



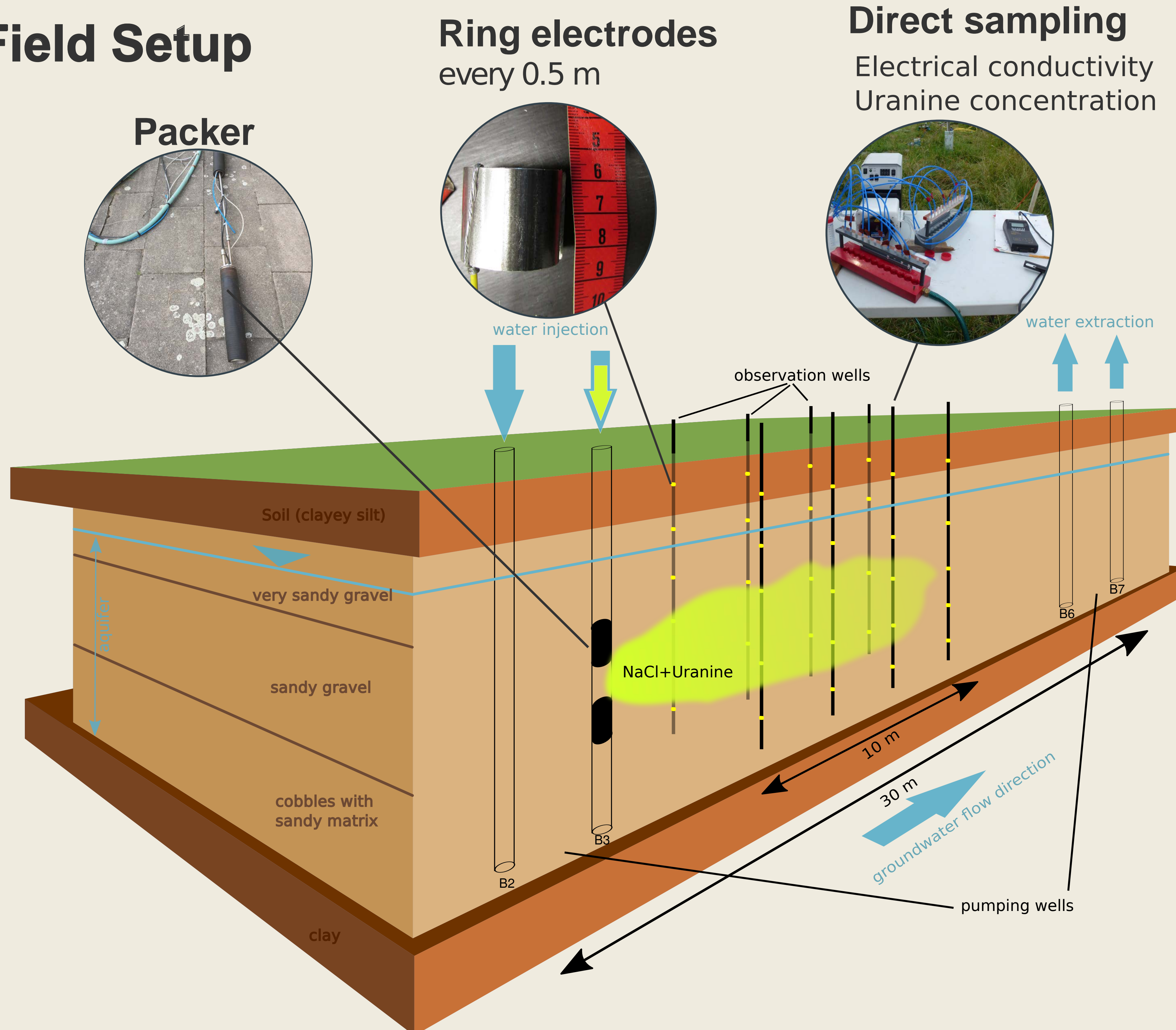
Fully-coupled Salt Tracer Test Tomography with Time-lapse Electrical Resistivity Tomography

