Reconstructing differential subsidence in the Netherlands using paleo-groundwater level indicators

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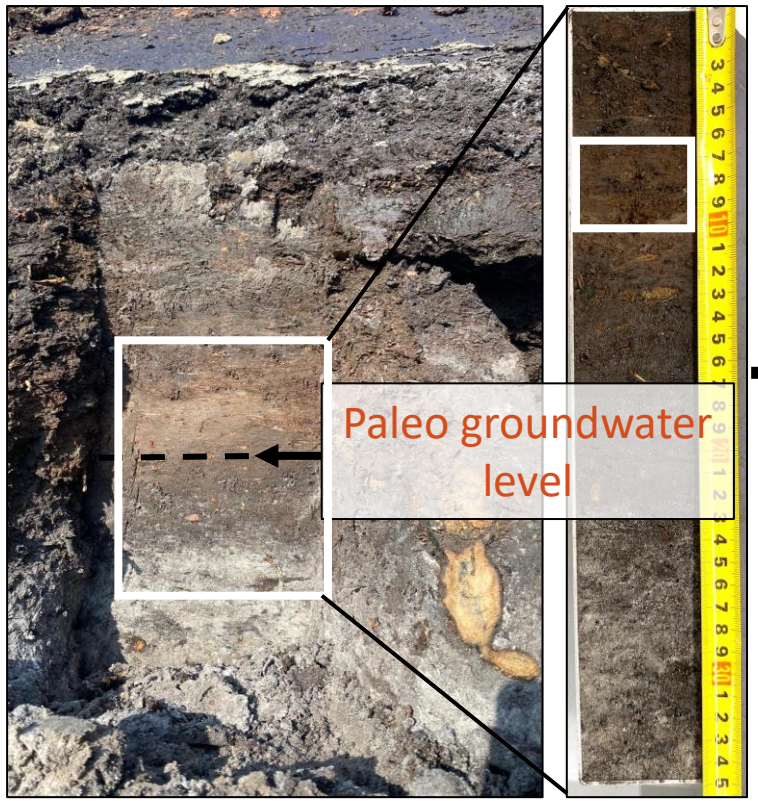
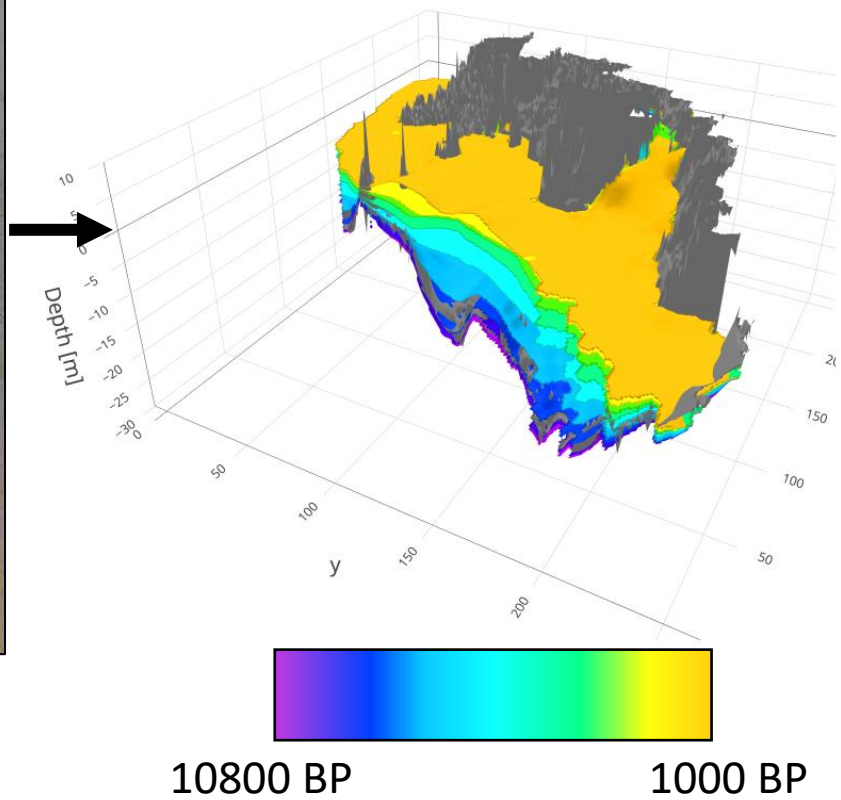
From water levels to subsidence

