

Dr. Sara König

born May 9, 1988 in Mettmann, Germany

Education

- 11/2012 – 07/2016 **PhD in Environmental Modelling**, Faculty Mathematics/Informatics,
Osnabrück University, Germany
- 04/2011 – 09/2012 **MSc Environmental Systems and Resources Management**,
Institute of Environmental Systems Research, Osnabrück University, Germany
- 09/2007 – 03/2011 **BSc Applied System Science**,
Institute of Environmental Systems Research, Osnabrück University, Germany

Research experience

- since 06/2018 **Postdoctoral Researcher**, Department Soil System Science,
BonaRes Centre for Soil Research,
Helmholtz Centre for Environmental Research - UFZ, Leipzig, Germany
- 08/2016 – 05/2018 **Postdoctoral Researcher**, Department Ecological Modelling,
WG Microbial Ecosystem Analysis,
Helmholtz Centre for Environmental Research - UFZ, Leipzig, Germany
- 11/2012 – 07/2016 **PhD Student**, Department Ecological Modelling &
Department Environmental Microbiology,
Helmholtz Centre for Environmental Research - UFZ, Leipzig, Germany
*„Modelling spatiotemporal dynamics of biodegradation under disturbances -
Insights into functional stability of microbial ecosystems“*
(Supervisors: Prof. Dr. Karin Frank, Dr. Martin Thullner)
- 03/2012 – 09/2012 **Master Student**, Laboratory for Environmental Analytics,
Institute of Environmental Systems Research, Osnabrück University, Germany
„Exposure, effects and risks of benzophenone plastic additives in the aquatic environment“
(Supervisors: Dr. habil. Elke Fries, Prof. Dr. Henner Hollert (RWTH Aachen))
- 2010 – 2012 **Student Research Assistant**, Laboratory for Environmental Analytics,
Institute of Environmental Systems Research, Osnabrück University, Germany
(Supervisor: Dr. Jörg Klasmeier)
- 04/2010 – 03/2011 **Bachelor Student**, Laboratory for Environmental Analytics,
Institute of Environmental Systems Research, Osnabrück University, Germany
„Do additives in LDPE pellets influence the sorption of PAHs?“
(Supervisors: Dr. habil. Elke Fries, Prof. Dr. Michael Matthies)

Publications (see also Google Scholar)

H-Index (Web of Science / Google Scholar): 9

- 2024 Vogel H.-J., Ammelung W., Blagodatsky S., Bonkowski M., Grosch R., Herbst M., Kiese R., Koch S., **König S.**, Kuhwald M., Lang B., Lennartz B., Leinweber P., Müller C., Pagel H., Rillig M., Russell D., Schulz S., Siebers N., Vetterlein D., Wachendorf C., Weller U. & Wollschläger U. How to adequately represent biological processes in modeling multifunctionality of arable soils. *Biol. Fert. Soils* **60**, 263–306, DOI: 10.1007/s00374-024-01802-3
- Müller S., Lange M., Fischer T., **König S.**, Kelbling M., Leal Rojas J. J. & Thober S. FINAM – is not a model (v1.0): a new Python-based model coupling framework. *Geosci. Model Dev. Discuss.* [preprint], DOI: 10.5194/gmd-2024-144
- 2023 **König S.**, Weller U, Betancur-Corredor B., Lang B., Reitz T., Wiesmeier M., Wollschläger U. & Vogel H.-J. BODIUM - a systemic approach to model the dynamics of soil functions. *Eur. J. Soil Sci.* **75**, 5, e13411, DOI: 10.1111/ejss.13411
- Vogel H.-J., Betancur-Corredor B., Franke L., **König S.**, Lang B., Lucas M., Rabot E., Stöbel B., Weller U, Wiesmeier M., Wollschläger U. The soil knowledge library (KLIB) - a structured literature database on soil process research. *SOIL* **9**, 533–543, DOI: 10.5194/soil-9-533-2023
- 2021 Clark, A.T., Arnoldi, J.-F., Zelnik, Y.R., Barabas, G., Hodapp, D., Karakoç, C., **König S.**, Radchuk, V., Donohue, I., Huth, A., Jacquet, C., de Mazancourt, C., Mentges, A., Nothaaß, D., Shoemaker, L.G., Taubert, F., Wiegand, T., Wang, S., Chase, J.M., Loreau, M. & Harpole, S. General statistical scaling laws for stability in ecological systems *Ecol. Lett.* **24**, art. 7, 1474 - 1486
- Stumpf, B., Glendining, M., Grosse, M., Hoffmann, C., Joschko, M., **König, S.**, Kroschewski, B., Cardoso-Lisboa, C., Macdonald, A., Macholdt, J., Makádi, M., Ostler, R., Perryman, S., Piepho, H.-P., Schnell, S., Storkey, J., Vaziritabar, Y., Weller, U. & Honermeier, B. Long-term-experiments: Methods, Standardization, and Modelling *BonaRes Series* 2021/2
- 2020 **König S.**, Vogel, H.-J., Harms, H. & Worrich, A. Physical, Chemical and Biological Effects on Soil Bacterial Dynamics in Microscale Models *Front. Ecol. Evol.* **8**, art. 53
- 2019 **König S.**, Köhnke, M.C., Firle, A.-L., Banitz, T., Centler F., Frank K. & Thullner, M. Disturbance size can be compensated for by spatial fragmentation in soil microbial ecosystems. *Front. Ecol. Evol.* **7**, art. 290
- 2018 **König S.**, Worrich A., Banitz T., Centler F., Harms H., Kästner M., Miltner A., Wick L.Y., Thullner M. & Frank K. Spatiotemporal disturbance characteristics determine functional stability and collapse risk of simulated microbial ecosystems. *Sci. Rep.* **8**, art. 9488
- König S.**, Worrich A., Banitz T., Harms H., Kästner M., Miltner A., Wick L.Y., Frank K., Thullner M. & Centler F. Functional resistance to recurrent spatially heterogeneous disturbances is facilitated by increased activity of surviving bacteria in a virtual ecosystem. *Front. Microbiol.* **9**, art. 734

