Prof. Dr. Ralf Seppelt

Dipl. Math. (Applied Mathematics)

Office Addresses

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CURRICULUM VITAE

Scientific Career / Education

2011 Graduation from Helmholtz Academy on *Scientific Management*

2004 Habilitation, Venia legendi *Geoökologie/Umweltsystemanalyse*

1997 Doctorial Degree „with distinction" in natural science in *Agroecology, Systemanalysis and Philosophy* at Institute for Geoecology, TU Braunschweig, Germany

1992 Research fellow at Hahn-Meitner-Institut Berlin, Institute of Computer Science, Berlin, Germany

1994 Master/diploma in applied mathematics at University of Clausthal, Germany

Positions

2022 till present

Head of Unit Ecosystem of the Future, Helmholtz Centre for Environmental Research (UFZ), Leipzig. https://www.ufz.de/

2004 till present (**re-appointment 2008, 2013, 2018, Co-Head sind 2022**)

Head of Department for Computational Landscape Ecology at Helmholtz Centre for Environmental Research (UFZ), Leipzig. www.ufz.de/cle

2004 till present

Full professor for *Applied Landscape Ecology* sind 2022 for *Landscape Ecology and Resources Economics*, Faculty member at Geography Department at Martin-Luther University Halle-Wittenberg

2019 Visiting Scholar

Purdue University, Department Agricultural Economics, Lecturing and independent reseach (March 2019)

2017 Visiting Scholar

University Southampton, Department of Geography Agri, Lecturing and independent reseach (Feb. 2017)

2010 & 2016 Visiting Scholar

University Standford, Woods Institute for the Environent, Lecturing and independent reseach on ecosystem services and biodiversty (Dec. 2010, Sept. 2019)

2014 Visiting Scholar

Stockholm Resilience Centre (SRC), Lecturing and independent reseach global limitation of renewable resources (Sept. 2014)

2009 2016

Speaker of UFZ Research Area „Land use options", one out of 5 topics in the research programme „Terrestrial Ecosystems" of the Helmholtz Association, located at the UFZ.

2000

Research Associate at Institute for Ecological Economics, Centre for Environmental Research, Univ. Maryland, USA (March July 2000)

1997 2004

Research Assistant and Lecturer at Institute for Geoecology, University Braunschweig, Germany.

1994 1997

Ph.-D. Student at the Collaborative Research Center 179, „Modelling of crop growth"-Project and Doctorate degree at University Braunschweig, Germany

Advisory Borads, Committees, Science-Policy

Scientific Advisory Bodies, Science-Policy

- Member of DFG Review Board **2.31** "Agriculture, Forestry and Veterinary Medicine" (2024-2028)
- Registered Expert for Science Media Centre Germany
- Lead Author of the *Global Assessment* of the Intergovernmental Platform for Biodiversity and Ecosystem Servicea (IPBES) (2016-2019)
- Member of Deutsche Akademie der Naturforscher Leopoldina for the special synthesis report on Biodiversity decline in Agrcultural Landscapes
- National Science Foundation Germany (DFG), Commision of the Senate on Agroecosystem Research (2012-2018)

Review Panels

- Hochschulrat Universität Hohenheim (2012-2016, 2016 - 2021)
- Scientific Technical Council UFZ (since 2004 - ongoing)
- Scientific Advisory Board CIRS, Universität Kassel (2012 - 2016)
- Evaluation Committee of Potsdam Institute of Clikate Impact Resarch (PIK), (2007)

Appointment Committees

- Professorship *Ökosystemanalyse und Simulation*, University Bayreuth (2020)
- Professorship *Methods on Sustainablility*, Leuphana University Lüneburg, (2017)
- Appointment of *Scientific Directorate WSL* and ETH Zurich, Swiss ETH-Rat, Zurich, Swiss (2010-2011)
- Professorship *Ecosystem Services*, Uni Jena/iDiv/UFZ (2012)
- Professorship *Makroecology*, Uni Halle (2012)
- Professorship *Ecological Modelling*, Uni Osnabrück (2011)
- Professorship *Environmental Institutional Economy*, Universität Leipzig (2009)
- Professorship *Applied Environmental System Analysis*, University Osnabrück (2006)
- Professorship *Nummerical Mathematics*, Clausthal-Zellerfeld (1993)

Prices, Awards

2020

UFZ Science Communication price granted to all UFZ authors of IPBES synthesis reports)

2010

Biannual Medal of the International Society for Environmental Modelling and Software

Editorial Boards, Reviews

Project and Institutional Reviews

- German Science Foundation DFG (ongoing)
- Federal Ministry of Education and Research BMBF (ongoing)
- Environmental Protection Agency, Ireland (2006)
- European Research Council ERC (ongoing)

Associate Editor and Editorial Board Membership

- Associate Editor: Environmental Modelling and Software (till 2019), Landscape Ecology (since 2019)
- Guest Editor (Special Issues): Ecological Modelling, Ecological Indicators, Enrionmental Resarch Letters

Journal Reviews

- Agriculture, Ecosystems and Environment
- Basic and Applied Ecology
- Current Opinion in Environmental Sustainability
- Ecology and Society
- Ecological Informatics
- Ecological Engeneering
- Ecological Economics
- Ecological Indicators
- Ecological Modelling
- Ecosystem Services
- Environmental Science & Policy
- Environmental Modelling & Software
- Global Environmental Change
- Global Change Biology
- Journal of Environmental Management
- Energy Policy
- Landscape and Urban Planning
- Journal of Photogrammetry and Remote Sensing
- Journal for Applied Ecology
- Hydrology and Earth System Sciences
- Proceedings of the National Academy of Science
- Nature
- Nature Communications
- Nature Sustainability
- Scientific Data
- Proceedings of the Royal Society B
- Science

Academic Societies

Presidency

- Vice President of International Society for Environmental Modelling and Software - iSEMS (2008-2014)

Memberships

- Faculty Opinion
- Gesellschaft für Ökologie (GfÖ)
- International Association for Landscape Ecology (IALE)
- Ecology Society of America (ESA)

PUBLICATIONS

Publications, I personally recommend because…

… the paper provides my vision statement on science

Seppelt R, Beckmann M, Václavík T & Volk M. 2018. The Art of Scientific Performance. *Trends in Ecology & Evolution* 10.1016/j.tree.2018.08.003.

… it was influential outside its scientific realm entering political papers

Lautenbach, S, **Seppelt, R**, J Liebscher, CF Dormann. 2012. Spatial and temporal trends of global pollination benefit. *PlosONE*. **7**(4): e35954

… of its quite different format

Seppelt, R, F Müller, B Schröder, M Volk. 2009. Challenges of simulating complex environmental systems at the landscape scale: A controversial dialogue between two cups of espresso. *Ecological Modelling*. **220**(24): 3481-3489.

… its incredible response in the media

Seppelt, R, AM Manceur, J Liu, EP Fenichel, S Klotz. 2014 Synchronized peak-rate years of global resources use. *Ecology and Society* **19**(4): 50.

… of its surprising results and stories behind the data

Václavík, T, S Lautenbach, T Kuemmerle, **R Seppelt**. 2013. Mapping global land system archetypes. *Global Environmental Change*, **23**: 1637 1647.

… of all the efforts we spent

Beckmann M, Gerstner K, Akin-Fajiye M, Ceauşu S, Kambach S, Kinlock NL, Phillips HRP, Verhagen W, Gurevitch J, Klotz S, Newbold T, Verburg PH, Winter M, **Seppelt R**. 2019. Conventional land-use intensification reduces species richness and increases production: A global meta-analysis. *Global Change Biology*, 10.1111/gcb.14606

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. & Evo.* 10.1038/s41559-024-02349-0

Quantitative Summary (**1995-2024, last update 8/2024**)

		Web of Science	**Scopus**	**Google Schoolar**
Peer reviewed journal publications	Number of publications	135	163	
	Citations / without self-citation	7847 / 7776	10861 / NA	16348 / NA
	Average citations per document	69,2	66,3	
	h-index	50	54	62
	Number of co-authors		1361	
Book publications	Single-author: 2	Edited books: 4		Book chapters: 12
Policy advisory papers	IPBES, Leopoldina, DFG, Deutscher Bundestag, NKGCF; 8 publications			
Interviews, Press	ARTE, Die Zeit, WDR, BR, MDR, Deutsche Welle, etc.; 14 press releases			

Full list Journal papers (peer reviewed, ISI listed)

2025

1. Andersson, M., Beiter, …, Seppelt, R., et al. 2025.Lessons from Africa's First Institute for Advanced Study. *Nature Africa*, 10.1038/d44148-025-00074-9.

