Issue #12 - 2025/3

CRC 1502 DETECT Newsletter

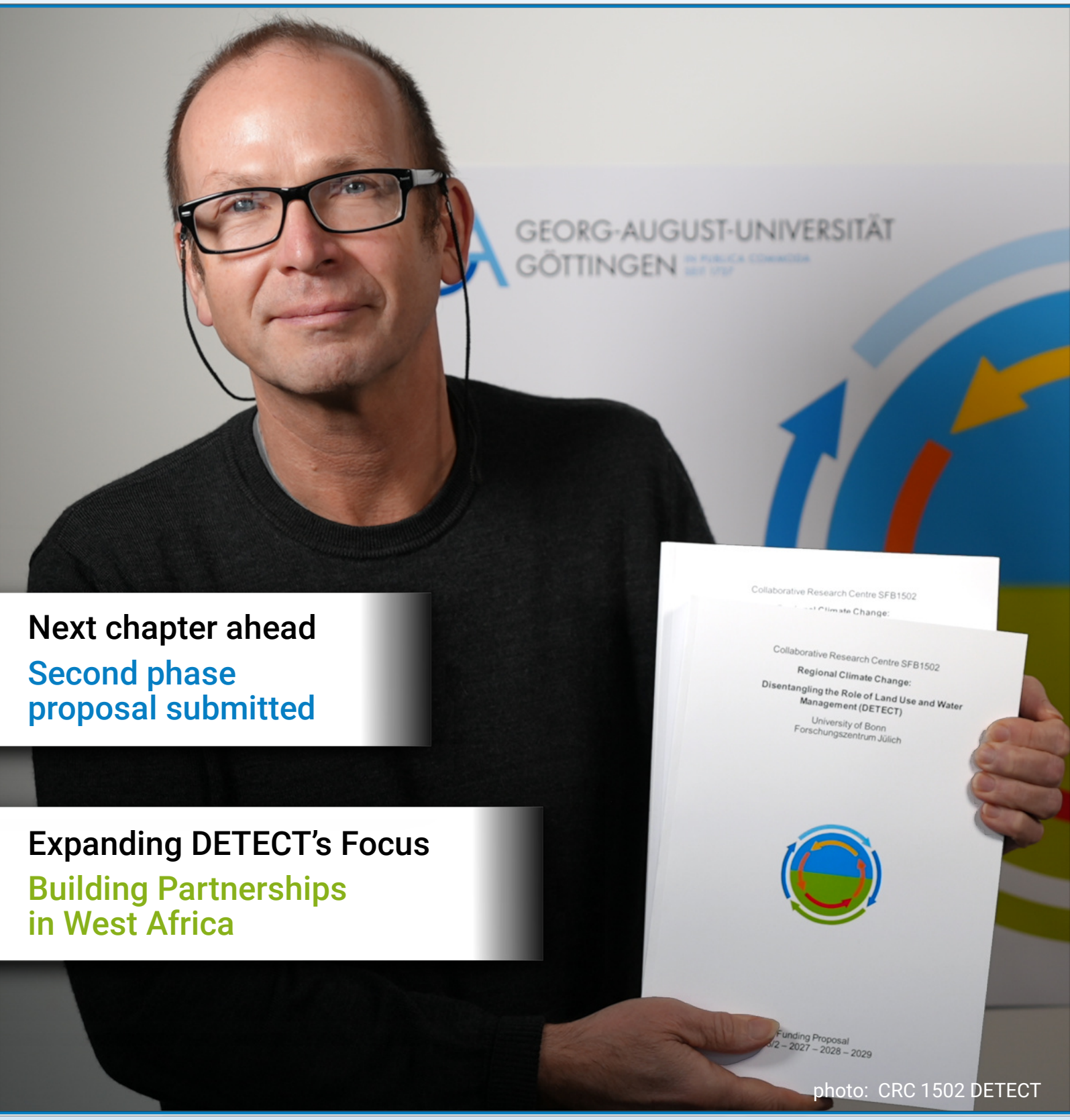


photo: CRC 1502 DETECT

Next chapter ahead

Second phase proposal submitted

Expanding DETECT's Focus

Building Partnerships in West Africa

Second Phase Proposal Submitted — Next Up: Preparing for On-Site Evaluation!

As the first funding phase of our Collaborative Research Centre comes to a close, we reflect on four years of intensive, interdisciplinary work. Since 2022, our teams have investigated how land use and water management influence climate change via modifications of the water cycle. Beyond scientific insights, this phase strengthened collaborations across disciplines, institutions, and countries, forming the foundation for **DETECT II**.

Under the leadership of our speaker Jürgen Kusche, the entire consortium has been dedicated to preparing the continuation proposal since the beginning of this year, which **was submitted to the DFG on 24 November 2025**. It synthesizes results, refines research questions, and charts a path building on our achievements. The second phase will expand geographically and scientifically, extending research beyond Europe to include West Africa. In this edition, some future African partners describe the importance of this regional focus.

In parallel, we are preparing for the **on-site DFG evaluation** in January 2026, focusing on a clear, well-structured setting that supports scientific exchange and a smooth review process. We look forward to welcoming the DFG and international panel and presenting DETECT's work in an open and transparent atmosphere.

Meanwhile, regular scientific and administrative activities continue at full speed: teams presented at international conferences, contributed to advisory work, published papers, and released project videos to broaden DETECT's visibility online.

We also highlight that our Co-Speaker, **Harry Vereecken**, has retired and are grateful that he will continue on board the CRC. His scientific contributions were celebrated at a farewell colloquium at his home institution, Forschungszentrum-Jülich, with the playful motto "Who Wants to Be a Retiree?" Of course, we report on the event and share some memorable photos.

And did you know that according to Clarivate Analytics, a total of ten researchers from University of Bonn are among the top one percent of the most influential in their field worldwide? Two out of these ten are DETECT PIs Jan Börner and Frank Ewert.

In this issue, we would like to express our special thanks to the **DETECT Outreach Group** – in particular to Co-Speaker and initiator **Silke Hüttel** and to **Zulfikar Nadzir** for the creative and swift implementation of the measures, Zulfikar's remarkable sense of agency, and, of course, to all authors, video producers, and contributors.

At the end of DETECT's first phase and a very active and fruitful year, we extend our gratitude to all DETECT researchers, Coordination and technical staff, and partners whose dedication has driven this CRC. With the knowledge gained and lessons learned from the first phase, DETECT II promises to be even more dynamic, and we are excited to embark on these next steps together.

We wish all colleagues and partners a joyful and healthy holiday season and a good and healthy start into the New Year. We hope the break offers moments of rest and recovery, so that we return refreshed, energised to defend our second phase proposal, and ready to continue our exciting DETECT project work.

Enjoy reading!

Sincerely,

Jürgen Kusche
Speaker

Silke Hüttel
Co-Speaker

Harry Vereecken
Co-Speaker

Frank Siegismund
Scientific Coordinator

Dorothee Berkle-Müller
Administrative Coordinator

Happy Season's Greetings!

from the DETECT Editorial Team

Funding proposal for the second phase

by Jürgen Kusche

Funding Proposal for the second phase of CRC1502

source: CRC 1502 DETECT

The funding proposal for the next and second DETECT phase has been finalised on time and submitted to DFG, in print and uploaded electronically. This took us about a year, and the last month felt like the final kilometer during a marathon run. We would like to express our sincere gratitude to everybody who contributed to this 394-page volume, be it during the countless brainstorming sessions, the workshops and the actual writing and proof-reading, or the final compilation, debugging, and formatting. I think we can say the new proposal is truly the brainchild of the entire DETECT team.

This funding proposal provides a renewed scientific vision and guideline for DETECT research over the next four years. It took up recent developments in the scientific community and at the participating institutions and groups, bundles the strengths of the DETECT team, and addresses burning science questions.

A new element is that we chart a programme to address questions of land use change and the resulting climate forcing in West Africa, a global climate hotspot and a region which is known for strong land-atmosphere coupling. This means that we will also team up with a group of local research institutions, all being leaders in their respective fields.

The next step will need to be the defence of the proposal in January. We are convinced that with the current proposal we are in a very strong position for this.

Prof. Jürgen Kusche with proposal

source: CRC 1502 *DETECT*

Ten researchers from the University of Bonn are among the most influential in their field, two of them are DETECT PIs Jan Börner and Frank Ewert

by Johannes Seiler

Highly Cited Researchers 2025 at the University of Bonn: (top row, from left) Frank G. Holz, Stefan Grimme, Matin Qaim. Bottom row, from left: Jan Börner, Frank Ewert, Thomas Bieber, and Jonathan L. Schmid-Burgk.

source: University of Bonn

The University of Bonn is once again featured on the international "Highly Cited Researchers" list: According to Clarivate Analytics, the information service provider that compiles the list, a total of ten researchers are among the top one percent of the most influential in their field worldwide.

The current list includes 6,868 researchers from 61 countries. From Germany, 363 scientists made it onto the list. The University of Bonn is represented by ten researchers among the Highly Cited Researchers 2025:

Thomas Bieber, Department of Dermatology and Allergology at the University Hospital Bonn (UKB), Cross-Field (also Christine Kühne Center for Allergy Research and Education – Medicine Campus Davos)

Jan Börner, Institute for Food and Resource Economics, Cross-Field

Frank Ewert, Institute of Crop Science and Resource Conservation (INRES), Cross-Field (also Leibniz Centre for Agricultural Landscape Research)

Stefan Grimme, Mulliken Center for Theoretical Chemistry, Clausius Institute for Physical and Theoretical Chemistry, Chemistry

Frank G. Holz, Department of Ophthalmology of the University Hospital Bonn, Clinical Medicine

Matin Qaim, Center for Development Research (ZEF), Economics and Business

Jonathan L. Schmid-Burgk, Institute of Clinical Chemistry and Clinical Pharmacology at the University Hospital Bonn (UKB), Cross-Field

DETECT PI's Jan Böhmer and Frank Ewert

source: University of Bonn

Some of the Bonn researchers have been among the Highly Cited Researchers for years. Jonathan L. Schmid-Burgk, a life scientist who is only 39 years old, achieved a "Hattrick" this year with three consecutive mentions.

In addition, three other researchers are on the list who are primarily affiliated with other institutions but have academic ties to the University of Bonn: Fields Medal winner Peter Scholze (Max Planck Society, mathematics), Joachim Schultze (DZNE, immunology), and Axel Kallies (University of Melbourne, immunology).

Methodology

The survey uses the frequency with which a researcher's scientific publications have been cited by other researchers over the past eleven years as a measure of their influence. Only publications included in the Web of Science publication and citation database are taken into account. The researchers listed are among the top one percent in terms of the number of citations in their respective fields.

For the analysis, the creators of the list divided the publications into 21 subject areas. The "Cross-Field" section lists scientists who have published in several subject areas.

source: University of Bonn

Find this article also at
Informationsdienst Wissenschaft (idw)

Additional Information at Clarivate

26-27 November: 2025 DETECT All Status Meeting

by Jürgen Kusche, Dorothee Berkle-Müller, Zulfikar Nadzir

The 2025 All Status Meeting of CRC1502 DETECT took place on 26–27 November (lunch-to-lunch) in a hybrid format at the University of Bonn.

As the final status meeting of the first funding phase, it showcased an impressive range of scientific achievements: numerous PhD projects are now close to completion, and several cross-project and cross-cluster collaborations have significantly evolved.

It also served to create a joint understanding of where we are now after nearly four years, how we should move towards synthesizing results on an overarching level in the first half of 2026, and to what extent projects are preparing already now for 2nd phase research.

As an internal event, the status meeting also served as a platform to identify questions which we should anticipate for the defence.

