## Successful completion of the project SolaRegio



Collegial workshop with for Saxonian farmers and agricultural advisors from different institutions.
Photo: © L. Egli

After three years the BMFTR-funded project "SolaRegio: community-supported agriculture (CSA) in the context of regional innovation ecosystems" in cooperation with the University of Siegen, the German CSA network, as well as agricultural chambers, authorities and institutions has been finalized.

A nationwide survey revealed that between 5 and 13% of the participating farms are open for a conversion to CSA. A broader adoption of CSA could enhance biodiversity in agricultural landscapes, strengthen economic resilience of small to medium-sized farms, increase the transparency and self-sufficiency of food systems, and promote healthier diets.

In a series of workshops, nine farmers in four different project regions in Germany were accompanied in developing individual conversion pathways for their farm and regional networks with various stakeholders that are able to support farms with CSA conversion were initiated.

Through the project, knowledge-related barriers could be successfully addressed, while resource-related challenges — such as limited time, the lack of potential members, and a shortage of skilled professionals — persisted. To overcome these barriers and unlock the full potential of CSA, coordinated support from various stakeholders and structural adjustments, will be essential.

**Project website:**
https://www.nascent-transformativ.de/projekte/nascent-solaregio/

**Publications:**
https://www.buel.bmel.de/index.php/buel/article/view/531
https://link.springer.com/article/10.1007/s10113-024-02332-2
https://www.oekom.de/_files_media/zeitschriften/artikel/GAIA_2025_01_10.pdf

## Press / Media

**Project film SolaRegio**

This short film, which was created as part of the SolaRegio project, highlights the potential of community-supported agriculture from a wide variety of perspectives. (only in German)



**OPTAIN Video of the German Case Study "Schwarzer Schöps"**

Link to video (in German with English subtitles)



**Farming together, because we reap what we sow!**

When crops are harvested in Germany, many are too large, too soft, or too misshapen. As a result, much of the food never even makes it to our markets. For example, only about 50 percent of the total potato harvest in Germany ends up on consumers' plates. Community-supported agriculture, or CSA for short, aims to change that.

The Helmholtz Centre for for Environmental Research has investigated the potential of SoLaWi to reduce food loss and waste.

→ Link to Report on 3Sat nano as part of the broadcast on March 13, 2025 (start at min. 20:17 / only in German)
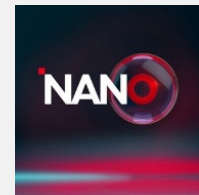


## Imprint

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## Highlights of the BIOECOS group


Photo: © E. Takola

Jannatul Ferdous and Elina Takola participated at the joint Graduate Meeting of the Animal Behaviour Section of the German Zoological Society (DZG) and the Ethological Society (Ethologische Gesellschaft e.V.).

The decimatoR R package is a tool created by former research assistant in our group, Elizaveta Shcherbinina. This package facilitates the homogenization of coordinates from different sources. The software publication is available in Zenodo and GitHub.

Elina Takola has given invited talks at the German Centre for Integrative Biodiversity Research (iDiv), the National and Kapodistrian University of Athens (EKPA), the Hellenic Centre for Marine Research (ELKETHE) and the University of Glasgow.

Johanna Esguerra completed successfully her Master thesis at the University of Applied Sciences of Stuttgart under the title: "Habitat selection of the northern lapwing (*Vanellus vanellus*) during breeding season in Europe". The thesis has evolved into a manuscript, which is currently submitted to a peer-review journal.


J. Esguerra
Photo: © E. Takola

## On mission – CLE goes Down Under!


A. Kaim, N. Bouzidi, M. Volk, C. Wittekind

In November and December, Andrea, Cordula, Irina and Martin travelled to Australia for the MODSIM conference, with Andrea and Irina also spending time on sabbatical.

Andrea spent 3.5 weeks at the University of New South Wales (UNSW) Canberra, visiting Hasan Turan and colleagues working on the integration of robust modelling into spatial (interactive) multi-criteria optimization. She then spent four weeks at the University of Adelaide with Holger Maier's group, where a highlight was a project on allocating prescribed burnings using multi-objective optimisation combined with a bushfire model.