Field experiments

Veronika Rieckh¹, Carsten Leven¹, Olaf A. Cirpka¹

¹ Center of Applied Geoscience, University of Tübingen, Hölderlinstr. 12, D-72074 Tübingen, Germany
veronika.rieckh@uni-tuebingen.de, carsten.leven@uni-tuebingen.de, olaf.cirpka@uni-tuebingen.de

Field Setup



Measurement devices

- pressure sensors
- fluorometer
- direct sampling with 3mm hoses

Time-lapse ERT (electrical resistivity tomography)

- ~ 4000 measurement configurations
- repeated every 20 min

Tracer tomography

- performed under steady-state conditions
- tracer is injected in several depths

How it looks in the field

Tracer

5 g Uranine
25 kg of NaCl
initial concentration ~ 25 mS/cm

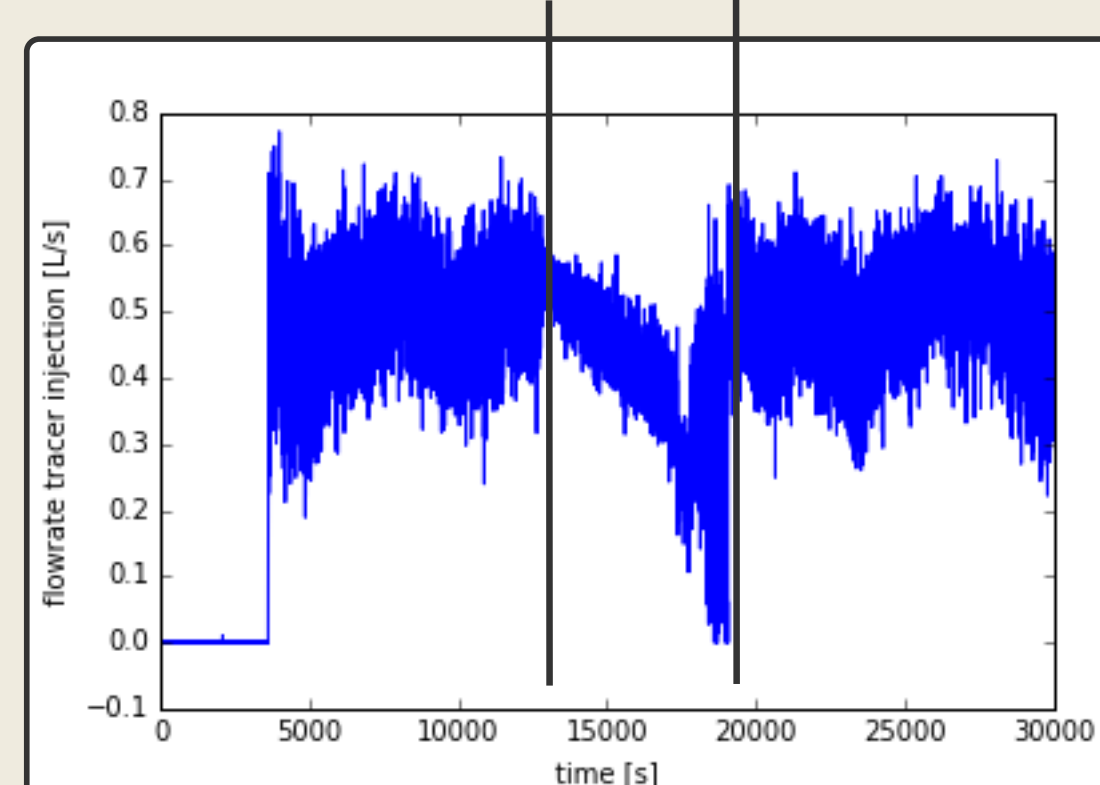


Injection

