

## PERSONAL INFORMATION



## Ursula Solard McKnight

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**Sex** Female | **Date of birth** 19/07/1974 | **Nationality** American

## PERSONAL STATEMENT

My research is highly transdisciplinary, integrating aquatic ecohydrology and contaminant hydrogeology with systemic climate-adaptation strategies to ensure the sustainable use of landscapes. I work at the environment-society interface, advancing cross-sector, catchment-based approaches to operationalise multifunctional Nature-based Solutions (NbS) and embed biodiversity, justice and well-being considerations within rural and urban resilience planning. My work focuses on co-developing participatory, simulation-guided adaptive co-management frameworks that support scientifically-grounded NbS design, monitoring and evaluation processes. Through this, I strengthen knowledge transfer across the climate-hydrology-ecology impact chain and generate actionable, scalable solutions for complex socio-ecological challenges.

## WORK EXPERIENCE

2021 – present

## Senior Researcher, SMHI, Hydrology Research Unit, Sweden

- Lead transdisciplinary research linking hydrology, ecology, climate impacts and stakeholder co-creation processes to operationalise multifunctional NbS across rural and urban landscapes
- Co-develop participatory, simulation-guided decision-support tools enabling scalable NbS design, implementation and evaluation.
- PI/WP lead for EU (Biodiversa+: NBSPLUS) and ECMWF (Destination Earth: DE\_330-MF: On-demand Extremes Digital Twin) projects
- Officer on Duty for Copernicus Emergency Management System, Flood monitoring and forecasting (CEMS Flood/EFAS)

2014 – 2021

## Associate/Assistant professor (Technical University of Denmark)

- Co-investigator/WP lead for Danish/EU-funded research on NbS, ecological monitoring, water governance and contaminant hydrology (e.g., RECONNECT; RIVERSCAPES, PIANO, GEOCON)
- Investigative hydrological techniques (innovative field and simulation tools) to support catchment-based water management.
- Supervised 9 PhD, 17 MSc, 6 BSc theses; developed/contributed to MSc/BSc courses covering surface water quality, ecohydrology/WRM, contaminant hydrogeology, environmental modelling
- Established a research group in aquatic ecohydrology; served as Head of Diversity & Inclusion

## EDUCATION AND TRAINING

2010-2011

## Additional pedagogical training (DTU)

- Education in University Teaching, covering PhD supervision, teaching international students, project management and proposal development

2006-2009

## PhD in Applied Geology (University of Tübingen, Germany)

- Focus: Contaminant hydrogeology, System Dynamics modelling (method developed by MIT), pollutant fate/transport, human health risk analysis
- *Dissertation*: A System Dynamics Approach for the Integrative Assessment of Contaminated Land Management Options

1998-2003

## Master in Applied Environmental Geoscience (University of Tübingen, Germany)

- Focus: Hydrogeochemistry, contaminant hydrogeology, applied geology, non-aqueous phase liquids

## ADDITIONAL INFORMATION

Selected, recent projects

2024-2028

2024-2026

2022-present

NBSPLUS (Biodiversa+), PI, establishing NbS services to support urban/rural climate resilience planning  
Green4Extremes (Formas), WP lead, multifunctionality analyses of green infrastructure for adapting to extreme heat and precipitation (floods)

DE\_330-MF (Destination Earth, Extremes DT), WP lead, advancing high-resolution extremes detection

- 2021-present and forecasting capabilities for Europe  
C3S2 contracts (ECMWF: Copernicus Climate Change Service), PM, evolving the existing operational seasonal hydrological forecasting service and its integration into national services
- 2018-2021 RECONNECT (EU H2020), participant, upscaling NbS measures for hydro-meteorological risk reduction

## PERSONAL SKILLS

Mother tongue(s) English

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
German	C2	C2	C2	C2	C1
Danish	B2	C1	B1	B1	B1
Swedish	C1	C1	B2	B1	B1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user  
Common European Framework of Reference for Languages

## Communication skills

- Excellent written/oral scientific communication; >65 conference contributions
- Experienced lecturer, facilitator and supervisor (>15 years)
- Skilled in transdisciplinary, multi-cultural collaboration and stakeholder co-creation

