

## University of the Free State (UFS), South Africa

Through Dr. Dirk Jungmann, Dr. Hilmar Börnick and colleagues from Environmental Sciences very good collaborations exist with the [University of the Free State](#) (UFS), especially on the topics of water quality, drought and natural disasters. Dr. Jungmann is Research Fellow at the UFS [Centre for Environmental Management](#) (CEM) since 2022.

### Dr's. [Jungmann](#)/[Börnick](#) – Activities with UFS

#### Planned activities

- Sampling campaign and workshop at [VWUA](#) July 2024
- Establishing a proposal for the ERASMUS+ call for February 2024

#### Publications

Marinda Avenant , Hilmar Boernick , Stephanie Graumnitz , Ngitheni Nyoka , Beatrice Opeolu , Patrick Voua Otomo , Annika Schubert , Sara Schubert , Adriana Tascha Vos and Dirk Jungmann. (2024): Investigating a surface water quality monitoring approach for QwaQwa, South Africa, by combining biological in vitro tests and chemical analyses. *Frontiers in Water* (in press).

[Carstensen Lale](#), Rene Zippel, Ron Fiskal, Hilmar Börnick, Viktor Schmalz, Sara Schubert, Mario Schaffer, Dirk Jungmann, Stefan Stolte. (2023). Trace analysis of benzophenone-type UV filters in water and their effects on human estrogen and androgen receptors. *Journal of Hazardous Materials*.

THREATS OF EXTREME WEATHER EVENTS - Improving the Resilience of QwaQwa to the Multiple Risks of Climate Change. 2023. M.F. Avenant, J.A. Belle, H. Börnick, D. Jungmann, B. Opeolu , P. Voua Otomo, N. Davis and R. Schulze. WRC Report No. 3091/1/23 ISBN 978-0-6392-0538-0, DOI: [10.13140/RG.2.2.19798.46408](#)

#### Previous activities

- July 2023: TUD Funding Program for Internationalization for further water sampling and teaching activities at UFS in 2023. Supported by the School of Civil and Environmental Engineering and the UFS to establish advanced Lab capacity at the CEM.



- April 2023: Visit at TU Dresden of Eleanor Van Der Westhuizen Assistant Director Research Development.
- August 2022: [Dresden Junior Fellowship for Dr. Marinda Avenant](#) (Senior lecturer of Environmental Management, UFS Centre for Environmental Management)
- 2022: Dr. Jungmann Research fellow at the UFS Centre for Environmental Management (CEM)
- March 2022. Sampling campaign in the QwaQwa catchment area, rainy season



- March 2022. South African Mountain Conference. Organising a work shop dealing with The Serious Game “MoRe WATER” followed by a locally surface water sampling campaign as a springboard for new collaborative research.

#### Oral presentation:

Jungmann et al. Combining Effect-based Methods for Diagnoses and Monitoring Water Quality by Chemical Analyses as Part of a Comprehensive Water Quality Assessment

- 24-28 January 2022: (virtual) [Summer School on managing surface water quality](#): General framework, tools and implementing disaster management aspects in urban areas in Bloemfontein Funded by Volkswagenstiftung and jointly organized with UFS and Cape Peninsula University of Technology.

Development of Serious Game “[MoRe WATER](#)” (“Monitoring and Remediation of Waters”):

The game provides an integrated approach to learn about benefits and challenges of different strategies for water quality monitoring in a case study. This includes the application of different water quality parameters such as basic physico-chemical information, detection of specific chemicals and assessment of biological endpoints. Factors such as different stakeholder groups as well as a limited amount of money and time resemble the real life situation.

Video created as teaching material for the Disaster Management Training and Education Centre for Africa (DiMTEC).



- 2019-2023: Threats of extreme weather events: improving the resilience of QwaQwa to the multiple risks of climate change. Joint BMBF-WRC proposal but funding only approved by the WRC (Water Research Commission, South Africa).
- 25-29 March 2019: [Summer school on Monitoring of surface water quality](#): General framework, methods, tools and strategies at UFS. Funded by Volkswagenstiftung
- 2018-2019: First drought, then rain and flood: Increased resilience to multiple climate change risks in Southern Africa. Project funded by the BMBF (CLIENT II– Internationale Partnerschaften für nachhaltige Innovationen): Workshop at UFS, including colleagues from the Institute for Groundwater Studies (IGS), the Disaster Management Training and Education Centre for Africa (DiMTEC), and other research institutions in South Africa and Namibia.
- 3-4 December 2018: Workshop: “Increased Resilience to Multiple Risks of Climate Change in Southern Africa - MultiRisk”\_at UFS
- 2017: African Water and Climate Resilience Symposium Key note speaker on „The 1st African Water Symposium on WATER CONFLICT“, 19 – 21 June 2013, UFS Bloemfontein
- UNU-ViE: Supports the development of the new UNU concept of “twin-institutes“ at Mozambique 2010 – 2012
- Workshop (Dresden): Gründung der UNU Dresden (2009)

#### Other activities:

10 student mobilities via Leonardo and Promos (2009-2019)

2010-2012: BMBF-funded project on “Integrated assessment of water quality as basis of sustainable water management” in Mozambique” and support for the development of a planned UNU concept of twin-institutes (UNU-ViE in Mozambique) following the establishment of the UNU-FLORES in 2009 (2010-2012). However, UNU-ViE was eventually not established.