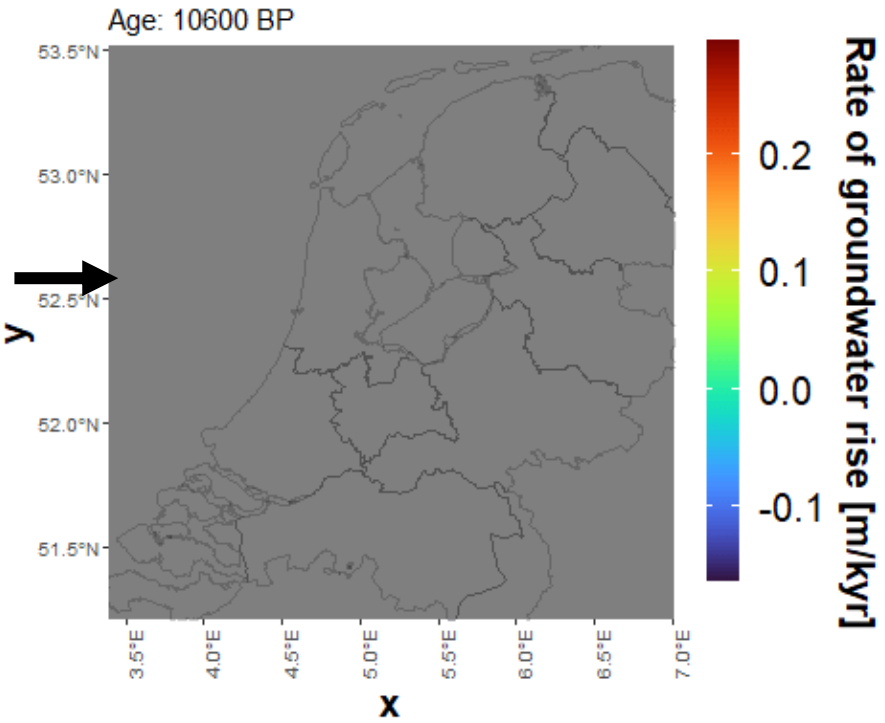
basal peats



3D interpolation
Holocene GW-levels



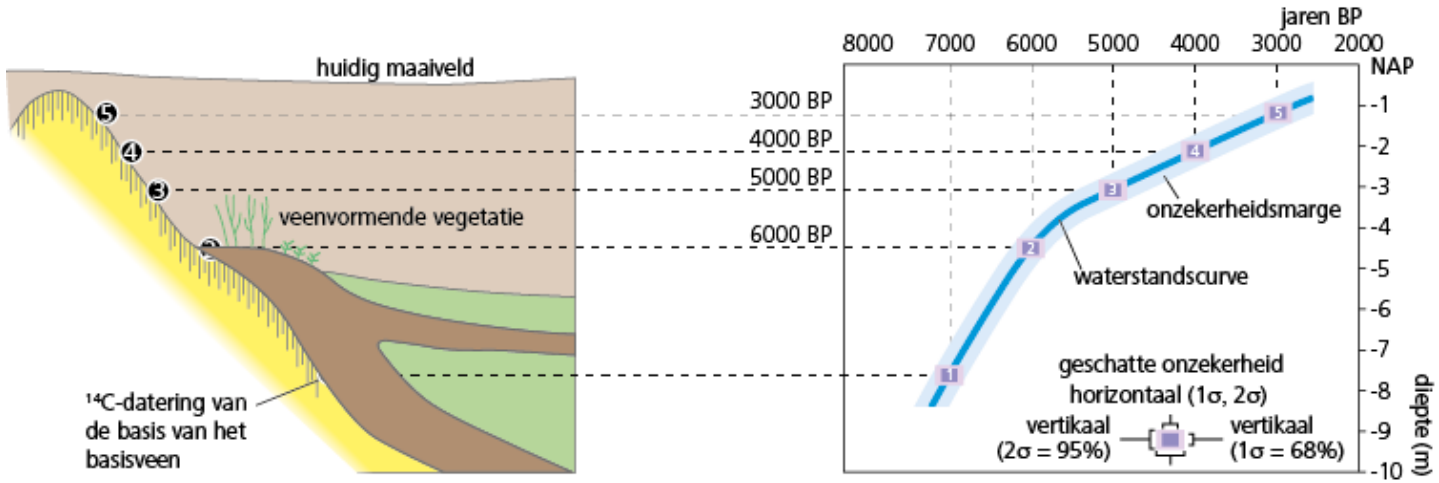
Holocene GW rise
and subsidence rates

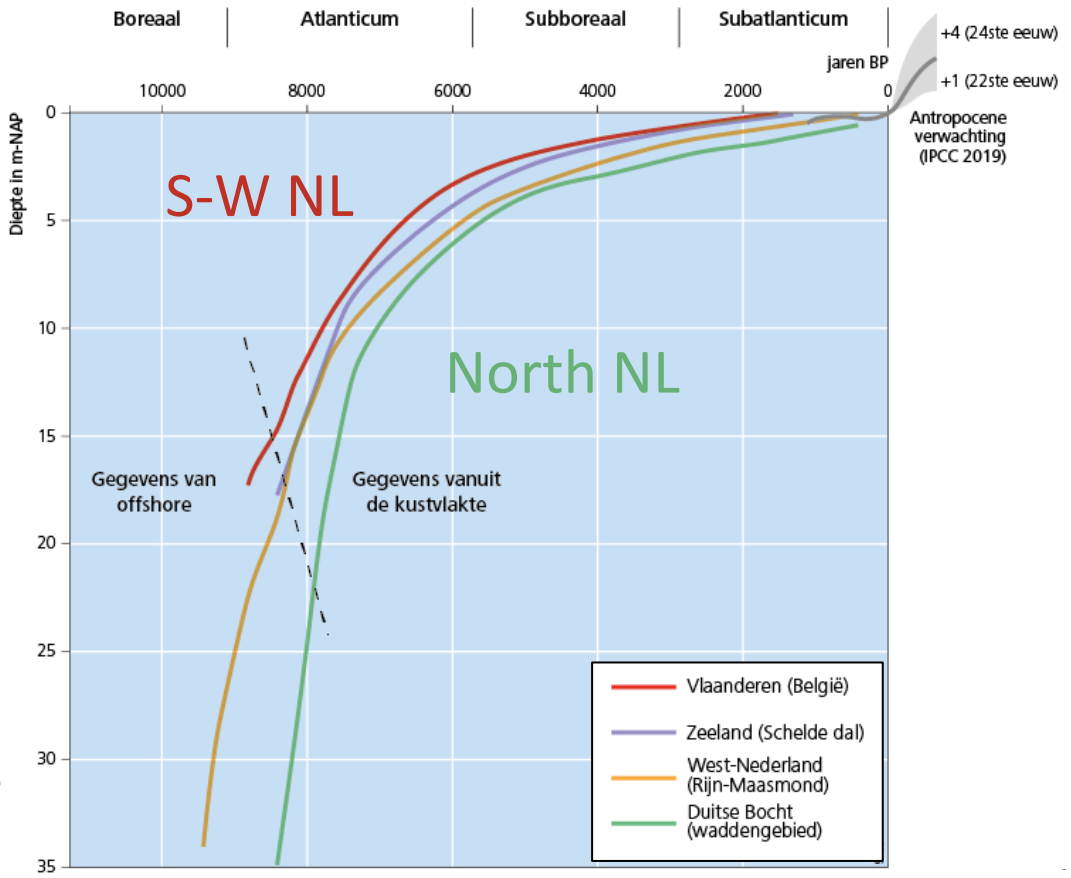


Why a spatial 3D reconstruction?

Currently:

- High accuracy at a few sites
- Sea level rise vs. Subsidence
- Spatial patterns



