

Controlled level drainage to expand freshwater lenses below creek ridges

A case study in the southwestern part of the Netherlands

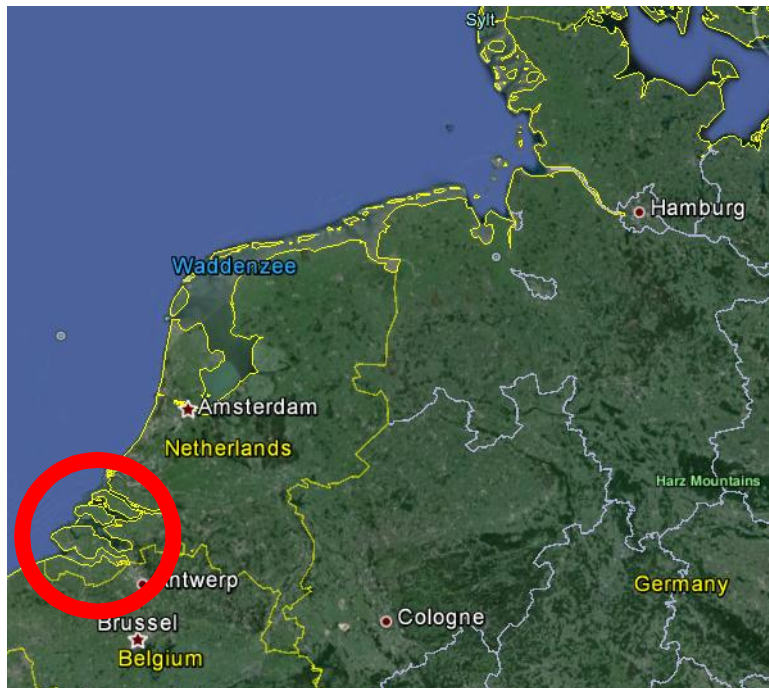
Introduction

- Field and modeling study in the southwestern part of the Netherlands



Problem statement

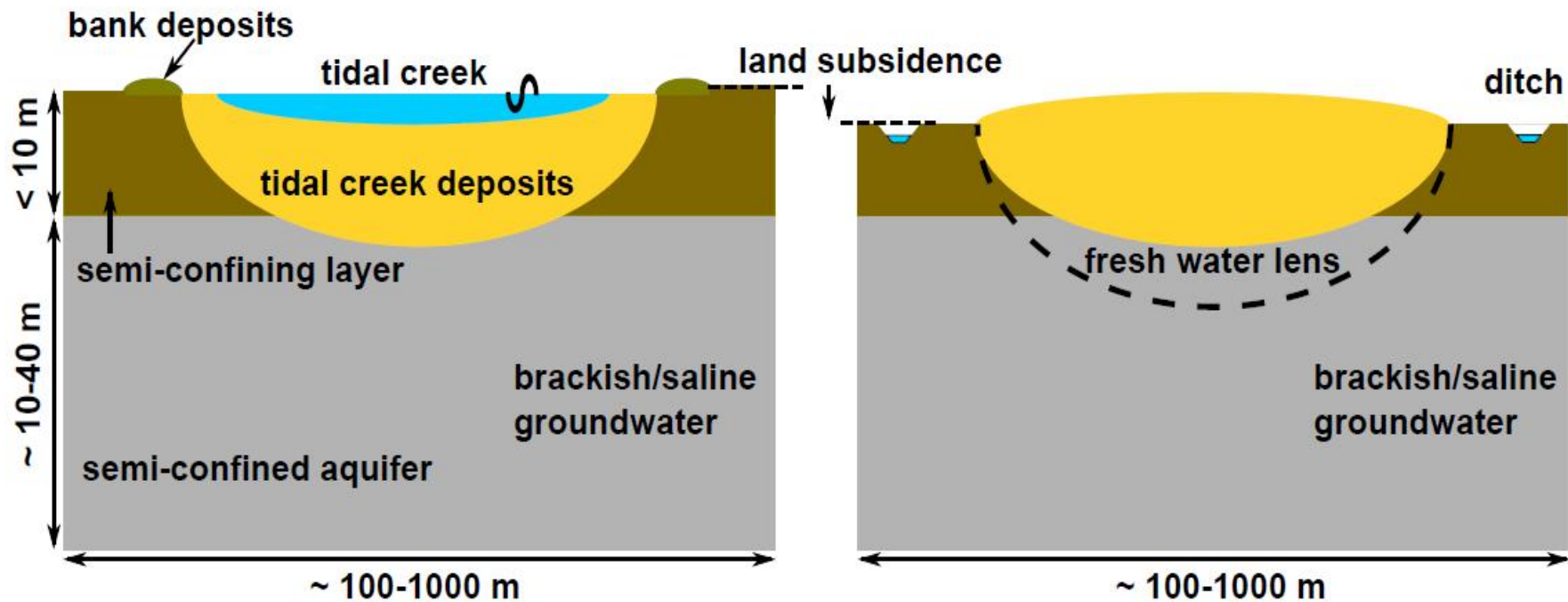
- Crop damage southwestern part of the Netherlands
- Fresh groundwater below creek ridges



