

## ESR 2 – Assessment of the performance of different soils as a reactive layer to enhance water quality during infiltration in MAR basins

Marcel Horovitz

Supervisors: Dr. habil. Teresa Leitao and Prof. Dr. Christoph Schüth

based at:

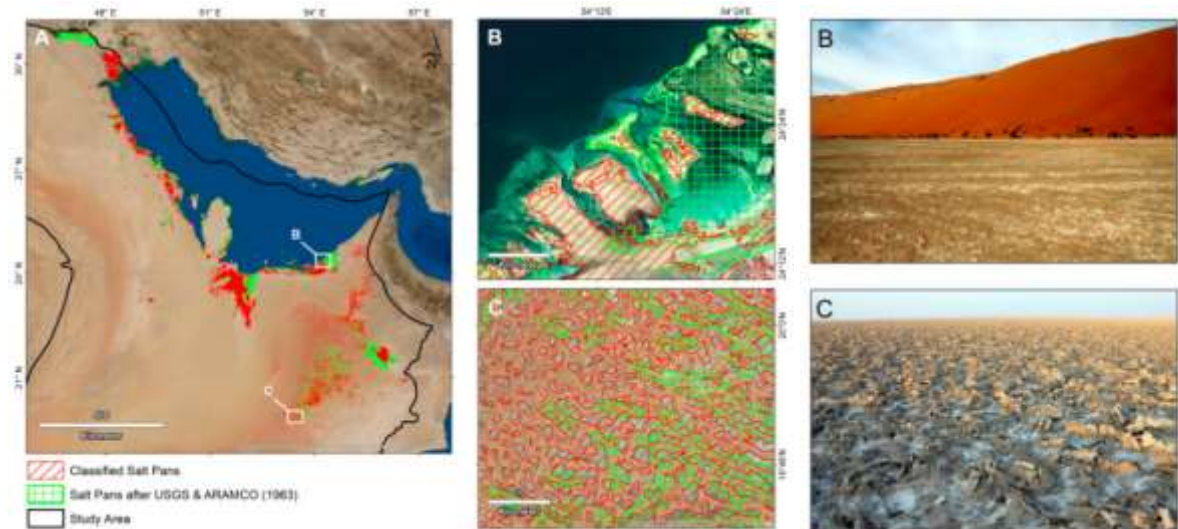
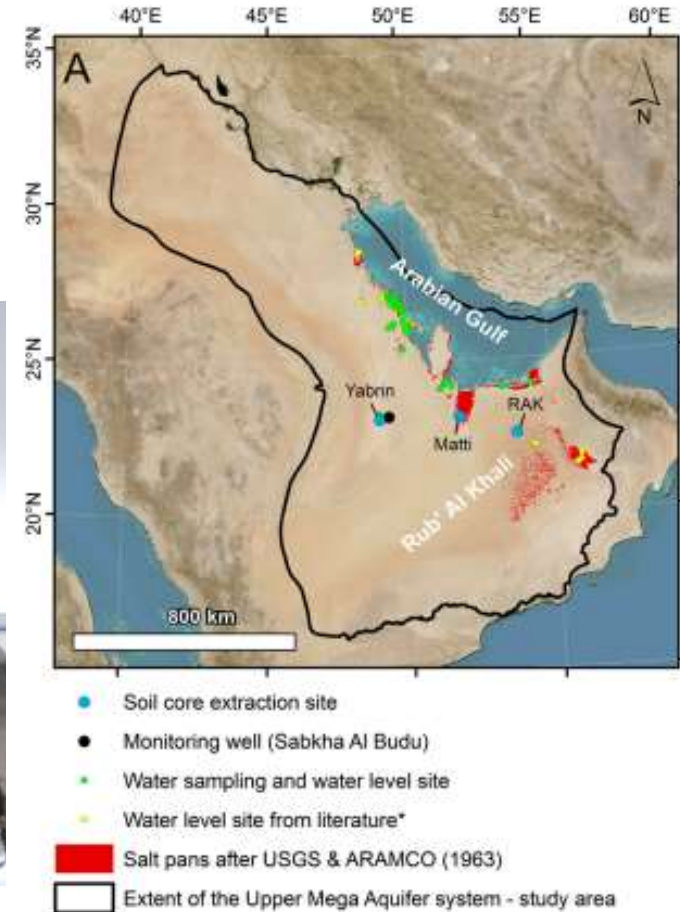
Laboratório Nacional de Engenharia Civil (LNEC), Lisbon, Portugal