2024

2. Neumann, C., Sritongchuay, T., **Seppelt, R.**, 2024. Model-based impact analysis of climate change and land-use intensification on trophic networks. *Ecography* e07533. https://doi.org/10.1111/ecog.07533
3. Schneider, J. M., Delzeit, R., Neumann, Chr., Heimann, T., **Seppelt, R.**, Schuenemann, F., Söder, M., Mauser, W., & Zabel, F (2024). Effects of Profit-Driven Cropland Expansion and Conservation Policies. *Nature Sustainability*, 2024. 10.1038/s41893-024-01410-x
4. Henn, E. V., Neubauer, M., Hodapp, D., Hepach, H., Hillebrand, H., Marquard, E**., Seppelt, R.,** & Settele, J. (2024). Perspektiven eines politikplanenden Biodiversitätsschutzgesetzes: Rechtsrahmen, Ausgestaltung und Forschungsbedarf. *Natur und Recht*, *46*, 234 242.
5. 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. *Nature Ecology & Evolution*. 10.1038/s41559-024-02349-0
6. Equihua, J., Beckmann, M., & Seppelt, R. (2024). Connectivity conservation planning through deep reinforcement learning. *Methods in Ecology and Evolution*, 2041-210X.14300. 10.1111/2041-210X.14300

2023

7. Takola, E., Bonfanti, J., **Seppelt, R.**, & Beckmann, M. (2023). An open-access global database of meta-analyses investigating yield and biodiversity responses to different management practices. *Data in Brief*, *51*, 109696. 10.1016/j.dib.2023.109696
8. Leguizamón, Y et al,. 2023. Environmental Potential for Crop Production and Tenure Regime Influence Fertilizer Application and Soil Nutrient Mining in Soybean and Maize Crops. *Agricultural Systems*.
9. Fischer J., Egli L., Groth J,, …, **Seppelt R**. 2023. Approaches and Tools for User-Driven Provenance and Data Quality Information in Spatial Data Infrastructures. *International Journal of Digital Earth* 16 (1): 1510 29. https://doi.org/10.1080/17538947.2023.2198778.
10. Morrison, T. H., Bodin, Ö., Cumming, G. S., Lubell, M., **Seppelt, R.**, Seppelt, T., & Weible, C. M. (2023). Building blocks of polycentric governance. *Policy Studies Journal*, psj.12492. doi.org/10.1111/psj.12492
11. Garibaldi, L.A., Goldenberg, M.G., Burian A., Santibañez F., Satorre E.H., Martini G.D., **Seppelt, R.** 2023. 'Smaller Agricultural Fields, More Edges, and Natural Habitats Reduce Herbicide-Resistant Weeds. *Agriculture, Ecosystems & Environment* 342: 108260. 10.1016/j.agee.2022.108260.

2022

12. Alexandridis, N., Marion, G., Chaplin-Kramer, R., Dainese, M., Ekroos, J., Grab, H., Jonsson, M., Karp, D. S., Meyer, C., O'Rourke, M. E., Pontarp, M., Poveda, K., Seppelt, R., Smith, H. G., Walters, R. J., Clough, Y., & Martin, E. A. (2022). Archetype models upscale understanding of natural pest control response to land-use change. *Ecological Applications*, *32*(8). 10.1002/eap.2696

13. Seppelt, R., Klotz, S., Peiter, E., & Volk, M. (2022). Agriculture and food security under a changing climate: An underestimated challenge. *IScience*, *25*(12), 105551. 10.1016/j.isci.2022.105551
14. Bonato, M., Martin, E.A., Cord, A.F., **Seppelt, R.**, Beckmann, M., and Strauch, M. 2023. Applying generic landscape-scale models of natural pest control to real data: Associations between crops, pests and biocontrol agents make the difference. Agriculture, Ecosystems & Environment *342*, 108215. 10.1016/j.agee.2022.108215.
15. Anderies, J.M., Cumming, G.S., Clements, H.S., Lade, S.J., **Seppelt, R.**, Chawla, S., and Müller, B. 2022. A framework for conceptualizing and modeling social-ecological systems for conservation research. *Biological Conservation* **275**, 109769. 10.1016/j.biocon.2022.109769.
16. Goldenberg, M. G., Burian, A., **Seppelt, R.**, Santibañez Ossa, F. A., Bagnato, C. E., Satorre, E. H., Martini, G. D., & Garibaldi, L. A. 2022. Effects of natural habitat composition and configuration, environment and agricultural input on soybean and maize yields in Argentina. *Agriculture, Ecosystems & Environment*, *339*, 108133. 10.1016/j.agee.2022.108133
17. Mehrabi, Z., Delzeit, R., Ignaciuk, A., …, Seppelt, R., … You, L. (2022). Research priorities for global food security under extreme events. *One Earth*, *5*(7), 756–766. 10.1016/j.oneear.2022.06.008
18. Wiederkehr, C., Ide, T., Seppelt, R., & Hermans, K. 2022. It's all about politics: Migration and resource conflicts in the global south. *World Development*, 157, 105938. 10.1016/j.worlddev.2022.105938
19. Dornelles, A.Z., Boonstra, W.J., Delabre, I., Denney, J.M., Nunes, R.J., Jentsch, A., Nicholas, K.A., Schröter, M., Seppelt, R., Settele, J., et al. 2022. Transformation archetypes in global food systems. *Sustain Sci*. 10.1007/s11625-022-01102-5
20. Dominik, C., **Seppelt, R.**, Horgan, F.G., Settele, J., and Václavík, T. 2022. Landscape heterogeneity filters functional traits of rice arthropods in tropical agroecosystems. *Ecological Applications*. 10.1002/eap.2560

2021

21. Mupepele, A-C, Bruelheide H, Brühl C, Dauber J, Fenske M, Freibauer A, Gerowitt B, … **Seppelt R**, et al. 2021. Biodiversity in European Agricultural Landscapes: Transformative Societal Changes Needed'. *Trends in Ecology & Evolution*, S0169534721002469. 10.1016/j.tree.2021.08.014
22. Langer L, Burghardt M, Borgards R, Böhning K, **Seppelt R**, Wirth C. 2021. The Rise and Fall of Biodiversity in Literature: A Comprehensive Quantification of Historical Changes in the Use of Vernacular Labels for Biological Taxa in Western Creative Literature, 17. 10.1002/pan3.10256
23. Alexandridis N, Marion G, Chaplin-Kramer R, Dainese M, Ekroos J, Grab H, Jonsson M, …, **Seppelt R**. et al. 2021. Models of Natural Pest Control: Towards Predictions across Agricultural Landscapes. *Biological Control* 163: 104761. 10.1016/j.biocontrol.2021.104761.
24. Palliwoda J, Fischer J, Felipe-Lucia MR, Palomo I, Neugarten R, Büermann A, Price MF, …, **Seppelt R**, et al. 2021. Ecosystem Service Coproduction across the Zones of Biosphere Reserves in Europe. *Ecosystems and People* 17(1): 491–506. 10.1080/26395916.2021.1968501.
25. Schröter M, Egli L, Brüning L, & **Seppelt R**. 2021. Distinguishing anthropogenic and natural contributions to coproduction of national crop yields globally. *Scientific Reports*. 11(1): 1–8. 10.1038/s41598-021-90340-1
26. Qiu J, Queiroz C, Bennett EM, Cord AF, Crouzat E, Lavorel S, Maes J, Meacham M, Norström AV, Peterson GD, **Seppelt R**, Turner MG 2021.

