



Supplement of

Where are the lake deposits? Two atypical overdeepening fills from the Rhine Glacier lobe in southwestern Germany

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Supplement S1: Geophysical measurements and other measurements

Table S1 & S2. Conducted geophysical, organic & carbonate content measurements on boreholes and drill cores

Table S1: ICDP 5068_6 Gaisbeuren - taken measurements		
GAIS borehole	Depth [m]	
Spectral Gamma Ray (K, Th, U)	000 – 142	
Magnetic Susceptibility (SUSZ)	037 – 077	090 – 143
Sonic Log (vp)	090 – 106	117 – 141
Specififc Electric Resistivity (DLL)	117 – 141	
Neutron Porosity (NN)	063 – 077	117 – 141
Acoustic Image (BHTV)	063 – 077	090 – 143
Grip dip oscillator (Dip)	063 – 077	090 – 143
GAIS drill core	Depth [m]	
Magnetic Susceptibility (SUSZ)	000 – 144	
Organic content	005 – 131	
Carbonate content	005 – 131	

Table S2: LICH Lichtenegg - taken measurements		
LICH borehole	Depth [m]	
Spectral Gamma Ray (K, Th, U)	000 – 079	
Magnetic Susceptibility (SUSZ)	035 – 076	
Sonic Log (vp)	043 – 076	
Specififc Electric Resistivity (DLL)	043 – 076	
Temp. & Resist. of drill fluid (TSAL)	035 – 076	
Grip dip oscillator (Dip)	035 – 076	
LICH drill core	Depth [m]	
Magnetic Susceptibility (SUSZ)	000 – 010	34 – 76
Organic content	000 – 009	35 – 63
Carbonate content	000 – 009	35 – 63

Supplement S2: Core descriptions

Table S3. Summary table of ICDP 5068_6_A with a description of the identified Lithofacies sorted by occurring depth

Molasse bedrock [Bm] / Diamict, massive [Dm] / Fines, diamictic [Fd] / Sand, massive [Sm] / Topsoil [T]		
Abbr.	Depth [m]	Description
[Bm]	137.7 – 144.0	Marl-, Siltstone, clayey to sandy, grey-blue, strongly consolidated
	134.0 – 137.7	Sandstone, silty, grey-blue, unconsolidated to moderately consolidated
	133.05 – 134.0	Siltstone, clayey to marley, grey-blue, moderately consolidated
[Fd]	124.0 – 133.05	Till, moderately sorted, matrix-supported, silty to sandy matrix, frequently fine to medium gravels,
[Dm]	117.0 – 123.4	Till, poorly sorted, matrix-supported, silty to sandy matrix, few gravels, occasionally cobbles, grey-yellow
[Sm]	110.5 – 117.0	Medium to coarse Sand, well sorted slightly silty, frequently fine gravels, grey-brown – grey-yellow
[Dm]	109.0 – 110.0	Till, poorly sorted, matrix-supported, silty to sandy matrix, few gravels, grey-yellow
[Sm]	106.0 – 109.0	Medium to coarse Sand, well sorted, slightly silty, frequently fine gravels, grey-brown – grey-yellow
[Dm]	88.0 – 106.0	Till, poorly to moderately sorted, matrix-supported, silty to sandy matrix, few gravels, occasionally cobbles, grey-yellow
	80.4 – 85.0	Till, poorly sorted, matrix-supported, silty to slightly sandy matrix, few gravels, occasionally cobbles, grey
[Fd]	65.0 – 80.4	Till, moderately sorted, matrix-supported, silty to sandy matrix, frequently fine to medium gravels, grey-yellow
[Dm]	51.5 – 64.6	Till, poorly sorted, matrix-supported, silty to slightly sandy matrix, few gravels and cobbles, grey-yellow
[Fd]	47.6 – 50.8	Till, moderately sorted, matrix-supported, silty to sandy matrix, frequently fine to medium gravels, grey-yellow
[Dm]	37.0 – 47.6	Till, poorly sorted, matrix-supported, silty to sandy matrix, less gravels, occasionally cobbles, yellow-grey
	36.0 – 37.0	Till, poorly sorted, matrix-supported, silty to slightly sandy matrix, less gravels, grey-yellow
	24.6 – 34.6	Till, poorly sorted, predominant matrix-supported, silty to slightly sandy matrix, grey-yellow – brown-grey
	17.0 – 21.4	Till, poorly sorted, predominant matrix-supported, silty to sandy matrix, grey-yellow – brown-grey
	1.0 – 16.0	Till, poorly sorted, predominant matrix-supported, silty to sandy matrix, from 7-14 m more gravels, grey-yellow
[T]	0.0 – 1.0	decalcified and reworked diamictic soil