Jürgen Kusche presenting the timeline of early 2026

source: CRC 1502 DETECT

Dorothee Berkle-Müller explaining the next steps

source: CRC 1502 DETECT

Alongside the scientific presentations, Zulfikar Nadzir, our new outreach coordinator, reported on recent developments regarding DETECT's social media activities. DETECT currently communicates via Bluesky and LinkedIn. Both channels have grown strongly: Bluesky follower numbers have doubled and posts have quadrupled thanks to increased community contributions— strong evidence of increasing external visibility. Members are invited to contribute news, highlights, and outreach ideas. Please feel free to contact Zulfikar for feedback, support, or posting templates.

CRC1502 DETECT All Status Meeting November 2025

source: CRC 1502 DETECT

Zulfikar Nadzir on how to increase the media presence

source: CRC 1502 DETECT

New in 2025:

Idea platform: for social media posts

Idea platform: for DE-I-TECT measures

https://sfb1502.de/internal-area
(both available via DETECT's internal Web area: access with former member login)

Looking ahead, the community is now preparing intensively for the start of the second phase. The All Status Meeting once again underscored its role as a central forum for bringing the community together, aligning strategies, and ensuring that our collective scientific goals remain front and centre.

We look forward to successful All Status Meetings throughout Phase 2 that will continue to strengthen collaboration and drive DETECT's scientific progress.

Impressions of the CRC1502 DETECT All Status Meeting November 2025

source: CRC 1502 DETECT

Report Fall School 2025

by Forschungszentrum Jülich (NN) and Zulfikar Nadzir

The Fall School 2025 on Terrestrial Modelling & High-Performance Computing took place from 8 to 12 September 2025 at Forschungszentrum Jülich!

This year's Fall School was once again organised by **HPSC TerrSys** and supported by **Geoverbund ABC/J** and **CRC 1502 DETECT**.

The 2025's programme again combined inspiring theoretical lectures with hands-on practical sessions—a unique opportunity to deepen scientific knowledge and directly apply it to real-world terrestrial modelling and #HPC challenges. Participants will gain experience with the Community Land Model (#eCLM) and the Terrestrial Systems Modelling Platform (#TSMP2), focusing on land surface processes, biogeochemical cycles, vegetation dynamics, coupled atmosphere–land–subsurface simulations, and data assimilation techniques.

Keynote & Expert Talks were held by:

Mauro Sulis, Research and Technology Associate, Environmental Research & Innovation Centre (ERIC), Luxembourg Institute of Science and Technology (LIST)

Sabine Grießbach, Team Leader, Simulation and Data Laboratory Climate Science, Forschungszentrum Jülich

Heidrun Matthes, Researcher, Alfred-Wegener-Institut, Helmholtz-Zentrum für Polar- und Meeresforschung

Lars Nerger, Head of Data Assimilation Team, Computing and Data Centre, Alfred-Wegener-Institut, Helmholtz-Zentrum für Polar- und Meeresforschung

Participants could gain practical insights into terrestrial modelling, data science, and high-performance computing using the #eCLM model and the #TSMPv2 platform. Experts from Forschungszentrum Jülich will guide the hands-on exercises, creating an exciting balance between theory and application.

Thank you for organizing this successful event.

The Fall School 2025 on Terrestrial Modelling & High-Performance Computing

source: CRC 1502 DETECT

Short Report on joint EAAE - DE-I-TECT Session at the 50th EAAE Meeting

by Silke Hüttel

On 27 August 2025, we held successfully the jointly organized EAAE-DE-I-TECT session about "Equity and Diversity in Agricultural and Food Economics – where are we?" at the 50th anniversary meeting of the European Association of Agricultural Economics at Bonn University. Silke Hüttel (Universities of Bonn and Göttingen) and EAAE board member Linde Götz (Leibniz Institute of Agricultural Development in Transition Economies) brought together highly recognised researchers in the field of women in agricultural economics: Regents Professor Jill McCluskey (Washington State University), evaluation of equal opportunity measures, Professor Ester Cois (University of Cagliari), and the leading expert on racial inequalities and food insecurity, Professor Norbert Wilson (Duke University NC).

Long story short, we recognize a systematic gender difference, for instance, women publish at lower rates than men but we find better written and more clearly written papers by women. The review process takes on average 6 months longer, after controlling for maternity leave! Recall that the number of publications is a major factor predicting the academic rank. It became clear the we however need diverse research teams and a values-driven research framework that centers around equity, interdisciplinarity, community engagement, policy focus, and appropriate rigor to address the sustainability transition of the agri-food system.

Please also refer to our Bluesky and LinkedIn posts.

Joint EAAE - DE-I-TECT Session at 50th EAAE Meeting

source: CRC 1502 DETECT

Farewell Colloquium for Prof. Harry Vereecken or: "Who Wants to Be a Retiree?"

by FZ-Jülich and DETECT

On 5 September, our co-speaker Harry Vereecken's farewell colloquium took place at Forschungszentrum Jülich, his home institution.

Here are some impressions and a short report from Jülich provided by Harry's immediate colleagues at the IBG-3.

In glorious sunshine and the festive atmosphere of Haus Overbach, we bid farewell to our director Prof. Harry Vereecken last Friday – a day full of appreciation, memories, and moving moments.

The colloquium traced Harry's extraordinary journey – from his beginnings in Leuven, recalled by Marnik Vanclooster and Jan Feyen, through his defining years in Jülich with contributions by Jan Vanderborght, Wulf Amelung, and Thomas Puetz, to the voices of former PhD students Sarah Garré, Jannis Groh, and Ute Weber. Regional collaborations were highlighted by Clemens Simmer, while the international dimension of his work was represented by Michael Mirtl, Nunzio Romano, Liu Congqiang (video recording from China), Michael Young, and Jan Hopmans. An inspiring keynote by Rien van Genuchten rounded off the program.

In between the talks, Harry received many personal gifts: a lovingly crafted hat from the IBG-3 PhD students, gifts honoring his passions besides science ad uniquely designed gifts from all of Harry's valued companions, by the entire staff of IBG-3 and from representatives of

source: Kreklau / Forschungszentrum Jülich

Prof. Harry Vereecken

source: Kreklau / Forschungszentrum Jülich

initiatives that Harry co-founded, such as the ISMC International Soil Modelling Consortium or the Geoverbund ABC/J.

And not even the German Chancellor could stand in the way of FZ-J Board Member Prof. Jansens Pieter J., delayed by the inauguration of the JUPITER supercomputer, he still arrived determined to share his personal words with Harry – and to present him with a book, a nod to Harry's fascination with Belgian history.

The emotional climax of this day came with Harry's closing words: with heartfelt gratitude, he turned to his family – above all his wife – to whom he now intends to dedicate his time after decades of professional commitment.

The day was rounded off with an outstanding buffet, countless personal conversations, and a group photo that will surely be remembered for years to come.

Thank you, Harry, for everything you have done for IBG-3, for Forschungszentrum Jülich, and for science.

The entire CRC1502 DETECT joins in expressing their gratitude and best wishes. Thank you, Harry, for your commitment as co-speaker, knowledge bearer and scientific advisor to our Collaborative Research Centre. We look forward to still having you on board for the upcoming phase II.

source: Kreklau / Forschungszentrum-Jülich

source: Kreklau / Forschungszentrum-Jülich

“Storms, Heat, Floods – Extreme Weather. Our new reality?”

by Zulfikar Nadzir

On Wednesday, 19 November 2025 (18:00–20:00 CET), the University of Bonn hosted the 6th event of 'Exzellenzuniversität Bonn', titled “Storms, Heat, Floods – Extreme Weather. Our new reality?” in the Aula, Main Building (Am Hof 1).

Two DETECT members — PD Dr. Petra Friederichs and Jun.-Prof. Dr. Leonie Esters (Institute of Geosciences) — joined Prof. Dr. Andreas Hense and Prof. Dr. Birgitta Weltermann to discuss how heat waves, heavy rainfall and flooding are reshaping everyday life, and what science can offer on risk, prediction and preparedness.

Specifically, Priv. Doz. Dr. Petra Friederichs presented how climate change influences heatwave and droughts in Europe and where the large amounts of water that fell in the Ahr Valley in July 2021 came from.

The topic is closely related to our CRC, where we examine the land–climate interactions and extremes.

Expanding DETECT's Focus: Building Partnerships in West Africa

by Hana Mohammed

As CRC1502 DETECT plans to continue its second phase, it aims to broaden its regional focus beyond Europe to include West Africa as a key area of study.

West Africa and Europe are regions of very differing environmental conditions and climates, with differing projections for future temperatures, precipitation changes and weather extremes. Also, the factors that govern current and past land use change differ from Europe, and the strength of the land-atmosphere coupling and thus the sensitivity of climate to land use changes are generally assumed as higher as compared to most regions in Europe. All this enables us to comprehensively test the transferability of the "DETECT approach" to other world regions. On the other hand, observational monitoring networks are less developed in West Africa, thus we believe exploring our modelling approach will be particularly rewarding in this region.

To support this goal, DETECT has initiated new collaborations with research partners from West Africa. These partnerships bring valuable regional expertise and perspectives that will strengthen the project's scientific reach and impact.

In this article, we are pleased to introduce our new partners from Africa, who join DETECT in this new phase. Each partner brings unique expertise and local insight that will be essential for advancing our understanding of land–atmosphere interactions in the region. Below, they share short introductions of their work and perspectives on collaboration with DETECT.

Prof. Dr. Leonard Kofitse Amekudzi
source: Leonard Amekudzi

Prof. Dr. Leonard Kofitse Amekudzi
Kwame Nkrumah University of Science and Technology (KNUST), Ghana

L. Amekudzi is a Professor of Atmospheric and Climate Science and Immediate Past Provost of the College of Science at KNUST, Ghana. He holds a Ph.D. in Atmospheric Physics from the University of Bremen, Germany. He is a leading figure in West African climate and atmospheric research, with specialization in **Satellite Remote Sensing, soil moisture dynamics, land use and land cover change**, and their influence on regional climate systems. As a collaborator within CRC1502 DETECT, he works closely with Prof. Dr. Heye Bogena and his colleagues to advance integrated studies on soil moisture measurement, land-use processes, and regional climate interactions, linking Ghana's field-based observations with DETECT's global climate modeling framework. Professor Amekudzi contributed to major international projects including WASCAL, DACCIWA, QWeCI, CONCERT, FURILOOD, and GCRF African SWIFT. Beyond academia, he is the Founder and CEO of Trotmemo Farms Ltd, promoting sustainable agriculture and science-driven entrepreneurship.

Dr. Djigbo Félicien Badou
source: Djigbo Badou

Dr. Djigbo Félicien Badou
Université Nationale d'Agriculture, Benin

D. Badou is a senior lecturer at the Université Nationale d'Agriculture and a part-time Research Associate at the Institut National de l'Eau, University of Abomey-Calavi. His research addresses the **modelling of climate change impacts on water resources**, with particular emphasis on **agricultural water management and the water-food-energy nexus**. Dr. Badou has contributed to national and regional water planning and risk-assessment initiatives. He co-designed impact-chain frameworks for the Benin National Adaptation Plan and he has analysed climate-driven changes for Lake Nokoué. In support of the Niger Basin Authority, he evaluated water-food-energy interactions and flood-mitigation scenarios for the Lagdo Dam (Cameroon). In 2024, he served as the lead hydrologist on the development of the water master plan for the Beninese portion of the Niger River Basin

Dr. Patrick Essien
Environmental Protection Authority (EPA), Ghana

P. Essien is an **Environmental, Space Weather, and Climate Change** Scientist with deep expertise in **space geophysics, atmospheric science, and sustainable resource management**. He brings a decade of experience in advancing environmental monitoring, climate resilience, policy engagement, and STEM/TVET innovation. He is a former Senior Lecturer and Research Scientist at the University of Cape Coast (UCC). Currently, he serves as the Deputy Director of the Mining Department at the Environmental Protection Authority (EPA) of Ghana, where he is responsible for the full spectrum of environmental permitting and regulatory oversight for Small-Scale, Medium-Scale, and Large-Scale mining operations. He also serves in several national leadership and policy advisory capacities. With his strong forward-looking approach, Dr. Essien continues to bridge science, engineering, education, and policy, ensuring that youth empowerment, climate action, and sustainable development remain at the heart of Africa's future.