Ensure stable injection rate throughout experiment independent of water table

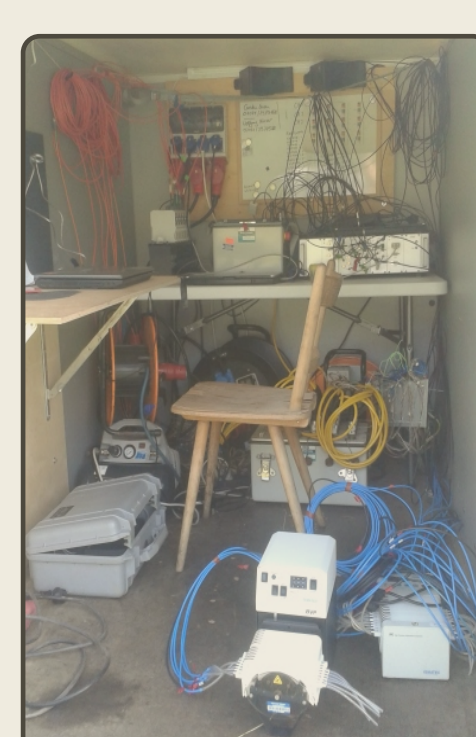
Ensure stable temperature tracer heats up ~ 3 °C, although directly prepared prior to injection

decreasing water table in tracer tanks



Cable organisation

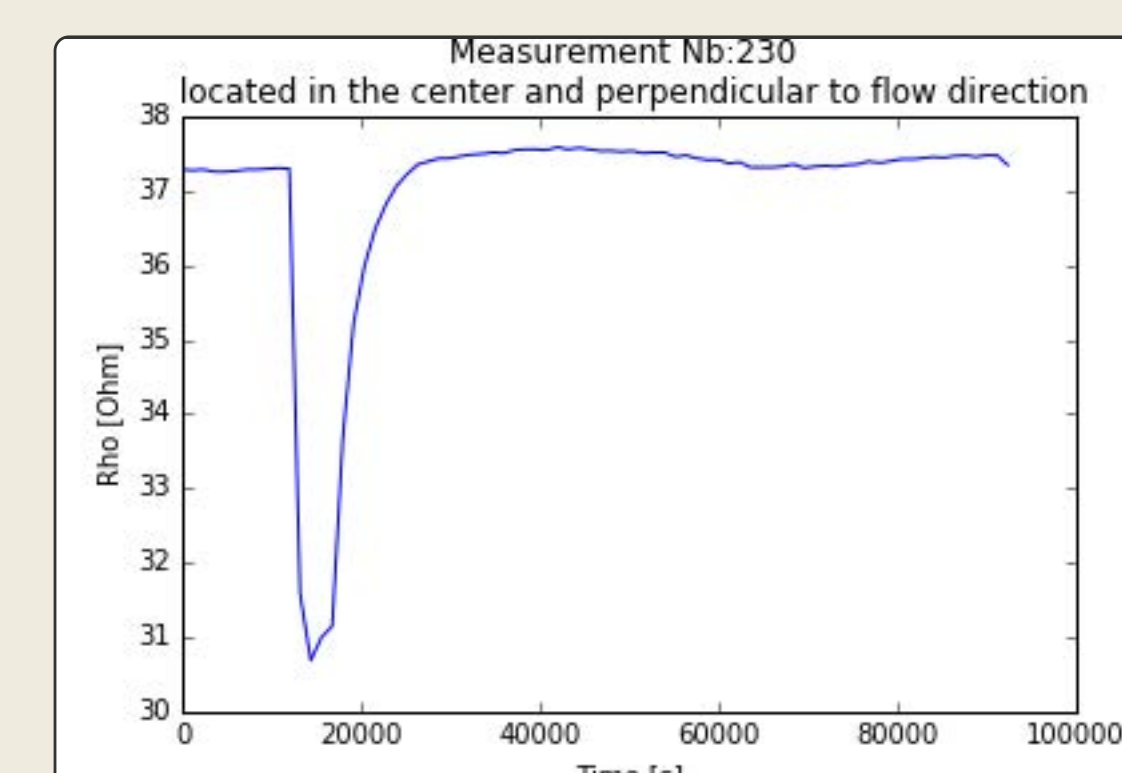
Stay organized!



Preliminary ERT data

The timeseries of an individual measurement configuration: located at the center of the field perpendicular to flow direction

Shows a clear signal of the tracer passing through



Shapes of individual breakthrough curves depend on the sensitivity kernel of the measurement.

Next steps

Develop a scheme for semi-automized data filtering and data pre-processing.