Land-use intensity mediates ecosystem service tradeoffs across regional social-ecological systems. *Ecosystems and People* 10.1080/26395916.2021.1925743

27. Biffi S, Traldi R, Crezee B, Beckmann M, Egli L, Schmidt DE, Motzer N, Okumah M, **Seppelt R**, Slabbert EL, Tiedeman K, Wang H, Ziv G 2021. Aligning agri-environmental subsidies and environmental needs: A comparative analysis between the US and EU. *Environmental Research Letters* 10.1088/1748-9326/abfa4e
28. Egli L, Mehrabi Z, & **Seppelt R** 2021. More farms, less specialized landscapes, and higher crop diversity stabilize food supplies. *Environmental Research Letters*. 10.1088/1748-9326/abf529
29. Schröter M, Crouzat E, Hölting L, Massenberg J, Rode J, Hanisch M, Kabisch N, …, **Seppelt R**, et al. 2021. Assumptions in ecosystem service assessments: Increasing transparency for conservation. *Ambio*. 10.1007/s13280-020-01379-9

2020

30. Egli L, Schröter M, Scherber C, Tscharntke T, **Seppel R**. 2020. Crop Asynchrony Stabilizes Food Production. *Nature* 588(7837): E7 12. 10.1038/s41586-020-2965-6.
31. Kambach, S., Bruelheide, H., Gerstner, K., Gurevitch, J., Beckmann, M., & Seppelt, R. 2020. Consequences of multiple imputation of missing standard deviations and sample sizes in meta-analysis. *Ecology and Evolution*, 14. 10.1002/ece3.6806
32. **Seppelt R**, Arndt C, Martin EA, Beckmann M, Hertel TW. 2020. Deciphering the biodiversity-production mutualism in the global food security debate. *Trends In Ecology & Evolution*. 10.1016/j.tree.2020.06.012
    - On recommended reading list for UN Food System Summit 2021, https://sc-fss2021.org/materials/publications-and-reports-of-relevance-for-food-systems-summit/
33. Ehrmann S, **Seppelt R**, & Meyer, C. 2020. Harmonise and integrate heterogeneous areal data with the R package arealDB. *Environmental Modelling & Software*, *133*, 104799.
34. Kehoe L, dos Reis TNP, Meyfroidt P, Bager S, **Seppelt R**, Kuemmerle T, Berenguer E, et al. 2020. Inclusion, Transparency, and Enforcement: How the EU-Mercosur Trade Agreement Fails the Sustainability Test. *One Earth*, S259033222030422X.
35. Chan KMA, Boyd DR, Gould RK, Jetzkowitz J, Liu J, Muraca B, Naidoo R., Olmsted P, Satterfield T, Selomane O, Singh GG, Sumaila R, … **Seppelt R**, *et al*. 2020. Levers and leverage points for pathways to sustainability. *People and Nature*. 10.1002/pan3.10124
36. Dornelles AZ, Boyd E, Nunes RJ, … **Seppelt R**., Settele, J, Shackelford N., Standish RJ, Yengoh GT, Oliver TH. 2020. Towards a bridging concept for undesirable resilience in social-ecological systems. *Global Sustainability*, 3, e20. 10.1017/sus.2020.15
37. Müller B, Hoffmann F, Heckelei T, Müller C, ,…**Seppelt R**, et al. 2020. Modelling Food Security: Bridging the Gap between the Micro and the Macro Scale. *Global Environmental Change* 63: 102085. 10.1016/j.gloenvcha.2020.102085 .
38. Martinez-Garcia R, Fleming CH, **Seppelt R**, Fagan WF, Calabrese JM. 2020. How Range Residency and Long-Range Perception Change Encounter Rates. *Journal of Theoretical Biology*, 110267. 10.1016/j.jtbi.2020.110267.
39. Cumming GS, Epstein G, Anderies JM, Apetrei CI, Baggio J, … **Seppelt R,** *et al.* 2020. Advancing Understanding of Natural Resource

Governance: A Post-Ostrom Research Agenda. *Current Opinion in Environmental Sustainability* 44: 26–34. 10.1016/j.cosust.2020.02.005.

40. Weise H, Auge H, Baessler C, … **Seppelt R**,…, Grimm V (2020). Resilience Trinity: Safeguarding Ecosystem Functioning and Services across Three Different Time Horizons and Decision Contexts. *Oikos*, Januar, oik.07213. 10.1111/oik.07213.
    - Editor's Choice

2019

41. Wiederkehr C, Schröter M, Adams H, **Seppelt R**, Hermans K (2019) How Does Nature Contribute to Human Mobility? A Conceptual Framework and Qualitative Analysis. *Ecology and Society* **24** (4): 16. 10.5751/ES-11318-240431.
42. Egli L, Weise H, Radchuk V, **Seppelt R**, Grimm V (2019) Exploring Resilience with Agent-Based Models: State of the Art, Knowledge Gaps and Recommendations for Coping with Multidimensionality. *Ecological Complexity* **40**: S1476945X18301089. 10.1016/j.ecocom.2018.06.008
43. Strauch M, Cord, AF, Pätzold C, Lautenbach S, Kaim A, Schweitzer C, **Seppelt R,** Volk M. (2019) Constraints in Multi-Objective Optimization of Land Use Allocation – Repair or Penalize? *Environmental Modelling & Software* **118**: 241–51.
44. Zabel F, Delzeit R, Schneider JM, **Seppelt R**, Mauser W, Václavík T. (2019) Global Impacts of Future Cropland Expansion and Intensification on Agricultural Markets and Biodiversity. *Nature Communications* 10 (1): 2844.
45. Hagedorn G, Loew T,… **Seppelt R**,… (2019) Scientists for Future: A joint statement by German, Austrian, and Swiss scientists and scholars concerning the protests of young people demanding adequate protection of the climate, biodiversity, forest, oceans, and soil. *GAIA - Ecological Perspectives for Science and Society* **28** (2): 79–87.
    - Selected as best paper of the year
46. Beckmann M, Gerstner K, Akin-Fajiye M, Ceauşu S, Kambach S, Kinlock NL, Phillips HRP, Verhagen W, Gurevitch J, Klotz S, Newbold T, Verburg PH, Winter M, **Seppelt R**. 2019. Conventional land-use intensification reduces species richness and increases production: A global meta-analysis. *Global Change Biology*, 10.1111/gcb.14606
47. Lautenbach, S., ..., **Seppelt, R.**, … Volk, M. 2019. Blind spots in ecosystem services research and challenges for implementation. *Regional Environmental Change*, 033498. 10.1007/s10113-018-1457-9
48. Kehoe L, Reis T, Virah-Sawmy M, Balmford A, Kuemmerle T & 604 co-signatories. 2019. Make EU Trade with Brazil Sustainable. *Science* **364** (6438): 341.1-341. 10.1126/science.aaw8276.

2018

49. **Seppelt R**, Beckmann M, Václavík T & Volk M. 2018. The Art of Scientific Performance. *Trends in Ecology & Evolution* 10.1016/j.tree.2018.08.003.
50. **Seppelt R**, Verburg PH, Norström A, Cramer W & Václavík T. 2018. Focus on Cross-Scale Feedbacks in Global Sustainable Land Management. *Environmental Research Letters* **13.** 10.1088/1748-9326/aadc45. (Editorial)
51. Dominik C, **Seppelt R**, Horgan FG, Settele J, & Václavík T. 2018. Landscape composition, configuration, and trophic interactions shape

arthropod communities in rice agroecosystems. *Journal of Applied Ecology*. 10.1111/1365-2664.13226

52. Settele J, Heong KL, Kühn I, Klotz S, ..., **Seppelt R.** et al. 2018. Rice ecosystem services in South-east Asia. *Paddy and Water Environment*. 10.1007/s10333-018-0656-9
53. Schmidt S, & **Seppelt R.** 2018. Information content of global ecosystem service databases and their suitability for decision advice. *Ecosystem Services* **32**: 22–40. 10.1016/j.ecoser.2018.05.007
54. Parker TH, Griffith SC, Bronstein JL, Fidler F, Foster S, Fraser H, Forstmeier W, …, **Seppelt R**, et al. 2018. Empowering Peer Reviewers with a Checklist to Improve Transparency. *Nature Ecology and Evolution* **2:** 929–35. 10.1038/s41559-018-0545-z .
55. Vallet A, Locatelli B, Levrel H, Wunder S, **Seppelt R.**, Scholes RJ, Oszwald J. 2018. Relationships Between Ecosystem Services: Comparing Methods for Assessing Tradeoffs and Synergies. *Ecological Economics* **150**: 96–106. 10.1016/j.ecolecon.2018.04.002 .
56. Magliocca NR, Ellis EC, … **Seppelt R**, Verburg PH. 2018. Closing Global Knowledge Gaps: Producing Generalized Knowledge from Case Studies of Social-Ecological Systems. *Global Environmental Change* **50**: 1-14. 10.1016/j.gloenvcha.2018.03.003 .
57. Rieb JT, Chaplin-Kramer R, … **Seppelt R**, et al. 2018. Response to Kabisch and Colleagues. *BioScience* **68** (3): 167–68. 10.1093/biosci/bix154.
58. Ziv G, Hassall C, Bartkowski B, Cord AF, Kaim A ..., **Seppelt R** ..., Beckmann M. 2018. A Bird's Eye View over Ecosystem Services in Natura 2000 Sites across Europe. *Ecosystem Services*. **30**: 287-298. 10.1016/j.ecoser.2017.08.011 .