Before and after the MODSIM conference, Irina visited APSIM modelling teams at CSIRO in Brisbane and Canberra. Learning directly from core developers was highly valuable for her PhD work, especially understanding modelling tools, pitfalls and how modelling supports government advisory services in Australia. She appreciated the welcoming modelling community and recommends a research visit there.

In the week before MODSIM, Martin met colleagues at the Australian National University (ANU) and CSIRO to discuss future collaborations in integrated modelling. He also joined a Water Quality Workshop hosted by the ANU Institute for Water Futures, which gathered over 50 experts to explore improved water-quality governance, monitoring, modelling and future preparedness. A perspective paper summarising the workshop outcomes is planned.

Together, Andrea and Martin organised a MODSIM session on "Coupling models for Agricultural transformation and climate change adaptation: Challenges, opportunities, and bestpractices", featuring diverse approaches and fruitful discussions. Andrea presented AgriScape, while Martin and Cordula showcased OPTAIN (project overview and results, modelling workflow). Cordula also presented the ParetoPickR app for interpreting Pareto-based management options, which generated considerable interest.


A. Kaim, C. Wittekind, I. Heiß
Photo: © Andrea Kaim

## PhD graduation



Photo: © Marta Bonato

Martin's PhD student **Diana Derepasko** successfully defended her dissertation entitled "Towards sustainable water management through optimization: Integrating e-flows and supporting adaptive management at Martin-Luther-Universität Halle-Wittenberg on 3rd November 2025. Second supervisor was Nicola Fohrer. Diana worked for three years (2018-2021) at CLE and as a doctoral student in the Marie Sklodowska-Curie ITN EuroFLOW project, which was coordinated by Prof. Lee Brown and his team at the University of Leeds. She took up then a permanent position in an Italian Agency, became a mother, but continued to work on her dissertation. we have great respect for this achievement.
Congratulations, Diana!

## PhD graduation



Photo: © Can Zhang

On 30 November 2025, our former visiting doctoral student **Can Zhang** successfully defended her dissertation entitled 'Identification and adaptive management of important ecological areas on the Tibetan Plateau based on an assessment of ecosystem services'. The defense took place at the School of Public Administration of the China University of Geosciences (Wuhan). Can worked in our department from 2022 to 2024. Not only did she participate in CLE's social activities, she was also very efficient and productive, publishing three outstanding articles, with another article currently being revised. She was supervised by Prof. Martin Volk and Prof. Michael Beckmann. Congratulations, Can!

## OPTAIN Final Meeting in Berlin!



Photo: © Tatenda Lemann



Photo: © Ivana Korn Varga



Photo: © Ivana Korn Varga

At the end of October, we held the final conference of our EU Horizon 2020 project OPTAIN, coordinated by the CLE team (Martin Volk, Felix Witing, Michael Strauch, Cordula Wittekind). Around 50 project partners and 20 invited stakeholders from all 14 case studies across Europe met in Berlin to share results and reflect on five years of close collaboration.

A particular highlight of the event was the field visit to the ZALF patchCROP experimental landscape in Brandenburg, where innovative approaches to sustainable land management were presented. Our sincere thanks go to Kathrin Grahmann (see picture) and the ZALF team for the inspiring and insightful tour.

OPTAIN focused on (i) identifying efficient, easy-to-implement techniques to improve water and nutrient retention in small agricultural catchments across the Boreal, Continental, and Pannonian regions of Europe, and (ii) optimizing the spatial allocation and combination of Natural/Small Water Retention Measures (NSWRM) using environmental and economic sustainability indicators. Over the course of the project, OPTAIN strengthened the connections between researchers, farmers, and policymakers, thereby advancing the implementation of NSWRM across Europe. Good practices were documented, modelled, and analysed in a harmonised way to identify optimal combinations of measures in all catchments.
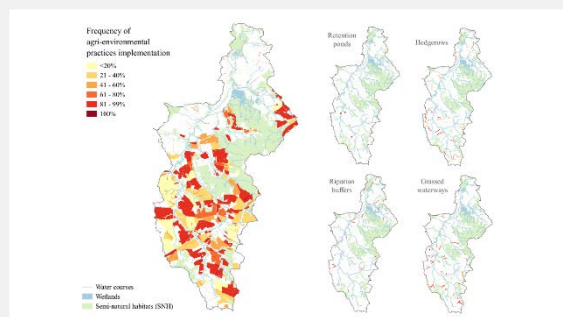
In his closing remarks, project lead Martin Volk emphasized the strong partnership within OPTAIN and the importance of continuing this collaboration beyond the project's end.

