

Thirteen high-resolution geological sections across the Rhine between Bonn and Rotterdam!

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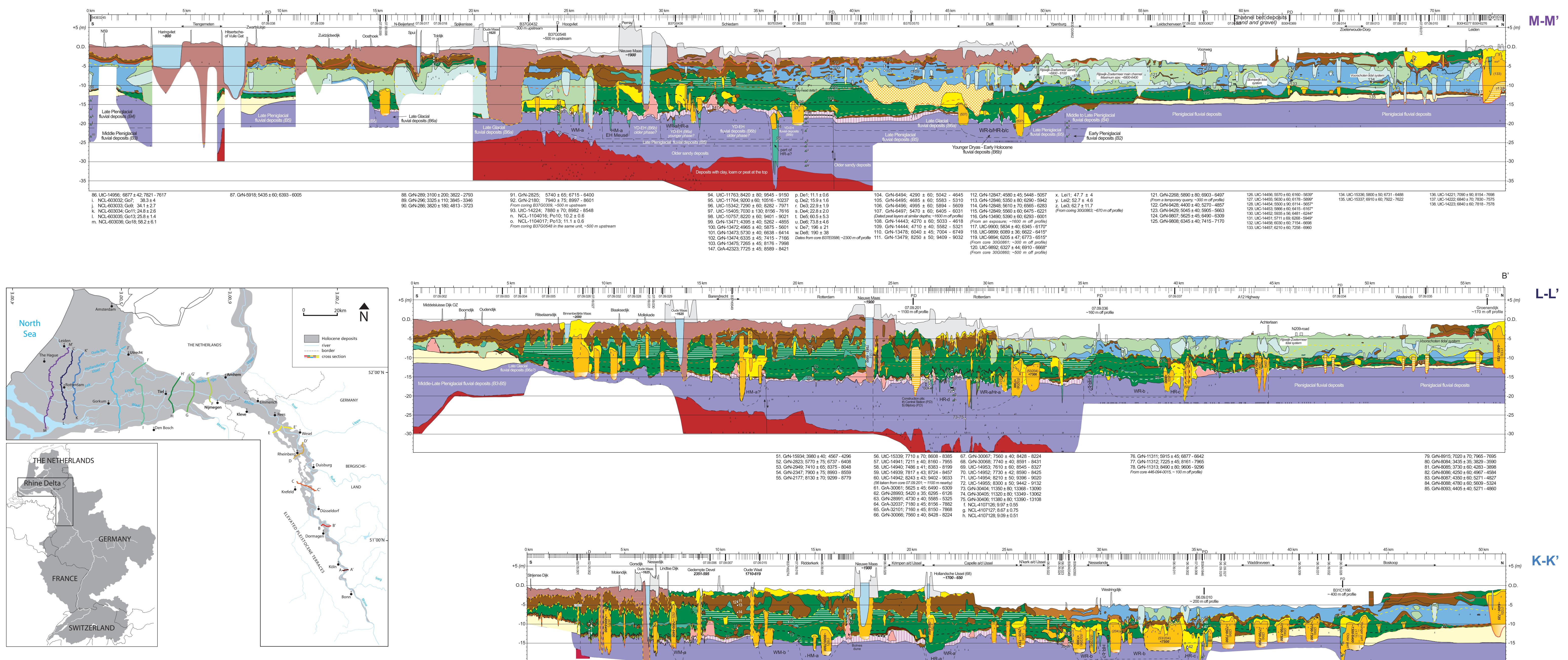


Figure 1. Location of the cross-sections in the Rhine-Meuse catchment.

