WUR Model & Data Day

16 November 2023 | Akoesticum Ede

WAGENINGEN
UNIVERSITY & RESEARCH

Location

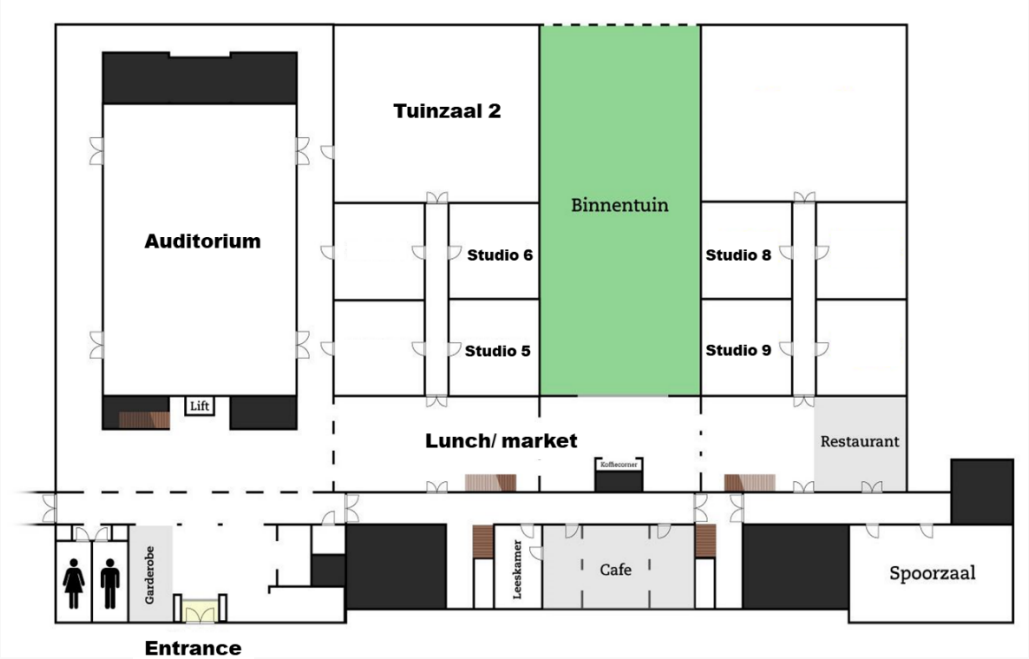
Akoesticum

Nieuwe Kazernelaan 4 - D
6711 JC E
Netherlands

Event schedule

		Auditorium	Tuinzaal 2	Studio 5	Studio 6	Studio 8	Studio 9
8:30-9:00	Walk-in						
9:00-9:30	Opening	Bram de Vos					
9:30-10:30	Parallel	Next level animal sciences	FB-IT: AI platform	Information security	Adagio application	Compre-hensive indicators	Engaging researchers
10:30-10:50	Break						
10:50-11:20	Plenary	A journey into the animal kingdom					
11:30-12:30	Parallel	Data management tools: several presentations	Hands-on Yoda workshop	FB-IT services: Organic growth of models	Generative AI to facilitate food domain research	MAST: multi model usage in policy support context	How to get recognition (and rewards) for your modelling work?
12:30-13:30	Lunch break						
13:30-14:30	Parallel	What is Scientific Machine learning and how to use it?	LEGO: metadata for re-producability	FB-IT services: HPC and GPU	Real-life farm data- & service platform	OnePlanet: digital ochards & data platforms/ algorithms	MAST: motivating model complexity
14:40-15:10	Plenary	Circular Food Systems model					
15:10-15:30	Break						
15:30-16:30		Economy-wide and household level impact of dietary changes on the future of the food system	BIS-4D: a high resolution soil modelling and mapping platform	FB-IT services: containerizing your model	Preparing a dataset before publishing	LTER-LIFE: bringing ecological data and models together	Value creation – from research to innovation
16:40-17:00	Closing	Jene van der Heide, Shauna Ni Fhlaithearta					
17:00-18:00	Drinks & bites						

Floor plan



Program

9:00-9:30 (Auditorium)

Opening by Bram de Vos

Managing Director Environmental Sciences Group (WUR)

9:30-10:30 Parallel sessions

Next Level Animal Sciences' model & data investments	Auditorium
We will showcase the data & models program of Next Level Animal Sciences. This program aims to let our scientists capitalize on the revolution in data collection and computing power by developing methods, tools and technology. We will provide an overview of the program, as well as more in depth talks about several highlights within the program.	Tobias van Kooten, Steffen Werner

