

# Quantitative reconstruction of Holocene vegetation cover in Flanders, Belgium

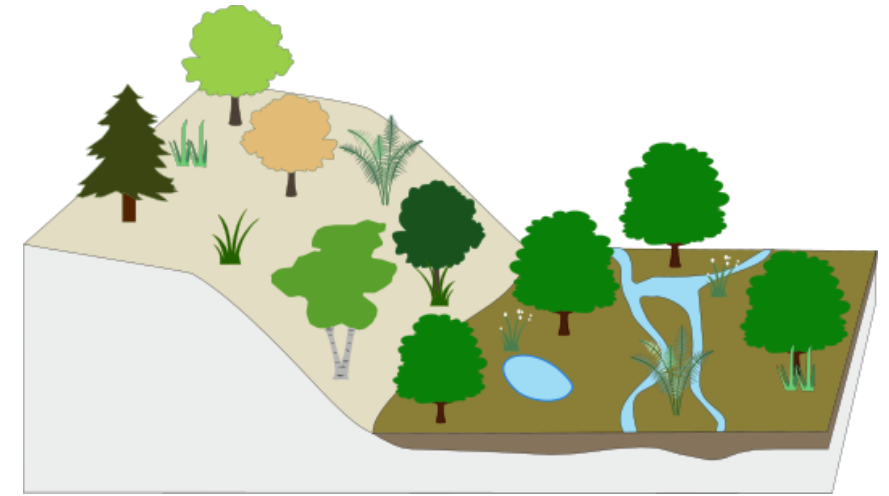
- a study based on pollen-records from alluvial floodplains

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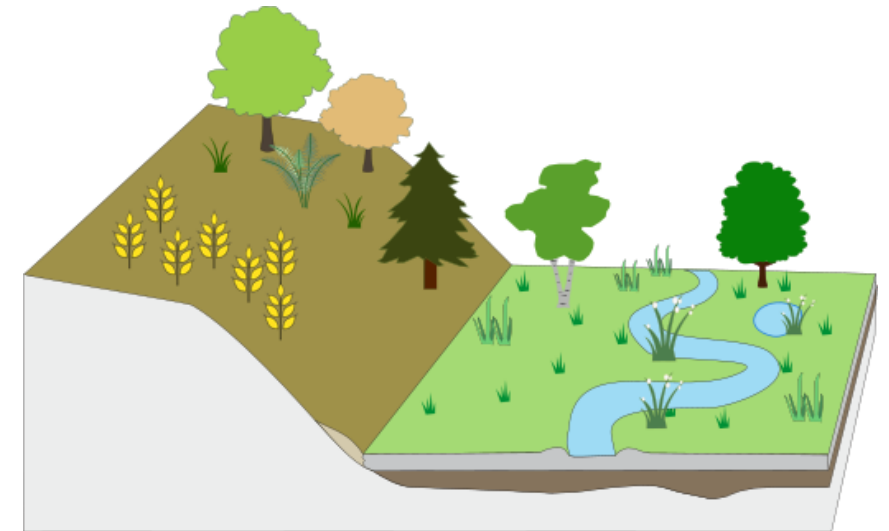


# Flemish floodplains

- **Early/Middle Holocene:** most floodplains were stable environments with limited floodplain aggradation, resulting in peat growth
- **Late Holocene:** floodplains changed completely towards single channel meandering rivers with overbank deposits, impeding peat accumulation
- Transformation in floodplain geoecology is largely a result of increasing anthropogenic impact, hence timing can differ a few thousand years between different river valleys