2017

59. Cord AF, Bartkowski B, Beckmann M, Dittrich A, Hermans-Neumann K, Kaim A, Lienhoop N, ..., **Seppelt R**, et al. 2017. Towards Systematic Analyses of Ecosystem Service Trade-Offs and Synergies: Main Concepts, Methods and the Road Ahead. *Ecosystem Services* **28**: 264–72. 10.1016/j.ecoser.2017.07.012. (Editorial)
60. Andreas D, **Seppelt R**, Václavík T, Cord AF. 2017. Integrating Ecosystem Service Bundles and Socio-Environmental Conditions - A National Scale Analysis from Germany. *Ecosystem Services* **28**: 273–82. 10.1016/j.ecoser.2017.08.007.
61. Rosa, IMD, HM Pereira, Simon Ferrier, Rob Alkemade, Lilibeth A Acosta, H. Resit Akcakaya, Eefje den Belder, ..., **Seppelt R,** et al. 2017. Multiscale Scenarios for Nature Futures. *Nature Ecology & Evolution* **1**(10): 1416–19. 10.1038/s41559-017-0273-9 .
62. Dittrich A, **Seppelt R**, Václavík, T & Cord AF. 2017. Integrating ecosystem service bundles and socio-environmental conditions – A national scale analysis from Germany. *Ecosyst. Serv*. 10.1016/j.ecoser.2017.08.007
63. Rieb JT, Chaplin-Kramer R, ..., **Seppelt R,** *et al*. 2017. When, Where, and How Nature Matters for Ecosystem Services: Challenges for the Next Generation of Ecosystem Service Models. *Bioscience*. 10.1093/biosci/bix075
64. **Seppelt R,** Beckmann B, Václavík T. 2017. Searching for Win–Win Archetypes in the Food–Biodiversity Challenge: A Response to Fischer

et al. *Trends in Ecology & Evolution* **92**(9): 630 632. 10.1016/j.tree.2017.06.015

65. Christophe D, **Seppelt R,** Horgan FG, Marquez L, Settele J, Václavík T. 2017. Regional-Scale Effects Override the influence of Fime-Scale Landscape Heterogeneity on Rice Arthropod Communities. *Agriculture, Ecosystems and Environment* **246**: 269 78. 10.1016/j.agee.2017.06.011 .
66. Cord AF, Brauman KA, Chaplin-Kramer R, Huth A, Ziv G, **Seppelt R.** 2017. Priorities to Advance Monitoring of Ecosystem Services Using Earth Observation. *Trends in Ecology & Evolution*. 10.1016/j.tree.2017.03.003
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Conference Proceedings

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Policy, Advisory Papers

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203. DFG Senatskommission für Agrarökosystemforschung (2014): *Nachhaltige ressourceneffiziente Erhöhung der Flächenproduktivität: Zukunftsoptionen der deutschen Agrarökosystemforschung. Grundsatzpapier der DFG Senatskommission für Agrarökosystemforschung. Federführung*: V. Wolters, J. Isselstein, H. Stützel, F. Ordon, C. von Haaren, E. Schlecht, J. Wesseler, R. Birner, M. v. Lützow, N. Brüggemann, B. Diekkrüger, A.

Fangmeier, H. Flessa, H. Kage, M. Kaupenjohann, I. Kögel-Knabner, R. Mosandl, **R. Seppelt**. S. 18.

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Books

- Schröter, M., Bonn, A., Klotz, S., **Seppelt, R.** & Baessler, C. (2019) Atlas of Ecosystem Services: Drivers, Risks and Societal Responses. Springer. ISBN 978-3-319-96228-3 www.springer.com/gb/book/9783319962283
- M. Berning, J. Schmidt, P. Scholz (2016): *Das Online Spiel LandYOUs. Unterrichtsimpuls zur Bildung für Nachhaltige Entwicklung.* www.landyous.org Klett MINT GmbH, Stuttgart.
- **R. Seppelt,** A.A. Voinov, S. Lange, D. Bankamp (Eds.) (2012): International Environmental Modelling and Software Society (iEMSs) 2012 International Congress on Environmental Modelling and Software. Managing Resources of a Limited Planet: Pathways and Visions under Uncertainty. Sixth Biennial Meeting, Leipzig, Germany. ISBN: 978-88-9035-742-8 http://www.iemss.org/society/index.php/iemss-2012-proceedings.
- **R. Seppelt** (2003) Computer-based Environmental Management, 304 pp. VCH-Wiley, Weinheim, New York. 2003. ISBN: 352730732X

  "This is a well-written and understandable book.... The author is to be commended on his effort." *Energy Sources*, 2004

  "This book is a giant step forward in describing the development and use of environmental models..." *Journal of Hazardous Materials*, **108**, 2004

  "Die Publikation […] bietet eine fundierte, reich mit Beispielen illustrierte Grundlage für theoretische und praktische Aspekte der Umweltmodellierung, indem es mathematische Methoden mit Themen aus Umweltforschung und Ökologie zusammenbringt und so Lösungsansätze zu aktuellen Herausforderungen im Umweltmanagement vorstellt. Neueste Entwicklungen in der Umweltmodellierung sind übersichtlich dargestellt." (Schweizerische Zeitschrift fur Forstwesen, 5/04)

  "...the book is unique in its comprehensive integration of the theory and practice of environmental modeling and management" *Environ Sci & Pollut Res* **12**(1), 55, 2005
- M. Flake, **R. Seppelt** & D. Söndgerath (Hrsg) (1999): Umweltsystemanalyse - Dynamik natürlicher und anthropogener Systeme und ihre Wechselwirkungen, Tagungsband GeoöKon'99. In: *Landschaftsökologie und Umweltforschung* **32**, 382pp
- **R. Seppelt** (1997): Strategien für eine nachhaltige Landwirtschaft.

Anwendung der Kontrolltheorie auf langfristige bioökonomische Prozesse. In: *Landschaftsökologie und Umweltforschung* 26, 130 Seiten

Press releases and media activities

2021

- *Co-Authering one season of "Wissen-vor-8 Natur" on Sustainbility and Climate Change for German ARD® boradcasting:* Press release by ARD https://www.daserste.de/information/wissen-kultur/wissen-vor-acht/wissen-vor-acht-natur100.html

2020

- *Temporal crop diversity stabilises agricultural production - Relying solely on the diversity of crops to ensure food stability is not enough.* UFZ press release 09.12.2020
- *Das EU-Mercosur Freihandelsabkommen steht in direktem Widerspruch zum European Green Deal.* UFZ press release 09.092020: (Media outlet in German only)

2019

- *Impending threats to biodiversity - How does the expansion or intensification of arable farming affect global agricultural markets and biodiversity?* UFZ press release 03.07.2019
- *Die Arten dieser Erde sichern unser Überleben.* Interview for German Weekly Newspaper „Die ZEIT" https://www.zeit.de/wissen/umwelt/2019-05/artensterben-ralf-seppelt-biodiversitaet-artenschutz-oekesysteme-ipbes
- *How much nature is lost due to higher yields? UFZ study reveals link between increasing yields and biodiversity.* UFZ press release, 10.04.2019
- *Better many small than a few large: how landscape configuration affects arthropod communities in rice agroecosystems.* UFZ press release, 07.08.2019

2018

- *Welternährungstag* Interview for German Radio Station WDR 5 „Morgenecho" (16.10.2018, 06:05-09:45) Audio-Track
- *Nachwachsende Ressourcen unserer Landschaften.* Presentation at ScientceNotes, Astra, Berlin Video

2016

- *Making Sense of Research: Research for Practical Application in Land Management*: Application-focused book with the findings of international research on sustainable land management presented at the global Convention on Biological Diversity (CBD). UFZ press release 05.12.2016
- *Zocken, um Nachhaltigkeit zu verstehen:* Mit einem Online-Spiel können Lehrer Schülern erklären, worauf es bei nachhaltiger Landnutzung ankommt (only german). UFZ press release 17.10.2016
- *Land under pressure* Final conference of the 7 year research programme "Sustainable Land Management": UFZ press release 03.03.2016
- *Es geht darum Nahrung gerecht zu verteilen und Verluste zu reduzieren* Interview aus Anlass des Welternährungstages (in German), UFZ press release 16.10.2016
- *Geht da noch mehr? Landschaftsökologie: Die Grenzen des Wachstums* Interview detektor.fm, 16.10.2016 Audio-Podcast