Creek ridges

1200 AD; before land reclamation

current situation



Deltares

Enabling Delta Life

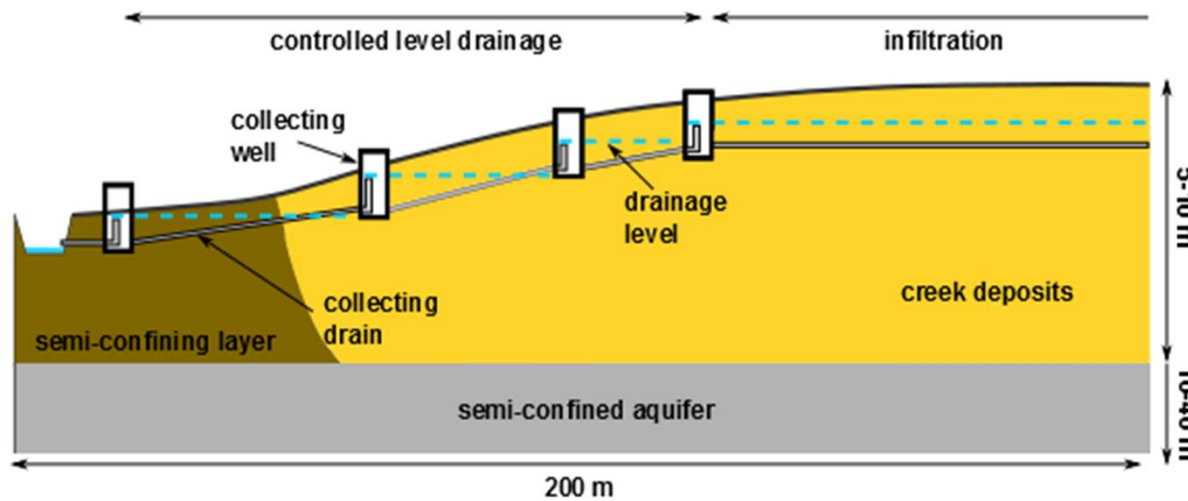


WAGENINGENUR

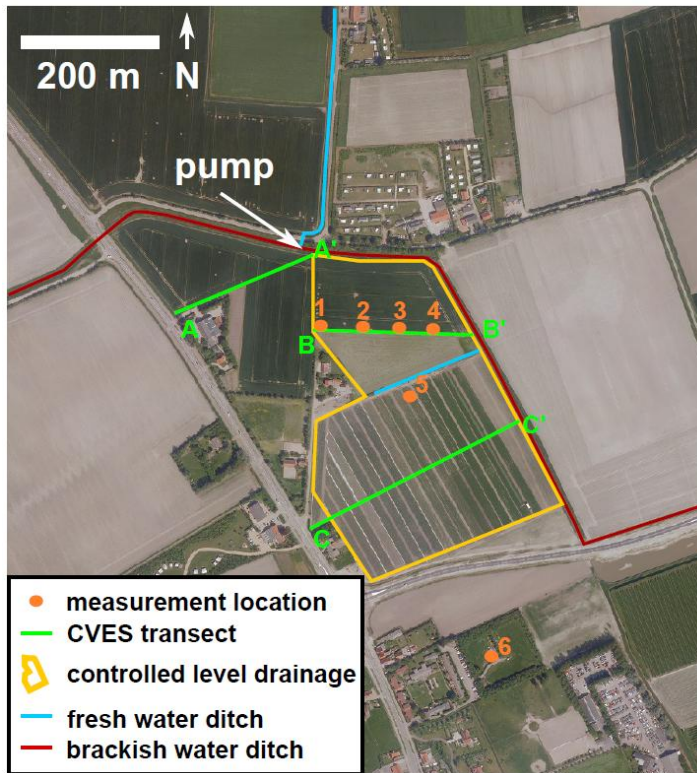
For quality of life