# Academic Background

- Studies in Geology/Hydrogeology in Jena (Germany)
- Final Thesis at UFZ Halle/Saale (Germany) - **Evaporation in a water scarce area**
  - *Methods: Remote Sensing / Isotopic Composition of Brines / Column Experiment*

Evaporation from Salt pans:  $39 \text{ mm} \pm 13 \text{ mm} \Rightarrow 1.3 \text{ km}^3/\text{a} \pm 0.5 \text{ km}^3/\text{a}$   
 Recharge of the Upper Mega Aquifer: 1.5-2.9 km<sup>3</sup>



# Professional Background

- Hydrogeologist at SGS Institut Fresenius GmbH – Environmental Fate of Pesticides - **Groundwater Quality**
  - *Studies for Registration Procedure of Pesticides*
    - *Long term field studies*
    - *Elucidation of findings (a.i. or metabolites) above the EU threshold for pesticides in groundwater*



Source: Vermeulen (PI) et al. Research on exposure of residents to pesticides in the Netherlands

# ESR 2 – Project Title

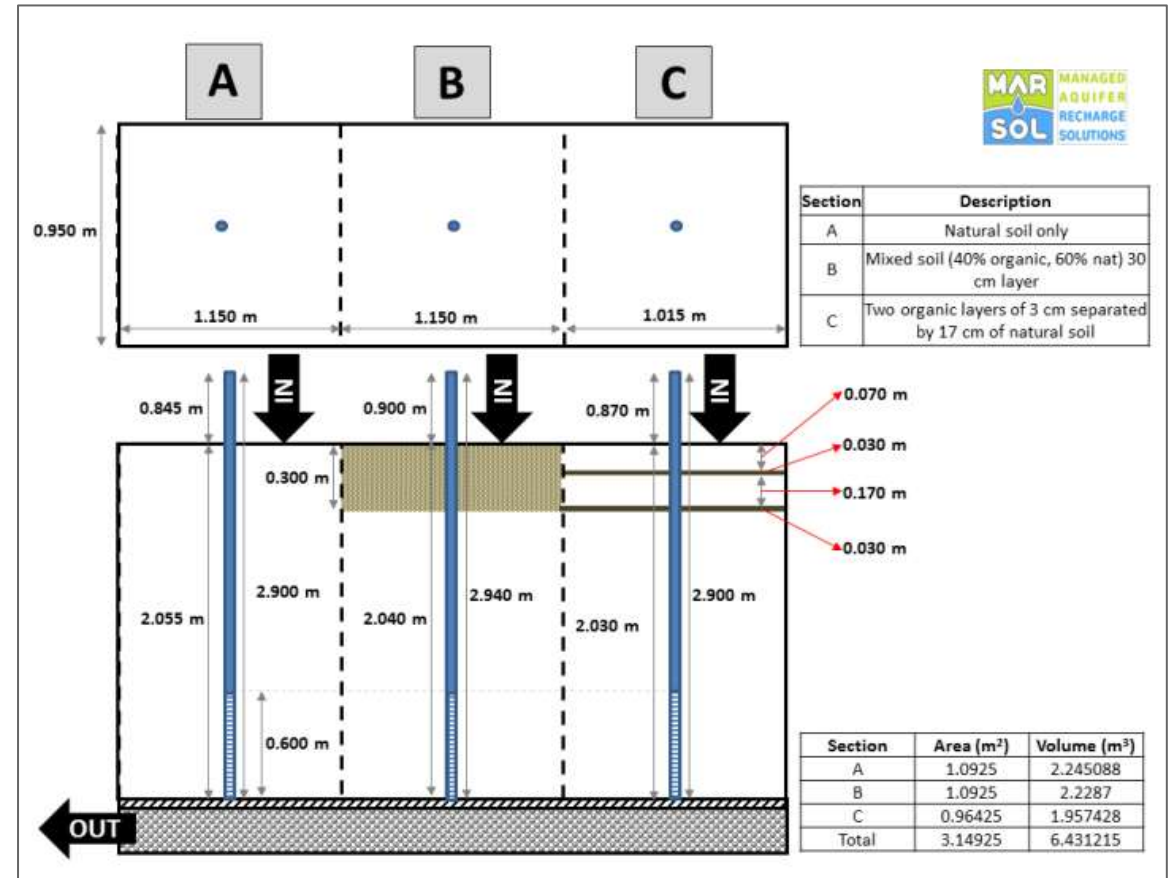
*Assessment of the performance of different soils as a reactive layer to enhance water quality during infiltration in MAR basins*