## Organisational / managerial skills

- >15 years contributing to/leading complex research projects and international consortia
- Experience as associate editor (*Journal of Hydrology*: 2020-2021) and research group leader
- Workshop organizer, session/event convener, and coordinator of small-to-large scale EU projects

## Digital skills

- Vensim, Stella Architect, ArcGIS, own DSS (e.g., DASH; CAROplus), experience with QGIS, Matlab, Rstudio, Fortran

## ADDITIONAL INFORMATION

### Selection of publications

40 peer-reviewed publications, h-index: 19 (22, GS); i-10-index: 34, Citations: 1207 (1884, GS)

- Wedi N., Sandu I., Bauer P., Acosta M., Andersen R.C., Andrae U., ...McKnight, U.S., ..., Pappenberger, F., 2025. Implementing digital twin technology of the earth system in Destination Earth. *JEMS* 3, 100015.
- Vinther, L., Broholm, M.M., Schittich, A.R., Haugsted, T., **McKnight, U.S.**, Draborg, H., Bjerg, P.L., Wunsch, U.J., 2025. Fluorescence spectroscopy as an indicator tool for pharmaceutical contamination in groundwater and surface water. *Chemosphere* 372, 144009.
- Viti, M., Ladenburg, J., Löwe, R., Sørup, H.J.D., **McKnight, U.S.**, Ambjerg-Nielsen, K., 2024. Beyond meta-studies: learnings from a large multi-site primary dataset on non-tangible benefits of Nature-Based Solutions. *Nature-Based Solutions* 6, 100146.
- Rad, M. Abtahi, A., Berndtsson, R., **McKnight, U.S.**, Aminifar, A., 2024. Interpretable machine learning for predicting the fate and transport of pentachlorophenol in groundwater. *Environmental Pollution* 345, 123449.
- Viti, M., Löwe, R., Sørup, H.J.D., Ladenburg, J., Gebhardt, O., Iversen, S., **McKnight, U.S.**, Ambjerg-Nielsen, K., 2023. Holistic valuation of nature-based solutions accounting for human perceptions and nature benefits. *Journal of Environmental Management* 334, 117498.
- Viti, M., Löwe, R., Sørup, H.J.D., Rasmussen, M., Ambjerg-Nielsen, K., **McKnight, U.S.**, 2022. Knowledge gaps and future research needs for assessing the non-market benefits of Nature-Based Solutions and Nature-Based Solution-like strategies. *Science of The Total Environment* 841, 156636.
- Lemaire, G.G., Rasmussen, J.J., Höss, S., Kramer, S.F., Schittich, A.R., Zhou, Y., Köppl, C.J., Traunspurger, W., Bjerg, P.L., **McKnight, U.S.**, 2022. Land use contribution to spatiotemporal stream water and ecological quality: Implications for water resources management in peri-urban catchments. *Ecological Indicators* 143, 109360.
- Carnohan, S., Clifford-Holmes, J.K., Retief, H., **McKnight, U.S.**, Pollard, S., 2020. Climate-change adaptation in rural South Africa: Using stakeholder narratives to build system dynamics models in data-scarce environments. *Journal of Simulation* 15, 5-22.
- Schittich, A.R., Wunsch, U., Kulkarni, H.V., Battistel, M., Bregnhøj, H., Stedmon, C., **McKnight, U.S.**, 2018. Investigating the role of humic DOM on the mobilization of arsenic in groundwater resources using coupled HPSEC-EEM fluorescence spectroscopy. *Environmental Science & Technology* 52, 13027-13036.
- Sonne, A.Th., **McKnight, U.S.**, Rønne, V., Bjerg, P.L., 2017. Assessing the chemical contamination dynamics in a mixed land use stream system. *Water Research* 125, 141-151.
- **McKnight U.S.**, Rasmussen, J.J., Kronvang, B., Binning, P.J., Bjerg, P.L., 2015. Sources, occurrence and predicted aquatic impact of legacy and contemporary pesticides in streams. *Environmental Pollution* 200, 64-76.