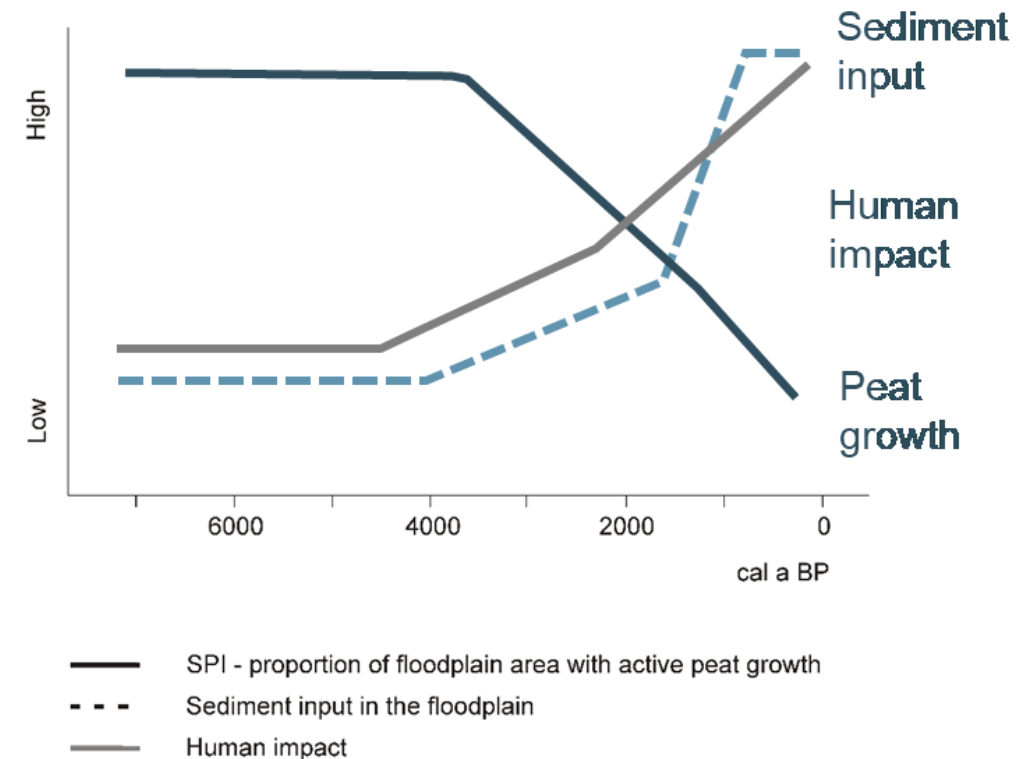
Early/Middle Holocene



Late Holocene

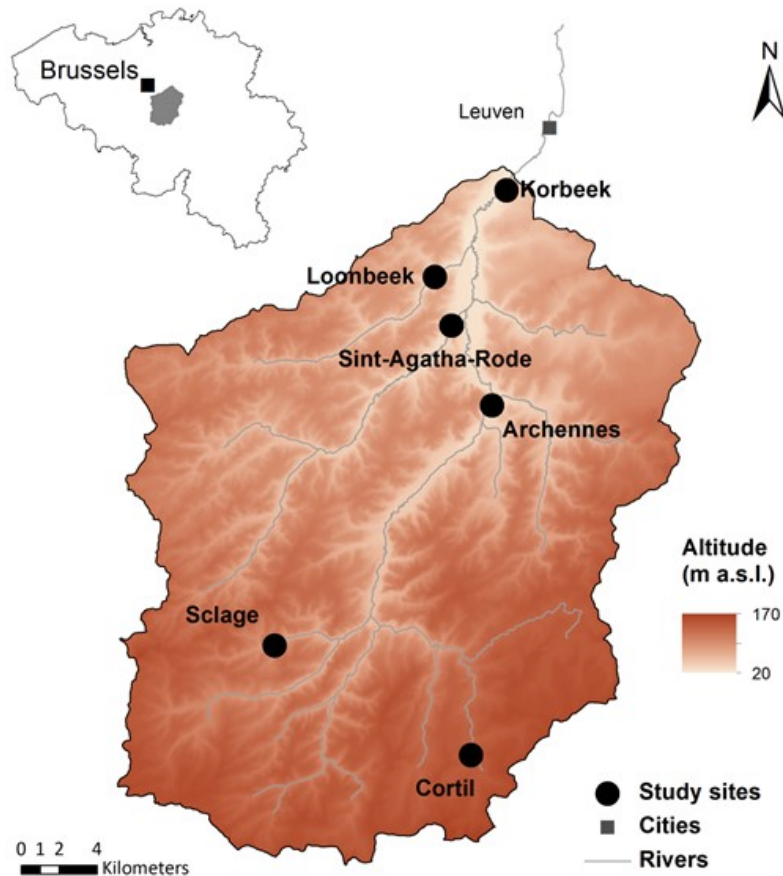
# Previous research

- **Land-use intensity** needs to cross a certain threshold to transform of the fluvial system
- Based on qualitative and semi-quantitative methods this threshold, and the timing at which it is crossed, could not be detected
- Therefore, **quantitative assessment** of the resilience of floodplain environments to regional land-use changes is needed