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*Physical and numerical modelling in a large-scale sand-box model*

# The Experimental Facility

## Current Design of the Sand Box:



# Design of Experiment

## Ideas for discussion and to refine:

- Constant Head conditions for artificial aquifer
- Sampling ports and probes throughout soil profile
- Depth dependent sampling in Piezometer (several screens)
- Artificial Sewage Effluent vs. Real WWTP Effluent
- Natural soils (mostly sands)
- Different amounts of organic carbon
- Reactive barriers/substances
- Emerging contaminants with broad physicochemical properties

Thank you for your attention

**MARSoluT**   
Managed Aquifer Recharge ITN

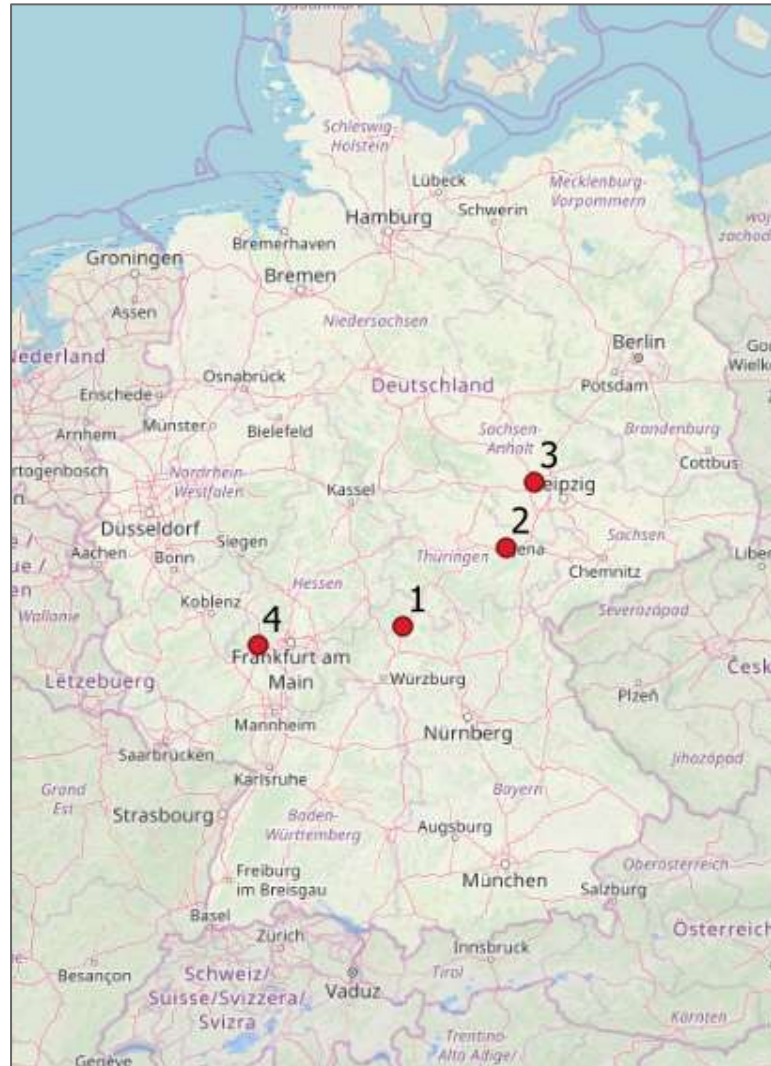
# ESR 2 – The Person Behind



**Halle (Saale)** – Helmholtz Centre for Environmental Research (UFZ) – Final Thesis



**Wiesbaden/Taunusstein** –  
SGS Institut Fresenius GmbH – Hydrogeologist



**Jena** – Friedrich-Schiller University –  
Studies in Geology  
(Hydrogeology/Soil Science)



**Münnersstadt** – Hometown