

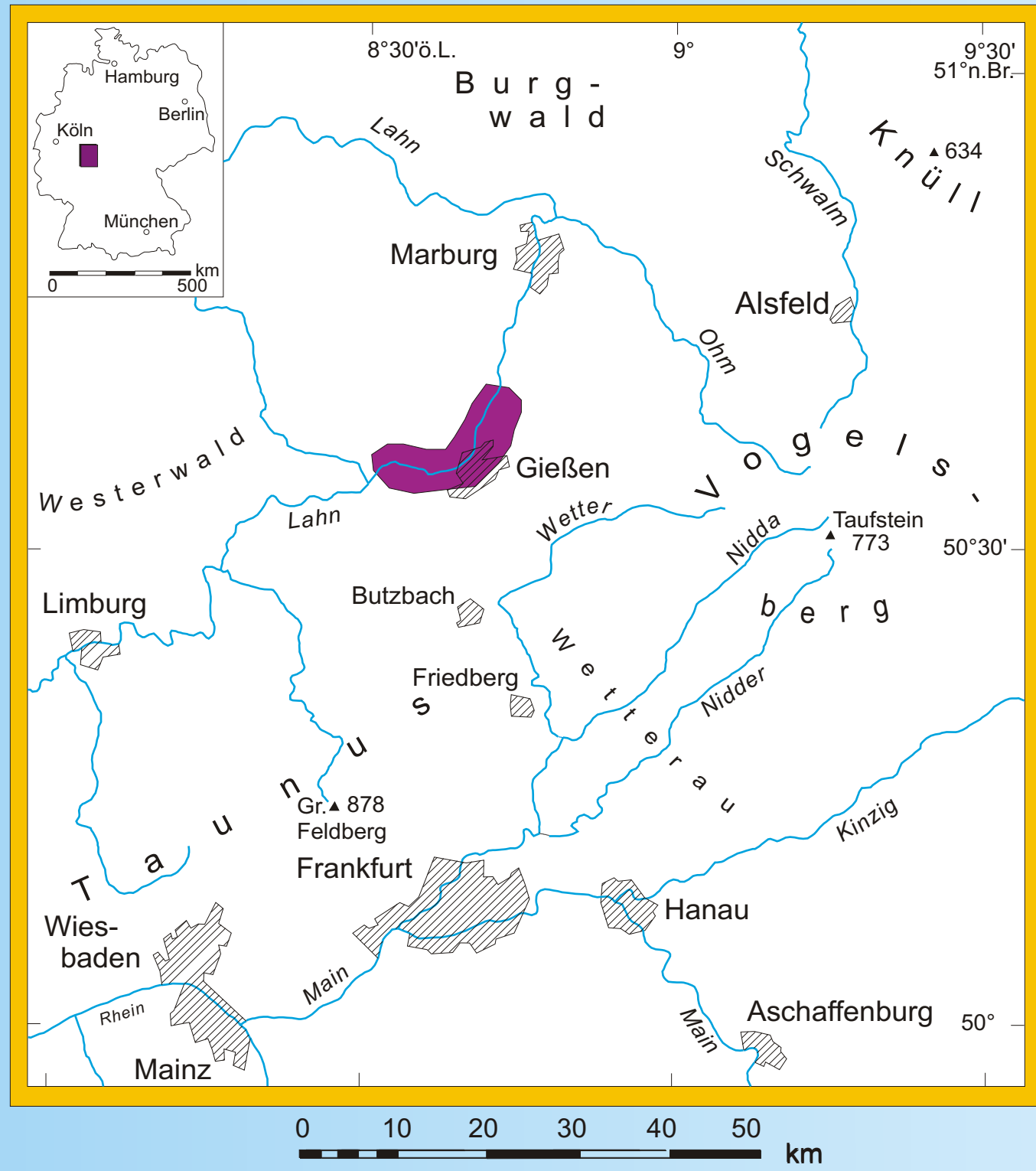
Environmental change and human impact in the middle Lahn valley (Hessen) during the middle and late Holocene



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Introduction

Results to Lateglacial and early Holocene alterations of the landscape in the middle Lahn valley, a valley in the Hessian uplands, showed that changes of the environment of man during timeslice 1 were mostly climatically controlled. However, local human impact can be recognized at the transition from timeslice 1 to timeslice 2 (see poster Urz/Bos/Kalis). To separate anthropogenically from climatically induced changes of the geo/biosphere, the transformation of the fluvial landscape clearly affected by anthropogenic pressure, was investigated.

Aims

To assess the causes of the alterations of the landscape, results of different fields of research were evaluated. Of major importance was to draw up a clear chronological framework consisting of ¹⁴C-, dendro- and archaeological age determinations. On this basis, geoscientific, palaeobotanical and archaeological results could be linked.