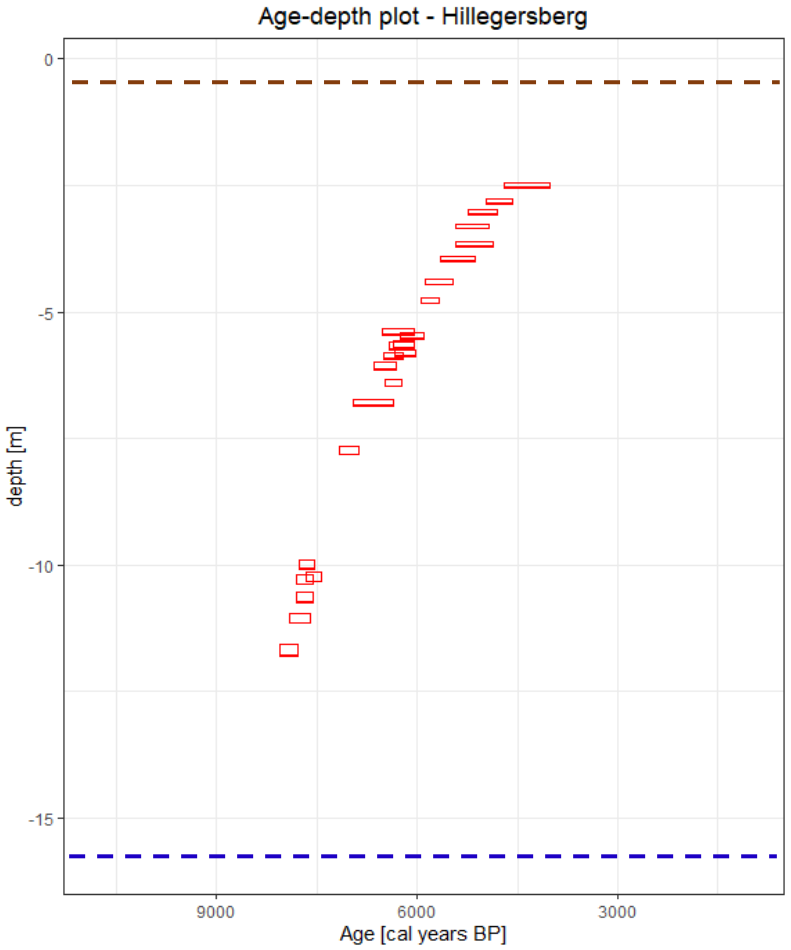


Kiden et al. 2008

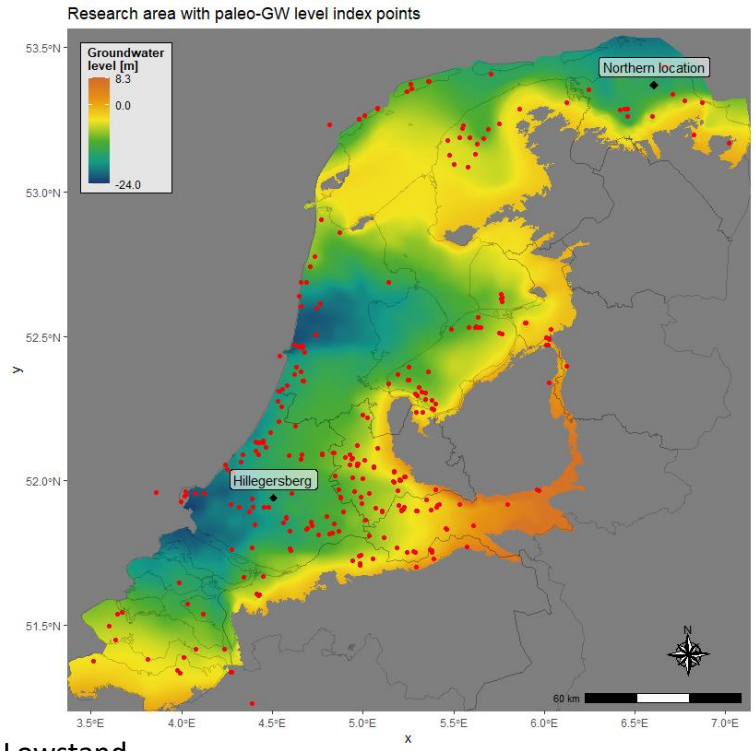
e.g. Jelgersma 1979; Van de Plassche et al. 2010

Stouthamer et al. (2020)