Measure

- Controlled level drainage
- Increase groundwater level



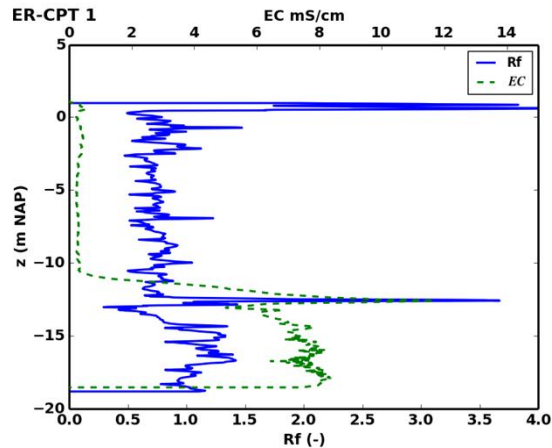
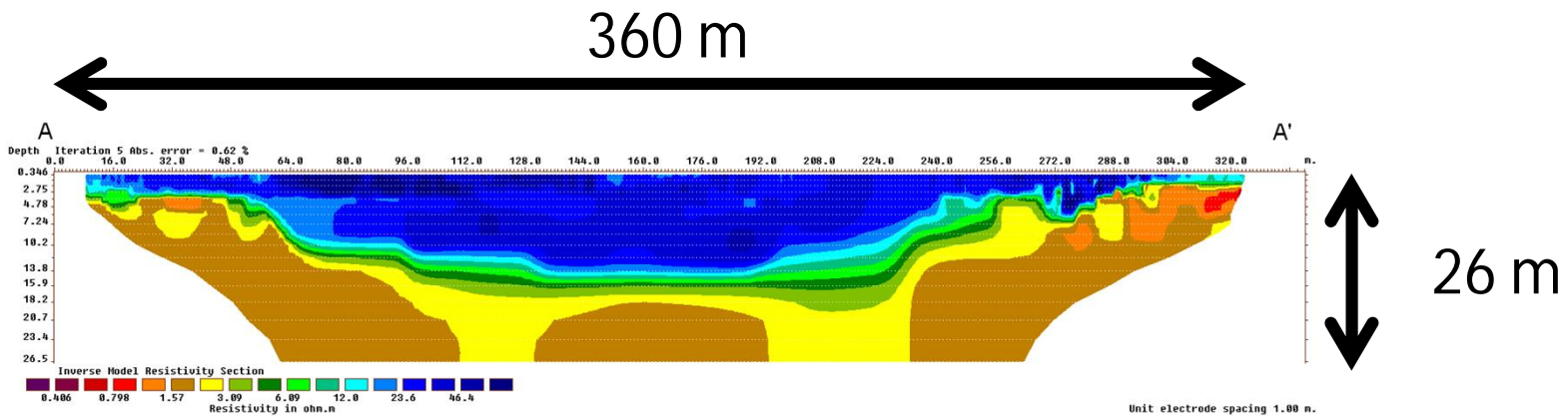
Installation of drainage and monitoring network