Dr. Patrick Essien
source: Patrick Essien

Dr. Fowé Tazen
source: Fowé Tazen

Dr. Tazen Fowé
International Institute for Water and Environmental Engineering (2iE Institute), Burkina Faso

T. Fowé is an assistant professor, lecturer and researcher in hydrology and climate change at 2iE Institute, and he is an experienced academic expert in **Integrated Water Resources Management**. Dr. Fowé's current work focuses on analyzing the impact of climate change on hydrological extremes such as droughts and floods, reservoir monitoring using remote sensing, and developing of decision support tool for optimal water resources management. In collaboration with IWMI (in Ghana) and GET (in France), Dr. Fowé has been involved in research on the use of **remote sensing data** to estimate the physical characteristics of reservoirs to support their operational management. In the EO Africa project, Dr. Fowé will contribute to observed data collection, data processing and analysis.

Prof. Tadesse Tujuba Kenea
Arba Minch University, Ethiopia

T. Kenea is an Associate Professor at Arba Minch University in the Faculty of Meteorology and Hydrology, where he has been serving at different academic ranks since 2009. He earned a Bachelor (2005) and Master's (2009) of Science in Meteorology from Arba Minch University and a PhD in **Earth Science (Hydrogeology)** in 2018 from Addis Ababa University. He was Alexander von Humboldt research fellow during 2017-2018 and worked closely with Prof. Jürgen Kusche. His main research interest lies in evaluating and forecasting **Hydroclimatic extremes and regional water budget** studies.

While Ethiopia is outside the current West Africa focus region, Prof. Kenea's expertise will still be an important contribution to DETECT.

Prof. Tadesse Tujuba Kenea
source: Tadesse Kenea

Prof. Vincent Logah
source: Vincent Logah

Prof. Vincent Logah
Kwame Nkrumah University of Science and Technology (KNUST), Ghana

V. Logah is is a **Soil Scientist**, Head of Department of Crop and Soil Sciences, and Vice Dean of Faculty of Agriculture, KNUST. He is Affiliate Professor with UM6P, Morocco and Co-Promoter with Wageningen University, Netherlands. He is a Fellow of the Africa Science Leadership Programme and Fellow of the Future Earth. He has trained many Scientists across Africa including supervision of 27 PhDs. He has successfully executed research awards with many notable funding organizations. He currently collaborates with 13 partner Institutions across Africa, Europe, South America and Oceania under the European Joint Programme (**EJP Soil C-arouNd**). He served as Expert Panelist on **soil carbon sequestration** for the 2025 Global Forum for Food and Agriculture of the German Federal Ministry of Food and Agriculture and has engaged widely with other stakeholders including FAO, with recent discussions on bioeconomy.

Prof. Dr. Dilys Sefakor MacCarthy
University of Ghana, Ghana

D. MacCarthy is an Associate Professor of **Plant Nutrition with Soil and Irrigation** Research Centre at University of Ghana. Her central research areas of interest include; (i) Agricultural systems modeling/climate change impact assessments on productivity, (ii) integrated nutrient management and dynamics in farming systems. She led the West African team of scientists that worked with the Agricultural Models Intercomparison and Improvement Project (AgMIP) on the topic "**Climate change impact on West African Agriculture: A Regional Assessment**". D. MacCarthy is also involved in collaborative research with several institutions across the world. She has served as a member of a number of international scientific conferences like iCROPM 2020 that was held in Montpellier, France and iCROPM2026 to be held in Florence, Italy. She has been collaborating with faculties from University of Bonn and other German institutions for more than 15 years.

Prof. Dr. Dilys Sefakor MacCarthy
source: Dilys MacCarthy

Dr. Mamadou Adama Sarr
source: Mamadou Sarr

Dr. Mamadou Adama Sarr
Ecological Monitoring Center (CSE), Senegal

M. Sarr holds a Doctorate degree in **Physical Geography (Climatology option)** at the University Jean Moulin Lyon III in France, and a postgraduate diploma in remote sensing at the University of Quebec in Montreal in Canada. He is currently an expert associated in the Ecological Monitoring Center (CSE) in Dakar, Senegal, where he coordinates and participates in the implementation of various national and regional projects/programs related to **Earth Observation data** applied to the Environment. Dr. Sarr also remains a lecturer at Gaston Berger University in Saint-Louis in Senegal.

Dr.-Ing. Loudi Yap
National Institute of Cartography (NIC), Cameroon

L. Yap is Chief of the Research Laboratory in **Geodesy** at the National Institute of Cartography (NIC) in Cameroon. His research focuses on the integration of satellite-geodetic data for understanding water cycle processes in West Africa. In 2024, he joined Prof. Jürgen Kusche's group at the Institute of Geodesy and Geoinformation, University of Bonn as a Postdoctoral Fellow under the SDG Fellowship Programme. Before completing his research stay, he secured funding together with Dr. Makan Karegar (a member of DETECT sub-project B01) for the project "**Cameroon Advanced Measurements for Enhanced Observations of Water Levels using Affordable GNSS-IR and Sentinel-3 & 6 Technology (CAMEO-WAGST)**", under the **EO Africa Research and Development Facility**, supported by the **European Space Agency (ESA)**. He is currently involved in this project, which aims to advance coastal and inland water monitoring through the combined use of GNSS-IR and satellite altimetry.

Dr.-Ing. Loudi Yap
source: Loudi Yap

DETECT remains open to expanding collaboration across the region. In addition to the partners featured here, DETECT collaborates with more partners such as **Prof. Alex Barimah Owusu**, Department of Geography and Resource Development, University of Ghana, Ghana, and **Dr. Cheikh Faye**, a lecturer in the Department of Geography at Université Assane Seck de Ziguinchor, Sénégal, among others. These collaborations and contributions will play an important role in advancing research activities across the region.

The partners have also shared insightful views on what they see as the key benefits and challenges of this collaboration.

Prof. Amekudzi provides his perspective on the collaboration: "My motivation is really about contributing to a global research effort while strengthening local capacity. I see this partnership as a way to combine advanced observation techniques with on-the-ground experience to better understand and manage climate and land use challenges. Additionally, one main challenge will be aligning research methods and data collection between Ghana and the DETECT framework, since our environmental and land use conditions differ. Ensuring consistency in soil moisture and land cover data will take good coordination".

Dr. Essien outlines some gaps: "Key challenges include limited access to high-quality environmental datasets, insufficient local modeling tools, and the need for sustained capacity building for national institutions. DETECT can help bridge these gaps by supporting interoperable data systems, cross-country learning, and long-term research collaboration".

Prof. Kenea points to the technical dimension of the collaboration: "We will harmonize diverse data sources by integrating high-resolution, remotely-sensed data from DETECT with our local ground-truth measurements. The challenge is ensuring dataset compatibility, filling spatial and temporal gaps, and developing robust methodologies. Coordinating timelines, work styles, and cross-time-zone communication requires mindfulness, so regular virtual meetings and a shared project management platform will be essential".

Prof. Logah explains his motivation and potential benefits: "DETECT investigates an important aspect of climate science to enhance our understanding of anthropogenic forcing on the water cycle. This is an important aspect that motivates me to partner CRC DETECT in extending its frontiers to Africa. This collaboration will undoubtedly deepen our understanding of the link between the land surface and climate change through provision of additional regional data set from Africa into the regional modelling efforts of DETECT in Europe".

Dr. Sarr highlights some of the key benefits: "There are many advantages. It will begin with the establishment of a scientific bridge for knowledge mobility between African and European Research institutes. Discussions on a win-win partnership between the DETECT initiative and the CSE have begun to gain momentum on issues such as climate, land use, technology transfer, etc. Human resource capacity building will also be one of the priorities of this collaboration on complex issues".

Dr. Yap points out some of the challenges: "One of the main challenges is ensuring continuous data collection and infrastructure maintenance in regions where logistical and technical constraints can be significant. Sustaining long-term observations requires stable funding, reliable power and communication networks, and trained local personnel. Another challenge is to maintain close scientific coordination across countries and disciplines from geodesy to climate science while keeping our research objectives coherent. However, these challenges also represent opportunities to strengthen collaboration frameworks and promote more sustainable, locally driven research capacity within DETECT".

These reflections underline the importance of partnership and the shared commitment to advancing research and capacity building in the region. Through this collaboration, we look forward to exchange knowledge, tackle challenges, and achieve mutual benefits & goals.

Climate Stress Reduces Efficiency on Crop Farms

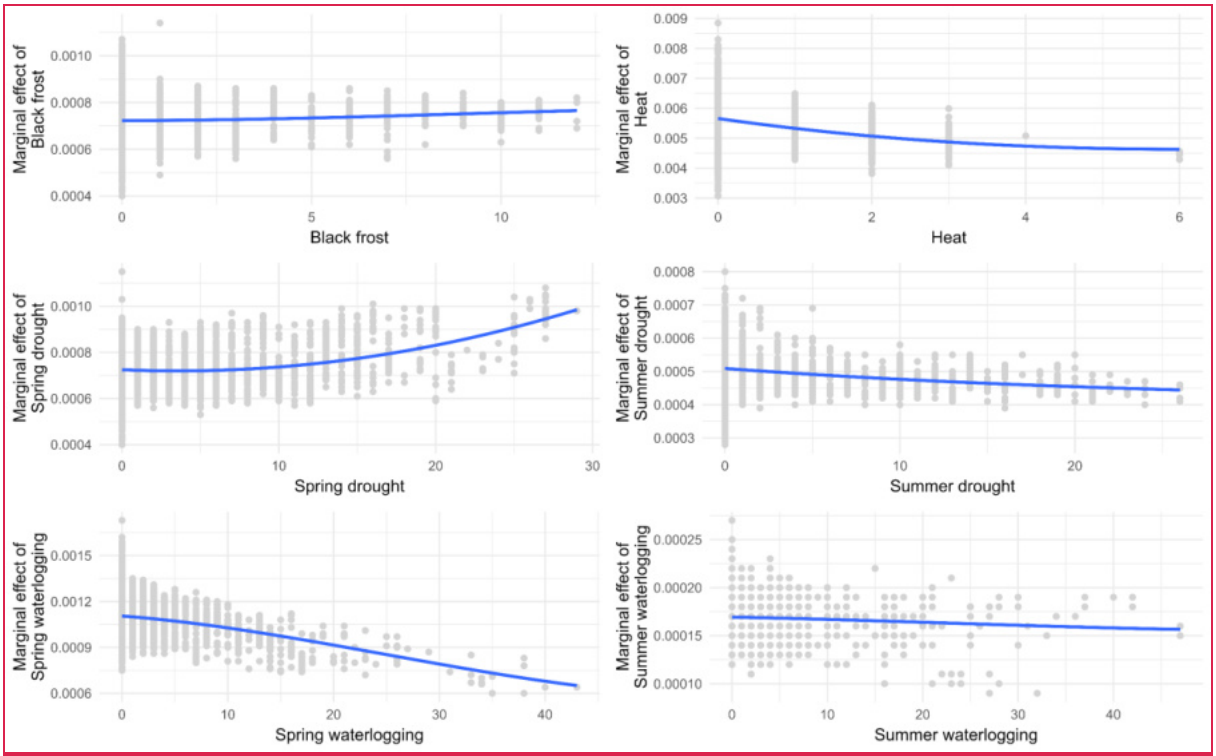
Researchers at the University of Göttingen analyze the relationship of weather extremes and agricultural productivity

by Moritz Hartig, Silke Hüttel, Stefan Seifert

How strongly do heatwaves, droughts, or waterlogging affect the economic performance of farms? A research team at the University of Göttingen has investigated how climate extremes influence the efficiency of specialized crop farms in Germany. They analyzed data from more than 1,200 farms collected in the EU's Farm Accountancy Data Network (FADN) between 2004 and 2020.