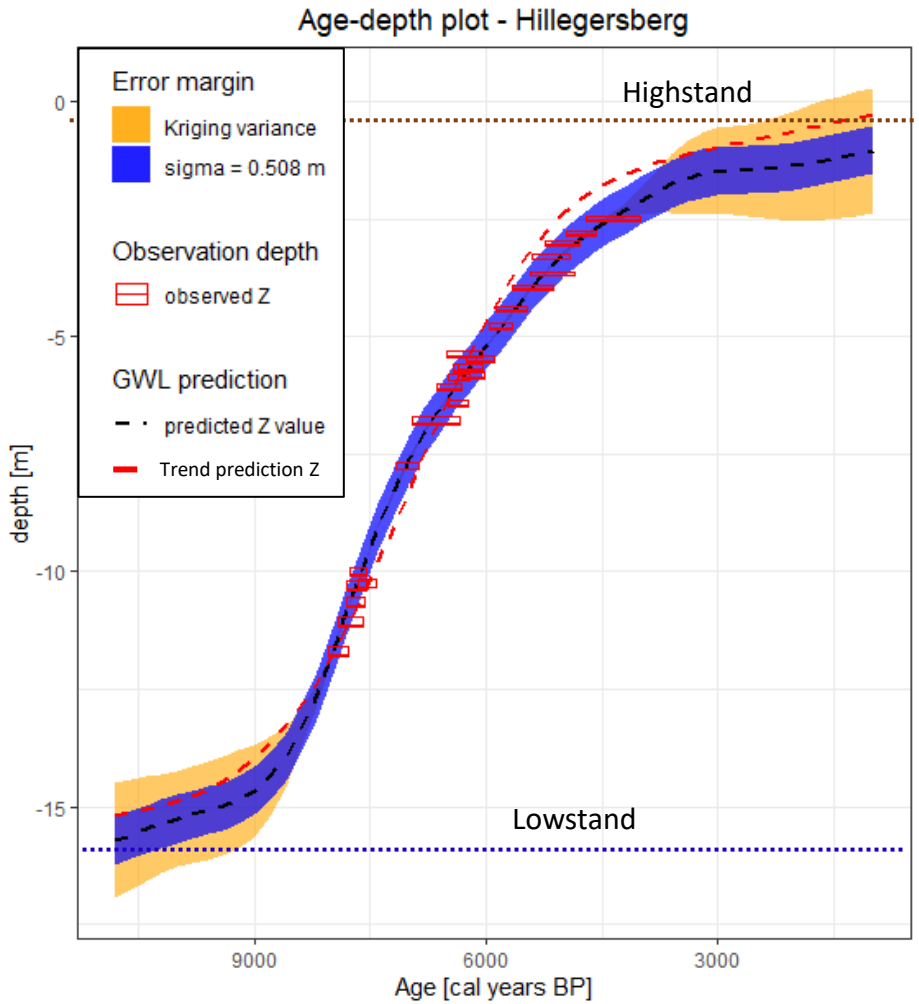
Groundwater level interpolation



Highstand