- various types of field measurements

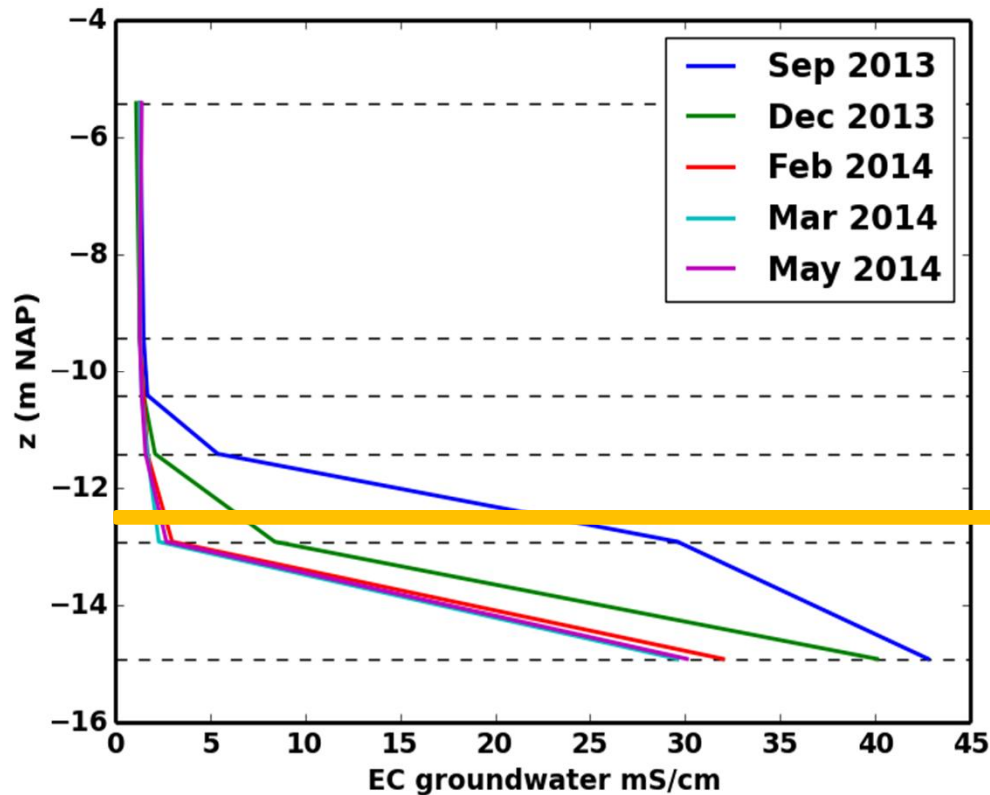
Key field observations (1)

- Fresh groundwater up to -12 m NAP



Key field observations (2)