Their results show that even a single day of extreme weather can cause substantial losses — ranging from 0.15 to 26 euros per hectare. Heat events have the most severe effects. The study has been published in the journal European Review of Agricultural Economics.

For their analysis, Moritz Hartig, Silke Hüttel and Stefan Seifert from the Department of Agricultural Economics and Rural Development utilized a model that captures the relationship of climate extremes and farm efficiency. It distinguishes between short-term and long-term inefficiency and separates these from farm-specific factors such as location or management decisions. The model also accounts for changes in agricultural policy, such as reforms of the European Union's Common Agricultural Policy (CAP). To identify the key weather-related factors, the team used machine learning techniques. "Our findings show that efficiency losses are particularly high during extreme heat days, with average losses of almost 17 euros per hectare," explains lead author Moritz Hartig. Water-related extremes, such as waterlogging, appear to have smaller impacts.



Scatter plots of marginal effects of a determinant of inefficiency on transient technical efficiency. Fitted line represents a locally estimated scatter plot smoothing curve.

source: Moritz Hartig

The study demonstrates that farm efficiency can be systematically underestimated if climatic conditions are not considered. “Farmers respond to weather extremes by adjusting crop choices or input use. Ignoring these reactions may bias efficiency assessments and, as a result, policy decisions,” says Hartig. To effectively support climate adaptation, agricultural policies should therefore pay closer attention to the regional occurrence of extreme events.

Original publication:

Hartig, M., Hüttel, S. & Seifert, S. (2025):
Crop farm efficiency and climate extremes in Germany. European Review of Agricultural Economics.
DOI: 10.1093/erae/jbaf047

European Commission’s 2025 EU Agricultural Outlook Autumn Workshop in Brussels, Belgium, October 2025

by Theresa Goebel

Every year, the European Commission’s (EC) Directorate-General for Agriculture and Rural Development (DG AGRI), together with the EC’s Joint Research Centre, publishes the EU Agricultural Outlook report. This publication provides medium-term projections for key EU agricultural markets and offers a forward-looking assessment of expected developments in production, consumption, trade, prices, and key environmental indicators.

The projections draw on the Aglink-Cosimo partial equilibrium model and are based on data available until mid-September of the respective year, assumptions on the most plausible macroeconomic trends, and the continuation of current policies. As such, the EU Agricultural Outlook report serves as an important analytical baseline for future policy debates and strategic discussions within the EU agricultural sector.

To ensure the robustness of the projections, the EC conducts an Agricultural Outlook Autumn Workshop each year. This workshop brings together experts, stakeholders, and representatives from across the EU food value chain. Their role is to review the preliminary projections, provide feedback, and contribute to improving the analytical foundation of the final report. This external review is a key component of the outlook process, helping to strengthen transparency, credibility, and practical relevance of the results.

DETECT’s sub-project D01 has presented its land use and land cover projections at various scientific conferences. This visibility led to an invitation to participate in the Agricultural Outlook Autumn Workshop and to contribute to discussions related to land use and land cover developments in the EU. The invitation offered a valuable opportunity to engage with ongoing analytical work at the European level and to better understand the perspectives and information needs of policy analysts and stakeholders. We would like to express our sincere thanks for the stimulating exchange and the insightful discussions. We look forward to continuing the dialogue on this important topic in the future.

How reservoirs breathe: what we are learning about greenhouse gas fluxes from the Rur reservoir

by Nabeeb A. A. Iddris and Ana Meijide

Figure 1: Floating chamber on the Rur Reservoir

source: Najeeb A.A. Iddris

Reservoirs play a vital role in drinking water supply, irrigation, recreation, and hydropower generation. Although hydropower is considered as a clean and renewable energy source, reservoirs can be a relevant source of greenhouse gases (GHG), i.e., carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Greenhouse gas emissions from reservoirs remain poorly quantified and data from Germany is limited and often lacking information on the temporal variability of the fluxes.

What we have been doing

As part of our DETECT-related research, we are investigating CO_2 and CH_4 emissions from the Rur Reservoir near the Schwammenauel Dam, in the Düren district of western Germany. The reservoir's agricultural and forested surroundings shape the nutrients and organic matter entering the water, which can influence GHG production.

To understand how emissions vary across space and seasons, in August 2024 we began monitoring CO_2 and CH_4 using floating chambers placed directly on the reservoir surface (**Figure 1**). We classified the reservoir surface into three distinct areas: the shoreline, the area near the dam, and the deepest open-water zone, in order to capture differences in depth, water movement, and environmental influence. This approach helps us identify how GHG emissions vary across different parts of the reservoir. Measurements were taken weekly from spring to autumn and every two weeks in winter.

What we have found so far

Our preliminary results show that the reservoir "breathes" differently throughout the year:

CO_2 switched from sink to source: In spring and summer, the Rur Reservoir absorbed CO_2 from the atmosphere, while positive fluxes (emissions) were measured during the autumn and winter (**Figure 2**).

CH_4 emitted year-round: Unlike CO_2, CH_4 was consistently released in all seasons, with high fluxes being measured during the summer and

autumn and lower fluxes during the winter and spring (**Figure 2**). The highest CH_4 emissions occurred in the open-water zone, indicating that deeper central areas may be particularly active CH_4 producers.

Temperature strongly shaped emissions: Changes in the fluxes were associated with changes in water temperature, underlining how sensitive reservoirs are to s easonality, as well as to warming and cooling.

Why this matters

These findings show that reservoirs are dynamic systems where CO_2 and CH_4 emissions vary seasonally and across different parts of the water body. Winter measurements, which are not measured in many existing studies, are especially important as they capture low-emission periods that help to avoid overestimating annual budgets. Understanding this full seasonal cycle is essential for accurately estimating the climatic impact of freshwater systems and for improving regional carbon budgets.

As our monitoring continues through 2026, we plan to assess the full global warming potential of the reservoir by including measurements N_2O, which is not only a potent GHG but also contributes to ozone depletion.

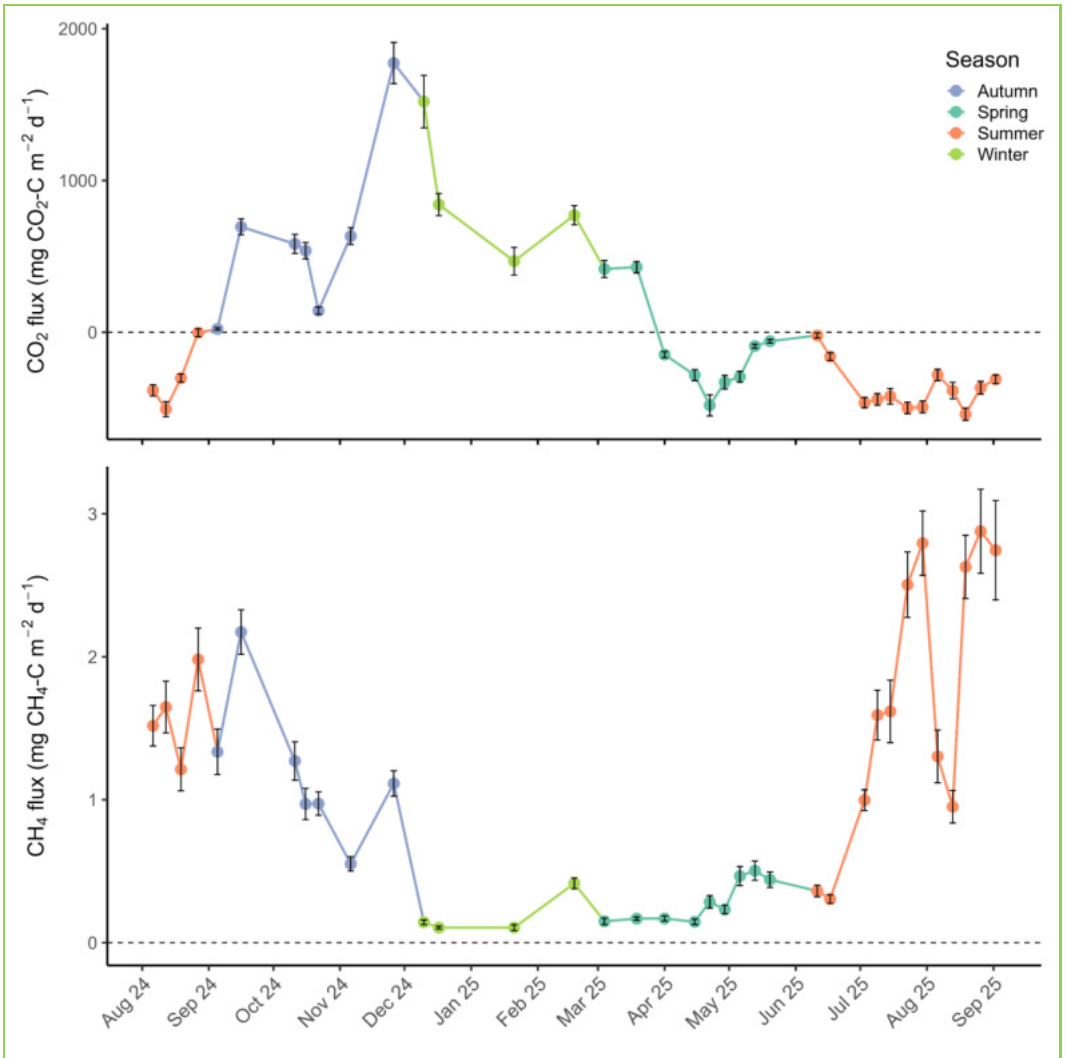


Figure 2: CO_2 and CH_4 fluxes in the Rur Reservoir

source: Najeeb A.A. Iddris

DETECTapple

by Anne Springer und Alicia Daubenspeck

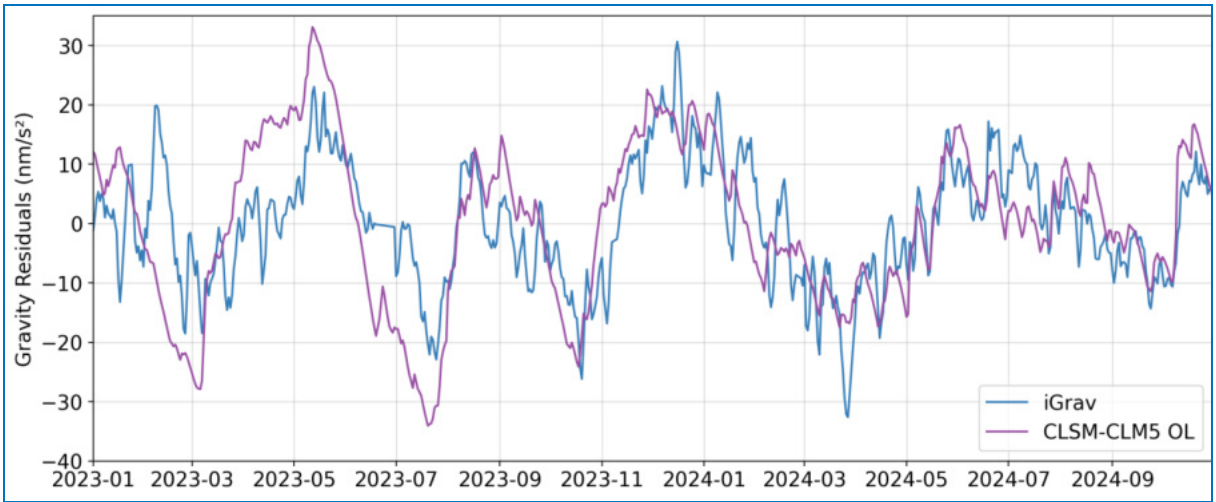


Figure 1: Gravity variations measured by iGrav043 and simulated by CLM5. The global part of the signal outside of Europe was obtained from the Catchment Land Surface Model (CLSM). Common corrections were applied to the iGrav measurements and a polynomial was subtracted to account for instrumental drift.

source: CRC 1502 DETECT

The iGrav043 gravimeter

source: CRC 1502 DETECT

No, this is not about this year's record-breaking apple harvest. This is about a rather special apple: **Newton's apple** — and its high-tech descendant, the **iGrav043**.