FB-IT services: AI platform	Tuinzaal 2
Nick Brummans shines a light on AI platform. As WUR, we should stimulate the integration of MLOps (Machine Learning Operations) into our AI research environments to enhance scalability, collaboration, model explainability and reproducibility. By investing in a platform with MLOps tools that prioritizes these factors, we can optimize the entire AI lifecycle, from data preparation to model deployment, ensuring high-quality, transparent, and reproducible research results.	Nick Brummans

Information security	Studio 5
This is a practical talk on how you can make sure your data is adequately protected. Remon Klein Tank will also give a real-world insight into some of the threats you are protecting your data from.	Remon Klein Tank

Adagio and application to MAGNET	Studio 6
This session introduces MAGNET - the global general equilibrium model of Wageningen Economic Research, which uses various sources of data and generates lots of data as results. To manage these data and gain useful insights from the results for various research projects, Magnet profits from the research data management solution Adagio, which facilitates researchers to include, validate, combine, analyze, visualize and share the data that are needed in projects.	Jules Bloem, Heleen Bartelings

Comprehensive indicators for connecting models and communicating results	Studio 8
Integrated assessment studies use many different indicators to present model results. However, such indicators do not always cover all relevant domains and it is not always clear which domains are included. This interactive workshop addresses the issue of how indicators can be used for building and communicating narratives based on (multi)model results. Marijn Gulpen and Pim Post will present their work creating a common narrative from results from multiple models by linking them into the SDG indicator framework. Saeed Moghayer will show his work building an indicator dashboard in PowerBI to communicate results from the MAGNET model. This dashboard allows users to navigate interactively through a dataset.	Marijn Gulpen, Pim Post, Saeed Moghayer, Jason Levin-Koopman

Engagement: connecting researchers with stewardship	Studio 9
Research Data Management (RDM) requirements are often perceived by researchers as a bureaucratic exercises. In this session, we will explore how to change this point of view, by showing, for example, that Data Management Plans (DMPs) present valuable opportunities for improving research and collaboration. We'll discuss the proactive steps data stewards can take to showcase the numerous benefits of effective RDM.	Lena Karvovskaya (VU)

10:50-11:20 (Auditorium)

Plenary session by Constanze Mager

A journey into the animal kingdom
Constanze Mager (Manager Conservation, Research and Education at Royal Burgers' Zoo) will take us on a journey into the animal kingdom, with special attention to models and data.

Manager Conservation, Research & Education Royal Burgers' Zoo

11:30-12:30 Parallel sessions

Data management tools (several presentations)	Auditorium
GIS data management tools: Multi Reclass Too and Combine Tool Hans Roelofsen presents the Combine-Tool and the Multi-Reclass Tool, which are designed to interact with categorical geospatial raster data. Their joint aim is to build new raster-datasets that are fully tailored to the user's application, based on one or more existing datasets. Key-feature is to design and apply a new categorization-scheme, while resolution, spatial extent and file-format are also customizable. The tools were successfully used in several land-use forecasting studies.	Hans Roelofsen Balazs Brankovics
SAM harmonization: interoperability for genomics Balazs Brankovics demonstrates the SAM harmonization toolkit , which was developed to improve interoperability of analysis tools in genomics and allow for modular design in pipelines. A few application possibilities will be highlighted and suggestions how similar approaches can contribute to more FAIR data analysis.	Jasper Koehorst
Introducing the FAIR Data Station Jasper Koehorst presents a FAIR By Design approach for experimental metadata management to ensure FAIR research and interoperability.	Jan Dirk Bulens
Soft data infrastructure building blocks for data spaces Ever thought about what it means to properly set up an infrastructure? In this talk Jan Dirk Bules will discuss how the European data spaces should be set up at a conceptual level. It is an architecture according to a so-called 'soft infrastructure' with 12 building blocks that cover operational and governance blocks and show which aspects need to be carefully thought off.	