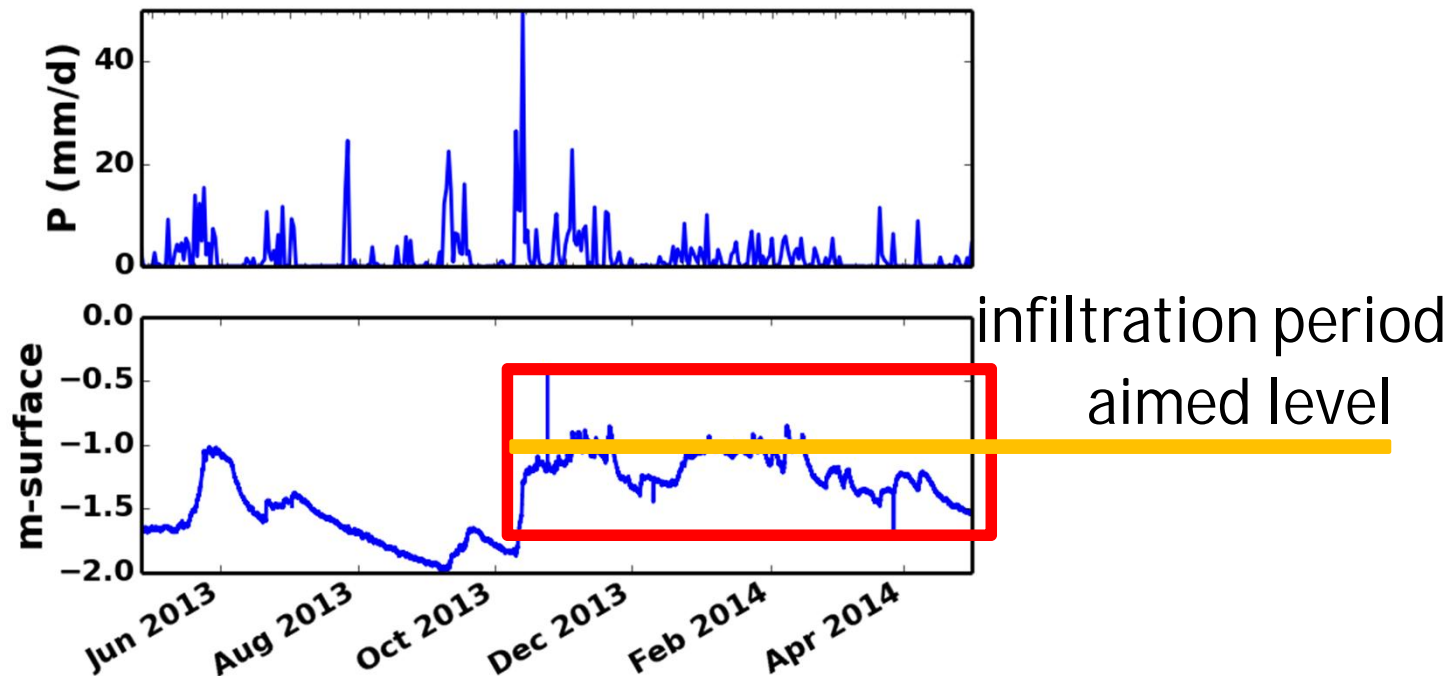
- Freshening up to 2m



thin, low permeable layer

Key field observations (2)

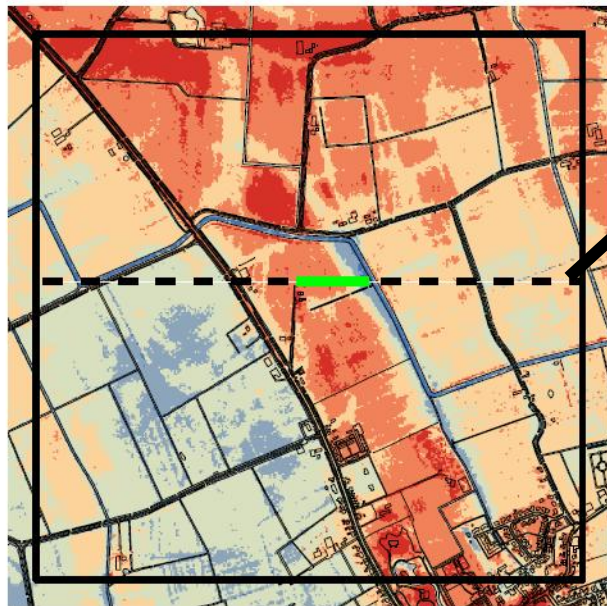
- Groundwater levels and precipitation



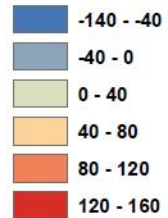
Influence of the controlled level drainage?