Broothaerts et al., 2014

# Pilot REVEALS-based reconstruction Dijle catchment



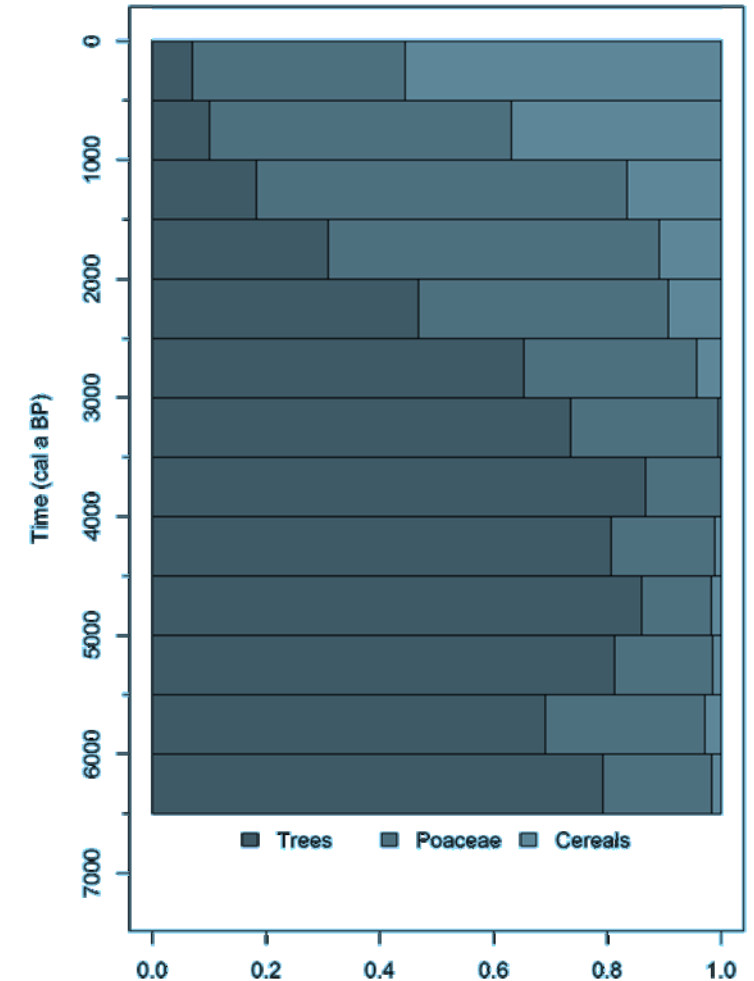
- Based on **six floodplain pollen records**
- No modern pollen data available
- Simulations of regional vegetation compared with **historical land cover maps for validation**

| Taxon group | Pollen proportions | REVEALS Mean (S.E.) | Observed vegetation |
|-------------|--------------------|---------------------|---------------------|
| Trees       | 0.25               | 0.05 (0.02)         | 0.16                |
| Grasses     | 0.46               | 0.43 (0.11)         | 0.34                |
| Cereals     | 0.29               | 0.52 (0.10)         | 0.50                |

