

River Rhine lower delta during the Last Interglacial

Architecture, facies distribution and preservation in a near-coastal deltaic setting in the southern North Sea Basin, The Netherlands

OSL dating

MIS 5e

Biostratigraphy

Eemian

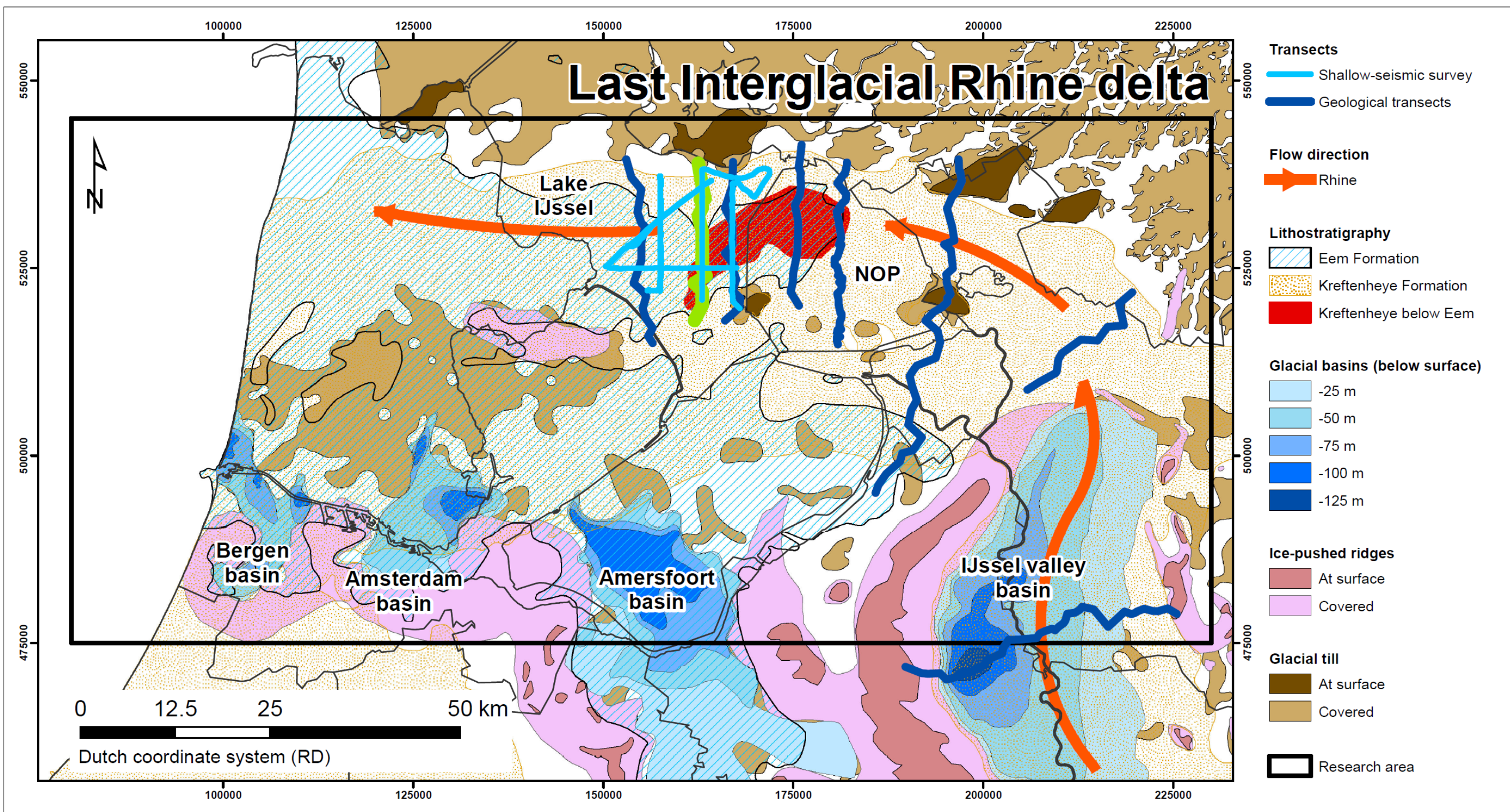
Within near-coastal environments, the fluvial-tidal transition zone is one of the most complex zones due to mixture of processes and sediments of different source and depositional styles.

The Eemian Last-interglacial (ca. 130-115 ka BP) Rhine delta in The Netherlands constitutes a promising natural archive for improving the understanding of the near-coastal deltaic palaeo-record. Besides, the well investigated Holocene Rhine delta is available for analogue studies and to directly test concepts of preservation potential.