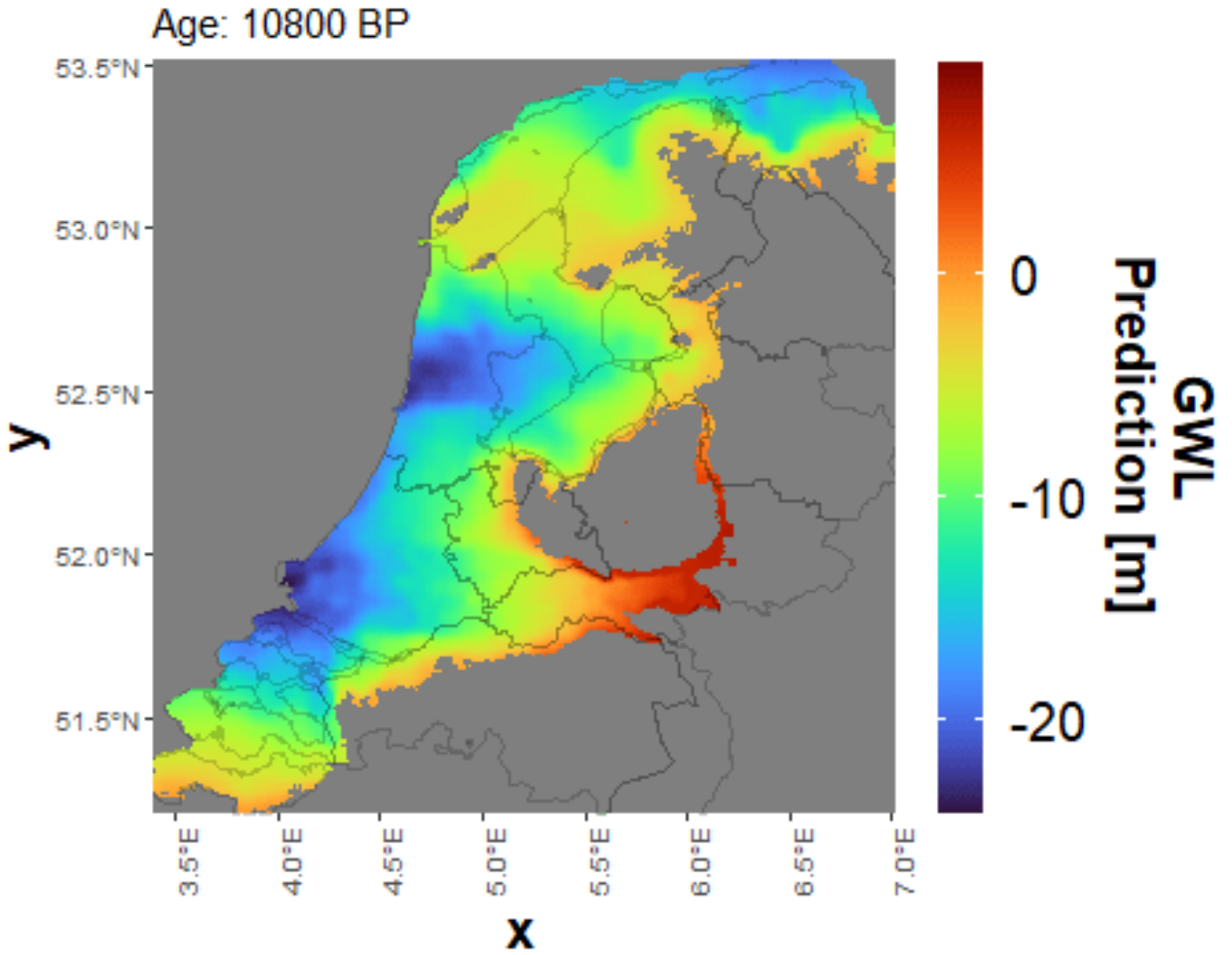


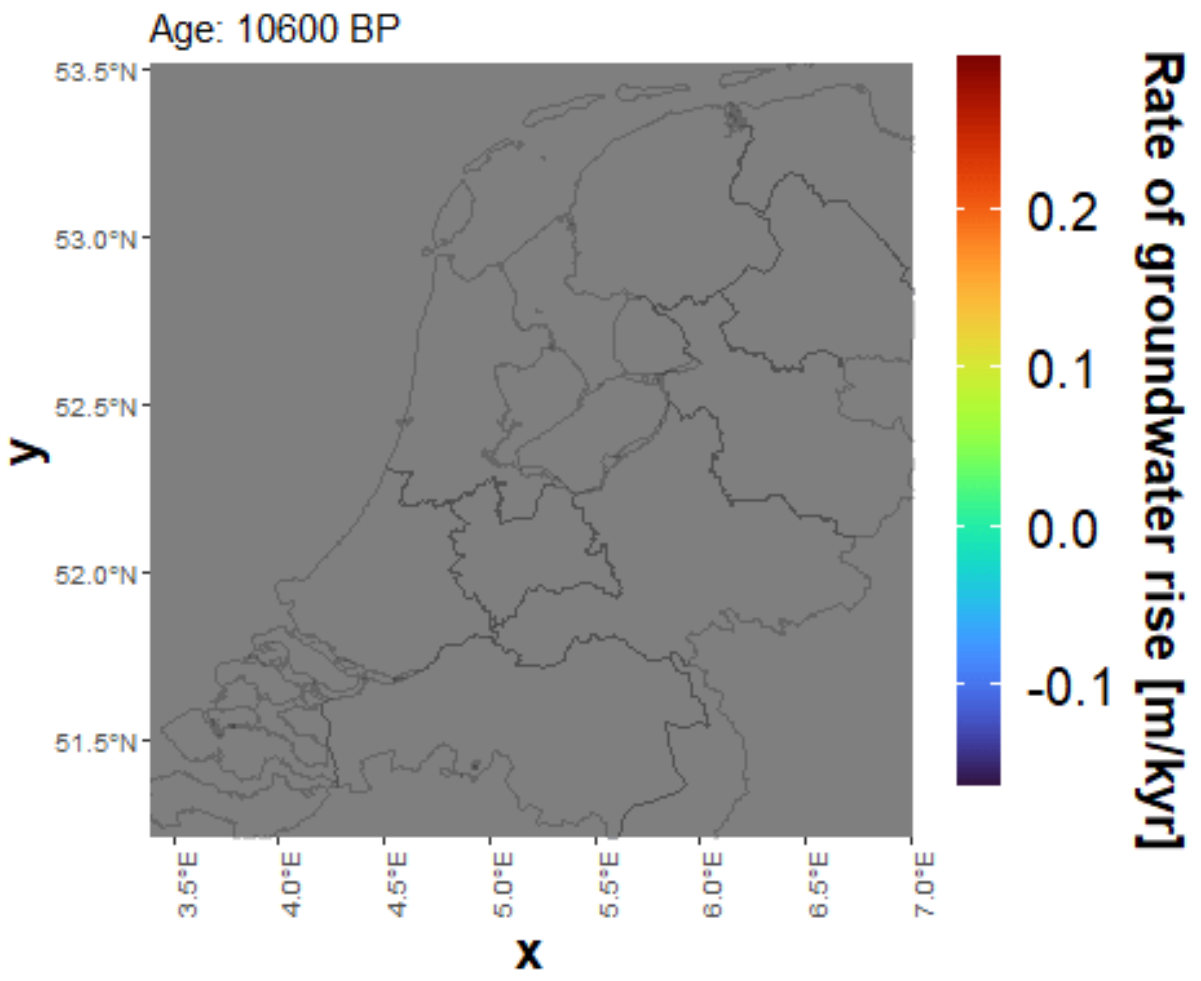
Lowstand