**Project website:**
https://www.optain.eu/

## Highlight Publications from 2025

**Bonato, M., Burian, A., Equihua, J.A.**, Cord, A.F., Bartkowski, B., **Strauch, M.** (2025):

**Minimizing trade-offs in agricultural landscapes through optimal spatial allocation of agri-environmental practices**

Using a multi-objective optimization approach in a German catchment, we showed that well-placed agri-environmental practices (AEPs) can substantially improve biodiversity and water quality with only minimal yield losses – and often even enhance production (win-win solutions). We produced maps showing where AEPs are most often implemented across all optimal solutions, highlighting the areas where their implementation most strongly supports win-win outcomes or reduces trade-offs at the landscape scale. These findings challenge prevailing trade-off assumptions and show how careful planning can make agricultural landscapes more sustainable.
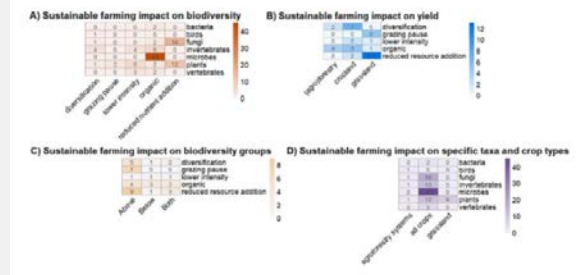
**Takola, E.**, Korell, L., Beckmann, M., Bonfanti, J., Reitz, T., Tamburini, G. (2025):

**Does sustainable agriculture promote biodiversity and yield? A second-order meta-analysis**

Biodiversity conservation and food security are major challenges of modern society. Increasing food production often relies on land-use intensification, a key driver of biodiversity loss. Environmentally friendly practices such as organic farming enhance biodiversity but may reduce yields, whereas diversification can increase both. In this study, we synthesize results from multiple meta-analyses to assess the effects of sustainable farming practices on the biodiversity–food nexus. Our results show that these practices positively affect biodiversity without compromising productivity. When pooling all meta-analytic means, biodiversity and yield gains were significantly correlated. Overall, sustainable farming practices benefit biodiversity without significant yield losses.
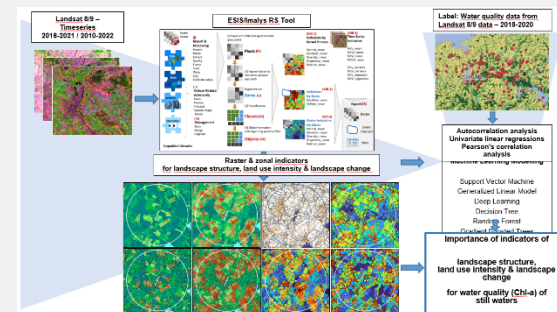
**Lausch, A.**; Selsam, P.; Heege, T.; von Trentini, F.; Almeroth, A.; Borg, E.; Klenke, R.; Bumberger, J. (2025):

**Monitoring and modelling landscape structure, land use intensity and landscape change as drivers of water quality using remote sensing**

Landscape structure and land use intensity (LUI) are key drivers of water quality but remain difficult to quantify consistently at large scales. Using hybrid remote-sensing indicators derived with the ESIS/Imalys tool from Landsat time series, we modelled chlorophyll-a concentrations in 119 standing waters in northern Germany. A Random Forest model achieved the highest performance, identifying landscape diversity, spatial structure, and vegetation activity as the most influential predictors. The results highlight the value of integrated RS-based landscape indicators for scalable water quality assessment.

MERRY CHRISTMAS!

FROHE WEIHNACHTEN!

M. VOLK '25