

## 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](http://ec.europa.eu/tolt/index_en.htm)
**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., Wünsch, 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.**, Arnbjerg-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.**, Arnbjerg-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., Arnbjerg-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., Wünsch, U., Kulkarni, H.V., Battistel, M., Bregnø, 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.**, Rønde, 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.