

Changes in the Department



Prof. Dr. Ralf Seppelt
Photo: S. Wiedling

The departures of Prof. Dr. Ralf Seppelt (in March 2025) and Prof. Dr. Michael Beckmann (in Oct 2024) will bring major changes for both the UFZ and CLE. Ralf has successfully led the Department for over 20 years, shaping it significantly and making it attractive as a cooperation partner within the UFZ in the thematic area of 'Ecosystems of the Future'. His work is internationally recognized and his achievements as head of the thematic area over the last two years are invaluable. Ralf is taking on the challenge as the new director of the new 'Centre for Socio-Environmental in

Luxembourg. The new research center will use state-of-the-art methods such as modelling, simulation and artificial intelligence to combine existing scientific data and conduct innovative research in the field of environmental science and sustainability.

Michael has already left the UFZ after 14 years taking over the Chair of Environmental Planning at the Brandenburg University of Technology (BTU) Cottbus. Michael has played a key role in the development of the UFZ Graduate School HIGRADE in recent years and has been active in the thematic area 'Ecosystems of the Future' and involved in numerous national and international third-party funded projects. In addition, he led the working group 'Biodiversity and Ecosystem Services' (BIOECOS) in the CLE and was deputy head of the department.

Both Ralf and Michael have contributed significantly to the collaboration between the research groups at the CLE and the UFZ and were great discussion partners and colleagues. We miss you, but we also look forward to continuing our work together. Thank you, Ralf and Michael!

But every end is also a new beginning, and so we are pleased that Prof. Dr. Martin Volk, after co-leading the CLE for the last two years, is now taking over as head of the department.

[Dr. Elina Takola](#) has taken over as head of the working group '[BIOdiversity and ECOsystem Services \(BIOECOS\)](#)' from Michael Beckmann. She has been working as a scientist at the UFZ since November 2022 and is focusing on data synthesis to explore the relationship between biodiversity, landscape features and land use intensity. Her research interests include meta-analyses and applications of evidence synthesis to various topics. Thank you, Martin and Elina!



Prof. Dr. Michael Beckmann
Photo: S. Wiedling

Press / Media

Interview with Scientists for Future about "Agrarwende und Modellierungen"

→ [Podcast with Dr. Andrea Kaim](#) (in German)

UFZ Scientist portrait of Andrea Kaim

→ [Youtube Video](#) (in German)

July 24, 2024: article in DUZ Magazin

Solidarisch gegen Höfesterben – Der Agrarökologe Lukas Egli erforscht, wie durch gemeinschaftliche Produktionsformen die Konzentration im Agrarsektor aufgehalten werden könnte.

(only in German)

→ [Link to article](#)

Irina Heiß was part of a 2-hour podcast session "UFZ goes live" by Felix Pohl and Sofia Kats on Twitch, talking about Opportunity Maps and AgriScope (05.06.2024).

Imprint

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New staff



Photo: Paulo Ricardo Rufino

Paulo Ricardo Rufino from the University of São Paulo in Brazil received a one-year scholarship from the German Academic Exchange Service (DAAD) and started at CLE in October 2024. For his doctoral thesis, he is working on the topic 'Climate Change and Land Use: An Analysis of the Hydrosedimentary Dynamics of the Amazon Basin'. At CLE, Paulo is supervised by Dr. Michael Strauch and Prof. Martin Volk.

Welcome, Paulo!

PhD graduation



Photo: Ellen Volk

Felix Witing finished his PhD and graduated at Martin-Luther-University Halle-Wittenberg under the supervision of Prof. Martin Volk, Dr. Uwe Franko (UFZ; retired) and Prof. Stefan Julich (University of Applied Sciences Eberswalde) in December 2024. Felix started his valuable modelling and optimization work at CLE in 2017 in the BiodivERsA project [CROSSLINK](#) and continued it 2020 as a research associate, project manager and work package leader in the EU H2020 project [OPTAIN](#) (ongoing). **Congratulations, Felix!**

Leaving



Photo: Can Zhang

After two years, our CSC fellow **Can Zhang** from China University of Geosciences (Wuhan) will leave us in December 2024. Can has not only been involved in CLE's social activities, but has also been very efficient and productive, publishing two outstanding articles and another two that are currently being revised. At CLE, she was supervised by Prof. Martin Volk and Prof. Michael Beckmann. Can 's work focusses on glacier changes on the Tibetan Plateau and their impact on ecosystem services. Both published articles were presented in the CLE newsletters. We will definitely miss her, but we are also looking forward to continuing our work together. **Thank you, Can!**