- 2017 **König S.**, Worrich A., Centler F., Wick L.Y., Miltner A., Kästner M., Thullner M., Frank K. & Banitz T. Modelling functional resilience of microbial ecosystems: Analysis of governing processes. *Environ. Modell. Softw.* **89**, 31 - 39

Worrich A., Stryhanyuk H., Musat N., **König S.**, Banitz T., Centler F., Frank K., Thullner M., Harms H., Richnow H., Miltner A., Kästner M. & Wick L.Y. Mycelium-mediated transfer of water and nutrients stimulates bacterial activity in dry and oligotrophic environments. *Nat. Commun.* **8**, 15472

- 2016 **König S.**, Modelling spatiotemporal dynamics of biodegradation under disturbances: insights into functional stability of microbial ecosystems, Dissertation, Universität Osnabrück

Worrich A., **König S.**, Banitz T., Centler F., Frank K., Thullner M., Harms H., Miltner A., Wick L.Y. & Kästner, M. Bacterial dispersal promotes biodegradation in heterogeneous systems exposed to osmotic stress. *Front. Microb.* **7**, art. 1214

Worrich A., **König S.**, Miltner A., Banitz T., Centler F., Frank K., Thullner M., Harms H., Kästner M. & Wick L.Y. Mycelium-like networks increase bacterial dispersal, growth, and biodegradation in a model ecosystem at various water potentials. *Appl. Environ. Microb.* **82** (10), 2902 - 2908

Conference contributions

- 2024 European Geosciences Union (**EGU**), Vienna, Austria (oral)
International Symposium on Microbial Ecology (**ISME19**), Cape town, South Africa (oral)
- 2023 BonaRes conference, Berlin (oral)
European Geosciences Union (**EGU**), Vienna, Austria (oral)
- 2022 European Geosciences Union (**EGU**), Vienna, Austria (oral)
Frontiers in Experimental Research, Leipzig (oral)
German Soil Science Society (**DBG**), Trier (oral)
International Symposium on Microbial Ecology (**ISME18**), Laussane, Switzerland
VDLUFA-Jahrestagung, Halle(Saale) (oral)
- 2021 European Geosciences Union (**EGU**), online (display)
- 2020 Virtual workshop: LTE research - methods, standardisation and modelling (oral)
European Geosciences Union (**EGU**), online (display)
- 2019 DOK conference on LTFEs, Monte Verità, Ascona, Switzerland (oral)
Ecological Society of Germany (**GfÖ**), Münster (oral)
German Soil Science Society (**DBG**), Bern, Switzerland (oral)
European Geosciences Union (**EGU**), Vienna, Austria (oral)
LTFE-Meeting IOSDV/BonaRes, Gießen (oral)
- 2015–2018 Ecology of soil microorganisms (**ESM**), International Symposium on Microbial Ecology (**ISME17**), Ecology Across Borders (**EAB/BES**), Functional Ecology and Environment (**FEE**), European Geosciences Union (**EGU**), British Ecological Society (**BES**), International Conference on Chemistry & the Environment (**ICCE**), Congress of European Microbiologists (**FEMS**)