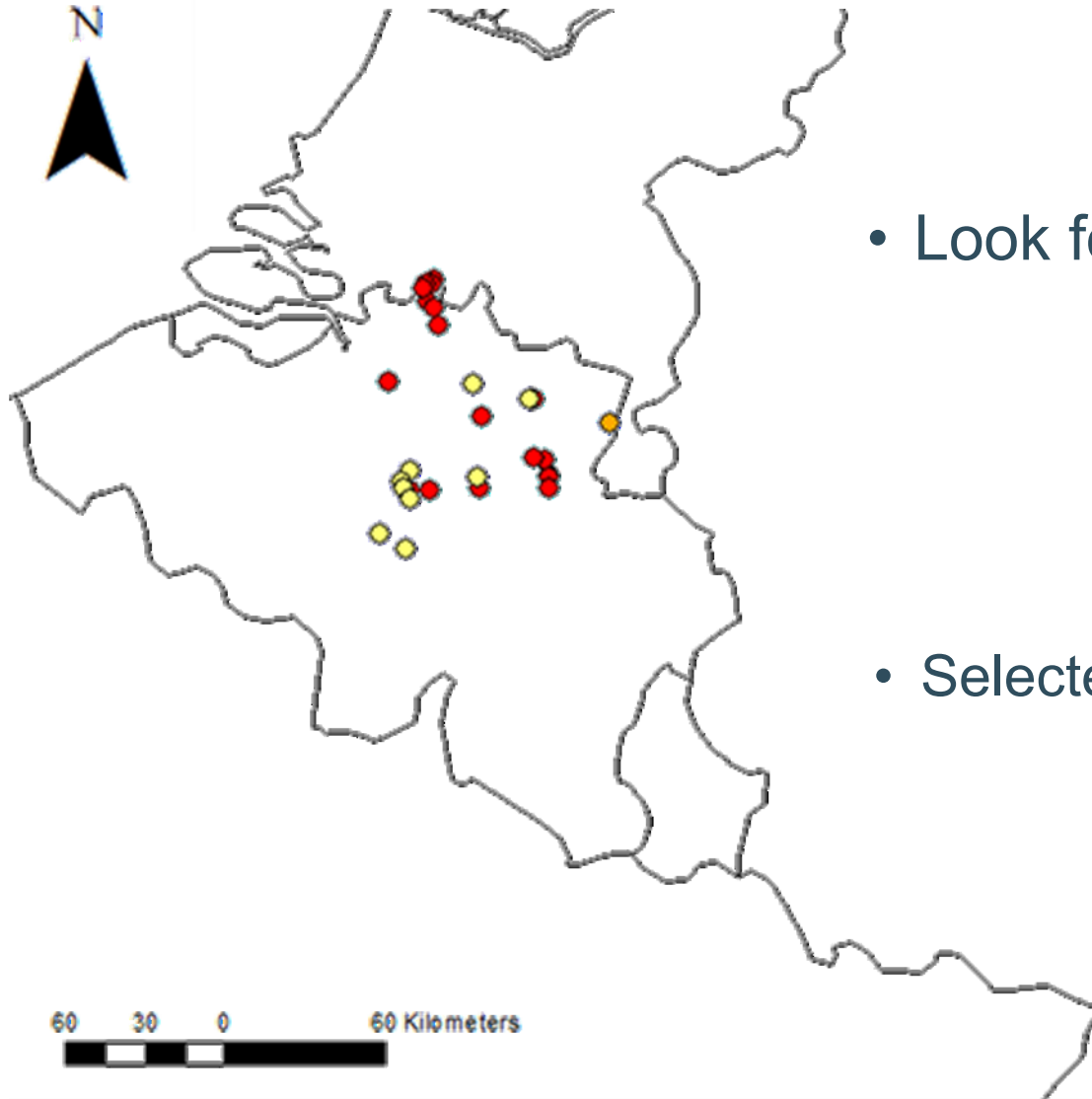
Table 1: Comparison of the average pollen proportions for the Dijle catchment around 1775 AD, the REVEALS-based vegetation reconstruction, and the observed vegetation proportions based on the 1778 AD land cover maps for the area

# Pilot REVEALS-based reconstruction Dijle catchment

- During the **Neolithic Period and the start of the Bronze Age**: low share of cereals
  - Could be related to local scale human impact and limited connectivity to the fluvial system
- Decrease in forest cover **from the Bronze Age onwards**, accompanied by increase in the proportion of cereals
- Grasses are abundantly present during all time periods, can be attributed to an overrepresentation as they are part of the natural local floodplain vegetation



# Next steps



- Look for **pollen type parameters** (PPE & FSP) that might be more appropriate for the study area
  - Test effect of **more pollen data**:
    - Database of 32 pollen records in NE Belgium
    - Selected sites differ in soil properties, topographies, and histories of human impact in their catchments
- **uncover regional differences in land-cover evolution**

Questions or comments?  
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<https://www.futurefloodplains.be/>



# References

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