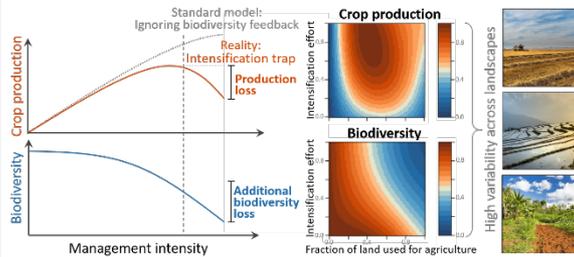
Leaving



Photo: S. Wiedling

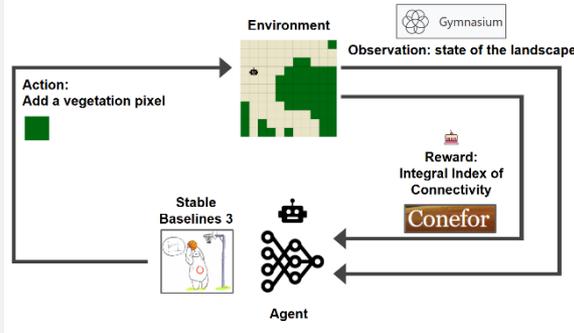
Anne Paulus joined CLE in 2018 and was a member of the working group BIOECOS. She took over a lead researcher role in BESTMAP in 2019 and led several studies on agricultural subsidies in Saxony (e.g. Paulus, A., Hagemann, N., Baaken, M. C., Roilo, S., Alarcón-Segura, V., Cord, A. F., & Beckmann, M. (2022). Landscape context and farm characteristics are key to farmers' adoption of agri-environmental schemes. *Land Use Policy*, 121, 106320). Anne then started working with novel biodiversity monitoring technologies using soundscapes before she moved to DB Engineering & Consulting as an Environmental and Landscape Planning Engineer. **Thank you, Anne!**

Some Highlight Publications from 2024



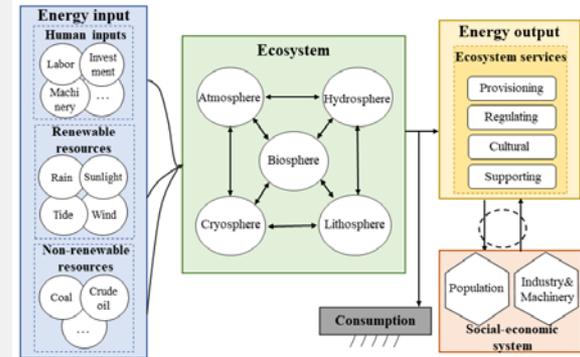
Burian, A., Kremen, C., Wu, J.S.-T., Beckmann, M., Bulling, M., Garibaldi, L.A., Krisztin, T., Mehrabi, Z., Ramankutty, N., Seppelt, R. (2024): Biodiversity-production feedback effects lead to intensification traps in agricultural landscapes
Nat. Ecol. Evol. **8** (4), 752 – 760.
 DOI [10.1038/s41559-024-02349-0](https://doi.org/10.1038/s41559-024-02349-0)

Highly intensive agriculture, which relies heavily on external inputs, is a major strategy for ‘feeding the world’. However, such intensive agriculture also causes declines in biodiversity, a key ecosystem service that supports agricultural productivity. Thus, over-intensification can result in intensification traps that are bad for both biodiversity and food production. In times when food security and biodiversity are critically threatened, the avoidance of these lose-lose situations is a clear minimum goal for agricultural management. However, the emergence of intensification traps depends on multiple, sometimes counteracting, ecosystem processes. A good conceptual understanding of the underlying processes and their natural variability is therefore a crucial requirement to prevent over-intensification and the associated double loss in biodiversity and food security.



Equihua, J., Beckmann, M., Seppelt, R. (2024): Connectivity conservation planning through deep reinforcement learning
Methods Ecol. Evol. **15** (4), 779 – 790.
 DOI: [10.1111/2041-210x.14300](https://doi.org/10.1111/2041-210x.14300)

Pressing environmental issues such as reversing the fragmentation of natural landscapes require spatially explicit conservation decisions. As conservation metrics become more ambitious, spatial optimization problems become increasingly non-linear and with more variables, thus presenting a significant challenge. Deep Reinforcement Learning is a relatively new approach that uses deep neural networks to solve decision-making tasks. We demonstrated that DRL can effectively handle complex spatial optimization aimed at improving habitat connectivity under limited budgets and trace a path in which this may be adapted to other conservation metrics.



Zhang, C., Su, B., Beckmann, M., Volk, M. (2024): Energy-based evaluation of ecosystem services: Progress and perspectives
Renew. Sust. Energ. Rev. **192**, art. 114201.
 DOI: [10.1016/j.rser.2023.114201](https://doi.org/10.1016/j.rser.2023.114201)

This review investigates the potential of the emergy analysis (EMA) as a new perspective and approach to the worldwide used ecosystem services framework to quantify the benefits derived from ecosystems. While EMA is relatively well established for agriculture, urban, industrial and wetland ecosystems, the application for forest, grassland, coastal, marine and other ecosystems has yet to be advanced. Future studies should focus on addressing incomplete data and parameterization issues, improving the accuracy of emergy accounting in changing environments, and combining EMA with other methods and policy scenarios.



Merry Christmas!

M.VOLK'24