Effects of data assimilation on different fluxes of a fully coupled land surface/subsurface model

Bastian Waldowski[1], Insa Neuweiler[1], and Emilio Sánchez-León[2]

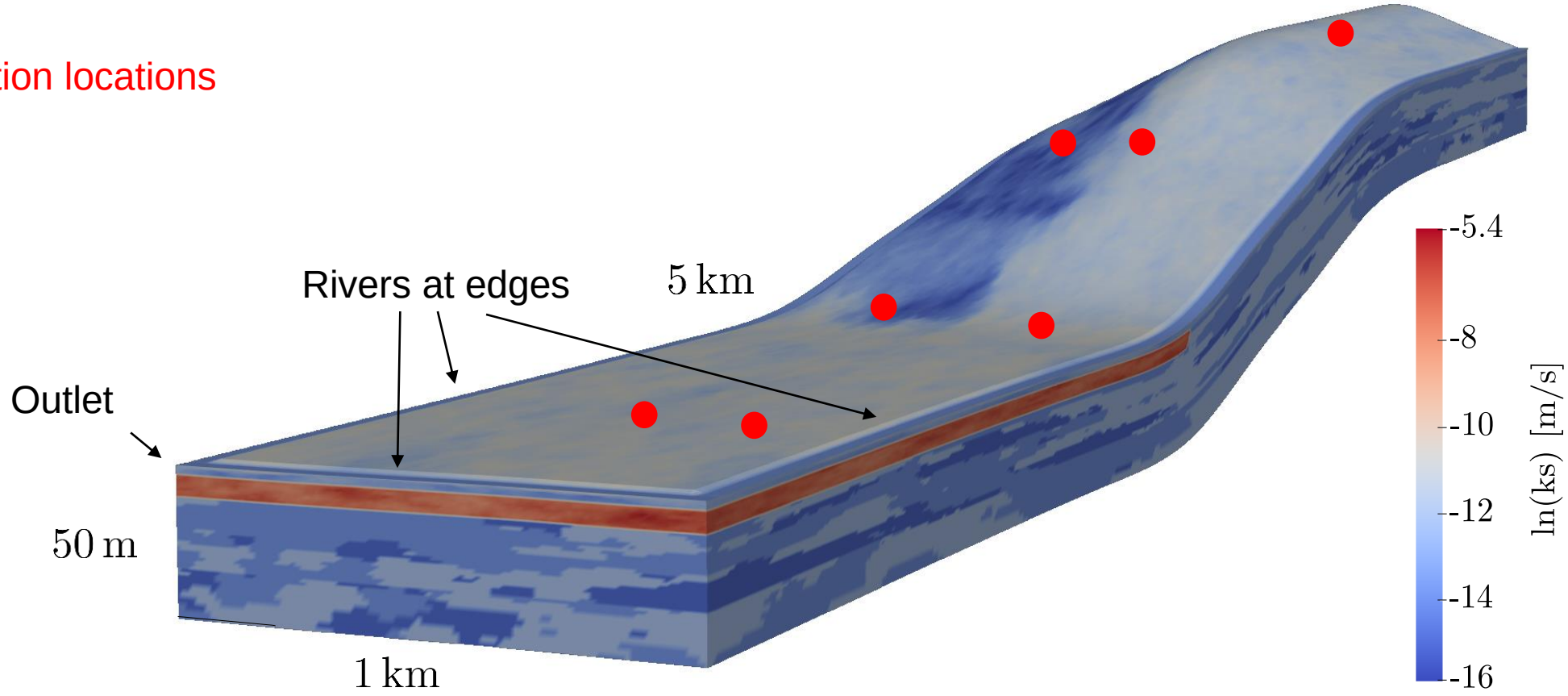
[1] Institute of Fluid Mechanics and Environmental Physics in Civil Engineering, University of Hannover, Germany
[2] Center for Applied Geoscience, University of Tübingen, Germany