2015

- Holger Klein*: Landschaft und Ökologie, Biodiversität, Subsistenzlandwirtschaft, Migration, demografischer Wandel, u.v.a.m. Interview mit Prof. Ralf Seppelt.* Helmholtz Podcast „Resonator“ Audio-Podcast
- *Renewable resources reach their limits*. Humanity should use planetary resources with care. UFZ press release 14.1.2015

2013

- *Global map provides new insights into land use* UFZ researchers show the complexity of land use by mapping its common patterns. UFZ press release 5.11.2013
- *Carbiocial – Neue Strategien für Südamazonien* Ergebnisse auf der Statuskonferenz „Nachhaltiges Landmanagement“ vorgestellt. UFZ press release 17.4.2013

2012

- *Streitthema Biokraftstoffe.* Deutsche Welle Fernsehen, Interview, Video

Conference- und Workshoporganization

2017

- UNCCD Conference COP13, Side Event: Presentation and Panel Discussion on “Sustanable Land Management.”

2016

- UN CBD Conference COP13 Rio Conventions Pavillion. Session and presentation on “Quantifying the effects of agricultural intensification on productivity and biodiversity”
- “Integrating findings from place-based research on land use and social-ecological dynamics across scales“ Session at GLP Open Science Conference 24-27 October 2016, Beijing, China.

2014 2016

- Series of Workshops on SESYNC project “Land Use BioDiversity Ecosystem Services trade-offs (LUBDES)”. This SESYNC funded conducts conceptual and data driven synthesis that acknowledges the multidimensional complexity captured in the label ‘land use’ in relation to biodiversity and ecosystem services. It is organized by a series of 6 workshops at SESYNC Annapolis, UFZ Leipzig and sDiv Leipzig.

2014

- Session/Workshop “Maintaining ecosystem functions and services under global change: identification of trade-offs in multifunctional landscapes with modern analysis tools” at GLP Open Science Meeting, Berlin 19.-21.3 2014
- Session/Workshop “Place-based analysis of land-use systems: approaches for synthesis across multiple scales” at GLP Open Science Meeting, Berlin 19.-21.3 2014

2013

- Status conference of the BMBF Research Programm on “Sustainable Landmanagement”, Hotel Maritim, Berlin 17.-19.4.2013, 540 participants

- Session/Workshop "Frameworks for structuring and synthesising ecosystem service assessments" at 6th ESP conference, 26-30 Augus, Bali, Indonesia

2012

- 6th International Congress on Environmental Modelling and Software. *Managing Ressources of a limited planet: Pathways and Visions under uncertainty*. 1.-5. July 2012, congress centre KUBUS Leipzig, Germany. 430 participants http://www.iemss.org/sites/iemss2012/
  - Bankamp, D. & **Seppelt, R.** 2013. Managing resources of a limited planet Or, how to organise an environmentally friendly congress. *Environmental Modelling & Software*, **46**: 299 303.
  - **Seppelt, R.**, Bankamp, D., Voinov, A., Rizzoli, A. 2013. 6th International Congress on Environmental Modelling and Software (iEMSs): "Managing Resources of a Limited Planet: Pathways and Visions under Uncertainty": A congress report. *Environmental Modelling & Software*, **43:** 160 162.
- Symposium on *Integrated modelling for ecosystem services* at 4th International Summit on Ecological Sustainablility ECOSUMMIT 30.9-5.10.2012 Columbus, Ohio, USA

2010

- *The Emperor's clothes? Addressing consistency in ecosystem service studies*. F. Eppink, R. Seppelt. Workshop at ACES Conference Phoenix Arizona, 6.-9. Dec. 2010
- *Ecosystem services concept for environmental management*, R. Seppelt, M. Volk and Ann van Griensven Symposium at biannual Conference of the Society for Environmental Modelling and Simulation. Ottawa, Canada, 5.-8. July 2010

2006

- *Beyond growth? Integrated models, simulations and scenarios of the future shape urban-rural regions*. D. Haase, R. Seppelt. Symposium at biannual Conference of the Society for Environmental Modelling and Simulation. 10.-13.7.2006, Burlington, Vermont

2004

- *Spatially explicit integrated modelling of dynamic mosaic landscapes*. B. Schröder, R. Biedermann, R. Seppelt, Symposium at the anual conference of the erman Society for Ecology. Sep. 13.-17, Giessen, Germany
- *Landscape Patterns: Simulating Changes, Identifying Driving Forces and Calibrating Models* Symposium at biannual Conference of the Society for Environmental Modelling and Simulation. 14.-18.6.2004 in Osnabrück

2003

- *Spatially Explicit Models Linking Abiotic and Biotic Processes at the Landscape* R. Seppelt, B. Schröder. Symposium at the anual conference of the erman Society for Ecology 8.9-11.9.2003 in Halle

2002

- Joined conference of German Society for Chemistry, Society of Environmental Toxicology and Chemistry and German Geoecological Societey (4.-6. October 2002) „Umweltchemie und Ökotoxikologie -

Forschung und Entwicklung im Dienste des Umwelt- und Verbraucherschutzes".

- Ausstellung „Tage der Forschung 2002" und im Rahmen des Jahres der Geowissenschaften (Titel „Blickpunkt Erde").

1999

- Jahrestagung des Verbandes für Geoökologie „GeoÖkon'99" (14.-16.Oktober 1999) unter dem Motto „Umweltsystemanalyse: Dynamik natürlicher und anthropogener Systeme und ihrer Wechselbeziehungen".

Invited Lectures (host payed expenses*)

2021

- Stable and high Yields in the Future? Deciphering the Biodiversity-Production Mutualism in the Global Food Security Debate. Lecture at Centre for Environmental and Climate Science (CEC), Lund University, Sweden, 2.3.2022.

2021

- Warum hört mir eigentlich keiner zu? Wissenschaftliche Politikberatung am Beispiel von IPBES: 3 Jahre Synthese, 2 Wochen Medien-aufmerksamkeit und was jetzt? WWF Berlin, Online, June 14th

2020

- Biodiversity loss. Its drivers and ways towards solutions: Insights from the IPBES Global Assessment, November 11th, Joint Guest Lecture Series Universities Freiburg and Göttingen, Online. Nov. 11th

2019

- Deciphering the biodiversity-production mutualism in the global food security debate, Seminar at University of British Columbia, Vancouverm, Canada, Dec. 12th
- Deciphering the biodiversity-production mutualism in the global food security debate, Food security Seminar at University of British Columbia, Vancouverm, Canada, May 29th

2018

- *Peak rate years of global resource use: Implication to land use, biodiversity and major agricultural production trends.* DG AgriResearch conference *Innovating for the future of farming and rural communities*, 2./3. Mai Bruxelles
- *Understanding global scale land use pattern for reconciling biodiversity conservation and agricultural production.* International Symposium on Integrative Modelling in Sustainability Systems Research, Kassel, 17./18. May 2018
- *Reconciling food security and biodiversity conservation: Understanding a mutual relationship.* Seminar Series, University Würzburg.

2017

- *Reconciling food security and biodiversity conservation: Understanding a mutual relationship*, Seminar Series University Hohenheim 16. Mai.

* Regular conference presentations or posters are not listed.