Methods

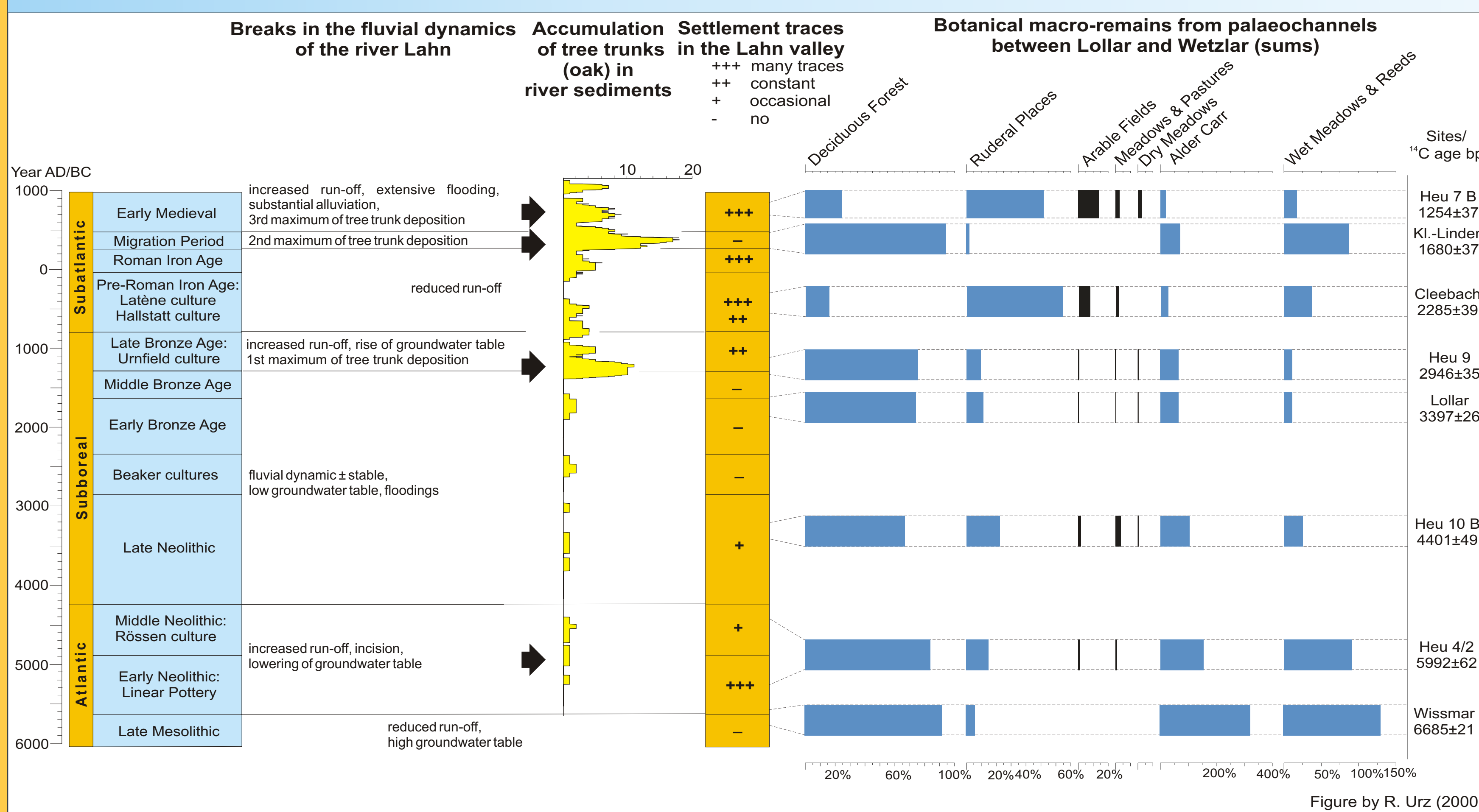
- investigation of sediment structure, morphology of the valley bottom, fluvial dynamics
- dendrochronological investigation to the middle and younger Holocene fluvial history
- palaeoecology (analyses of botanical macro remains of dated channel sediments)
- mapping of settlement traces within the middle Lahn valley
- evaluation of the human influence on erosional processes of the valley slopes

Area of Investigation

Investigations were carried out in the middle Lahn valley (Hessian uplands) between Lollar and Wetzlar. The loess covered landscape in the catchment area of the river Lahn provides suitable conditions for agriculture since the early Neolithic.

