Center for Environmental Research, Education and Outreach

The Center for Environmental Research, Education, and Outreach (CEREO) at Washington State University is a progressive network of 350+ faculty, staff, students, and industry leaders working to resolve the ever-growing challenges of environmental sustainability and climate change through collaborative partnerships. Guided by a roster of distinguished scientists with expertise reaching from agriculture, biology, and communication to engineering and education, CEREO seeks to apply innovative ideas and tools to a wide range of environmental projects.

CEREO Activities

CEREO has resisted constraining its focal topics too tightly; rather, its success has been based on responsiveness and inclusiveness that invites energetic and collaborative individuals to propose new ideas that can be nurtured by CEREO's structure. CEREO actively supports a variety of activities, including research development and support, training workshops, and graduate and undergraduate education. In all of these activities, three consistent elements are that CEREO is *1) interdisciplinary, 2) solution-oriented*, and *3) data-intensive*.

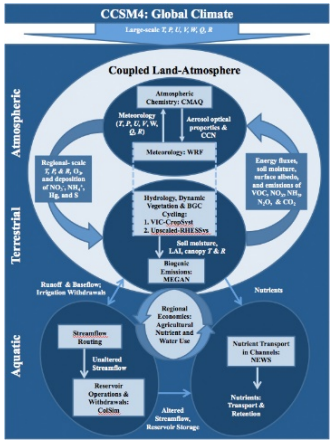
C-NSPIRE Certificate Program

CEREO supports the newly created C-NSPIRE graduate certificate program. This certificate is modeled on the successful "Nitrogen Systems: Policy-oriented Integrated Research and Education (NSPIRE)" IGERT program that provided students with rigorous multidisciplinary training in carbon and nitrogen cycling coupled with the ability to effectively communicate with public policy makers. Participating students train as multidisciplinary cadre of next-generation scientists to understand and address the human dimensions of environmental issues and develop the skills necessary to build strong partnerships with leaders in government, business, and communication. Find out more about C-NSPIRE at: https://cereo.wsu.edu/c-nspire-certificate-program/#Overview

Regional Integrative Environmental Modeling

Models of water, nutrients and pollutant movement are integrated at ecologically relevant scales to address management and policy concerns.

BioEarth is an on-going CEREO modeling initiative focused on the U.S. Pacific Northwest. Using a modular Earth system Modeling (EaSM) framework, BioEarth integrates atmospheric, terrestrial, aquatic, and economic models with the goal to improve understanding of the interactions between coupled C:N:H2O dynamics and human actions at regional and decadal scales under global change.



Example Model Outputs

Air Quality: GHG emissions & pollutants
Water quantity: reservoirs, rivers, soil moisture, unmet demand
Water quality: inorganic/organic nitrogen and carbon
Terrestrial ecosystem health: species composition, net primary productivity, water stress, nutrient limitations
Economic: crop yield, forest/rangeland productivity, hydropower generation, carbon mitigation

Impacts & Outreach

This integrative modeling approach allows both rich economic analysis and spatially-explicit biophysical-socioeconomic integration. Direct engagement with non-academic stakeholders throughout model development informs priorities for model development and scenarios.

Food-Energy-Water Nexus

Population growth and climate change worldwide exacerbate tensions among food, energy, and water (FEW) sectors. In response to this emerging research priority area, CEREO has been working towards preparing WSU faculty and students to meet these needs through WSU and NSF sponsored workshops, seed grants and research proposal development and support. CEREO's collaborative partnerships with SWWRC and CSANR have facilitated FEW activities at WSU including:

Find out more: https://cereo.wsu.edu/food-energy-water-initiatives/

Other CEREO Research Focus Areas

Water. CEREO facilitates a growing array of water-related initiatives including stormwater management in urban areas and the responses of agriculture, aquatic systems and human communities to climate-driven hydrologic change.

Sustainable Urbanization- across the rural-urban gradient. This rising initiative is aimed at a sustainable-energy component investigating biofuels, carbon neutrality, local food production, crop choices, and distribution networks.

Nitrogen in the environment. CEREO affiliates have cultivated a vibrant researcher network that works across disciplinary boundaries to examine the biogeochemical nitrogen cycle, its massive perturbation by human activity especially agriculture, and policy responses to the consequent challenges.

Training for data-intensive research

Environmental research is increasingly depending on large and distributed data to address major scientific and societal problems. The need for training in skills that facilitate data-driven science is significant across disciplines, institutions, and sectors. CEREO is leading and participating in collaborative efforts to improve access to training across career stages, both at WSU and at national scales.

Science Communication

CEREO Newsroom. The CEREO Newsroom is a program that pairs undergraduate Murrow College of Communication students with graduate students conducting environmental research. Under the guidance of Murrow faculty, these student teams create multimedia packages that frame the environmental problems and the research being pursued by the graduate student.

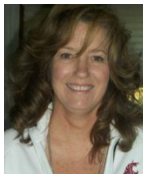
Undergraduate Education

CEREO Seminars and Honors Course. CEREO represents a broad group of environmental disciplines and seeks to showcase their diversity through invited seminars. As part of our education mission, CEREO has partnered with the WSU Honors College to use this opportunity to explicitly reach out to undergraduates interested in the environmental sciences. Undergraduates attend seminars and learn to develop and write their own environmental research proposals.

CEREO People

Stephanie Hampton is the Director of the Center for Environmental Research, Education and Outreach and a Professor in the WSU School of the Environment. Hampton has a strong background in aquatic science, statistical analysis, and environmental informatics. Her research has included analyzing long-term ecological data collected from lakes as globally diverse as Lake Baikal in Siberia and Lake Washington in Seattle. Prior to coming to WSU in 2014, she was Deputy Director of the National Center for Ecological Analysis and Synthesis. She can be reached at (509) 335- 6750 or s.hampton@wsu.edu.

Julie Padowski is a Clinical Assistant Professor for the Center for Environmental Research, Education and Outreach (CEREO) and the Water Research Center (WRC) . She joined WSU in 2014, and focuses on interdisciplinary issues related to water with a special interest in urban water sustainability. She actively coordinates new collaborations, and initiates and promotes inter-disciplinary water-related research at WSU. Julie can be reached at (509) 335-8539 or julie.padowski@wsu.edu.



Jacqueline McCabe is a Principal Assistant for CEREO and the Water Research Center. She is a proud WSU graduate and has worked at WSU since 2008. She joined CEREO and the WRC in 2014. She can be reached at (509) 335-5531 or jacquem@wsu.edu.

The **CEREO Executive Committee** is made of 14 WSU faculty who work with the Director to provide oversight and direction for CEREO and it's operations.

The **External Advisory Board** consists of 10 environmental leaders from outside of academia who provide insight on environmental issues in industry, government and business so help CEREO maintain an applied research edge.

CEREO Affiliates include over 380 scholars, educators and practitioners across 8 colleges, 4 campuses and dozens of departments – spanning a breadth of physical, natural and social sciences, business, communication, and medicine.

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