# CLE Newsletter 2020

As with everybody else around the world, our lives changed with the pandemic. After safely passing the 1st lock-down in spring, we are now happy being able to work at the institute – although with limitations but with the possibility of having some face-to-face meetings. Lots of work-shops and activities were canceled, such as the last ESCALATE workshop (see below). However, we quickly learned how best utilizing virtual con-ferences and tried to understand this as an opportunity rather than a burden: We could reduce traveling (and CO2 emissions) but also involve other groups at our online seminars, discussions and journal clubs. The all-hands-on-deck meeting every month, is, however, still online.

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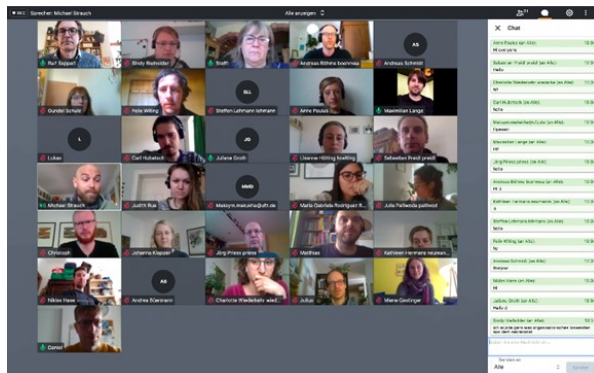
New Project: OPTAIN

An increasing number of extreme events such as droughts and heavy rainfall exacerbates conflicts between agricultural water uses and other human and environmental demands for water. Natural/Small Water Retention Measures (NSWRMs) can help to mitigate those conflicts, addressing societal challenges such as climate change, biodiversity, and food security at the same time. Despite the comprehensive set of water/nutrient retention measures available, knowledge is still lacking on the effectiveness of those measures across various European soil-climatic regions, agricultural systems, scales, and especially under changing climate.

Hence, for a total of 14 case studies, OPTAIN (OPTimal strategies to retAIN and re-use water and nutrients) will (i) identify efficient techniques for the retention and reuse of water and nutrients in small agricultural catchments across Continental, Pannonian and Boreal biogeographical regions of Europe in close cooperation with local actors, (ii) select NSWRMs at farm and catchment level and optimize their spatial allocation and combination, based on environmental and economic sustainability indicators.

The Horizon 2020 project is coordinated by the UFZ and brings togeth-er 22 partners from 15 countries across Europe. OPTAINs results will be documented and presented through a web-based, interactive learn-ing tool that will recommend case-specific measure allocations and combinations.
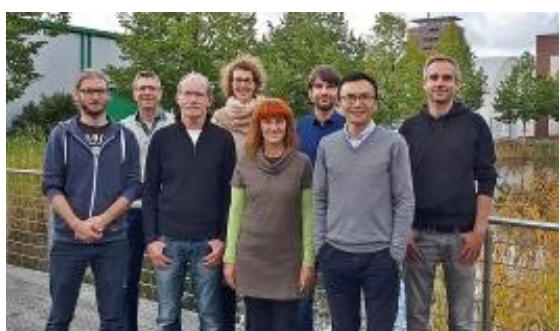
From 8 to 10 September 2020 OPTAIN held its semi-virtual kick-off meeting at the UFZ in Leipzig, where partners met for the start of the five-year research and innovation action.

More information: https://www.optain.eu/

Contact at CLE: Prof. Dr. Martin Volk, Felix Witing, Dr. Michael Strauch

Change of Affiliations CLEs Remote Sensing Group

With the establishment of the Department for Remote Sensing at the UFZ in the Research Unit Smart Models/Monitoring we need to say good-bye to our remote sensing group headed by Daniel Doktor. We look back on a productive and creative collaboration within the depart-ment and now look forward to a productive and creative collaboration across research units.
More information:
https://www.ufz.de/index.php?en=43327

ESCALATE Workshop

The third workshop of ESCA-LATE's final synthesis project called ARAGOG took place in May 2020. In a joint team with PhD students from UFZ, University of Leeds and the University of Mar-yland the final meeting had to take place in a virtual setting instead of at the National Socio-Environmental Synthesis Center (SESYNC) in Annapolis as origi-nally planned.

Nevertheless, the project was a success and a paper manuscript

The photo shows the team at the 2nd workshop in Oct 2019 in Leipzig.

entitled "Aligning agri-environmental subsidies and environmental needs: A comparative analysis between the US and EU" has been written and sub-mitted to Environmental Research Letters. After submission, the team had a virtual celebration meeting reminiscing about the often great and some-times difficult times they had during the project which was a huge learn-ing experience for everyone involved. After all, our plans for a delayed final in-person meeting still stand. This will be used to shape out one of the many other paper ideas that have been generated during the project.

