coronavirus Pandemic on Social-Ecological systems
- I: Heat Vulnerability and Resilience Among Mobile Home Owners
- I: Planning for Evacuation & Sheltering During Compound Hurricane Pandemic Threat
- I: Improving Resiliency to Extreme Weather Events in EJ Communities
- I: Get Out of Your Comfort Zone: Importance of Building Program Externalization

## Poster Presentations

- F: Molecular Inclusion Complexes of CLD and  $\beta$ -HCH with CD's for Water Treatment
- F: Citizen Science in Action: Water Quality Monitoring Using Arduino Sensors
- F: Microplastic Hazards on Water Quality and Human Health
- I: The COVID-19 & Climate Change Syndemic: Recognize Global Threats & Opportunities
- I: Pedestrian Thermal Comfort Evaluation of Multi-Modal Corridors in Tucson, AZ

3:00–4:00 p.m.

## 2021 NCSE Lifetime Achievement Award | Keynote Remarks

Introductory remarks by Erica Goldman, Deputy Director, National Council for Science and the Environment

**Warren Washington**, Distinguished Scholar, National Center for Atmospheric Research/University Corporation for Atmospheric Research

*Award presented by **Jim Buizer**, Board Member, NCSE; Interim Director of the Arizona Institutes for Resilient Environment and Societies, University of Arizona*

**Christiana Figueres**, Founding Partner, Global Optimism; Former Executive Secretary, United Nations Framework Convention on Climate Change

*Award presented by **Tom Lovejoy**, Board Member, NCSE; Professor, George Mason University; Senior Fellow, United Nations Foundation*

4:00–5:00 p.m.

## Networking and Pathway Synthesis Workshops (F, G, H, & I)



# Naming the Future We Want

NCSE DRAWDOWN 2021 CONFERENCE

10:00–11:00 a.m.

**Networking**

10:45–11:00 a.m.

**Opening Keynote | Role of Technology in Accelerating Science and Solutions for a Planet Under Pressure**

**Amy Luers**, Board Member, GCSE; Global Lead, Sustainability Science, Microsoft

11:00–11:50 a.m.

**Plenary Panel | Pandemic Perspectives: Global Health in Altered Ecosystems**

**Peter Schlosser**, Vice President and Vice Provost, Global Futures Laboratory, Arizona State University

**Serena Sowers**, Senior Client Manager and Vice President in the Public Sector Solutions Division, Swiss Re

Moderated by **Randy Burd**, Board Director, NCSE; Senior Vice President for Academic Affairs, Long Island University

12:00 am.–12:30 p.m.

**Concurrent Panel Live Q&A Sessions**

C: Colorado River Sustainability: Epicenter of Science, Environment, and Policy

C: Communicating in Crisis: Sharing Research Related to COVID-19

D: Telling stories, facilitating dialogue, mediating change, engaging differences

E: Strengthening Sustainability Programs and Curricula in Higher Education

I: Advancing Urban Heat Resilience

I: The Costs and Losses of Wildfires – Investment Solutions vs. Reactive Management

1:00–2:30 p.m.

**Student Career Workshop**

**Jim Barrett**, Principal, Barrett Economics

**Sarah Brady**, Deputy Director, California Council on Science and Technology

**Carly Carroll**, Vice President of Business Initiatives, Sustainability and Corporate Responsibility, Wells Fargo

**Laura Helmuth**, Editor-in-Chief, Scientific American

**Dionne Toombs**, Director of the Office of the Chief Scientist, United States Department of Agriculture

# Naming the Future We Want

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1:00–2:30 p.m.