- *Understanding global scale land use pattern for reconciling biodiversity conservation and agricultural production.* Seminar Series AGROSCOPE, Reckenholz, Swiss, 11. Mai 2017
- *Conceptualizing and understanding global scale land use pattern for reconciling biodiversity conservation and agricultural production.* Seminar Series, University Southampton. 25. Jan 2017

2016

- *Conceptualizing and understanding global scale land use patterns for reconciling biodiversity conservation and agricultural production.* TheSYS Lecture series, Humbold University Berlin Symposium, Berlin, 14.1.2016,

2015

- *Next Generation Models for Ecosystem Services and Biodiversity*. Workshop organized by Synthesis Centre of German Centre on integrationve Biodiversity Research (iDiv, sDic), PI Elena Benette, Gretchen Daily.
- *Global Knowledge Gaps,* Workshop by Socio-Environmental Synthesis Centre, NSF PI Erle Ellis.
- *Agricultural production and biodiversity: A global perspective.* Gesellschaft für Pflanzenbauwissenschaften e. V.: Multifunktionale Agrarlandschaften, Pflanzenbaulicher Anspruch, Biodiversität, Ökosystemdienstleistungen, 22.-24. September 2015, Technischen Universität Braunschweig

2014

- Stockholm Resilience Centre: *A resouce economics view to planetary boundaries,* Sept 2014, on invisation by Prof. Carl. Folke.
- Karslruhe Institute of Technoloigy (KIT), Karlsruhe, Germany: *Renewable resources: Distribution, Use and Limitations,* Nov. 2014, on invitation be Prof. Armin Grunwald
- UFZ annual reception, Nov. 17th: *Land – A limited resource*

2013

- UNCCD Conference, Bonn, Germany: *Sustainable Land management: A solution oriented funding measure,* April 2013
- Konference of the Environmental protection Agency Germany (UBA): *Nachhaltige Landnutzung – Wie regional-skalige Forschungsprojekte Antworten auf globale Fragen geben können*, Dec. 2013

2012

- 4th Annual Meeting of the SGA Network, Stellenbosch, SA: *Scientific Coordination and Synthesis of the funding activity 'sustainable land management,* Nov. 2012
- GEO BON Biodiversity observation Network, Working Group 6 Meeting, Paris *Some thoughts on ecosystem service based environmental management: Models, Tools, Examples & Applications*, March 2012
- Kolloquium Frankfurter Geographische Gesellschaft: *Land - eine limitierte Ressource? Oder: Was Landnutzung in Brasilien mit Konsummustern in Mitteleuropa zu tun hat.*

2010

- Woods Institute, Stanford University: *Some thoughts on ecosystem service based environmental management: Models, Tools, Examples & Applications.* Dec. 2010
- Kolloquium Universität Marburg, Germany: *Ökosystemare Dienstleistungen – eine wissenschaftliche Erfolgsgeschichte?* April 18th
- Martin-Luther Universität Halle-Wittenberg. Vorlesungsreihe "Die Vielfalt der Arten": *Wieviel Fläche braucht die Biodiversität? Viele Fragen und einige Antworten*.
- Ecosystem Service Conference, Kiel, Kohren-Salis, Germany: Keynote Lecture *Quantification, Modelling and Valuing of Ecosystem Services: Some thoughts on the perspectives of the concept.* June 2010

2009

- Keynote Lecture *Managing Landscapes for Ecosystem Service Provisioning*. Bratislava, Slovenia, June 2009
- Keynote Lecture. Expert Panel at Naturschutzbund Deutschland e.V. (NABU) *Ökosystemare Dienstleistungen: Eine wissenschaftliche Erfolgsgeschichte?* Nov 2009
- Guest Lecture at Potsdam University *Modelling and Simulating Ecosystem Services – What so smart about?* Nov. 2009
- Lecture at the Kiel Institute for the World Economy, Kiel, Germany *How much space is needed for biodiversity?* Nov. 2009
- Keynote Lecture *Modelling and Simulating Ecosystem Services! What's so smart about?* NATO Advanced Reseracher Workshop, Pell Center, Salve Regina University, Newport Rhode Island, USA. July 6-10.

2008

- *Modelling Strategies for Environmental Management*. Lecture at USGS, Reston Virginia

2007

- Chinese Acadamy of Science, Institute for Geography and Remote Sensing Research, Beijing, *Integrative modeling of environmental systems, or: How can we manage our environment?* Invitation by Prof. Tianxiang Yue.
- Chinese Agricultural University *The Helmholtz-Centre for Environmental Research – Overview and spotting on the Department for Computational landscape Ecology*.

2006

- Joint Indo-German Research Workshop: Will competition for land and water hinder energy development in India? National Institute of Advanced Studies, Indian Institute of Science Campus (NIAS), Bangalore. *Modeling methods for assessing local/regional impacts of energy development on water and land resources*. March 7-8, 2006, Bagalore, Indien, Invitation by NIAS

2005

- CCMS Pilot Study Meeting at Veliko Turnovo (Bulgaria), September 4-8, *On the use of Landscape Modelling: Selected Studies on Modelling Anthroposphere Biosphere Interaction*

- Lecture at Swiss Federal Institute of Technology (ETH): *Integrative modeling of environmental systems, or: How can we manage our environment*"
- Lecture at Eidg. Forschungsanstalt für Wald, Schnee und Landschaft (WSL) Zurich: *Integrative modeling of environmental systems, or: How can we manage our environment?*

2004

- University Kassel. *Ja mach' nur einen Plan - Über Möglichkeiten, Anwendungen und Perspektiven landschaftsökologischer Modelle*. Nov. 2004
- University Kiel, Ecosystem Research Center. *Agrarlandschaftsmanagement - Modellierung, Simulation, Regionalisierung und Optimierung*.

2003

- Annual Meeting ASA-CSSA-SSSA, Denver, Colorado, USA, Changing Sciences for a Changing World: Building a Broader Vision. Invited talk: *Optimization of Farm Management using non-linear Agroecosystem models: Methods, Applications and Perspectives*, November 2003
- University Canberra, Australien und CSIRO Australia: *Environmental modelling and management: Case studies and applications of optimisation techniques*, July 2003

2001

- Lecture at Inst. of Computer Science TU München. *Modellierung und Simulation geoökologischer Prozesse*. Dec. 2001
- Lecture at Institute for Physical Geography, TU Frankfurt: *Modelle, Simulation und Geographische Informationssysteme – Grundlagen geoökologischer Forschung und Lehre.*

RESEARCH PROJECTS (3RD PARTY FUNDING)

Major Collaborations

Biodiversity Ecosystem functioning

- Lucas Garibaldi, Universidad Nacional de Río Negro, Argentina; Michael Schmidt, CONABIO, Mexico;
- Jessica Gurevitch, Stony Brooks Univ., USA;
- Gretchen Daily, Woods Inst., Univ. Stanford, USA,
- Tim Newbold Univ. College London, UK

Socio-Environmental Systems

- Orjan Bodin, Stockholm Resilience Centre, Sweden;
- Graeme Cumming, James Cook University, Australia;
- Reinette Biggs, Univ. South Africa;
- Guy Ziv, University of Leeds, UK;
- Jonathan Cramer, Margareth Palmer, Univ. Maryland, SESYNC, USA

Economics

- Thomas Hertel, Purdue Univ., USA

Land use and resource appropriation

- Claire Kremen, Navin Ramankutty, Univ. of British Columbia, Canada; Tomas Václavík, Univ. Olmuc, Czech Rep.;
- Peter Verburg, Vreije Universität Amsterdam, Netherlands;
- Felix Eigenbrot, Univ. Southampton, UK

List of 3rd party funded projects

2020 2025 BestMAP EU H2020 260.000 €
www.bestmap.eu
The Horizon 2020 project BESTMAP will provide improved tools to European policymakers to predict the impacts of future EU agriculture policies, taking account of farmers' needs and effectively monitor policy impacts on natural, social and cultural assets in rural areas.

2019 2022 GeoKUR **Germany Ministry of Resarch and Education (BMBF)** **453.000 €**

geokur.geo.tu-dresden.de

The BMBF project GeoKur aims to support the curation and quality assurance of environmental data already during the research process, throughout the whole life cycle of the data. Therefore, existing standards and best practices are evaluated and integrated and finally tested and implemented in a comprehensive proof-of-concept using the example of global land-use dynamics data

2016 2022 MigSoKo **Germany Ministry of Resarch and Education (BMBF)** **1.400.000 €**

The junior research group headed by Dr. Kathleen Hermans (under my supervision), aims to understand the causalities between environmental change and human migration in the tropics. In recent decades, millions people worldwide are estimated to have migrated due to environmental change. The close relationships between environmental factors and political, economic, and social factors driving migration make it challenging to understand the role of the environment in migration processes. Environmental pressure supports out-migration, whereas in-migration may affect the landscape at the migrant's destination due to a possible overexploitation of local natural resources. The aim of MigSoKo is to: (1) Identify and explain spatial patterns of migration and environmental change, and (2) Explore the causality between environmental change, population pressure, human migration, and environmental consequences of migration for drylands: a biome where both significant environmental changes and migration have been observed. The group takes a global view and also conducts case study work in Ethiopia.