The iGrav043 is a **superconducting gravimeter** that resides in **Todenfeld near Bonn**, at a site with an appealing viewpoint!

This instrument measures **tiny changes in gravity** — so sensitive that it can detect trees taking up water through their roots. (Yes, it feels thirsty roots!) The principle behind it is based on levitating a superconducting sphere in a magnetic field, so that even extremely small mass changes can be observed as a shift in gravity.

In her Bachelor thesis, our DETECT-C01 student assistant **Alicia Daubenspeck** evaluated a two-year time series from iGrav043 against terrestrial water storage changes from **eCLM model output** produced within DETECT. To our big surprise, the iGrav data captured a large portion of the signal modeled by eCLM (see Figure 1).

Why surprised? Well, just like Newton's head was most sensitive to the apple directly above it, the iGrav is most sensitive to what happens within a few hundred meters. Yet, the **model's**

simulated water storage changes in the grid cells around the site are consistent with the **actual mass changes** affecting local gravity. This also shows that our CLM5 model does a solid job of capturing **regional-scale water storage dynamics**.

And what about adding a little extra flavor? We tried **assimilating GRACE-FO observations into eCLM** to see if the match could improve. Unfortunately, that apple fell a bit farther from the tree — the fit did not get better.

But hey — science would be boring if everything fit perfectly on the first branch! While there are more than 70 million apple trees in Germany, we have less than a dozen iGravs in Germany — each one a rare fruit of precision. In a next step, we will extend our investigations to these other sites. Be sure, we keep you updated.

source: CRC 1502 DETECT

New research outcomes from CRC1502 – Project D01

by Theresa Goebel and Wolfgang Britz

D01's research anticipates future land use and land cover (LULC) trajectories through 2050 – key to global sustainability and climate action – under a broad range of socio-economic scenarios defined by the narratives of the Shared Socio-Economic Pathways (SSPs). This exciting work is now featured in two new publications:

The research article **"Global land use and land cover projections under the shared socio-economic pathways: An integrated computable general equilibrium analysis with sub-national resolution for Europe"** published in Global Environmental Change Advances, presents D01's new set of globally consistent LULC projections and introduces a novel methodological approach.

This approach generates LULC projections using an integrated Computable General Equilibrium (CGE) analysis based on the modelling platform **CGEBox**, its recursive-dynamic component **G-RDEM**, and dedicated LULC and energy accounting features. The framework comprehensively implements the SSPs, allows simulations with high regional and sectoral resolution, and directly incorporates drivers of structural change. The article also compares key global findings with existing projections from Integrated Assessment Models.

The research article is accompanied by the data article "**NUTS2 level dataset on land use and land cover projections for Europe under the shared socio-economic pathways through 2050**" published in Data in Brief. This companion publication makes the detailed LULC projections covering eight land cover categories and 35 land uses publicly available and focuses on the generation of the data, which enables high regional and sectoral specificity.

D01's research offers valuable insights into the complex interactions between socio-economic drivers and land system dynamics. The new projections are particularly valuable for economically grounded policy assessments of LULC change and its implications – especially where timely updates, distributional effects, or regional and land use details are essential.

Link to the research article: https://doi.org/10.1016/j.gecadv.2025.100027
Link to the data article: https://doi.org/10.1016/j.dib.2025.112268

28th Annual Conference on Global Economic Analysis in Kigali, Rwanda, June 2025

by Theresa Goebel

The 28th Annual Conference on Global Economic Analysis took place in Kigali, Rwanda, from June 25–27, 2025, bringing together researchers, policymakers, and international organizations to discuss pressing global challenges. Organized by the Global Trade Analysis Project (GTAP) Centre, based at Purdue University, the conference is the leading forum for applied economic research using Computable General Equilibrium models and the widely used GTAP Data Base. Each year, it provides a platform for knowledge exchange on trade, (economic) development, climate change, resource use, and related topics.

This year's theme - "Accelerating Economic Transformation, Resilience, Diversification, and Job Creation" - highlighted Africa's growing importance in the global economy. Plenary speakers offered thought-provoking insights: African Development Bank Group President Dr. Akinwumi Ayodeji Adesina examined shifting global dynamics and Africa's growth prospects; Dr. Andrew Mold from the United Nations Economic Commission for Africa discussed the role of intra-regional trade in boosting food security in Eastern Africa; and Dr. Mustafa Babiker, IPCC lead author and consultant at Saudi Aramco, reflected on the implications of low-carbon transitions for Africa's fossil fuel industries.

Nearly 200 participants from around the world presented their research in parallel sessions. In the session "Land Use and Climate Policies", I presented my work titled "Detailed Global Land Use and Land Cover Projections under the Shared Socio-Economic Pathways: An Integrated Computable General Equilibrium Analysis with Sub-National Resolution for Europe". At the core of DETECT's sub-project D01 "*Scenario Development*," this work introduces a new methodological approach to quantify land use and land cover under different socio-economic scenarios. Unlike previous approaches, it relies on a stand-alone economic model, enabling higher regional and sectoral detail.

GTAP™

Global Trade Analysis Project

source: GTAP Presskit

Beyond fruitful technical discussions, the GTAP conference also provided valuable perspectives for extending this work to West Africa in the second phase of DETECT—highlighting both opportunities and challenges for applying these methods in a new regional context.

GTAP conference site

source: Theresa Goebel

3rd International OZCAR-TERENO Conference 2025

by Daniel Schulz

The 3rd OZCAR-TERENO Conference, organised by the French network OZCAR and the German network TERENO, took place from 29 September to 2 October 2025 at FIAP Jean Monnet in Paris. Like the conferences in Strasbourg in 2021 and Bonn in 2023, this one was also a great success: almost 260 participants attended in person and around 20 participated online from over 30 countries, almost half of whom were doctoral students and postdocs.

The scientific programme comprised 15 sessions on topics such as hydrology, geophysics, soil science, geochemistry, ecology and socio-ecology. It demonstrated how interdisciplinary approaches help to better understand the functioning of the critical zone in the Anthropocene. Keynote lectures, oral presentations and poster sessions were very well received.

The evening icebreaker provided an opportunity for exchange. Jeff Munroe (Middlebury College, USA) presented the Critical Zone Network of Networks initiative, in which OZCAR and TERENO are involved.

We would like to express our sincere thanks to everyone who contributed to the success of the conference – in particular the scientific committee, the session chairs, speakers, organisers and institutional and industrial partners.

Further information:
https://ozcartereno2025.sciencesconf.org/

See you in Berlin in 2028 for the next TERENO-OZCAR conference!

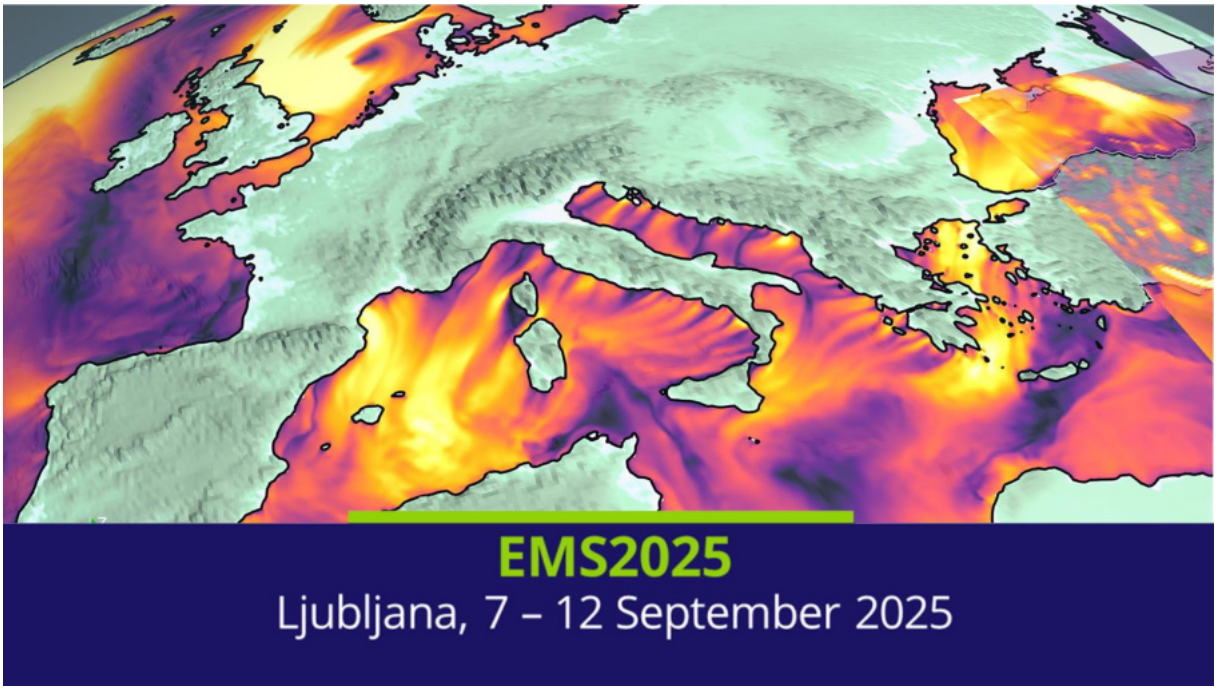
A warm welcome to our participants.

source: Daniel Schulz

Participation in EMS2025

Ljubljana, Slovenia

by Paul Rigor



Last September, I participated in the European Meteorological Society (EMS) Annual Meeting held in Ljubljana, Slovenia, where I gave an oral presentation: "Decadal convection-permitting irrigation impacts across the European Continent". My presentation was part of the session "Exploring the interfaces between meteorology and hydrology" and focused on how irrigation influences surface variables such as soil moisture, energy fluxes, and temperature in the long term.

The presentation generated interest and engaging discussions with other researchers and modelers attending the session. Some participants were particularly interested in the potential of integrating data assimilation techniques into the irrigation simulations to better constrain soil moisture and irrigation-related processes. Moreover, there was also interest in the scalability of my modeling framework, given that irrigation plays a crucial role in many semi-arid and agricultural regions worldwide, where the land-atmosphere coupling is strong. Therefore, there were suggestions to transition from the European domain to global applications.