## Student Poster Presentations

- A: A Tale of Three Cities: A Worldly Approach to Innovative Urban Water Management Strategies
- B: Aerial Hyperspectral Imagery for Assessing Field Scale Heterogeneity in Crops
- B: Mapping Bull Kelp Forests of Puget Sound With Consumer-Level UAV Image Platforms
- B: The Digital Divide: A Lesser Known Symptom Impacting Communities During the COVID-19 Pandemic
- B: Managing With Logic: A Bayesian Causal Network Assessment of Forest Management in the Monarch Reserve Using the Critical List
- C: Coastal Management and Federal Consistency: A Policy Tool for Coastal Resilience
- C: Human dimensions of growing bioenergy trees among farmers in North Carolina
- C: The Role of Values in the Interactions of Social and Ecological Systems
- C: Innovative Behavior: Increasing Litter Collection on Public Lands and Waters
- C: Urban Areas at Great Risk From Flood Damage
- C: Energy Justice through Solar: The Social Construction of Low-Income Households
- C: The CST: A Study of Tourism Certification and Sustainability in Costa Rica
- D: Reducing Dining's Carbon Footprint at Penn State
- D: Showcasing Diverse Voices for Ocean Research and Solutions With ArcGIS StoryMaps
- D: Examining Factors That Influence Restoration of Wading Bird Nesting Colonization in Florida Everglades National Park
- D: Factors that Motivate Cacao Farmers' Agricultural Decisions in Jamundí
- D: Microbial Diversity and Antibiotic Production of Tree Hole Ecosystems
- D: Spatial Distribution of Forest Products Manufacturers in North Carolina
- D: Initial Assessment of Soil Antibiotic-Producing Bacteria in a Large, Urban Park
- D: Resilience for Refugee Women Through Social and Environmental Solutions
- E: Getting Out of Hot Water: Moving STEM Education Ideas to Actions
- F: Oxybenzone Sunscreen Alters Stress and Behavioral Patterns in Sheepshead Minnows
- F: Ocean Acidification and South Florida's Coral Reefs
- H: Investigating Mineral Precipitation and Dissolution During CO<sub>2</sub> Injection
- H: Exploring the Adoption of Hemp as a Sustainable Agricultural Crop in Nebraska

# Naming the Future We Want

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3:00–3:15 p.m.

## Linking Arms for the Future We Want

**Chad Frischmann**, Senior Director of Research & Technology, Project Drawdown

**Michelle Wyman**, Executive Director, National Council for Science and the Environment (NCSE)

3:15–3:35 p.m.

## Keynote | Inclusive sustainability, and the need to integrate Indigenous Peoples and Scientific knowledge

**Hindou Oumarou Ibrahim**, President, Association for Indigenous Women and Peoples of Chad (AFPAT)

3:35–4:30 p.m.

## Naming the Goal: creating a regenerative future today. Perspectives from around the world

4:30–4:35 p.m.

## The Seastars Performance

4:35–5:05 p.m.

## Keynote | Building a Regenerative Future: Science and Solutions for People and Planet

**Chad Frischmann**, Senior Director of Research and Technology, Project Drawdown

5:05–5:15 p.m.

## Closing Remarks: Welcome Home!

**Chad Frischmann**, Senior Director of Research & Technology, Project Drawdown

**Amanda Ravenhill**, Executive Director, Buckminster Fuller Institute

5:15–5:45 p.m.

## Naming the Future We Want - AY Young Performance

**AY Young**, Performer, batterytour.com and Young Leader for the UN SDGs

# Solutions for People and Planet

NCSE DRAWDOWN 2021 CONFERENCE

9:00–9:10 a.m.

## Welcome to Day of Drawdown Research

**Chad Frischmann**, Senior Director of Research and Technology, Project Drawdown

9:10–9:40 a.m.

## Keynote | Solutions for a Regenerative Economy that Works for All

**Kate Raworth**, Co-founder, Doughnut Economics Action Lab

9:40–11:00 a.m.

## The Latest Research for People and Planet

Explore a variety of prerecorded Project Drawdown hosted hybrid sessions focused around the theme of "Latest Research", each 30-40 minutes.

### Keynotes

Climate Solutions for Poverty Alleviation and Sustainable Livelihoods

Conscious Eating: Unite behind the (food) science

Food as a climate solution

Green Entrepreneurship: Achieving Inclusive and Sustainable Growth in Europe Post-COVID-19

Leveraging Girls' Education for a New Green Learning Agenda

Local to Global - Climate Adaptation Strategies: Perspectives from Zimbabwe

No Journey without a Compass - Building the SDG-Economy

Now, it's about the How

The Health Benefits of the Net Zero Economy

### Panels

Drawdown's System of Solutions Helps Achieve the SDGs

Energy Solutions: Electricity, Buildings, and Transportation, Implementing the Decarbonization Transition

Industry and Materials Solutions - solutions for a circular economy

Nature-based solutions for People and Planet

Ocean-based solutions for People and Planet

11:00a.m.–12:20 p.m.