2013 2017 ECOPOTENTIALS EU H2020 **150.000 €**

ECOPOTENTIALS (Improving improving future ecosystem benefits through earth observations) is a large European-funded H2020 project that focuses its activities on a targeted set of internationally recognised protected areas, blending Earth Observations from remote sensing and field measurements, data analysis and modelling of current and future ecosystem conditions and ecosystem services. ECOPOTENTIAL considers cross-scale geosphere-biosphere interactions at regional to continental scales, addressing long-term and large-scale environmental and ecological challenges.

2009 2022 ESCALATE **Helmholtz Association** **600.000 €**

www.ufz.de/escalate

Helmholtz Research School for Ecosystem Services under Changing Land-use and Climate (ESCALATE): Our main goal is educate a new generation of young scientists in interdisciplinary ecosystem service research by bringing together an experienced and multidisciplinary team for doctoral education, integrating the UFZ with excellent external partners. ESCALATE provides harmonized education in theoretical principles of all involved disciplines, enabling interdisciplinary thinking and research on ecosystem services.

2009 2017	**GLUES** www.ufz.de/glues	**Germany Ministry of Resarch and Education (BMBF)**	**4.400.000 €**

The research programme Sustainable Land management is being coordinated by the scientific coordination and synthesis project GLUES (Global Assessment of Land Use Dynamics, Greenhouse Gas Emissions and Ecosystem Services). The objective of the consortium aims at an overarching coordination of international cross-sectoral activities of 12 international research project, and comprises the support through various communication measures and a synthesis of results generated within the programme. A network among science and stakeholders will be initiated and a common data platform, consistent global land use scenarios support the work. Synthesis is done by an analysis of global and regional findings on land use management related to ecosystem services and green house gas emissions.

2012 ongoing	**iDiv (FZT 118)** www.idiv.de	**German Science Foundation (DFG)**

The German Centre of integrative Bidioversity Research (iDiv) was set up back in 2012 aiming at recording biological diversity in its complexity, making available and using scientific data on a global level, and developing strategies, solutions and utilization concepts for decision-makers in order to prevent any further loss of biodiversity. For the resarch area *Biodiversity Conservation - safeguarding ecosystem functions and services*, I was founding PI for the 1st funding period. iDiv was very successfully evaluated in 2016 and now continues for the 2nd period (2017-2020). PI's for the second period were recruited from the professors appointed in the 1st phase.

2012 2017	**OPERAs**	**EU FP 7**	**150.000 €**

OPERAs (Operational Potential of Ecosystem Research Applications) is an European research project which aims to bridge the gap between ecosystem science and practice. The project is focused on ecosystem services and natural capital science and on enabling stakeholders to apply these concepts in practice.

2014 2015	**LUBDES**	**SESYNC, NSF**	**Travel Grant**

This SESYNC funded project LUBDES seeks for conceptual and data driven synthesis that acknowledges the multidimensional complexity captured in the label 'land use' in relation to biodiversity and ecosystem services. Other involved partners include Peter Verburg, Gretchen Daily and Matt Walpole.

2011 2016	**DELITZSCH**	**Germany Ministry of Resarch and Education (BMBF)**	**560.000 €**

Energy-efficient Delitzsch: The pathway of a city to energy-efficiency under conditions of population shrinkage.

2013	**2015**	**CONABIO**	**National Commission for Knowledge and Use of Biodiversity Mexico**	**34.000 €**

Improving species distribution models of endangered plants (Orchidaceae, Pinaceae, Cupressaceae, Taxaceae, Podocarpaceae) in Mexico by utilizing remote sensing data and spatial measures of model uncertainty

2012	**2015**	**CONNECT**	**Germany Ministry of Resarch and Education (BMBF) / BiodivERsA**	**420.000 €**

Linking biodiversity CONservatioN and ecosystem services: advancing insights in tradeoffs and synergies between biodiversity, EcosysTem functioning and ecosystem service values for improved integrated biodiversity policy

2008	**2009**	**POLATE**	**Germany Ministry of Resarch and Education (BMBF) / BiodivERsA**	**532.510 €**

Synthesis and review study to assess research needs for a better understainding pf land use and land management effects on biogeochemical cycle to achive climar mitigation potentials.

2007	**2010**	**PLUREL**	**EU FP6**	**700.000 €**

Peri-urban land use relationships Strategies and Systainability Assessment Tools for urban-rural linckages. PLUREL will develop new strategies and innovative planning and forecasting tools that are essential for developing sustainable urban-rural land use relationships. These strategies and tools, generic in nature, will support the analysis of urbanisation trends in the EU so that ways can be identified to support this process and minimise their negative impacts, and improve the quality of life of the urban population. PLUREL will evaluate costs for the implementation of these strategies, and aid stakeholders to better understand, plan and forecast the interactions between urban, peri-urban and rural areas.

2006	**2011**	**3ZM-Grimex**	**Germany Ministry of Resarch and Education (BMBF)**	**300.000 €**

Development of a coupled model for integrated flood risk management of surface and groundwater flow in urban areas

2005	**2006**	**AmLaTUR**	**DAAD**	**10.000 €**

The goals of the projects that are supported by this cooperation between the Centre for Environmental Research (UFZ) and the Gund Institute of Ecological Economics (GIEE) are two-fold. (1) Integrate models for simulating land use change with the associated land consumption and land surfacing, growing traffic density as well as flows of matter through the landscape, and the assess ecosystem services provided by the dynamically changing landscape; (2) Use this model system within an optimization framework to estimate, assess and compare different strategies of landscape management.

2002 2003 **DAAD** **10.000 €**

Cooperation with Central Biological Laboratory des University of Maryland Centers for Environmental Sciences. Projekt „A GIS based habitat suitability model for Chesapeake Bay blue crab".

2000 **SE 769-1/1** **DFG** **15.000 €**

Application of numerical algorithms of control theory for regional agro-ecological Models with respect to nutrient and pesticide dynamics. Coperation with Prof. Dr. Robert Costanza, Maryland, Institute for Ecological Economics, University of Maryland, USA.

TEACHING

Mentoring Summary (**2004-2020**)	**male/female**
Directly mentoring Ph.D. students (1st reviewer)	9/6
Member in committee of Ph.D. students (2nd reviewer)	5/7
Mentoring postdocs (3-year appointments or longer)	11/6
- From those appointed to professorships	4/3
Committee member of professorship appointments	6

Credo

I always aim at teaching students to be independent, critical and creative thinkers. This especially means, not be afraid of making mistakes but being open and to learn through scientific discussions. In all my lectures, seminars and courses, I teach that data gathering in the field, conceptional as well as mathematical modelling and numerical/statistical analysis is part of the whole picture of environmental research. I aim at motivating students by providing a challenging, problem driven research question within each lecture. In my courses I embed up-to-date research and methods even in undergraduate courses, as this is key to get students excited at scientific progress and innovation. This enables us to assess scientific progress to teach interdisciplinary work.

Due to limited teaching obligations, I teach classes in sustainability science and environmental resource management mainly in master programs, while having experiences in undergraduate (B.Sc.) programs.

I have in-depth experience in organizing and implementing structured Ph.D. programs in environmental science, such as the graduate school ESCALATE at UFZ, Martin-Luther University and University Leipzig as well as the graduate school of the German Centre of integrative Biodiversity Research (yDiv), which I was a funding member. In this environment we developed and implemented the concept of **Ph.D. synthesis workshops**, in which we teach the Ph.D. hands-on interdisciplinary group work with in synthesis project of limited extend, inclding writing and submitting a joint manuscript, see Ziv *et al.* (2018, 2016), Dittrich *et al.* (2017)

Lectures

Graduates (Martin-Luther University Halle-Wittenberg annually since 2004)

- *Introduction in Environmental Modelling*: Lecture and practical exercise with modelling tools and focus on agro-ecosystem and hydrological Systems. (5 ECTS)

Undergraduates (Technical University Braunschweig, annually till 2004)

- *Introduction to computer science* (2 ECTS)
- *Geographic information systems (GIS)* (4 ECTS)
- *Practical Introduction to programming languages (C, Mathematica)* (2 ECTS)
- *Numeric of complex environmental simulation models*: Lecture and practical exercise (3 ECTS)

Seminars (including practical exercise)

Graduates (Martin-Luther University Halle-Wittenberg)