Photography encouraged

Model Setup

TSMP: ParFlow-CLM

Observation locations



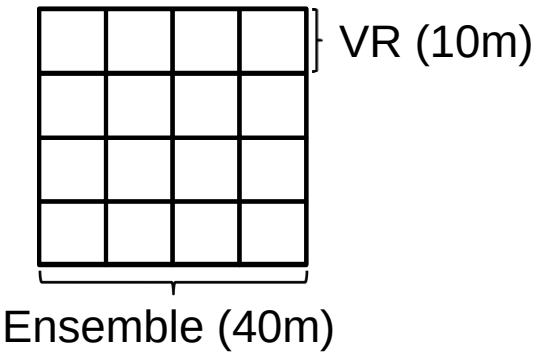
Photography encouraged

Ensemble setup (LEnKF)

TSMP-PDAF

Over 90 members

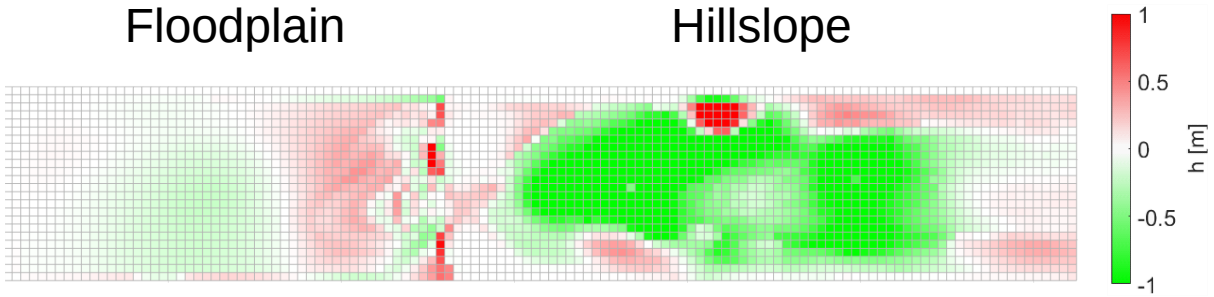
- Unique heterogeneous parameter fields
- Unique atmospheric forcings
- Reduced resolution



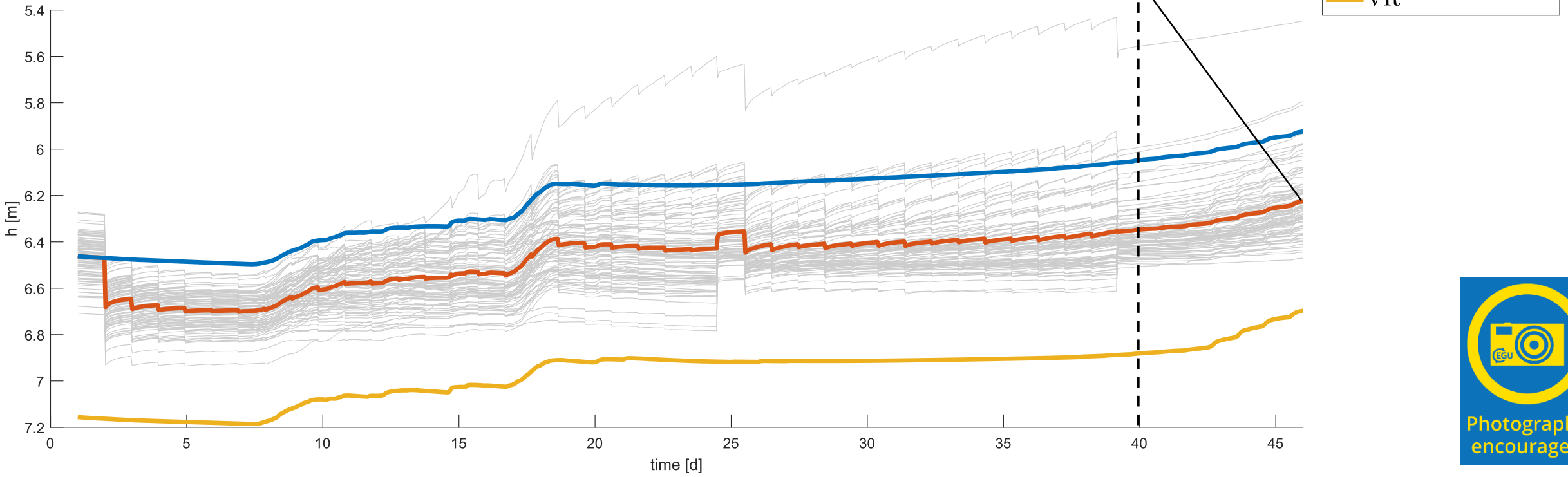
Results

Depth to watertable

Spatial average:



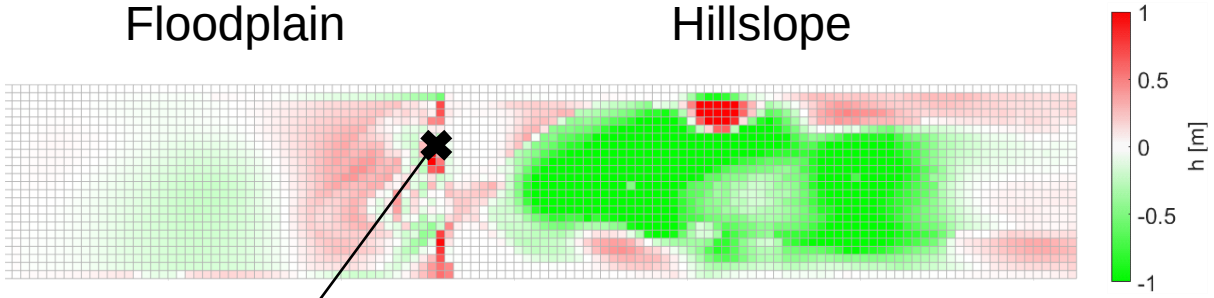
$DA: \psi_{GW}$ & K_s

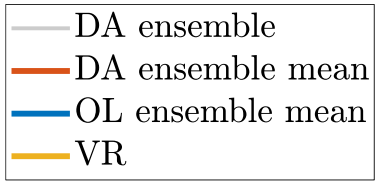


Photography encouraged

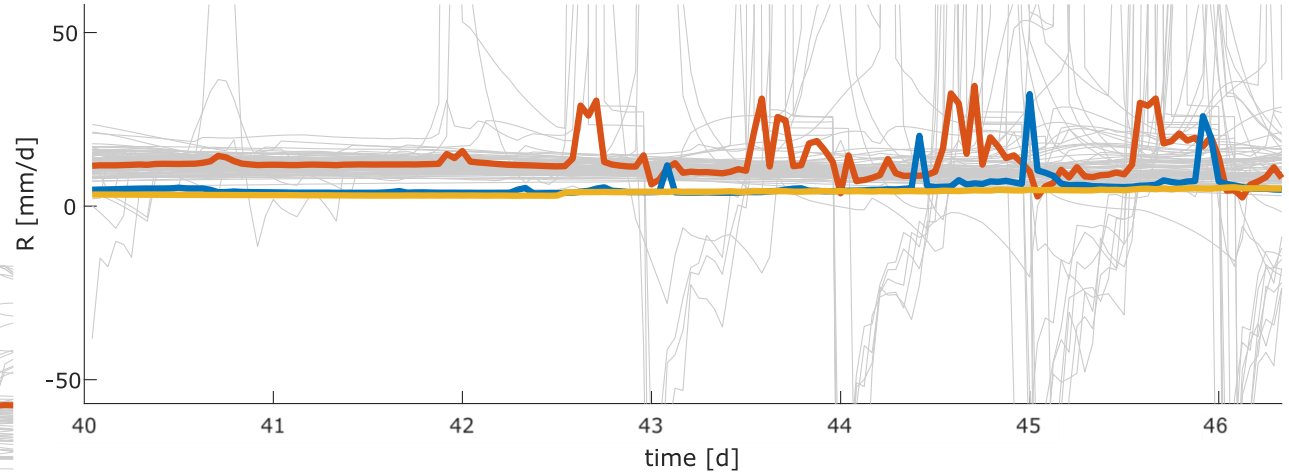
Results

Specific locations

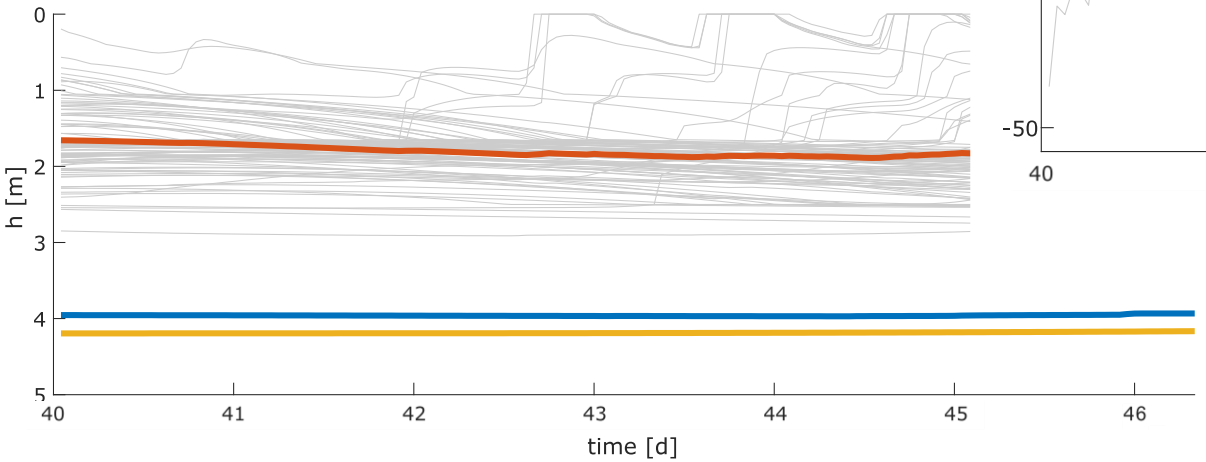




Groundwater recharge