Overall, my participation in EMS2025 was an excellent opportunity to exchange ideas and receive valuable feedback. I was glad to see that many researchers are increasingly aware of the importance of soil moisture as a variable that influences the weather and climate. This recognition was evident not only in my own session but also throughout other presentations, posters and discussions during the conference. So, in general, I feel encouraged to conduct a research that addresses both the role of soil moisture and the anthropogenic effects of irrigation within Earth system modeling, contributing to a better understanding of the interactions between the human, land, and atmosphere.

source: European Meteorological Society

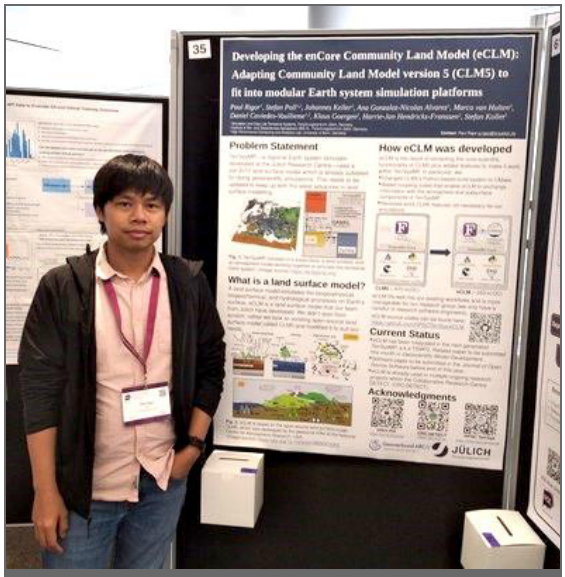
UK RSECon'25

General impressions of the conference

by Paul Rigor

I became aware of UK RSECon'25 through the JuRSE travel grant. As a programmer who spends most of my waking hours in front of a computer, traveling to a conference to present some Franken software I've hacked sounded like a foreign idea to me. Those were my sentiments last spring. Fast-forward to September and I found myself presenting at a poster lightning talk. At that moment I reaffirmed that many experiences in life may be terrible in the imagination but are not bad and could even be surprisingly pleasant in reality.

The conference atmosphere was congenial and stimulating. One is surrounded by like-minded peers: developers and academics (not necessarily mutually exclusive) from various research fields united by a common interest in learning and sharing experiences about research software. One day before the conference I joined a Fortran workshop colocated at the conference venue. One of the host's remarks stood out to me: "The Fortran community is invisible to itself". It was energizing to meet and connect with the people involved in the small but highly active UK Fortran community.



Paul Rigor at the poster session

source: CRC 1502 DETECT

Amanda Brock gave the opening keynote talk "The Rise of Open Source in Research". Amanda is a lawyer by trade; given that I'd expect that she could offer a comprehensive, legal definition of "open source". However, the messy reality reveals that open source is still grounded on shifting sands. As somebody who aligns with open-source principles, there are plenty of insights to be learned about the legalities of open source. I'm grateful that there are people like Amanda who work on the political forefront to preserve the open-source ethos.

UK RSECon'25

source: Paul Rigor

I presented a poster about eCLM# —a computational software developed in IBG-3. I entertained a handful of interested people, and I found it rewarding to discuss our group's work and share some of my experiences that went into its software development. RSECon is indeed an ideal setting to showcase the development that goes behind research software.

Paul Rigor explaining eCLM#

source: CRC 1502 DETECT

The conference dinner was quite interesting. Attendees could choose to sit on any table labeled with a topic that was perhaps interesting to them. There were more than 10 topics; to name a few there's "board games", "movies", "Fortran", and "career development".

Almost all tables were full when I arrived and thus I picked a sparsely-populated table that happened to be labeled "Explore Warwick". Note that the dinner tables were round and could seat 10-12 people. Only four people (me included) seemed to be interested in "Exploring Warwick". I had a good chat with my tablemates throughout the evening and found out that nobody is really that interested in "Exploring Warwick". After being served a nice full-course English meal, Matt Parker, who hosts the Stand-up Maths YouTube channel took the stage and gave us some laughs. He talked about crazy custom board games he made, his terrible Python coding skills, and the crowd-sourced maths breakthrough related to knot folding (we were told to be silent about it). It was the ideal way to end the first day of the conference.

On each conference day there were 5 tracks running in parallel. I attended the Geosciences track and the HPC track. Without going into much detail, it's interesting to note the similarities and the differences of the UK research groups to their German counterparts. I also attended a workshop about accessibility testing just for fun. We were asked to debug a web browser accessibility problem which I found infuriating and satisfying at the same time.

Overall RSECon'25 was super fun. I recommend it to anybody who works with research software. I'm hoping to join again next year!

41st AMS International Conference on Radar Meteorology 25-29 August 2025, Toronto, Canada

by Julian Giles and Silke Trömel

The 41st International Conference on Radar Meteorology organized by the American Meteorological Society's Committee on Radar Meteorology took place in the city of Toronto, Canada, during the last week of August. The conference included several sessions with poster and oral presentations from diverse topics including microphysical studies and severe weather events monitored with radar, advancements in radar technology, as well as the use of radar for numerical weather prediction and artificial intelligence in radar meteorology.

Silke Trömel (PI of project A04) served in preparation of the conference as chair of the topical committee on the "Use of Radar Data for Numerical Weather Prediction and Analysis". Both, Silke and Julian Giles (PostDoct Researcher of project A04) actively participated in the conference, attended numerous talks on new research avenues, exchanged with international colleagues, and acted as chairs of the sessions "Use of Radar Data for Numerical Weather Prediction and Analysis" part I and II, respectively.

In addition, Julian gave a talk on the progress made in the A04 project entitled “Bridging Observations and Simulations: Microphysical Insights into Stratiform Precipitation in Germany and Türkiye” in the session "Microphysical Studies with Radar II". The presentation statistically compared radar quantities of stratiform precipitation events between a large database of radar sites in Germany and Türkiye and evaluated the results of new convection-permitting simulations with the ICON model using the Terrestrial Systems Modeling Platform v2 (TSMP2) and the forward operator EMVORADO. The presentation focused on microphysical processes associated with the precipitation events and how closely the model can reproduce the observed characteristics.

Julian Giles presenting

source: CRC 1502 DETECT

"Healthy soils for climate change mitigation" Conference of the German Soil Science Society (DBG) 13th to 18th of September 2025 in Tübingen, Germany

General impressions of the conference

by Heike Schimmel and Dymphie Burger

Every two years, soil scientists and professionals working in the field of soil science in Germany meet at the conference of the German Soil Science Society. This year, the conference was in Tübingen, and the theme of the conference was "healthy soils for climate change mitigation". Soils provide more than 90% of our food and fiber, contain a quarter of the biodiversity on earth, filter our drinking water and contribute to regulation of the climate, they should therefore get our attention, to make sure soils are "healthy" and can provide us all these services. The sessions at the conference had a wide range in topics, for example plastic in soils, soil protection on construction sites, soil biodiversity, archeology, water transport in soils, and new laboratory methods.

The DBG conference always offers a variety of excursions to deepen soil science knowledge and learn about new perspectives in soil science, an offer that is well received. This year it was particularly important as there is a new soil classification system, which we were introduced to on the excursion. We opted for a two-day excursion through the Black Forest where we looked at a total of nine soil profiles, including Podzols, Stagnosols and a raised bog, but also gained an insight into the nature conservation work of the Black Forest National Park. The excursion was very valuable for us to see soils from mountainous regions, which are not found here in the Rhineland, and to become more familiar with the new classification system so that we can pass this knowledge on to students in the future (**Figure 1**).

Figure 1: Podzol-Stagnosol with iron pan and organic surface layer in the Black Forest

source: Heike Schimmel

Figure 2: Heike Schimmel (C03) presenting her work on carbon stability after peatland restoration

source: Dymphie Burger

The institute of soil science in Bonn attends this conference every two years with a large delegation, including DETECT members Heike Schimmel (C03), Dymphie Burger (A01), Farnaz Sharghi (A01), Sara Bauke (A01 and C03), and Wulf Amelung (A01 and C03). On the first day, Sara Bauke had a presentation in the first session of the conference on microbial phosphorus cycling in forest and agricultural soils and Farnaz

Figure 3: Dymphie Burger (A01) presenting the newly developed pedotransfer function.
source: Heike Schimmel

Sharghi presented her poster on soil water infiltration variability, which is based on her paper that is now published in Geoderma. On Tuesday, it was Heike Schimmel's turn to present her work on carbon stability after peatland restoration which is also published in Geoderma (**Figure 2**). Dymphie Burger's presentation was on Wednesday where she presented her newly developed pedotransfer function for saturated hydraulic conductivity using soil structure (**Figure 3**).

Aside from presentations and excursions, the DBG conference also has a program for early career scientists and young professionals in soil science, with discussions on the use of AI in soil science, career opportunities in soil science, a discussion round with the editors of three well known journals in soil science (Journal of Plant Nutrition and Soil Science, Nutrient Cycling in Agroecosystems, and SOIL), as well as inclusivity and diversity science. For both of us, the networking at this conference was fruitful, as we could exchange ideas and interact on topics such as hood infiltration measurements, CT scanning, and soil respiration measurements. One of the further highlights was the biyearly soil cake contest at the networking evening, where participants bake a cake that represents a soil, this year's cake contest was won by Sascha Scherer, who baked an impressive podzol cake (**Figure 4**).

Figure 4: Winner cake at the Soil Cake Contest, made by Sascha Scherer, baking a Podzol.
source: Heike Schimmel

Link to the publication of Heike Schimmel: https://doi.org/10.1016/j.geoderma.2025.117550

Link to the publication of Farnaz Sharghi: https://doi.org/10.1016/j.geoderma.2025.117391

International Geoscience and Remote Sensing Symposium (IGARSS) 2025 in Brisbane, Australia

by Visakh Sivaprasad and Carsten Montzka

We are thrilled to announce that Visakh Sivaprasad, PhD Student with the Forschungszentrum Jülich (Institute of Bio- and Geosciences: Agrosphere, IBG-3) and member of the C01 subproject, recently presented his research at the International Geoscience and Remote Sensing Symposium (IGARSS) 2025 in Brisbane, Australia. As the flagship conference of the IEEE Geoscience and Remote Sensing Society, IGARSS 2025 promoted collaborative global solutions using remote sensing technology under the theme "One Earth".

The oral presentation, titled "**Evaluating the Role of Preprocessing in AMSR-E/2 Soil Moisture Data Assimilation**," unveiled an innovative approach to transform inconsistent satellite data into a seamless, continental-scale soil moisture dataset. This work is a crucial step towards developing a 21-year (2003-2023), high-resolution European soil moisture reanalysis.

The research addressed the critical need for a continuous, continental-scale soil moisture dataset for Europe by demonstrating that AI-enhanced preprocessing of satellite observations is able to improve land surface modeling.

Key methodological innovations included:

Gap Filling: Utilizing a hybrid Conv-LSTM2D and Conv2D Neural Network to fill spatial and temporal gaps in the AMSR-E/2 data, successfully achieving 100% daily coverage.

Bias Correction: Applying Quantile Delta Mapping (QDM), based on SMAP observations, to perform trend-preserving bias correction.

Recently, the enhanced satellite data was assimilated into the 12 km resolution land surface model (eCLM-PDAF) using a 50-ensemble LESTKF (Local Error Subspace Transform Kalman Filter) data assimilation framework. The assimilation findings confirm that the resulting enhanced dataset leads to substantial improvements in model accuracy (improvement in RMSE and R as compared to the Open Loop simulation). This dataset is crucial for understanding hydrological extremes, analysing trends, and assessing anthropogenic activities.

Presenting at IGARSS

source: Visakh Sivaprasad

We are especially proud that part of the work on the AI component has been recognized and published:

Sivaprasad, V., et al. (2025) Development of Continuous AMSR-E/2 Soil Moisture Time Series by Hybrid Deep Learning Model (ConvLSTM2D and Conv2D) and Transfer Learning for Reanalyses. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*.

GNSS-Interferometric Reflectometry

by Makan Karegar

Makan Karegar led a short course on GNSS-Interferometric Reflectometry (GNSS-IR) from July 27 to August 2, 2025 at the College of Engineering, University of the Philippines. Over five days, undergraduate and graduate participants explored how to use GNSS-IR for water-level monitoring, progressing from foundational concepts to hands-on data processing and fieldwork.

Sea level time-series plot on the screen showing a clear spike (in the background). That spike was recorded by a GNSS-IR site on the Philippine coast and corresponds to the tsunami waves from the Mw 8.8 Kamchatka earthquake captured right as the course was wrapping up.

source: Makan Karegar

On the final day, a GNSS-IR site recently installed by Dr. Rosalie Reyes captured tsunami waves from the Mw 8.8 Kamchatka earthquake just as the course was concluding. The spike visible in the background of the group photo provided a powerful real-world demonstration of how GNSS-IR can detect coastal disturbances from thousands of kilometers away.