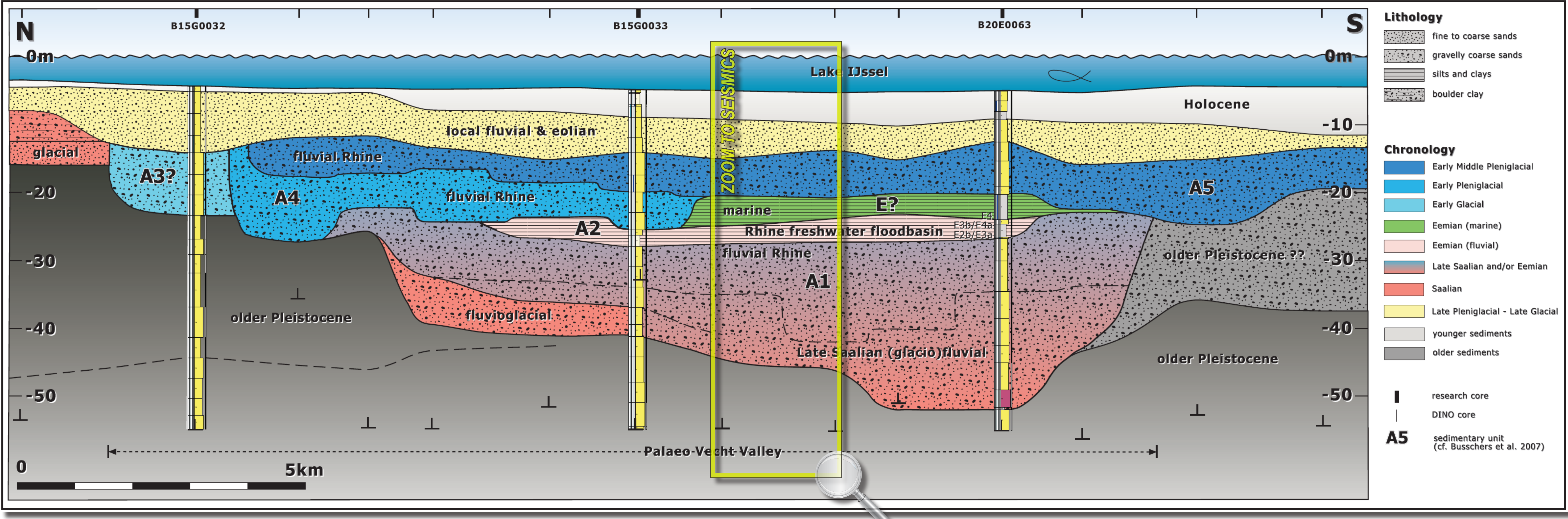
Huge datasets available at Utrecht University and TNO, together with new continuous cores, cpt's, well logs, seismic sections and 3D geological models are used to sedimentologically and architecturally characterize the near-coastal deposits. Optically Stimulated Luminescence dating, U/Th dating, biostratigraphy and tephrochronology are used for age determination.



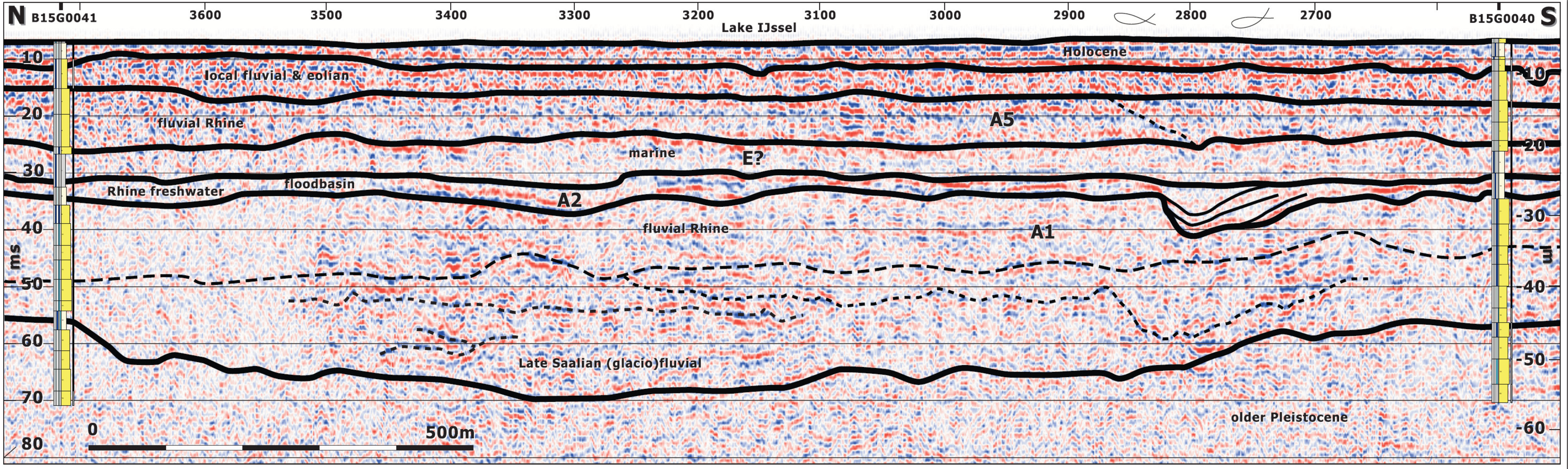
After: De Bosatlas van Ondergronds Nederland (2009) & Digital Geological Model - TNO (2011)



Geological transect



Shallow seismics



We conclude that our integrated multiple-technique strategy works:

- Geological transects illustrates near-coastal deltaic architecture and can be used for **preservation potential** estimation;
- Shallow-seismics provide valuable extra (detailed) info on **facies distribution**;
- Detailed continuous research cores show **sedimentary deposit characteristics**;
- Absolute-dating techniques can be used to construct a **rigid time frame**.

Comparing the Eemian Rhine and Holocene fluvial-estuarine transition zones, will lead to more insights in the development of older near-coastal deltaic areas and hence of better understanding the stratigraphic architecture of hydrocarbon resource reservoirs.

The second part of my PhD research addresses facies and deltaic architecture response to allogenic and autogenic processes.

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