## Peer-to-Peer Brainstorming Session

The goal of today's session is to identify big ideas that further the science and research behind the solutions for people and planet. During this session, you and your small group will share your ideas, identify connections between them, and recommend one idea as a potential topic for a Collaborative Action Group later this afternoon.



# Solutions for People and Planet

NCSE DRAWDOWN 2021 CONFERENCE

1:35–2:35 p.m.

## Plenary Q&A Session for Speaker-Participant Discussion

Plenary speakers will share their insights and guidance with the audience, and they will provide guidance, resources, and suggestions participants should consider during the Collaborative Action Groups later in the day.

2:45–3:45 p.m.

## Collaborative Action Groups Session

The goal of today's session is to begin developing an action plan for a big idea that furthers the science and research behind the solutions for people and planet. When developing the action plan, we encourage you to focus on how you and your fellow group members can bring this idea to life. Before leaving the group, you and every member of your group should have at least one action you plan to take after the conference.

4:00–4:45 p.m.

## Keynotes | Vision for the Future We Want

### Change Framing the 21st Century Economic Growth Agenda

**Joyashree Roy**, Bangabandhu Chair Professor at Asian Institute of Technology, Thailand and Professor of Economics at Jadavpur University & National Fellow, INCSSR

### A Generous Economy for Spaceship Earth

**Amanda Ravenhill**, Executive Director of the Buckminster Fuller Institute

4:00–4:45 p.m.

## Closing Remarks

**Mamta Mehra**, Senior Fellow, Land Use & Research Program Officer

# Creating the Future We Choose

NCSE DRAWDOWN 2021 CONFERENCE

9:00–9:10 a.m.

## Welcome to Day of Drawdown Action

**Crystal Chissell**, Senior Director of Partnerships, Project Drawdown

9:10–9:25 a.m.

## Keynote | Drawdown 2.0: Accelerating Solutions

**Jonathan Foley**, Executive Director, Project Drawdown

9:25–9:40 a.m.

## Keynote | Science is our Superpower

**Michelle Wyman**, Executive Director, National Council for Science and the Environment

9:40–11:00 a.m.

## Call-to-Action to Create the Future We Choose

Explore a variety of prerecorded Project Drawdown hosted hybrid sessions focused around the theme of "Latest Research", each 30-40 minutes.

### Panels

A New vision: Reimagining the Climate for Climate Solutions  
 Building a Global and Intersectional Environmental Narrative  
 Climate Opportunities: Finding Your Path Within the Climate Movement  
 Ending Climate Silence: mainstreaming climate solutions in the media  
 Inspiring Private-sector Action  
 Joining the Drawdown Global Collaborative  
 Launching the Drawdown Global Solutions Platform  
 Learning How the World Can Reach Drawdown: The Evolving Work of Drawdown Learn

11:00a.m.–12:20 p.m.

## Peer-to-Peer Brainstorming Session

The goal of today's session is to identify big ideas that further the science and research behind the solutions for people and planet. During this session, you and your small group will share your ideas, identify connections between them, and recommend one idea as a potential topic for a Collaborative Action Group later this afternoon.

# Creating the Future We Choose

NCSE DRAWDOWN 2021 CONFERENCE

1:35–2:35 p.m.

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2:45–3:45 p.m.

## Collaborative Action Groups Session

The goal of today's session is to begin developing an action plan for a big idea that furthers the science and research behind the solutions for people and planet.

4:00–4:45 p.m.

## Keynotes | Creating the Future We Choose

### A New Business Model for a Regenerative Future

Christian Kroll, CEO of Ecosia

### Indigenous Perspectives for a Regenerative Future

Nawashahu Yawanawa-Bergin (Sara), Caceque (Chief), Aldeia Shukuvana Yawanawa

Sachem Wushouwunan Kesikbesek Maxé Rua (Sachem HawkStorm), Chief of the Schaghticoke First Nations

4:00–4:45 p.m.

## Closing Remarks

Michelle Wyman, Executive Director at NCSE

Chad Frischmann, Senior Director of Research and Technology, Project Drawdown

4:00–4:45 p.m.

## Closing Ceremony

Nawashahu Yawanawa-Bergin (Sara), Caceque (Chief), Aldeia Shukuvana Yawanawa

Sachem Wushouwunan Kesikbesek Maxé Rua (Sachem HawkStorm), Chief of the Schaghticoke First Nations

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