Table S4. Summary table of Lichtenegg core with a description of the identified Lithofacies sorted by occurring depth

Molasse bedrock [Bm] / Diamict, massive [Dm] / Fines, diamictic [Fd] / Fines, massive [Fm] / Erratic block [Eb] / Gravels [Gms]		
Abbr.	Depth [m]	Description
[Bm]	73.7 – 75.6	Sandstone, silty, grey-yellow, strongly to moderately consolidated
	71.7 – 73.7	Siltstone, sandy, clayey to marley, grey-yellow-reddish, moderately consolidated
	69.6 – 71.7	Sandstone, silty, grey-yellow, moderately consolidated
	67.0 – 69.6	Siltstone, clayey to marley, grey-yellow-reddish, marbled, caliche, moderately consolidated
	66.4 – 67.0	Sandstone, silty, grey-yellow, moderately consolidated
	63.7 – 66.4	Siltstone, sandy, clayey to marley, grey-yellow-reddish-brown, caliche, moderately consolidated
[Fd]	63.0 – 63.7	Subglacial traction till, Silt, sandy, slightly gravels, grey-yellow, moderately sorted, matrix-supported
[Dm]	61.0 – 63.0	Till, Silt, sandy, few gravels, occasionally cobbles, grey-yellow, poorly sorted, matrix-supported
	58.6 – 60.5	Till, Silt, sandy, gravelly, brown-grey-yellow, poorly sorted, matrix-supported
	53.1 – 57.0	Till, Sand, Silt, gravelly to slightly gravels, grey-yellowgrey, poorly to moderately sorted, matrix supported
[Fd]	49.5 – 53.1	Silt, Sand, fine gravels, grey-greybrown, well to poorly sorted, matrix supported
[Eb]	47.3 – 49.0	Calcareous Sandstone, grey, massive
[Fd]	46.8 – 47.3	Silt, slightly clayey and sandy, slightly fine to medium gravels, moderately sorted, matrix supported
[Fm]	46.3 – 46.8	Silt, clayey, slightly fine sandy, yellowgrey-grey, well sorted,
[Dm]	45.7 – 46.3	Till, Silt, sandy, fine gravel, slightly medium to coarse gravel, greybrown, poorly sorted, matrix supported
[Gms]	44.0 – 45.7	Fine to coarse Gravel, sandy, slightly silty, sparsely cobbles, moderately to poorly sorted, clast to matrix supported
[Fd]	42.2 – 44.0	Silt, sandy, fine to medium gravel, slightly coarse gravels, brown, poorly sorted, matrix supported
[Dm]	40.7 – 42.2	Till, Silt, fine to medium gravel, sand, slightly coarse gravel, sparsely cobbles, poorly to moderately sorted, clast to matrix supported
[Fd]	40.6 – 40.7	Silt, clay, slightly fine to medium gravel, brown, moderately sorted
[Dm]	37.7 – 40.6	Till, Silt, Sand, gravel, sparsely cobbles, grey to brown, poorly to moderately sorted, clast to matrix supported
[Gms]	34.15 – 36.0	Fine to medium Gravel, sandy, slightly silty and cobbles, conglomerated pieces, grey, clast to matrix supported, poorly
	10.0 – 34.0	No cores but cup samples taken, Gravel and Sand, slightly cobbles
[Dm]	0.4 – 10.0	Till, poorly sorted, matrix-supported, silty to slightly sandy matrix, few gravels and cobbles, grey-yellow
[T]	0.0 – 0.4	rooted soil, organic, silty, slightly fine sandy, sparsely gravel