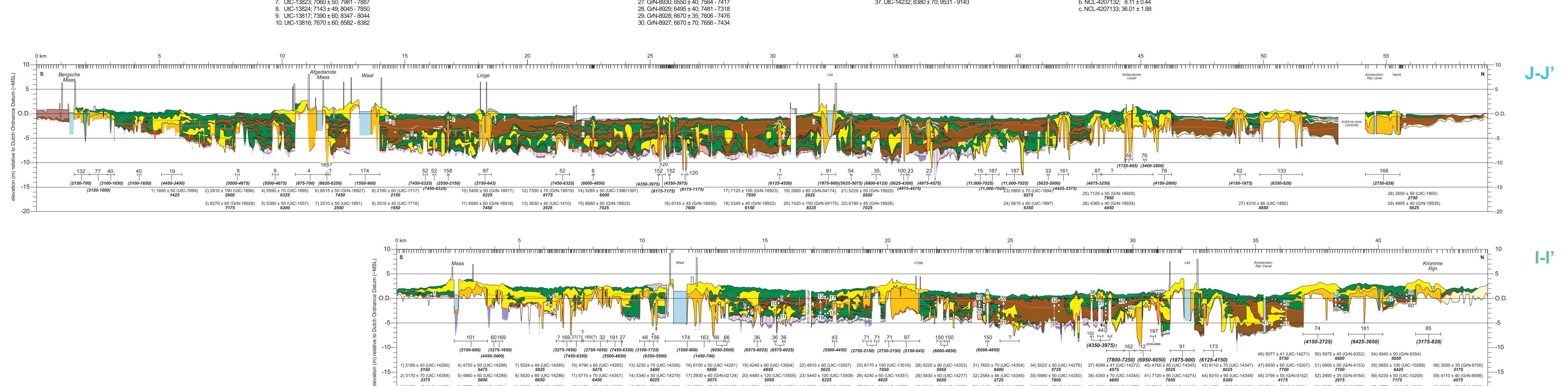
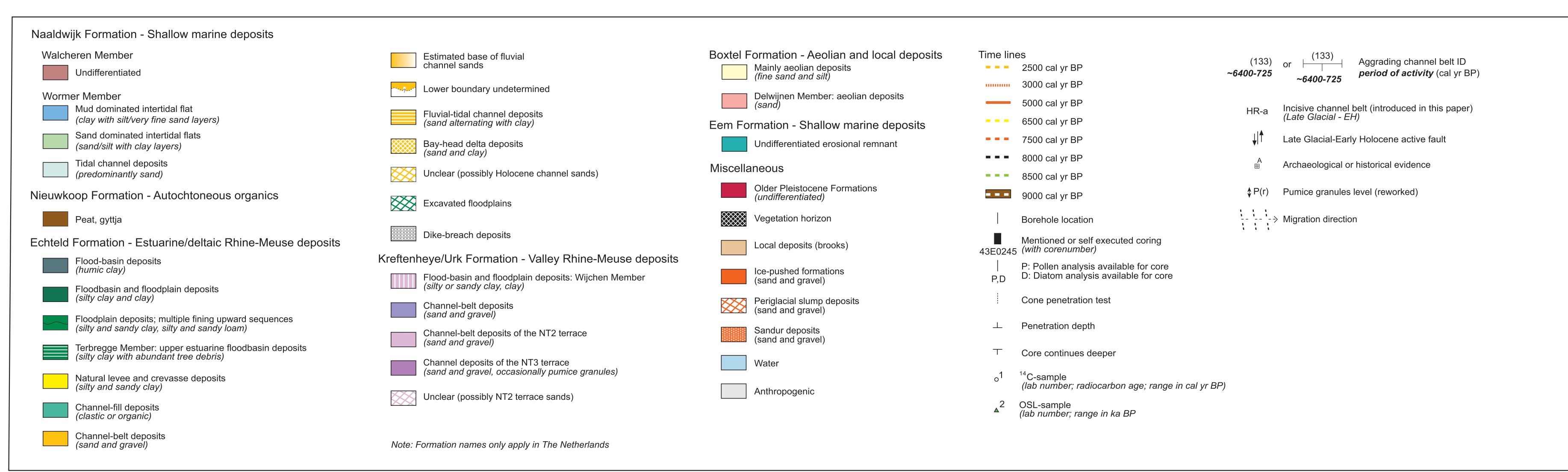


Table 1. Upstream to downstream trends in alluvial architecture, morphology, stratigraphy and lithology between Bonn and Rotterdam.