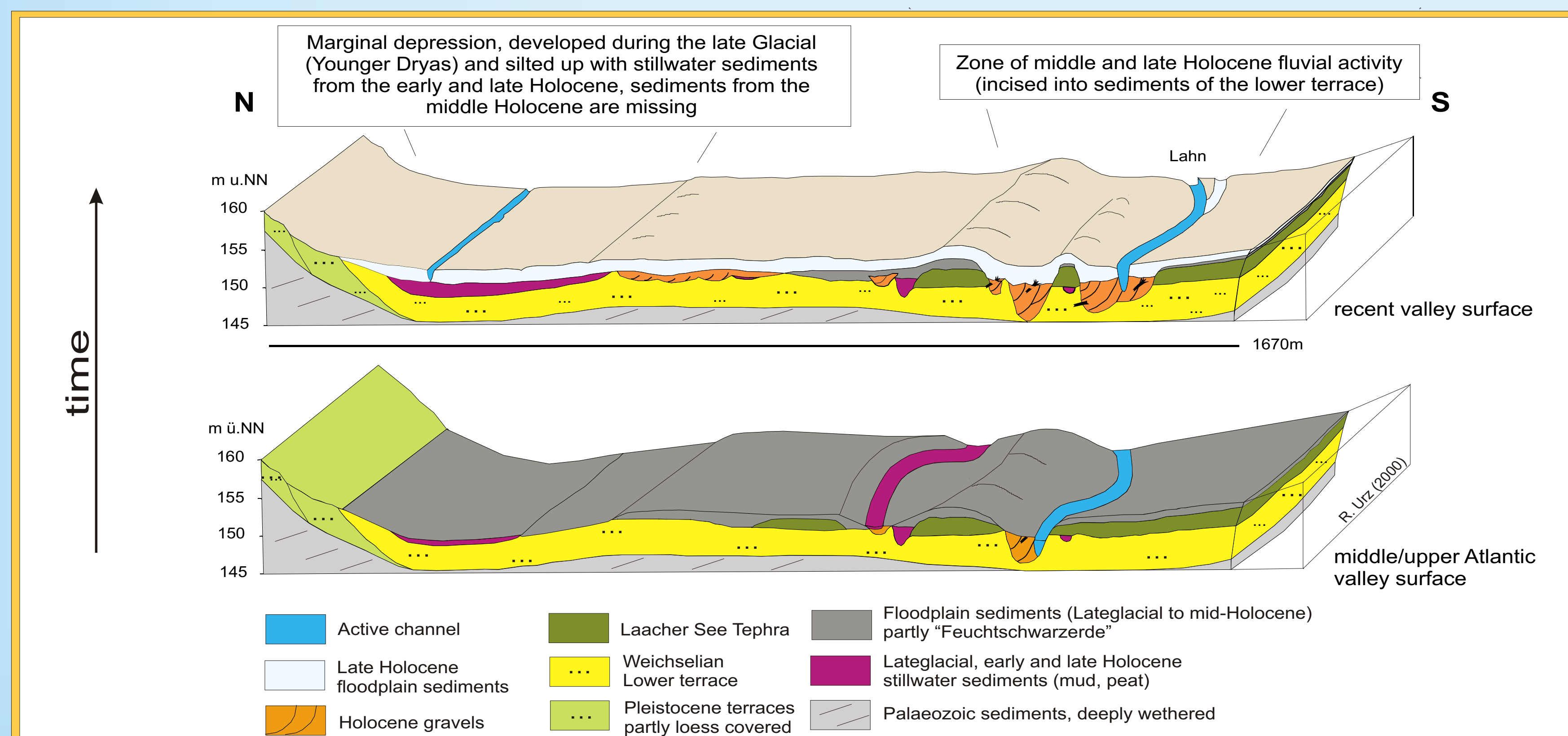
Conclusions

1. Prior to the early Neolithic human impact can only be detected locally. Changes of the fluvial dynamics that occurred before the Neolithic can therefore be regarded as mainly climatically induced.
2. Since the early Neolithic through to the Bronze Age, human impact on a low level is detectable within the Lahn valley. Changes of the stream-flow regime like higher run-off values and vertical incision during the early and middle Neolithic cannot be explained only by climatic changes. Human impact into a stable ecosystem could as well be responsible, as settlement traces of the early Neolithic are abundant.
3. Since the late Bronze Age (Urnfield culture) until the early Medieval fluvial dynamics and oak tree deposition in river sediments increased periodically, whereas traces of settlements increased constantly. Therefore, anthropogenic influence can be considered as so strong, that climatic signals might be obscured or enhanced.
4. An exception was the Migration period, where an anthropogenic influence could not be detected and the higher fluvial dynamics with a peak in oak tree deposition might be a climatic signal.
5. Anthropogenically induced landscape forming processes eventually reached a peak during the early Medieval with increased run-off, extensive floodings and substantial alluviation (see below).



Development of valley infill and relief between the middle/upper Atlantic and today under climatic and anthropogenic influences

Middle Lahn valley in the Giessen basin between Atzbach and Dutenhofen



Climatically and - from the younger Holocene onwards - mainly anthropogenically induced landscape forming processes considerably changed the sediment structure and the morphology of the valley floor. This led to an elevation of the floodplain and the relief was levelled out. At the latest since the early Medieval, the floodplain covers the complete breadth of the valley.

Literature:
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