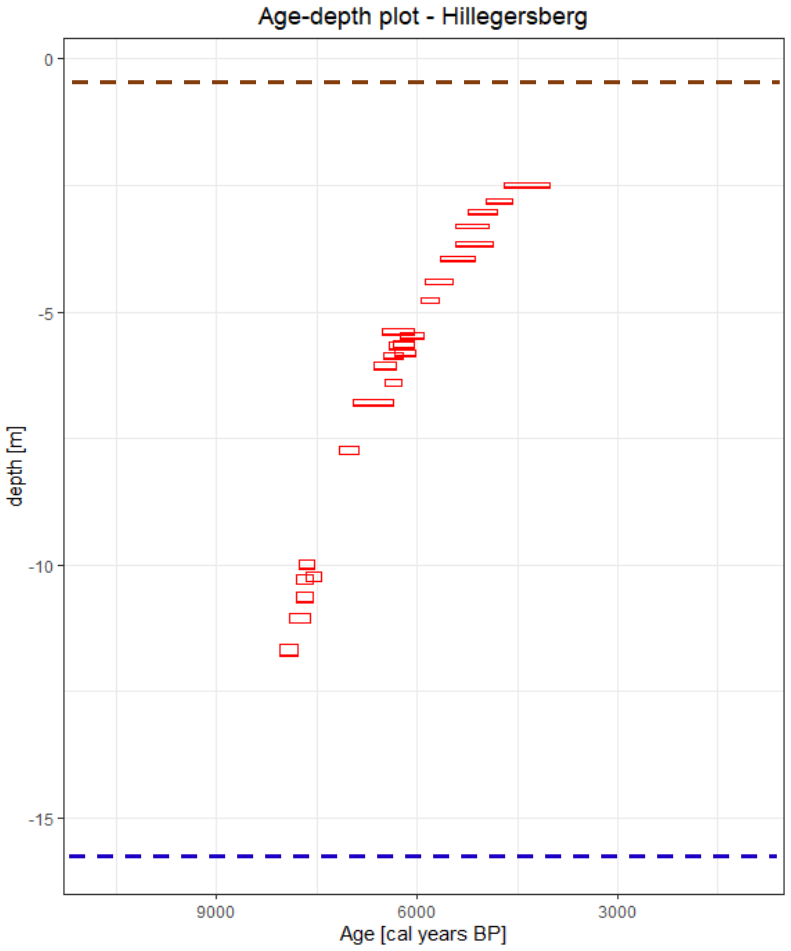
Observation data from Van de Plassche (1982)