Cross-section	Distance to Bonn (km)	Borehole #	Width of Holocene deposits in cross-section	Average elevation of top of Holocene deposits (m +NAP)	Elevation difference early vs late Holocene (m)	Thickness Holocene fine clastic deposits (m)	Onset of aggradation (cal year BP)	Channel deposits (%)	Peat (%)	Marine dep. % 8500-6500 BP	Average lithology of channel facies	Lithology of floodplain/floodbasin facies	Hol. allogenic forcing factors (in order of importance)
A-A'	15	27	3	47	-8.5	1.2	N/A	~ 85	0	0	Strongly gravelly Coarse to medium sand	Loam	Climate change Tectonic uplift Human impact
B-B'	45	27	6.5	38	-8.5	1.5	N/A	~ 85	0	0	Strongly gravelly Coarse to medium sand	Loam	Climate change Tectonic uplift Human impact
C-C'	75	67	8	30	-7.0	1.5	N/A	~ 80	0	0	Strongly gravelly Coarse to medium sand	Loam	Climate change Tectonic uplift Human impact
D-D'	95	86	11.5	23	-7.0	1.8	Incision stopped	~ 75	0	0	Gravelly Coarse to medium sand	Silt loam	Climate change Human impact Tectonic uplift
E-E'	115	87	11	18	-5.0	2.0	Incision stopped	~ 75	0	0	Gravelly Coarse to medium sand	Silt loam	Climate change Human impact Tectonic uplift
F-F'	229	152	15	8	+ 4.0	4.0	5000	~ 70	~ 3	0	Slightly gravelly Medium sand	Silty clay loam	Human impact Eustatic sea-level rise Climate change
G-G'	245	292	26	7	+ 5.0	5.0	6500	~ 55	~ 2	0	Slightly gravelly Medium sand	Silty clay loam	Human impact Eustatic sea-level rise Climate change
H-H'	255	286	25	5	+ 5.0	5.0	6800	~ 55	~ 4	0	Slightly gravelly Medium sand	Silty clay loam	Eustatic sea-level rise Neo-tectonics Human impact
I-I'	285	547	44	3	+ 7.0	7.0	7800	~ 44	~ 14	0	Medium to Fine sand	Silty clay	Eustatic sea-level rise Human impact Climate change
J-J'	305	645	59	0	+ 8.0	8.0	8100	~ 32	~ 28	0	Medium to Fine sand	Silty clay	Eustatic sea-level rise Human impact Climate change
K-K'	335	527	>50	-3	+ 15.0	15.0	8300	~ 14	~ 25	~ 5	Medium to Fine sand	Clay	Eustatic sea-level rise Human impact Climate change
L-L'	345	506	>50	-1.5	+ 17.0	17.0	9000	~ 8	~ 17	~ 10	Medium to Fine sand	Clay	Eustatic sea-level rise Human impact Palaeotopography
M-M'	355	519	>75	0	+ 20.0	20.0	9500	~ 4	~ 14	~ 80	Medium to Fine sand	Clay	Eustatic sea-level rise Palaeotopography Human impact



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FURTHER READING

Erkens, G. (2009). Sediment dynamics in the Rhine catchment: quantification of fluvial response to climate change and human impact. Ph.D.-thesis, Utrecht University: 278 pp. Download at: <http://igitur-archive.library.uu.nl/dissertations/2009-1119-200148/UUindex.html>

Hijma, M.P. (2009). From river valley to estuary: the early-mid Holocene transgression of the Rhine-Meuse valley, The Netherlands. Ph.D.-thesis, Utrecht University: 192 pp. Download at: <http://igitur-archive.library.uu.nl/dissertations/2009-1209-200111/UUindex.html>