Yoda hands-on workshop	Tuinzaal 2
Danny de Koning-van Nieuwamerongen gives an introduction to Yoda - a new storage system for research data and metadata. Handy tips and tricks come across such as connecting Yoda to file explorer, setting access rights, adding metadata and submitting data to the Vault-enviroment. Please bring your laptop!	Danny de Koning-van Nieuw amerongen

FB-IT services: Organic growth of models - the small modeler	Studio 5
This session is about 'organic programming': where a program grows without a real plan. Koen Meesters and Nick Brummans presents best modelling practices, starting from the small modeler's perspective. They share experiences, difficulties, hints and solutions to improve your way of working; and how FB-IT can help you.	Koen Meesters, Nick Brummans

Generative AI to facilitate food domain research	Studio 6
Over the past year, generative AI, including models like ChatGPT, has gained substantial attention. It is widely recognized for its potential to bring about a paradigm shift across various industries and sectors. In this session, we'll explore how powerful generative AI, including large language models and image generators, can greatly impact food (system) research. We'll share ongoing project updates, highlight key discoveries, and invite colleagues to join in-depth conversations. This collaborative effort aims to uncover new possibilities in food (system) research to utilize the potential of generative AI.	Xuezhen Guo

MAST: modelling / multi-model usage/ model collaboration in decision/policy support context	Studio 8
This session elaborates on the potential of integrated modelling use to assess complex policy and research questions which often involve researchers from several disciplines. The introduction of a general framework for multi-model analysis (MMA) will be followed by a presentation on potential research questions in which MMA can be applied. Recent examples will serve as an illustration of how the methodology is applied in practice.	Ana Gonzalez Martinez

How to get recognition (and rewards) for your modelling work?	Studio 9
We will introduce you to the new academic career framework at WUR, which will be implemented (at WU) from 2024 onwards. The framework is a new system for recognising and rewarding a variety of research outputs, including models. The question is, what criteria should be used to evaluate models and what does it mean to be recognized for this work? The Wageningen Modelling Group will present their work on model evaluation and participants will be invited to actively discuss key questions about this topic.	Theo Jetten, Jene van der Heide, Shauna Ni Fhlaithearta, Wies Vullings

13:30-14:30 Parallel sessions

What is Scientific Machine Learning and how can you use it?	Auditorium
During this session we will introduce yourself, as a WUR-domain specialist but probably non-machine learning specialist, to 'Scientific Machine Learning' (SciML). We will start with a general introduction: What is SciML and how can you use it? This followed by two speakers who will tell about their research in which they used SciML. This will give you an idea how such a novel technique could be used to solve WUR domain research questions. We will then give a short demo, led combinedly by WUR FB-IT and the SciML-network, to show how the MLflow software can help you to bring SciML into practice. We end the session with additional room to ask questions and to discuss.	WUR Scientific Machine Learning Network

LEGO: metadata for reproducibility	Tuinzaal 2
LEGO is used to address and discuss several aspects in data documentation, which is essential for data understandability and reproducibility. Come play!	Irene Verhagen

FB-IT services: HPC and GPU	Studio 5
Anunna HPC (High Performance Computing) has been thoroughly renovated this year and also the GPU options have increased a lot. In this session an update is being given, accompanied with some demo's on how to benefit from the new infrastructure.	Alexander van Ittersum, Jeremie Vandenplas, Jan van Haarst

Real-life farm data- & service platform	Studio 6
Fedde Sijbrandij, Thomas Been and Tamme van der Wal demonstrate a real-life farm data- & service platform to develop and deploy field data, WUR models and Digital Twins for research and practical application.	Fedde Sijbrandij, Thomas Been, Tamme van der Wal

OnePlanet (several presentations)	Studio 8
Digital orchard supports pruning In the agriculture sector, finding skilled workers is challenging, while robotization of complex agricultural systems is not keeping up with demand. A faithful 3D replica of an orchard is currently build, using hybrid techniques, and lidar and visual sensor combinations, with the objective of creating a digital twin of the orchard to support tree-pruning. OnePlanet Research Center analyzes the processes in the digital orchard, translating the output into actions for humans or robots. In the short term, the software and tools help trainee agricultural workers become pruning experts. In the long term, the software will make it possible for robots to take over certain tasks.	Bas Boom
OpenPlanet, a secure and easy data and algorithm sharing platform developed by OnePlanet and partners OnePlanet Research Center has developed a platform, called OpenPlanet, that facilitates the workflow from finding to working with data. OpenPlanet makes the process of requesting (sensitive) data transparent to both data provider and consumer. It gives data providers much control over the secure sharing of their data, while making it easy for data consumers to find and receive data.	Wim Yedema
BarnSense, a digital platform providing actionable insights in (nitrogen) emissions in and around barns BarnSense is a data platform to enable research regarding emissions, in and around barns, by managing and ingesting data of modern sensors. It allows researchers to manage hundreds of sensors, even those still in development. This talk will focus on how well-structured data and metadata can be leveraged to create solid, reliable, and future-proof systems for creating societal impact.	Jos Kuijpers