Groundwater level rise rates





From GW-levels to subsidence



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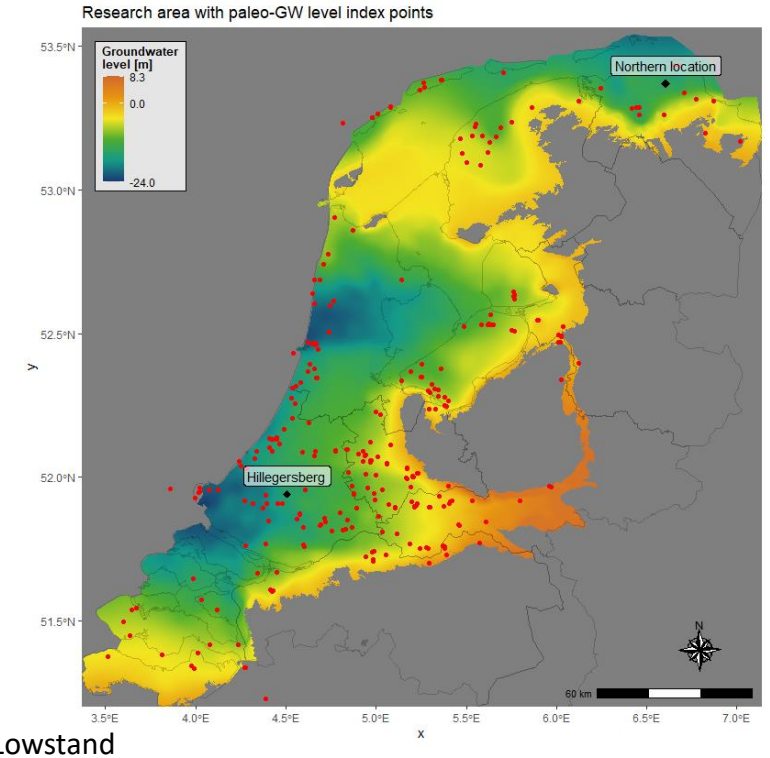

