



CDSC Workshop Series “AIM for Science”

AIM for Sustainability

14 Sept 2026 | 12:30 to 17:45
GEO 1 | Heisenbergstraße 2, Münster





AIM for Sustainability

Artificial intelligence is becoming an increasingly important tool for addressing sustainability challenges. From analyzing environmental systems and optimizing infrastructure to monitoring and managing natural resources, AI methods enable new ways of extracting knowledge from data, improving predictions, and supporting informed decision-making.

The landscape of AI methods is as diverse as the sustainability challenges they address. Drawing from this wide range of research opportunities, the workshop's Keynote Talks highlight two particularly promising areas: GeoAI and AI for sustainable energy system operation. The keynotes are complemented by Spotlight Talks showcasing current research activities at the University of Münster and highlighting opportunities for interdisciplinary exchange and future collaborations. Beyond that, the workshop also provides space for critical reflection on the role of AI in sustainability research by inviting discussion of dominant technological narratives.

Bringing together researchers from diverse disciplines, the workshop is designed to spark new ideas, encourage fresh perspectives, and strengthen AI for sustainability research at the University of Münster. We warmly invite all interested researchers, including PhD candidates and postdoctoral researchers, to join the event.

The workshop is co-organized by the [Center for Data Science and Complexity \(CDSC\)](#) and the [Center for Interdisciplinary Sustainability Research \(ZIN\)](#) as part of the CDSC's initiative *AIM for Science*. International participation in the event is enabled by the [Ulyseus European University Alliance](#).

AIM for Science seeks to bring together AI expertise and research needs from across the University of Münster by promoting collaboration between methodological and application-oriented disciplines and thereby creating new impulses both for the advancement of AI and for its use in addressing scientific challenges. Through a growing network of researchers, research groups, external partners, and stakeholders, AIM for Science fosters an environment that lowers barriers to the adoption of AI methods, strengthens interdisciplinary exchange, and creates new opportunities for collaboration within and beyond the University of Münster.



SCHEDULE

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12.30	 COME-TOGETHER with lunch snacks
13.00	OPENING Dr. Carolin Bohn (ZIN), Dr. Katrin Schmietendorf (CDSC)
13.10	KEYNOTE <i>GeoAI for Sustainable Development and Climate Studies</i> Prof. Claudio Persello (Faculty of Geo-Information Science and Earth Observation, University of Twente, NL)
14.00	SPOTLIGHT TALKS <i>Digital Twins and Environmental Sensor Data for Prediction, Monitoring, and Decision Support</i> Prof. Angela Schwering (Institute for Geoinformatics, University of Münster) <i>AI4Forest: AI for Large-Scale Forest Monitoring from Space</i> Prof. Fabian Gieseke (Department of Information Systems, University of Münster)
14.30	 COFFEE AND NETWORKING BREAK
15.00	DIALOG <i>Coopting GreenAI – The Pitfalls of AI for Sustainability</i> Dr. Anne Mollen (Department of Communications & ZIN, University of Münster)
15.40	SPOTLIGHT TALK <i>AI for Sustainability, Sustainability for AI</i> Prof. Benjamin Risse (Institute for Geoinformatics & CDSC & ZIN, University of Münster)
15.55	 COFFEE AND NETWORKING BREAK
16.30	KEYNOTE <i>Understanding Interdependent Energy Systems with Explainable and Causal Machine Learning</i> Prof. Dirk Witthaut (Institute for Theoretical Physics, University of Cologne & Forschungszentrum Jülich)
17.20	SPOTLIGHT TALK <i>Towards a Data-Driven Energy Building Management @ University of Münster</i> Dr. Oliver Kamps (CDSC)
17.35	CLOSING Dr. Carolin Bohn (ZIN), Dr. Katrin Schmietendorf (CDSC)
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KEYNOTES

Prof. Claudio Persello:

GeoAI for Sustainable Development and Climate Studies

This talk presents how GeoAI, combining artificial intelligence, Earth observation, and geospatial science, can support sustainable development and climate studies by providing timely and spatially consistent information. It highlights recent advances in deep learning for extracting semantic and geometric information from remotely sensed data, including optical and Synthetic Aperture Radar (SAR) images. Through examples such as global glacier mapping, urban deprivation mapping for SDG 11.1.1, delineation of smallholder farm fields, forest and land degradation monitoring, and automated vector mapping, the talk demonstrates the growing role of GeoAI in addressing environmental and societal challenges. The presentation also reflects on key open challenges, including computational demands, model generalisation for large-scale studies, uncertainty quantification, data quality, and the need for trustworthy and explainable AI to support decision-making.

Prof. Dirk Witthaut:

Understanding Interdependent Energy Systems with Explainable and Causal Machine Learning

The transition towards a climate-neutral energy system is fundamentally changing the way electricity is generated, traded, and delivered. Modern energy systems have become highly interconnected: power system operation depends on electricity and reserve markets, market outcomes are shaped by weather conditions and consumer behavior, and all of these processes are influenced by regulatory and policy decisions. Empirical research is needed to understand interactions between subsystems and to quantify the consequences of interventions.

In this talk, I will present how transparent and causal machine learning can help understand mechanisms and quantify interactions in interdependent energy systems. Explainable machine learning models, based on Shapley Additive Explanations (SHAP), reveal which factors drive transmission congestion and frequency stability in power systems, leading to new insights into the role of renewable energy sources. Structural causal models, in turn, make it possible to distinguish cause and effect in electricity markets, providing a quantitative perspective on the mechanisms that shaped the recent European energy crisis.

DIALOG

Dr. Anne Mollen:

Coopting GreenAI – The Pitfalls of AI for Sustainability

Especially large-scale generative AI industry actors, but also political actors, are co-opting the „Green AI“ narrative to legitimize the escalating environmental footprint of their technologies. With nebulous statements about AI solving the climate crisis, they connect two discourses that have almost nothing in common: the sustainability impacts of generative AI vs. often small-scale and context-specific Machine

Learning applications for sustainability. Those genuinely committed to sustainability must recognize this strategic cooptation and actively call out its underlying dangers. This includes preventing dependencies from private AI providers who are commercialising the climate crisis as the next business opportunity as well as acknowledging the limits of predominantly data-driven sustainability solutions and the narrow concept of sustainability they imply.

REGISTRATION

You can register for the event via:

<https://indico.uni-muenster.de/event/4364/>

The deadline for registration is **August 31, 2026**.

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