- *Applications of Ecosystem Modelling*: Practical exercise and seminar lecture based on recently published journal papers (2 ECTS)
- *The Stern Report*: A critical review (2 ECTS)
- *The Millennium Ecosystem Assessment*: A critical review (2 ECTS)

THESIS SUPERVISION

Professorship appointies of colleagues under my supervision

- Prof. Dr. Anna Cord. Affiliation from 2019 onwards: *Professur für Modellietrung in der Landschatsökologie*, TU Dresden
- Dr. Nina Schwarz. Affiliation from 2016 onwards: *Assistant professor in the faculty of Geo-Information Science and Earth Observation (ITC)* of the University of Twente, The Netherlands.
- Prof. Dr. Sven Lautenbach. *Affiliation from 2012: Assistant Professor for Landuse Modelling and Ecosystem Services*, Rheinische Friedrich-Wilhelms-University of Bonn, Insitute for Geodesy and Geoinformation Bonn, Germany
- Prof. Dr. Dagmar Haase. Affiliation from 2009 onwards: *Professor for Landscape Ecology*, Department of Geography, Humboldt University Berlin, Berlin, Germany
- Prof. Dr. Carsten Dormann (2002-2011): *Present affiliation:* Albert-Ludwigs-Universität Freiburg, Department of Forest Biometry, Freiburg, Germany

Habilitationen

- Dagmar Haase (2009): *Dynamics of urban regions. From theory-driven data analysis to quantitative models.* Martin-Luther University Halle-Wittenberg.
- Martin Volk (2009): *Scale appropriate analysis, assessment and management of landscape water and matter dynamics*. Martin-Luther University Halle-Wittenberg.

Supervised Postdocs

- Justin Calabrese, Ph.D. (2005-2007) *Present affiliation:* Research Ecologist, Smithsonian Conservation Biology Institute, USA
- Ameur M. Manceur, Ph.D. (2012-2014) *Present affiliation:* Caprion, Montreal, Canada
- Dr. Florian Eppink (2008-2011): *Present affiliation:* Landcare Research Maanaki Whenua, Governance and Policy Team, Auckland, New Zealand

Ph.D. thesis/Doctorate degree

Theses completed

- Christophe Dominik (2012-2018): *The effects of surrounding landscapes on the biocontrol-production function in rice dominated agroecosystems*. Matin-Luther University Halle-Wittenberg.
- Lukas Egli (2021): *Stabelazing agricultural system through diversity.* University Potsdam, co-supervised with Prof. Dr. Volker Grimm
- Veronika Liebelt (2012-2019): *Explaing pattern of of urban green, housing prices and inner urban migration using a agent based model*. Martin-Luther University Halle-Wittenberg

- Stefan Schmidt (2011-2017): *Global distribution of ecosystem services and the uncertainty of the valuation*. Martin-Luther University Halle-Wittenberg
- Madhumitha Jaganmohan (2012-2017): *The influence of urban form on urban ecosystem services and biodiversity.* Martin-Luther University Halle-Wittenberg
- Johannes Förster (2011-2017): *Assessing ecosystem services across multiple scales*. Martin-Luther University Halle-Wittenberg
- Markus Meyer (2012-2016): *Environmental assessment of different feedstocks for solid biofuels.* Martin-Luther University Halle-Wittenberg
- Katharina Gerstner (2011-2016): *Global effects of land use change to species distribution and global biodiversity*. Martin-Luther University Halle-Wittenberg
- Nadja Kabisch (2008-2011): *Heterogene urbane Bevölkerungsdynamik in Europa Identifizierung aktueller Prozessverläufe und ihrer Triebkräfte auf verschiedenen räumlichen Ebenen im Modellzusammenhang*. Martin-Luther University Halle-Wittenberg
- Christian Schweizer (2006-2009): *Modeling drivers and socio-environmental impacts of regional land-use change: Integrating new processes into the SITE modeling framework.* Martin-Luther Univesity Halle-Wittenberg
- Stefan Liersch (2006-2009): *Development of a GIS-based monitoring and information system to support adaptive management*. Martin-Luther Univesity Halle-Wittenberg
- Michael Strohbach (2007-2010): *Impact of Urban Patterns on ecosystem function and services*. Martin-Luther University Halle-Wittenberg
- Maik Renner (2008-2011): *Land use effects and climate impacts on evapotranspiration and catchment water balance*. TU Dresden
- Annelie Holzkämper (2004-2007): *Spatial optimization of land-use patterns with respect to habitat functions.* Martin-Luther Univesity Halle-Wittenberg
- Christine Vogel (1999-2002): *Räumlich explizites Modell auf Basis von Habitateignung und Populationsdynamik für Carabiden*. TU Braunschweig

Mentoring/Supervisioning incl. Committee Membership, ongoing

- Juliane Groth: *The dynamics between migration and environmental change in Ethiopia – Empirical Insights from rural sending and receiving areas.* Martin-Luther University Halle-Wittenberg (in progress since 2019)
- Julia Palliwoda: *Urban green infrastructure in Leipzig: Ecosystem services, user's visions and the influence of green, spatial and grey characteristics. Implications for a resilient development.* Martin-Luther University Halle-Wittenberg (in progress since 2019)
- Charlotte Wiederkehr: *The environment-migration nexus: Transferring knowledge from local to global scale* Martin-Luther University Halle-Wittenberg (in progress since 2019)
- Maria Gabriela Rodríguez Barrera: *The role of prairie dogs in maintaining ecological functions and plant functional diversity in Mexican grasslands*, Martin-Luther University Halle-Wittenberg (in progress since 2018)
- Andreas Dittrich: *Trade-offs between ecosystem service and biodiversity in German agricultural landscapes*, Martin-Luther University Halle-Wittenberg (in progress since 2013)

Commitee Member/External Thesis Review

- Lisanne Hölting (2021): *Multifunctional landscapes – an ecosystem service perspective.* Technical University Dresden, 1st supervisor Prof. Dr. Anna Cord
- Jule Schulze (2016): *Social-ecological modeling for policy analysis in transformative land systems. Supporting evaluation and communication for sustainability*, University Osnabrück, 1st supervisor Prof. Dr. Karin Frank.

- Laura Kehoe (2016): *Of food & fauna: investigating the relationship between global agricultural land use & biodiversity*, Humboldt University Berlin. 1st supervisor Prof. Dr. Tobias Kuemmerle.
- Benjamin Stuch (2017) *Food Security and Biodiversity Conservation under Global Change*. University Kassel. 1st supervisor: Prof. Dr. Joe Alcamo
- Sibyl Hanna Brunner (2017): *How to reach desired futures supporting key ecosystem services? – A backcasting approach for inferring management strategies from the local to the regional scale.* ETH Zurich, Swiss. 1st supervisor Prof. Dr. Gret-Regamy
- Shalini Gupta (2010): A Modeling Analysis of Changing Global Land Use as affected by Changing Demands for Wood Products. University Kassel, 1st supervisor: Prof. Dr. Joe Alcamo
- Mira Kattwinkel (2009): *Biodiversity of urban brownfields: Modelling species occurrence and persistence in dynamic habitats*. University Oldenburg, 1st supervisor Prof. Dr. Michael Kleyer.
- Andre Jellema (2008): Analysis and Design of Multifunctional Agricultural Landscapes - a Graph Theoretic Approach. University Wageningen
- Mathias Mimler (2008): Design, implementation and application of a generic framework for interated regional land-use modelling. University Kassel, 1st supervisor: Prof. Dr. Joe Alcamo
- Maik Heistermann (2006): Modelling the Gobal Dynamics of Rain-fed and Irrigated Croplands. Faculty of Computer Science. University Kassel, 1st supervisor: Prof. Dr. Joe Alcamo
- Barbara Strauss (2006): Insects in urban brownfields Analysis of species occurrences, community composition, and trait frequencies alon a successional gradient, Faculty for Methematics and Natural Sciences, University Oldenburg, Germany, 1st supervisor Prof. Dr. Michael Kleyer.
- Sven Lautenbach (2005): Modellintegration zur Entscheidungsunterstützung für die Gewässergütebewirtschaftung im Einzugsgebiet der Elbe, Universtät Osnabrück, 1st supervisor: Prof. Dr. Michael Matthis
- Janina Onigkeit (2005): Ein Modell für die Sticksoff- und Kohlenstoffumsätze im Boden von Agrarökosystemen unter besonderer Berücksichtigung der Variabilität der mikrobiellen Aktivität. TU Braunschweig, 1st supervisor Prof. Dr. Otto Richter