

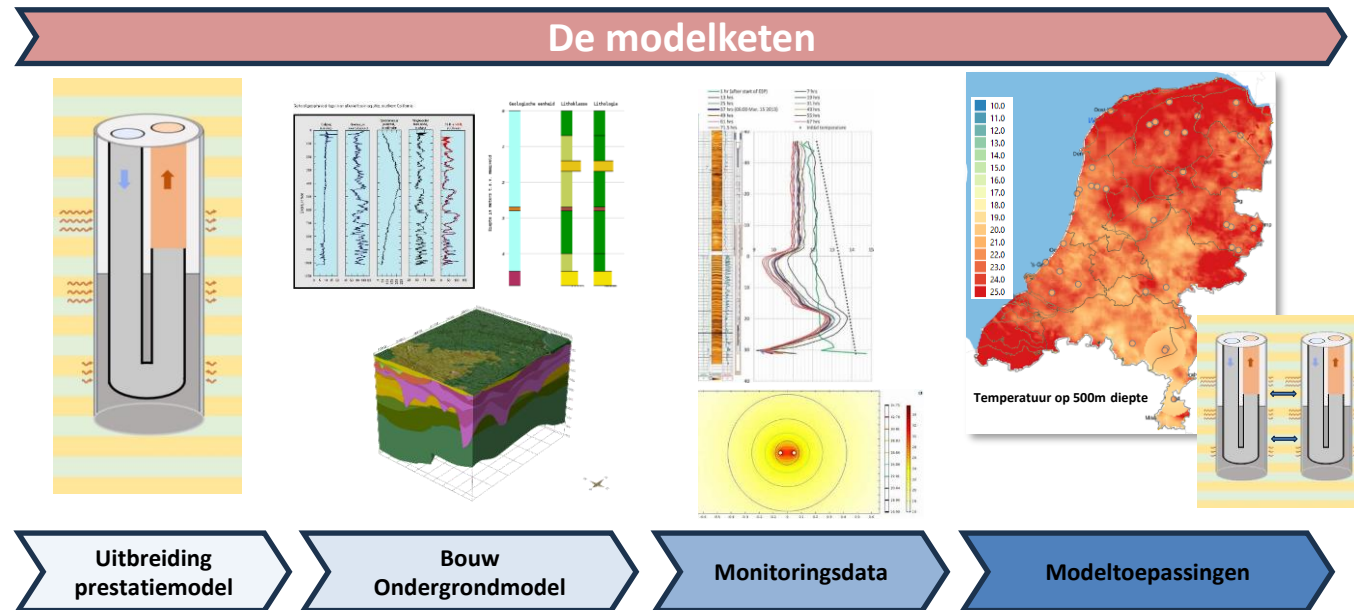
WP3 Monitoring of deep closed loop systems

Developing insights into system optimization

General meeting Geo4All 17 September 2026

Our ambition & vision

Goal: To promote the use of **deeper closed-loop geothermal energy systems** by demonstrating how these systems can be **optimised** depending on their location and subsurface variation. We aim to identify, quantify, and possibly provide mitigating recommendations for any **interference** with other sources or groundwater flows. Data and knowledge will be obtained through **monitoring pilots** at 2 different locations.



Impact:

- Gaining insight into the performance of deep closed-loop systems in different subsurface types in the Netherlands.
- Providing recommendations for further developments, as well as improved management of geothermal energy systems through better system control.

Status overview

Progress:

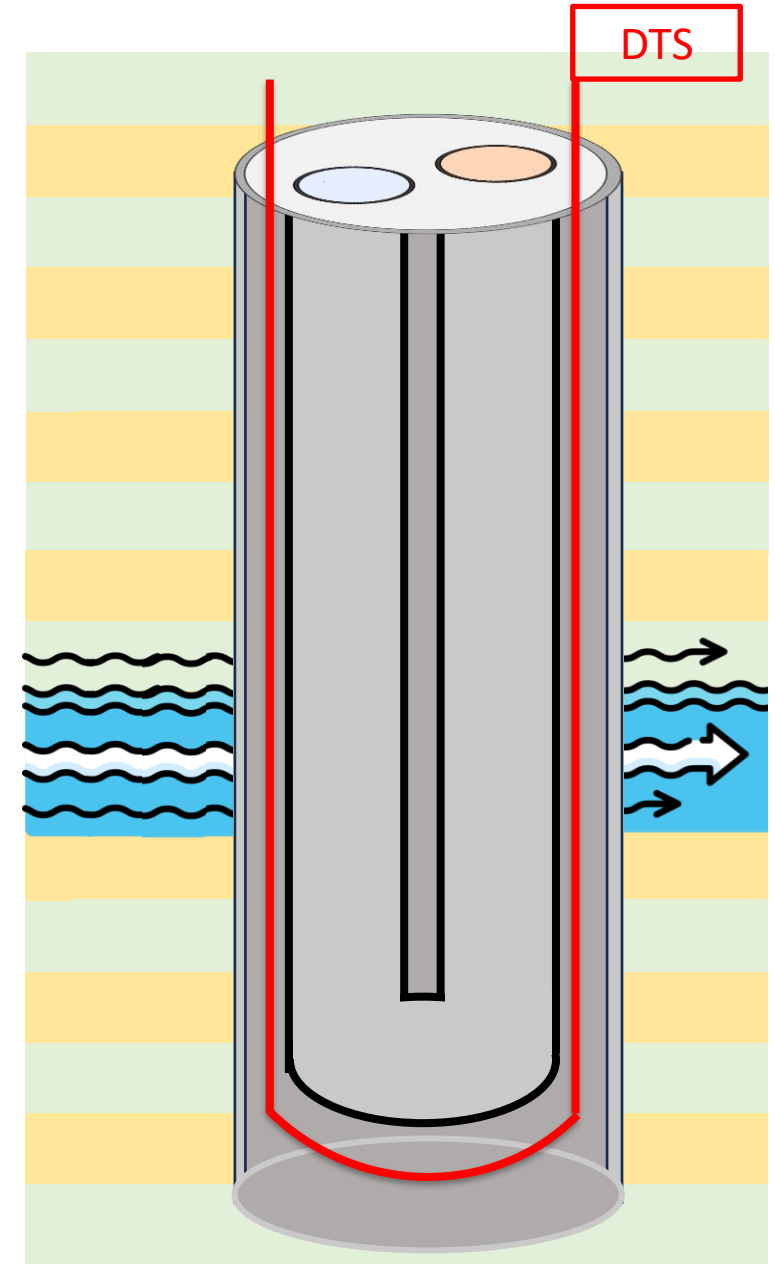
- Pilot 1:
 - Confirmation fibers are intact
 - DTS temperature baseline (Q4 2026)
 - Heat pumps functional (after some hick ups) – data made public
- Preparing pilot 2 in Rijswijk (through synergies with another ongoing project)
- Development of software (Geoloop) for system optimisation:
 - Depth-dependent effect of groundwater flow implemented in **Geoloop**
 - Based on the Moving Finite Line Source (MFLS) model
 - Next step is to validate the model with monitoring data from Vosbergen

Focus short term:

- Describing core samples pilot 1 site – starting next month
- Mature TRT methodology

Focus longer term:

- Pilot 1 & 2 temperature (DTS en TRT) monitoring campaigns
- Development of software (Geoloop) for system optimisation
 - Source configuration, quality assessment of grout, outlook for the Netherlands



Vosbergen borehole information

