

# Designing Human-Centered Disaster Impact Information

April 19, 2025



## Sabine Loos

*Assistant Professor,  
University of Michigan,  
Designing human-  
centered disaster impact  
information*

## Seminar Details

*Friday, April 19, 2025  
2:30pm – 4:00pm*

*UH Campus  
Classroom & Business  
Building  
Room CBB 108*

*Online via TEAMS  
[https://www.cive.uh.edu/  
research/seminars](https://www.cive.uh.edu/research/seminars)*

**ABSTRACT:** This talk will explore the potential of algae as a sustainable, nutrient-rich fertilizer for enhancing soil and plant health. Algae, as photosynthetic organisms, utilize sunlight to transform carbon dioxide and inorganic nutrients like nitrates and phosphates into complex organic compounds, naturally releasing oxygen in the process. Rich in essential nutrients such as nitrogen (N), phosphorus (P), and potassium (K), algae are effective fertilizers that also contain growth-promoting hormones and other beneficial compounds. Unlike chemical fertilizers, algae-based alternatives are organic, environmentally friendly, and can be cultivated sustainably in nutrient-rich wastewater, providing a renewable source of key nutrients. The presentation will cover recent research on the use of algal biomass as a soil health enhancer, beginning with a comparison of environmental impacts between synthetic and algae-based fertilizers, particularly regarding greenhouse gas emissions and water pollution. We will discuss analyses of algal biomass composition—including NPK, heavy metals, proteins, fibers, and phytohormones—and results from controlled studies on cotton plant growth and gene expression. Field trials at PVAMU are underway, focusing on the potential of algae pellets to reduce synthetic fertilizer and pesticide use, as well as greenhouse gas emissions. This work positions algae-based fertilizers as a promising solution for reducing agriculture's environmental impact.

**BIOGRAPHY:** Sabine Loos is the PI of AIDD labs and an assistant professor in the Civil and Environmental Engineering Department at the University of Michigan. Broadly, her research surrounds the development of disaster information that centers users and the human experience. She applies statistical learning, risk analysis, and design thinking techniques to develop tools that inform effective and equitable disaster risk reduction, response, and recovery. She has worked across Nepal, Singapore, and the U.S. to gain firsthand experience of the impacts from disasters. The transdisciplinary nature of her work had led her to collaborate with Kathmandu Living Labs, the World Bank, Nasa-JPL, the U.S. Geological Survey, and other. She also co-organized the understanding Risk Climate Data Field Lab and co-founder the Risk & Resilience DAT/Artathon. Prior to UM, Sabine was a Mendenhall Fellow at the U.S. Geological Survey in collaboration with the Natural Hazards Center at CU Boulder working on developing socially equitable earthquake risk products. Sabine completed her PhD in Civil Engineering between Stanford University and Earth Observatory of Singapore at Nanyang Technological University, her MS in Sustainable Design & Construction from Stanford University, and BS in Civil Engineering from the Ohio State University.