More Information:
https://www.ufz.de/index.php?en=43669

CLE Newsletter 2020

Department Offspring

| Nora Josephine *22 Nov	Carla *17 Feb (Andreas Böhme)	Emin (Michael Beckmann)	Lino *18 Oct (Jule Thober)	Simon *4 Jun (Julius Schmiedt)

## Publications "Editor's Choice"
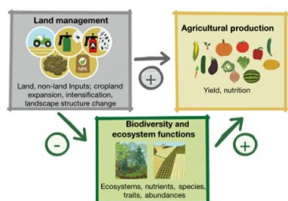
Seppelt, R., Arndt, C., Martin, E. A., **Beckmann, M.** & Hertel, T. W. (2020) Deciphering the biodiversity-production mutualism in the global food security debate. *Trends In Ecology & Evolution.* DOI: 10.1016/j.tree.2020.06.012.

Biodiversity underpins our life support system and provides of stable and healthy food: Here we suggest how integrated assessment models should take this into account to provide balanced assessment of food provisioning. By unpacking the link between ecosystem service and biodiversity research for managing agricultural landscapes we suggest how performance of agriculture production should be measure, using Green Total Factor Productivity.

Groth, J., Ide, T., Sakdapolrak, P., Kassa, E., & **Hermans, K.** (2020). Deciphering interwoven drivers of environment-related migration–A multisite case study from the Ethiopian highlands. *Global Environmental Change*, *63*, *102094*. DOI: 10.1016/j.gloenvcha.2020.102094
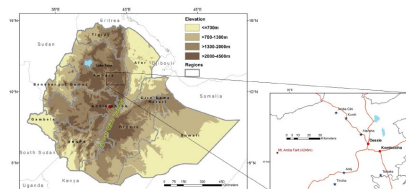
Environment-related migration is a process driven by multiple drivers at different scales and little is known about which contextual factors are most relevant and how they interact. In this paper we shed light on this issue by conducting an in-depth qualitative, yet multisite and medium-N study of farming households in the northern Ethiopian highlands. We utilized qualitative comparative analysis (QCA) – a novel approach in the research field – to decipher interwoven micro- and mesolevel migration drivers. Our findings reveal that migrant networks in combination with migration abilities, rather than commonly cited push factors, are far more important drivers of environment-related migration at the household level.
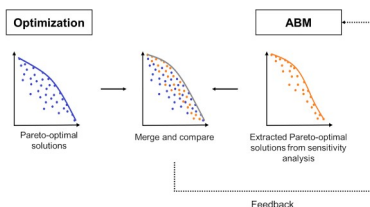

Bartkowski, B., **Beckmann, M.**, Drechsler, M., **Kaim, A., Liebelt, V.**, Müller, B., **Witing, F.** & **Strauch, M.** (2020). Aligning agent-based modelling with multi-objective land-use allocation: Identification of policy gaps and feasible pathways to biophysically optimal landscapes. Frontiers in Environmental Science, 8, 103. DOI: 10.3389/fenvs.2020.00103

The paper is a result of the POF3 core project ALABAMA (ALigning Agent-BAsed Modeling With Multi-Objective Land-Use Allocation). Here, scientists from different departments (CLE/OESA/OEKON) developed an approach to explore the feasibility of biophysically optimal landscapes and the relevance of policies tailored to environmental and socio-economic objectives. The approach was successfully tested for a virtual watershed. The next step needs to be a real-world application, perhaps within POF4.

Schröter, M., Crouzat, E., **Hölting, L.,** Massenberg, J., Rode, J., Hanisch, M., Kabisch, N., **Palliwoda, J., Priess, J.A., Seppelt, R.** & **Beckmann, M.** (2020). Assumptions in ecosystem service assessments: Increasing transparency for conservation. Ambio, 1-12. DOI: 10.1007/s13280-020-01379-9

Ecosystem service assessments depend on complex multi-disciplinary methods and rely on a number of assumptions which reduce complexity. We synthesised 12 prevalent types of assumptions in ecosystem service assessments that include assumptions on data collection, mapping, on socio-economic valuation and about using assessment results for decision-making. We recommend future assessments to increase transparency about assumptions, and to test and validate them and their potential consequences on assessment reliability.
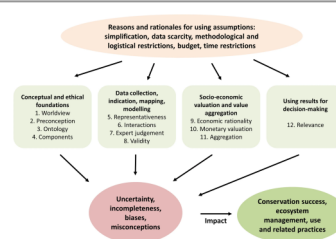
Palliwoda J, E Banzhaf, **J Priess** 2020. How do the green components of urban green infrastructure influence the use of ecosystem services? Examples from Leipzig, Germany. *Landscape Ecol*. DOI: 10.1007/s10980-020-01004-w

Increasing urbaninzation leads to an increasing importance of high quality urban green infrastructure (UGI) providing ecosystem services. This study analyses the influence of tree cover and other green parameters like species richness on ecosystem service use in urban parks and green brownfields in the city of Leipzig. Results from the study highlight how vegetation or green structures of UGI can be employed to steer its use and therefore contribute to its resilient design and management.

UFZ HELMHOLTZ Centre for Environmental Research

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