The course highlighted how GNSS-IR and sensors such as the Raspberry Pi Reflector developed by Karegar within the Detect project is rapidly becoming a valuable tool for sea level hazard monitoring and early-warning systems in vulnerable coastal regions such as the Philippines.

DE-I-TECT

DE-I-TECT 2025 „Luncheon Series – Impulses on Unconscious Bias

„We all have unconscious biases. The key issue is how we deal with them."

by Dorothee Berkle-Müller

DETECT is committed to combating unconscious biases. Seven successful luncheon workshops of 30 minutes each were thus offered on highly relevant key topics throughout the past 6 months.

The last workshop in 2025 will take place on 11 December at 1p.m., the last workshop of the current series on 29 January 2026, also at 1p.m.

Save the dates!

Interest and feedback from our colleagues have proven the importance of this topic and how valuable even short awareness-raising sessions are.

In Phase II, we will continue working on unconscious biases within our DE-I-TECT programme measures.

Thanks to Imke Lode and the DETECT Community for their active interest and participation!

Registration for the remaining sessions is open to all DETECT and other interested colleagues: Register here!

Last but not least:

For our daily awareness-raising, here are the topics we reflected on in the unconscious biases sessions. Stay tuned!

1. „We all have unconscious bias – the key issue is how we deal with them"

Take part in learning how unconscious bias are created and what it takes to prevent them from turning into stereotypes, prejudices and/or discriminating behaviour.

2. "The un/spoken rules of power – un/conscious privileges and discrimination in academia"

How do ideology, institution(alisation), interaction, and internalisation – the 4 "i" of power – in the scientific system interrelate in generating privileges for some, discrimination for others? What can we do to change it?

3. "Did you grow up with debates on politics or social issues at the dinner table?"

The impact of our family background on scientific careers is significant – and largely not on our radar. Discover its effects and how to create equal opportunities.

4. "As scientists, we are all equal – as long as we do not become parents, or identify with one or more dimensions of, e.g. being female, or queer, or having psychological or physical limits in our abilities"

Sexism, anti-queer, anti-parental, ableist, or intersectional discriminating behaviour and comments can be subtle or overt. Become sensitized and empowered to recognise, prevent them, and intervene.

5. "Science is international, of course! Yet, do we have the same expectations regarding collaboration, supervision, or communi–cation?"

Understand our key intercultural imprints, their impact on scientific working relations, and how transcultural bridges can help crossing cultural differences between people.

6. "Racism? In academia? – The long shadows of the intertwined growth of Modern Sciences and Colonialism"

Find out why un-/conscious racism in scientific interaction and research is an issue that concerns us all – today, every day. As an ideology, attitude and practice, institutionalised and personal, all aspects that can be changed.

7. "Yes, you can! How each person in academia can contribute to an anti-bias working culture"

Building an anti-bias, diversity-conscious scientific working environment does not happen overnight. It is a continuous learning process. Gain insights into how DEIB – diversity, equity, inclusion, belonging – become part of your mind and actions for yourself and the people you work with.

Want to find out more?

Contact Silke or Dorothee.

2025 DE-I-TECT Workshop on offer: From Bystander to Upstander

Fostering a culture of respect and equality in the workplace.

by Dorothee Berkle-Müller

On Tuesday, 30 September, the second workshop, **from Bystander to Upstander**, initiated by the DE-I-TECT Team Silke and Dorothee, and conducted by Sabine Mariss, took place on site at University of Bonn.

Content, approach and goals:

Bystanders are those who witness situations where harm, discrimination, or injustice occur.

The workshop participants were provided with both theoretical input to understand what exactly keeps bystanders from standing up in obvious situations of injustice and tools on how to overcome the hurdles and lots of practical experience. Every theoretical section was followed by practical exercises, including body and voice work.

The aim of this workshop was to empower participants to becoming allies instead of bystanders by practicing how to stand up against disrespectful behavior in alignment with creating a respectful and just workplace culture.

Feedback from participants have underlined the importance of providing such workshop offers. DE-I-TECT will include further measures that aim at fostering equality and respect in the workplace also in phase II.

Want to know more?

Contact Silke or Dorothee

#CRC1502 DETECT – Publication List Call

by Zulfikar Nadzir

To keep the scientific output of CRC 1502 DETECT visible and easy to track, we are updating the central list of all DETECT-related publications (journal articles, conference contributions, datasets, software and reports).

We kindly ask all DETECT members to **register their publications** via the online form that is available here and as QR code below.

- enter authors, title and full citation as you would like them to appear,
- specify the relevant DETECT project(s) that is involved,
- add the DOI or permanent URL,
- pick the publication type and status of collaboration,
- add #keywords that is relevant to the publication,
- and submit one entry per publication (no duplicates from co-authors needed).

The collected information will be used for our annual reporting, the DETECT website and our growing social media presence that will be checked once a week. Our LinkedIn page has already reached 100 followers in just two months (10.09–10.11) – your submissions will help us showcase even more of your work there.

If you have questions or corrections, please contact Zulfikar

Tell your DETECT story!

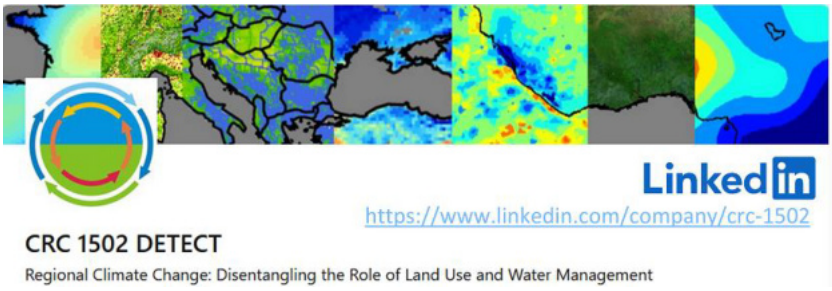
by Zulfikar Nadzir (https://www.linkedin.com/in/zulfikar-adlan-nadzir-46402267/)

The past few months were dedicated to boost DETECT's visibility on their social media channels:

Bluesky: https://bsky.app/profile/crc1502-detect.bsky.social

LinkedIn: https://www.linkedin.com/company/crc-1502

We ask all members who are interacting on these platforms to please follow and engage with us. Even better—contribute content!



How you can contribute

Option A — Post on your own & tag us.

Have a new paper or activity? Share it from your personal account and tag our page. Great examples:

Dr. Farzane Mohseni:
https://www.linkedin.com/feed/update/urn:li:activity:7378445408152211456

Prof. Haunert:
https://www.linkedin.com/feed/update/urn:li:activity:7378444954127351809

Option B — We post it for you.

Send us:

A short description for Bluesky (≤250 characters)
and longer description for LinkedIn (750 - 1000 characters),

Link(s) (DOI, event page, etc.)

1–2 images that best represents the paper (with brief captions/credit)

What to share

New papers, preprints, or datasets,

Conference talks, awards, media/podcasts, seminars, outreach,

Lab/field highlights and project milestones

For inspiration, see other CRC pages and some posts from our account:

https://www.linkedin.com/company/sfb-1625

https://www.linkedin.com/company/crc1678

https://bsky.app/profile/crc1502-detect.bsky.social/post/3m2jdccndmk2j

https://www.linkedin.com/feed/update/urn:li:activity:7384183873871704064

https://sfb1502.de/news-events/news/news-collector-invisible/new-crc1502-publication-in-naturefood-journal

Post	Impressions	Reactions	Repost	Page Visitors	Followers	Datetime
0	0	-	0	0	0	10.09.2025
7	224	-	1	20	13	23.09.2025
18	1,061	-	1	56	29	01.10.2025
19	3,720	-	1	83	45	06.10.2025
23	5,085	-	1	101	51	12.10.2025
26	5,175	97	1	101	51	13.10.2025
42	9,721	180	4	184	102	10.11.2025
47	11,312	201	6	217	134	17.11.2025
47	12,080	207	6	239	141	23.11.2025

Questions or submissions?
Contact Zulfikar Nadzir (nadzir@uni-bonn.de).

Thanks for helping us to tell DETECT's stories.

Tell your DETECT story in manifold ways

Expanding DETECT's visibility beyond Bluesky and LinkedIn

by Dorothee Berkle-Müller

DETECT recently began to boost its outreach activities on Bluesky and LinkedIn. Even though our social-media presence is still new, we have already seen remarkable engagement and positive responses to the scientific content shared there. These platforms will continue to play a key role in how we present our work to broader audiences—but they are only one piece of our communication strategy.

There are several additional ways each of us can help enhance both the visibility of DETECT and our own profiles as researchers within the project. One particularly effective format is short video content.

Our Video Guidelines (**don't forget to log-in to our internal area first before clicking the link**), which have just been updated with further support materials, are available on the internal web area and offer practical advice for producing concise, impactful clips—whether you want to introduce your research focus, highlight recent results, or share impressions from a conference.

Newsletter contributions are another valuable avenue. This issue demonstrates how much these contributions enrich our internal community, featuring numerous conference reports that showcase the diversity and depth of research across DETECT.

We warmly encourage you to contribute to future editions—whether through event highlights, project insights, or reflections on collaborative achievements.

By diversifying the ways we communicate our research, we not only increase the visibility of DETECT but also strengthen our individual presence as part of this vibrant scientific community.

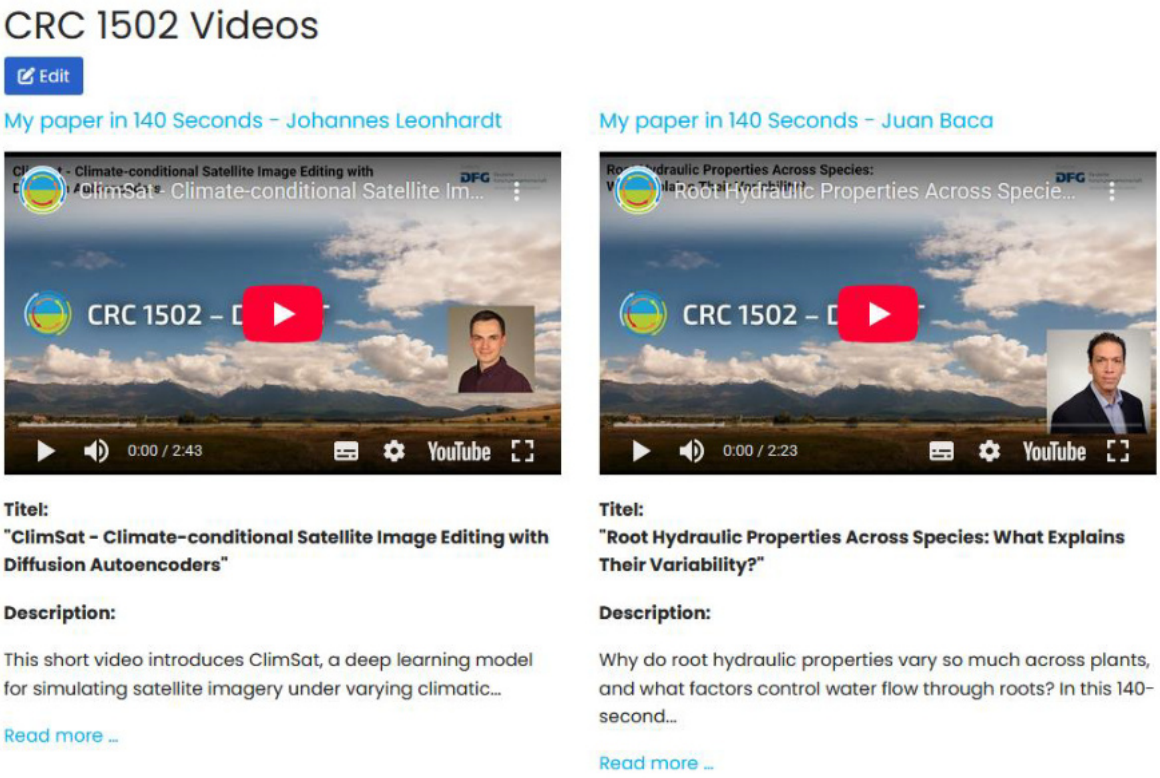
Stay tuned, the Coordination Team looks forward to your contribution!