MAST: motivating model complexity from fitness for purpose	Studio 9
In this session we will explore the link between model complexity and fitness for purpose. We have two interesting talks that will stimulate a follow-up discussion.	Cheng Liu, Vincent Hin

14:40-15:10 (Auditorium)

Plenary session by Hannah van Zanten

Circular Food Systems model
This plenary session will focus on the Circular Food Systems (CiFoS) model. The CiFoS model redesigns the food system based on human and planetary heath constraints. It answers questions such as: 'which crops to grow where', 'which fertilizers to use', 'which animals to keep', and 'which food to consume' and 'how to best recycle leftover streams in the food system'.

Associate Professor
Farm Systems Ecology Group
(WUR - PSG)

15:30-16:30 Parallel sessions

Economy-wide and household level impact of dietary changes on the future of the food system	**Auditorium**
Rising incomes and changing lifestyles drastically alter consumption patterns, particularly in developing countries like Bangladesh. As people's incomes grow, the demand for animal-based proteins increases. This raises questions about the future food system: how much food can be produced domestically given the changing climate, and how much will need to be imported? The **first talk** illustrates the use of interdisciplinary model collaboration as well as a qual-quan handshake process to address these uncertainties, using a case from Dhaka Food System Project in which a series of participatory foresight scenarios and modeling processes were conducted. The Magnet model was utilized (at national level) and a microsimulation model (at micro level). The **second talk** presents focus on the supply side issues using a suit of biophysical models. The demand projections from MAGNET were used by the land allocation model iClue to explore supply responses to these changes in demand under a changing climate and the environmental costs, such as biodiversity loss. The **third talk** delves into the affordability of such diets, developing and using models to determine the costs associated with following specific dietary plans or maintaining a healthy and balanced diet. The session ends with a discussion on the role of Data in food system approaches and how model collaboration can enable the analysis of complex interactions between consumption patterns, climate change, and agricultural production, thereby informing strategic decisions for sustainable food and nutrition security.	Saeed Moghayer, Peter Verweij, Daniel Mekonnen

BIS-4D: A high resolution soil modelling and mapping platform in 3D space and time for the Netherlands	**Tuinzaal 2**
BIS-4D is a high resolution soil modelling and mapping platform in the Netherlands in 3D space and time. In this computer practical, we introduce methods and tools for digital soil mapping of basic soil properties in the R environment for statistical computing. Participants will be guided through data preparation, model calibration and prediction using a machine learning algorithm, map visualization and accuracy assessment. Please bring your laptop!	Anatol Helfenstein

FB-IT services: Containerizing your model	Studio 5
Delve into a practical demonstration that streamlines the packaging of machine learning models for efficient deployment, all while enjoying the benefits of easy scalability and reproducibility. This tutorial will guide you through creating portable model packages, ensuring that your models can be reliably replicated across diverse environments, delivering consistent and reproducible results.	Nick Brummans, Tino Kraan

Preparing a dataset before publishing	Studio 6
How do you prepare your raw data into a quality FAIR dataset ready for publishing? We discuss common pitfalls, selecting the right data, making a readme file and adding metadata. Please bring your laptop!	Laura Zeeman

LTER-LIFE – bringing ecological data and models together	Studio 8
Geerten Hengeveld will talk about the LTER-LIFE project, which aims to provide an e-infrastructure that allows researchers to construct digital twins of ecosystems – initially focusing on the Veluwe and the Wadden areas. The infrastructure will bring together data, models and tools and support ease-of-use of in creating using and re-using streamlined workflows to generate digital representations of these ecosystems. To make such an infrastructure work requires software solutions and a FAIR way of working with data, tools and models. In this session we will present the general idea of LTER-LIFE, show and extend the initial inventory of datasets and models that are available at WUR, and discuss potential use of the LTER-LIFE infrastructure within the WUR-workflow.	Geerten Hengeveld, Victor Mensing

Value Creation - from Research to Innovation	Studio 9
A session led by Yannick van Gelder (WDCC), where he shares the stories of three research projects that transcended academia, offering insights into how research can create real-world impact. Whether you're a researcher or simply curious about the power of knowledge to drive change, this workshop will inspire and inform, with practical guidance on accessing the support you need.	Yannick van Gelder, Ruud Borgart

16:40-17:00 (Auditorium)

Closing by
Jene van der Heide
Shauna Ní Fhlaithearta

Coordinator Research WDCC (WUR)

Coordinator Data management WDCC (WUR)