modeling


- SEAWAT

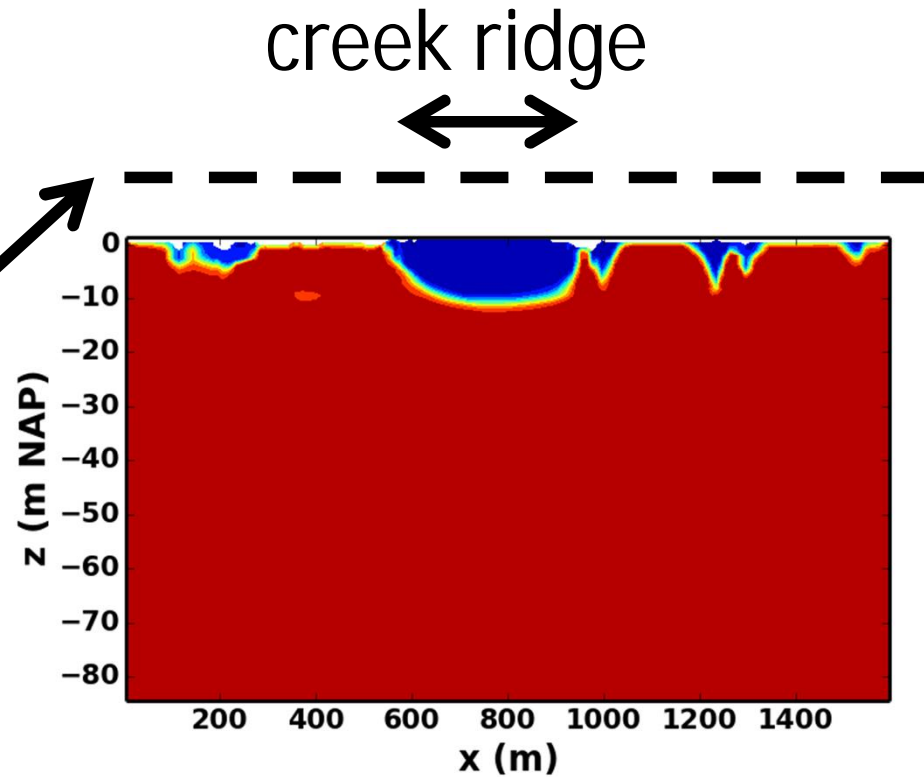


surface elevation
(cm NAP)

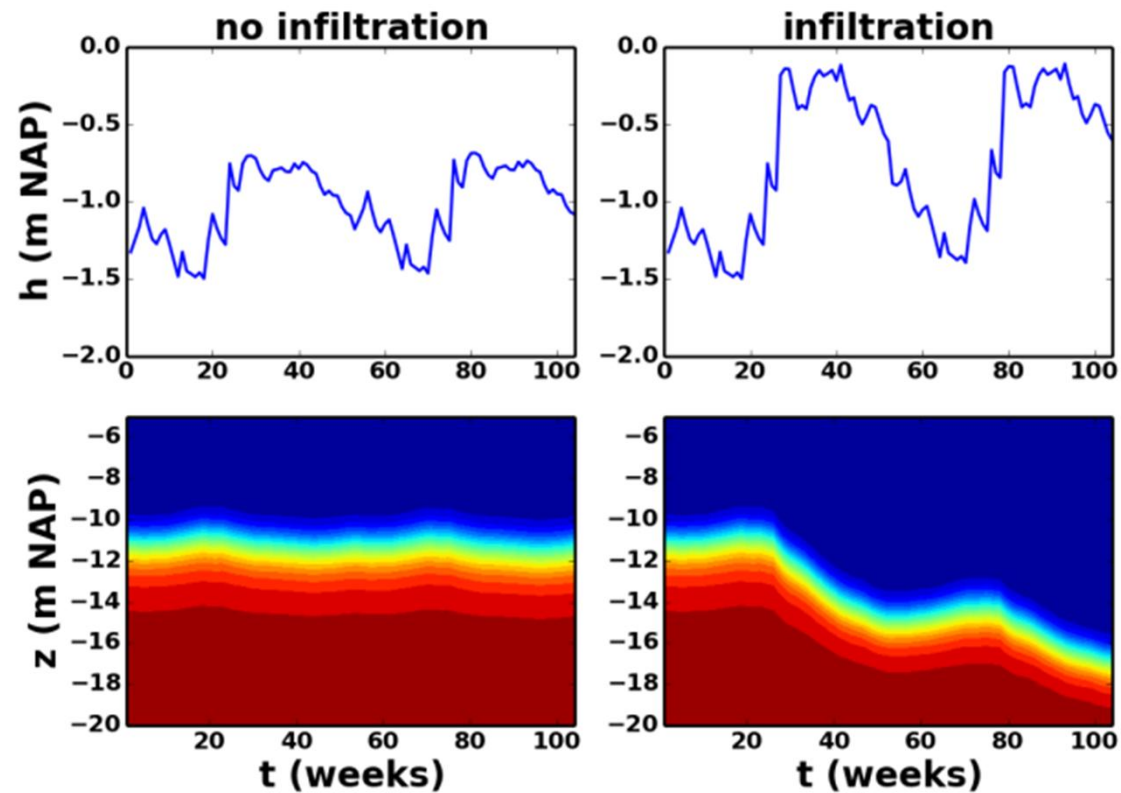


 model domain


200 m



Influence of infiltration



summary

- Indications of effectiveness of controlled level drainage
- Heterogeneity is important for the feasibility of the measure
- Long-term monitoring measurements are needed for validation

Thank you