Coordination and organisational experience

- since 2024 **WP leader** of work package 4 of the EU HORIZON project DeepHorizon
- 2017 – 2024 Organisation of annual **Session** on topics related to soil modelling, EGU General Assembly, Vienna
- since 2022 Coordination of the **GLIMPSE consortium**[!\[\]\(a22ba4e13c745edbf29e51af246c4c12_img.jpg\)](#)
- 2020 **Workshop** „From process to prediction“, BonaRes status seminar, Leipzig
- 2019 **Workshop & Symposium** „Bridging scales in microbial ecology“, UFZ Leipzig
Workshop for BonaRes-Early Career Scientists, BonaRes status seminar, Leipzig
- 2018 Public event „**Night of the microbes**“[!\[\]\(33b18af9a4b997eb52666cfeb3c44157_img.jpg\)](#), Werk 2, Leipzig
- 2017 – 2018 **Sponsorship** Coordinator and Member of **local organizing committee (LOC)** of ISME17 (International Symposium on Microbial Ecology), chaired by Prof. Dr. Hauke Harms, August 2018, Leipzig, Germany
- 2016 **Workshop & Symposium** „Microbial dispersal in soil“, UFZ Leipzig
- 2013 – 2017 **Winter school** „Ecological Modelling“, Kohren-Sahlis
- 2011 **Excursion & Workshop** „Environmental Modelling at Research Institutes“, UFZ Leipzig

Awards

- 2020 „**Incredible Impacts Award**“ for organisation of ISME17 and „Night of the microbes“ (ICCA & BestCities Global Alliance 2020)
- 2019 „**CSF Award**“ for best talk at the DOK conference in Monte Verità, Switzerland
- 2019 Selected participant in the **Helmholtz-Advance Mentoring** program
- 2015 **Award** for second best poster at the HIGRADE conference

Outreach & other activities

- since 2024 **Committee chair** of the division „Soil System Science: Metric, Informatics, Statistics and Models in Soils“ of European Geosciences Union (**EGU**)
- since 2022 Part of the Twitter-Team of **BonaRes** and **Deutsche Bodenkundliche Gesellschaft**
- 2020 Science year 2020/2021 - Bioeconomy:
 - „**Nachgefragt!**“ interview about soil and bioeconomy
 - **Video presentation**[!\[\]\(4c660a3c4ce1da3313488b7854f55083_img.jpg\)](#) of the BonaRes exhibit on the „MS Wissenschaft“
- since 2020 **Committee member** of the division „Soil System Science: Metric, Informatics, Statistics and Models in Soils“ of European Geosciences Union (**EGU**)
- since 2018 Coordination of BonaRes **Early Career Scientists**
Member of the **UFZ - PostDoc AG**
Coordination of **PostDoc network** at UFZ Halle
- since 2016 **Journal peer review** for
EJSS, Scientific Reports, Environmental Science & Technology, MDPI, JIMB
- since 2015 **Member** of scientific societies:

- Deutsche Bodenkundliche Gesellschaft (DBG)
- Vereinigung für allgemeine und angewandte Mikrobiologie (VAAM)
- European Geosciences Union (EGU)
- British Ecological Society (BES)

Funding

- exp. 2025 LAND.VISION alliance - project BODIUM4Farmers (proposed for funding by BMBF)
- 2024 EU-project DeepHorizon
- 2022 UFZ grant for fully funded PhD cohort GLIMPSE (4 PhD students)
- 2020 BMBF funding initiative BonaRes - Soil as a Sustainable Resource for the Bioeconomy (co-author of submitted proposal for the third phase)
- 2019 UFZ integration grant
- 2018 DFG international scientific events grant for ISME17
- 2018 Meeting organization grant for ISME17 of FEMS (Federation of European Microbiological Societies)
- 2016 UFZ integration grant