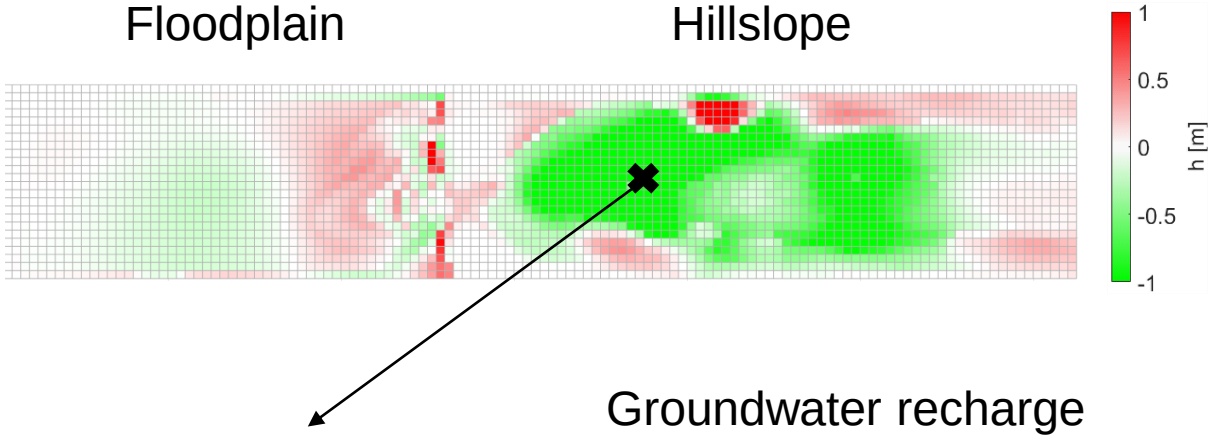
Depth to groundwatertable

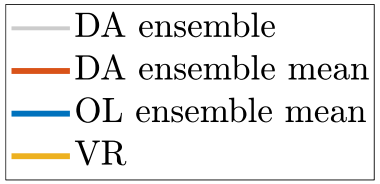


Photography encouraged

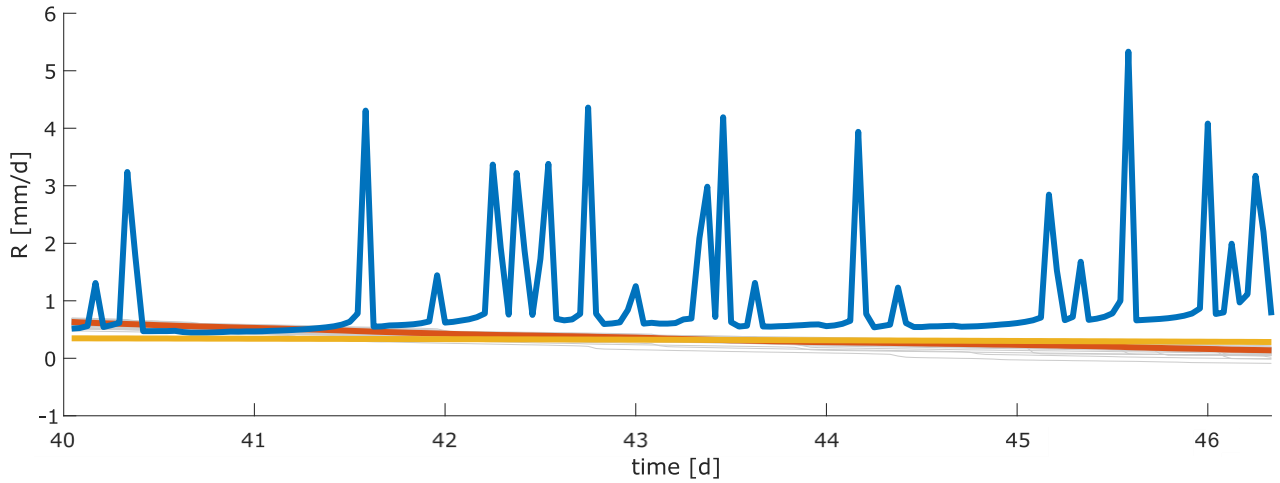
Results

Specific locations

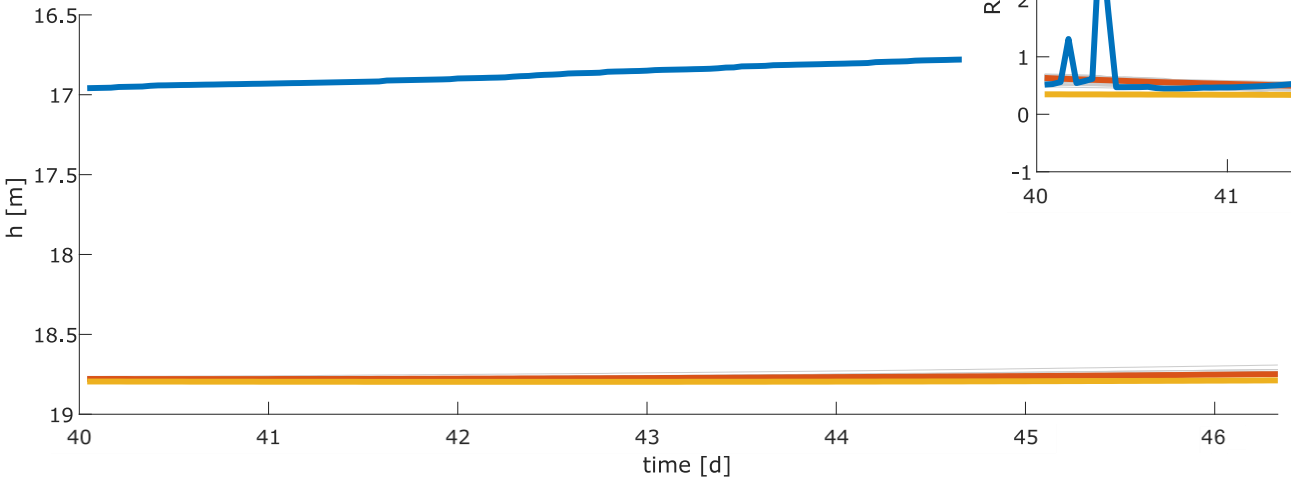




Groundwater recharge



Depth to groundwatertable



Photography encouraged

Key Takeaways

- We can improve groundwater recharge, if we improve the water table depth
- Improving the water table depth is more challenging for areas with complex topography

Thank you!