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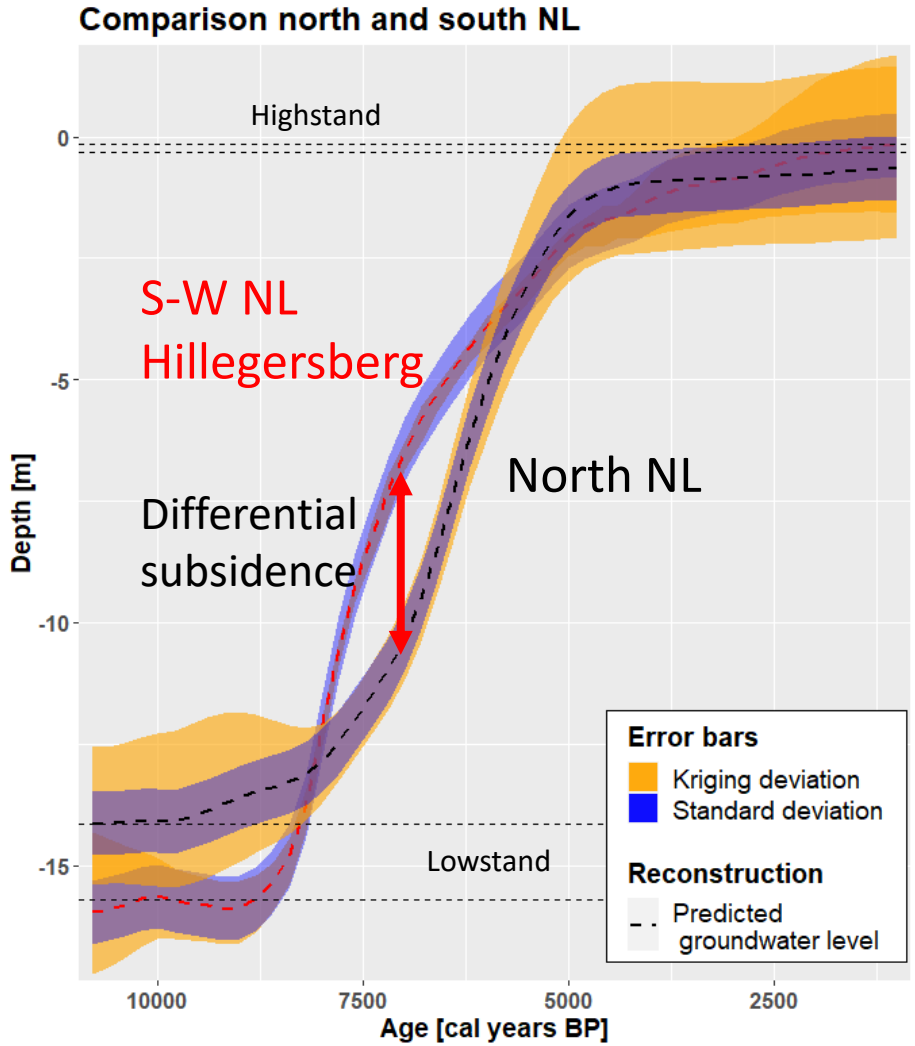
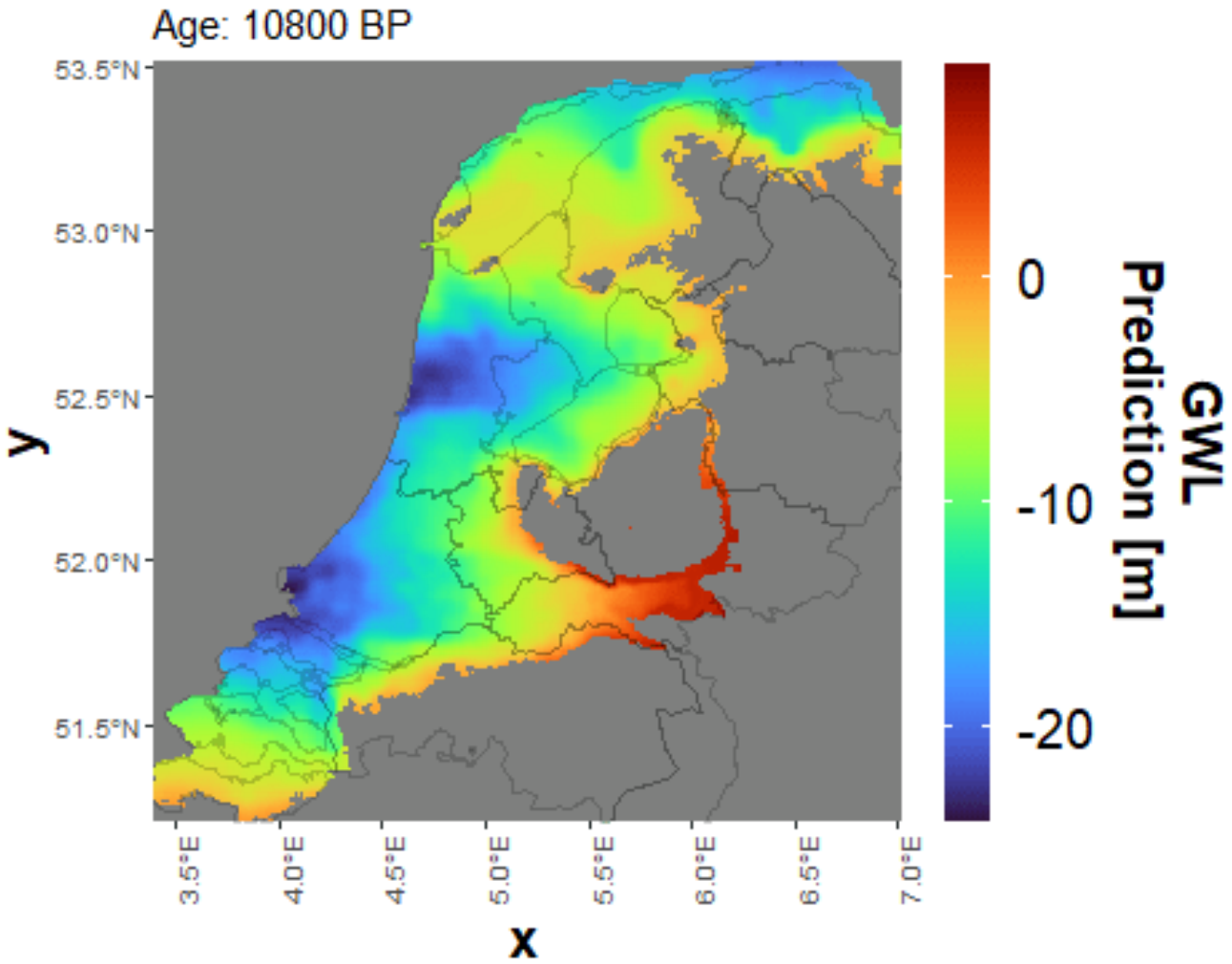


Observation data from Van de Plassche (1982)

From GW-levels to subsidence



Holocene averaged →
Difference in subsidence rates
0.1 m/kyr in south and 0.4 m/kyr in the north
Strongest in Middle-Holocene

Next steps:

1. Sensitivity check interpolation
2. Comparison with GIA modelling
3. Analyze tectonic component

References

References

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