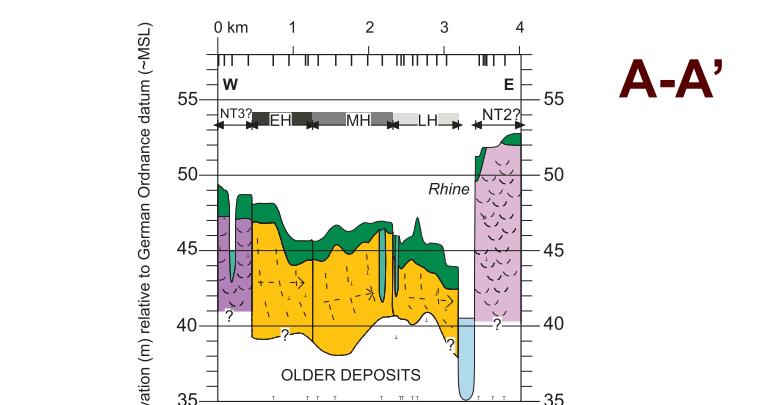
ACKNOWLEDGEMENTS

Cross-section H-H' modified from Cohen (2003), cross-section I-I' modified from Törnqvist (1993).

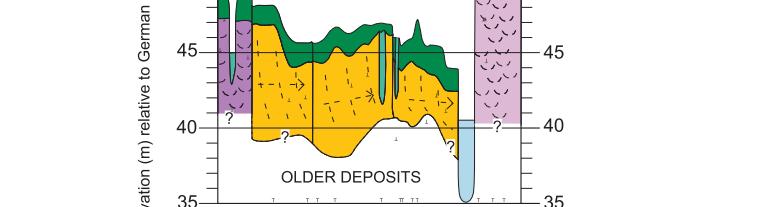
Channel-belt and peat proportions for cross-sections F-F' to I-I' from Gouw (2008). Marc Gouw is also greatly thanked for his work on cross-sections F-F' to I-I'.

The Geological Survey of The Netherlands and the State Geological Survey of Nordrhein-Westfalen, Germany, kindly provided data.

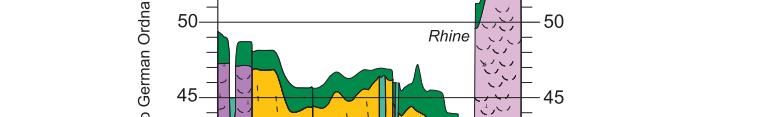
A-A'



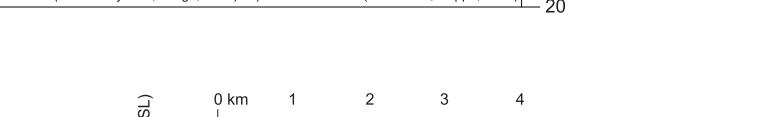
B-B'



C-C'



D-D'



E-E'



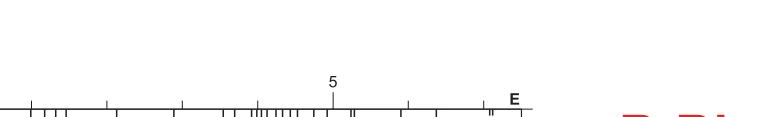
F-F'



G-G'



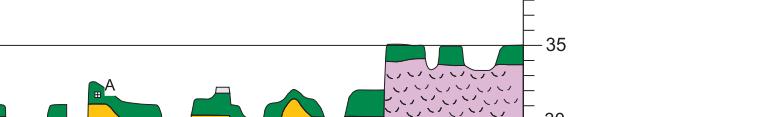
H-H'



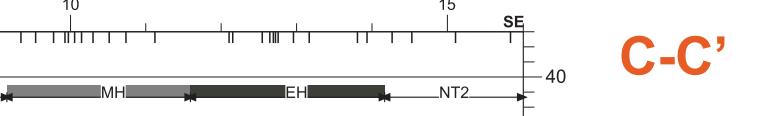
I-I'



J-J'



K-K'



L-L'



M-M'