Your contacts for any questions or comments you may have are:

Zulfikar Nadzir and Dorothee Berkle-Müller

Watch the DETECT videos produced to date…

https://sfb1502.de/resources/videos



…or browse through the DETECT newsletter archive:

https://sfb1502.de/resources/newsletter

Save the dates and get prepared for the defence of DETECT's second phase proposal

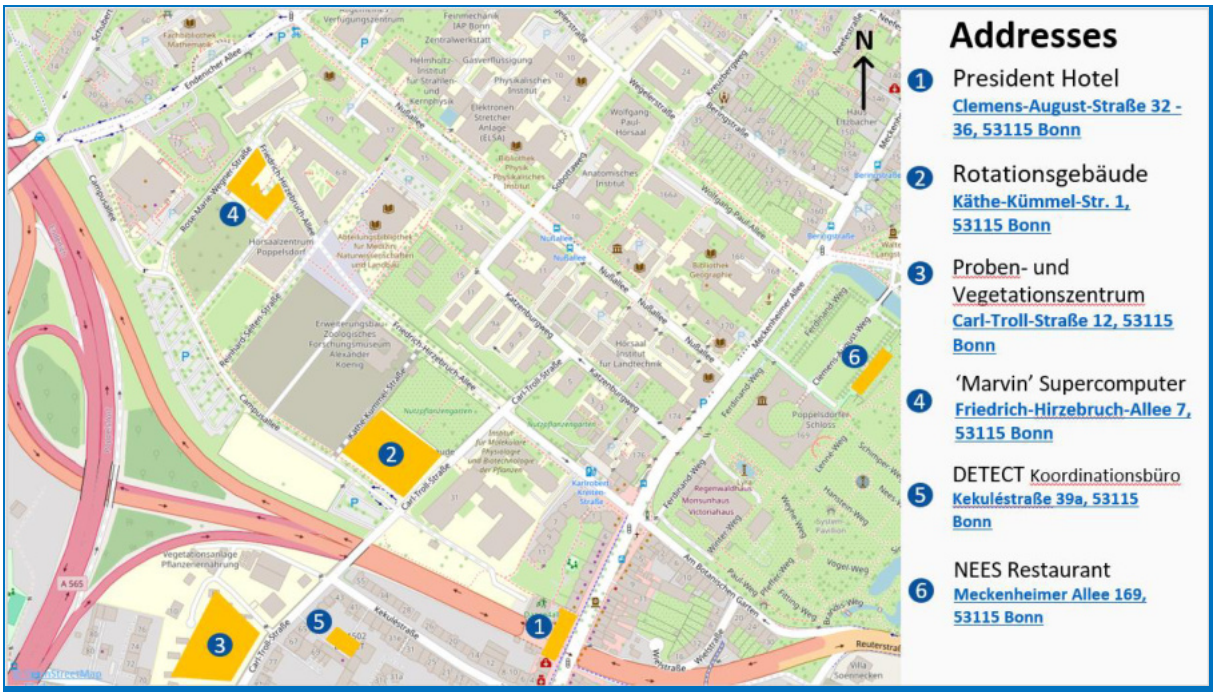
by Dorothee Berkle-Müller

Preparations for the on-site evaluation are underway. Here is a summary of all the key information regarding venues and schedules.

DFG On-site Evaluation – CRC1502 DETECT – Second Phase Proposal

Event	Date	Time	Focus / Goals	Format / Venue
Rehearsal 1	**08. Jan**	**1:00pm - 4:00pm**	**Rehearsal of the presentations**	**Online only** Zoom: confidential
Rehearsal 2	**09. Jan**	**9:00am – 12:00am**	**Rehearsal of the presentations** **Focus on collaboration/chemistry**	**On-site /hybrid** ROT Lecture Hall 0.056 Zoom: confidential
Rehearsal 3	**14. Jan**	**1:00pm - 4:00pm**	**Fine-tuning the presentations**	**Online only** Zoom: confidential
Rehearsal 4	**15. Jan**	**2:00pm - 5:00pm**	**Final rehearsal in the same setting as the DFG-on-site evaluation**	**On-site only**
DFG Evaluation Day 1	**21. Jan**	**11:00am -2:00pm**	**Plenary Session: Presentation of continuation proposal**	**On-site only** ROT Lecture Hall 0.056
DFG Evaluation Day 1	**21. Jan**	**2:00pm - 5:00pm**	**Poster Session – phase II** **In-depth discussions**	**On-site only** Green Hall Proben- und Vegetationszentrum
DFG Evaluation Day 1	**21. Jan**	**Tbc between 2-5pm**	**If requested, online discussion with external reviewer/s**	**ROT Room U 1.059**
DFG Evaluation Day 2	**22. Jan**	**8:00am - 10:00am**	**Opportunity for reviewers to ask questions (projects will be informed in due time)**	**On-site only** ROT, room U 1.059
DFG Evaluation Day 2	**22. Jan**	**9:30/ 10am- 2:30 pm**	**Final Evaluation Session of the reviewers**	**On-site only** ROT Reviewers' room
DFG Evaluation Day 2	**22. Jan**	**2:30pm**	**Feedback on the recommendations of the review panel** **Addressed to University management and Speakers Team**	**On-site only** ROT, room 2.050 (second floor)

Any questions? Dorothee and Frank are happy to assist.



Map of relevant venues for the DFG Evaluation of DETECT's Second Phase Proposal

source: CRC 1502 DETECT

15 – 19 December 2025
New Orleans, Louisiana

AGU annual meeting 2025

Where Science Connects Us

Each year, AGU comes up with a unique theme for the Annual Meeting. It starts as a brainstorm among interested parties, and then our design team takes themes and common threads from that brainstorm, and unites it with visuals that we can translate to graphics and signage for the meeting.

More information here.

16th – 20th March 2026
DWD Headquarters in Offenbach, Germany

ICCARUS 2026

ICCARUS brings together developers and users of the non-hydrostatic COSMO and ICON models, which are used in numerical weather prediction as well as for climate simulations and modeling of air quality and its feedback to the atmosphere.

The Seminar is a forum for COSMO- and ICON groups to exchange information about model development, physics parameterizations, data assimilation, ensemble generation, verification and applications.

More information here.

3 – 8 May 2026
Vienna, Austria & online

EGU General assembly 2026

The European Geosciences Union (EGU) is the leading organization for Earth, planetary and space science research in Europe. With our partner organizations worldwide, we foster fundamental geoscience research, alongside applied research that addresses key societal and environmental challenges. Our vision is to realise a sustainable and just future for humanity and for the planet.

More information here.

6 – 9 July 2026

Pan-GLASS Conference

Pan-GLASS is the GEWEX Global Land-Atmosphere System Studies Panel and will hold its first conference “Back to the Drawing Board: Accelerating Improvements in the Modeling of the Coupled Land-Atmosphere System” from 6-9 July 2026 in Stuttgart, Germany.

This international meeting will bring together modelers, observationalists, and theoreticians working across scales and disciplines to advance understanding and modeling of land-atmosphere interactions. Pan-GLASS 2026 will be primarily an in-person event with limited online participation options.

Registration and abstract submission will open around New Year.

More information here.

9-14 August 2026
Washington, DC

IGARSS

IEEE International Geoscience and Remote Sensing Symposium

The International Geoscience and Remote Sensing Symposium (IGARSS) is the flagship conference of the IEEE Geoscience and Remote Sensing Society (GRSS). On behalf of the Organizing Committee, we are honored to invite you to attend the 46th IGARSS which is to be held in Washington, D.C., the United States of America, on 9-14 August 2026.

The theme of IGARSS 2026 is the Future of Earth Observations. IGARSS 2026 will examine the future Earth observation technologies for solving grand challenges faced by our Earth and society and promote collaborative global solutions using such technologies. IGARSS 2026 will provide an excellent experience for its attendees through strong technical and social programs, and opportunities for collaboration regionally and globally.

More information here.

Recent and Upcoming DETECT Land and Climate Seminars

by Frank Siegismund

The Land and Climate Seminar, featuring presentations by our team members and cooperation partners, is once again reflecting the multifaceted spectrum of our research at DETECT in the current semester.

DETECT Land & Climate Seminar	Mondays at 10:15 (zoom-link)
13 Oct	Shin-Chan Han: **Alternative use of GRACE for examining rapid surface mass change including flood and flash drought**
3 Nov	Alexander Graf: **Reflect sunlight or use it to store carbon?**
24 Nov	Anna Klos: **Water vapor variability and trends from GNSS**
8 Dec	Alex Owusu Bariman: **Biophysical assessment of climate change severity in the upper east region, Ghana**
12 Jan	Bahareh Kamali: **Exploring trade-offs and synergies for sustainable management of grassland ecosystems**

For example, in his presentation ‘Reflect sunlight or use it to store carbon’ on 3 November Alexander Graf addresses how land management affects the earth’s radiation budget in the shortwave region via planetary albedo, and in the longwave region via emission of greenhouse gases. He informs us on a study based on global FLUXNET monitoring data, where it has been examined whether there is a general relationship between carbon uptake and albedo of land cover types and if there are options left to maximize both at the same time.

Online Session with Alexander Graf

source: Frank Siegismund

Feel free to contribute your research results and challenges on DETECT topics to the Land and Climate Seminar! Just get in contact with Frank Siegismund

Activities within DETECT

All-cluster meetings scheduled for 2025:

Please enter in your calendar!

11 Dec

DE-I-TECT unconscious bias lunch series

Please register here.

All-cluster meetings scheduled for 2026:

8 January 2026, 1-4pm

Online Rehearsal 2nd phase DFG Evaluation

9 January 2026, 9-12am

Online Rehearsal 2nd phase DFG Evaluation

14 January 2026, 1-4pm

On site Rehearsal 2nd phase DFG Evaluation

15 January 2026, 2-5pm

On site Rehearsal 2nd phase DFG Evaluation

21-22 January 2026

On site DFG 2nd phase Evaluation

29 January 2026, 1pm

DE-I-TECT unconscious bias lunch series

10-11 June 2026

Retreat at Hotel Vier-Jahreszeiten in Bad Breisig

Publications

Find more publications published on our website:

https://www.sfb1502.de

UNIVERSITÄT HEIDELBERG
ZUKUNFT SEIT 1386

UNIVERSITÄT BONN

GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN IN PUBLICA COMMODA SEIT 1737

JÜLICH Forschungszentrum

Deutscher Wetterdienst
Wetter und Klima aus einer Hand

Impressum

Publisher
Collaborative Research Centre (SFB)
1502 - DETECT

Contact
Collaborative Research Centre (SFB)
1502 – DETECT
Kekuléstr. 39a
53115 Bonn
+49 228 73-60585

dberklem@uni-bonn.de
siegismund@geod.uni-bonn.de

https://www.sfb1502.de

Editors
Dorothee Berkle-Müller
Zulfikar Nadzir
Frank Siegismund

Graphic design and layout
Polywebster

SFB1502 – DETECT is a Collaborative Research Center run by the University of Bonn and participating institutions FZ Jülich, the Universities of Heidelberg and Göttingen, and the DWD, and funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) – SFB 1502/1-2022 - 450058266.