

Fig. S1. Investigated clasts from the three Bruche fluvial terraces shown alongside their cross-polarized thin sections. Thin sections were prepared perpendicular to the elongated axes of the clasts.

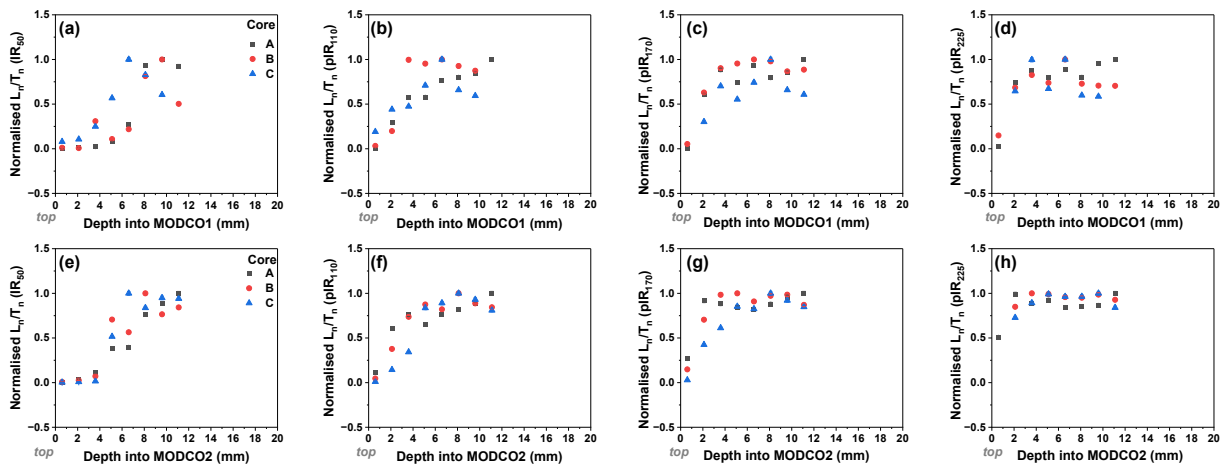


Fig. S2. Depth profiles of normalised luminescence signals (L_n/T_n) from the investigated modern clasts obtained from Bruche river bed (a-d for MODCO1 and e-h for MODCO2). Each data point represents the natural luminescence signal measured from individual rock slice, normalised to the maximum natural signal at each IR stimulation temperature obtained from the corresponding core. Luminescence signal variations into the depth of these two clasts are shown for IR₅₀ (in panels a and e), for pIR₁₁₀ (in panels b and f), for pIR₁₇₀ (in panels c and g) and for pIR₂₂₅ (in panels d and h).

Table S1. Summarization of the MET-pIRIR CAM D_e values and corresponding approximate MET-pIRIR ages obtained from the two modern river clasts. In order to calculate the approximate ages, dose rate ($\sim 3 \text{ Gy ka}^{-1}$) obtained from the clasts of Roethig terraces is utilized. (*surface slices from MODCO2 are unable to produce natural D_e maintaining the routine rejection criteria, with a recycling ratio of 10% and a recuperation $< 10\%$ of the natural dose, therefore, the natural D_e from those slices are not considered reliable).

Sample ID	Clast surface	Number of surface slices/measured surface slices	IR stimulation temperature ($^{\circ}\text{C}$)	CAM D_e (Gy)	Approximate age (ka)
MODCO1	top	1/3	IR ₅₀	2.3 ± 0.2	0.8
		1/3	pIR ₁₁₀	8.4 ± 0.5	2.8
		1/3	pIR ₁₇₀	16.2 ± 0.5	5.4
		1/3	pIR ₂₂₅	23.7 ± 0.8	7.9
MODCO2	top	3/3	IR ₅₀	1.5 ± 0.1	0.5
		2/3	pIR ₁₁₀	5.8 ± 3.3	1.9
		2/3	pIR ₁₇₀	18.0 ± 10.3	6.0
		0*/3	pIR ₂₂₅	--	--

Table S2. Luminescence ages of the investigated clasts based on CAM D_e values estimated from the surface slices. Results are shown for all MET-pIRIR signals, with and without fading corrections. For each clast, the NLS ratio used for fading correction represents the mean value derived from three saturated slices taken from different cores. *Indicates that no D_e values could have been obtained from the rock slices of different cores for the corresponding clast, since the natural signals measured at higher IR stimulation temperatures (170°C and 225°C) approach saturation for the slices. CAM D_e , CAM age and fading-corrected CAM age values are additionally recalculated using a 18% reduced beta dose rate to assess the sensitivity of the results to dose rate uncertainty.

Sample ID	Clast surface	Number of surface slices/measured surface slices	IR stimulation temperature ($^{\circ}\text{C}$)	CAM D_e (Gy)	CAM D_e (Gy) with reduced beta dose rate	OD (%)	CAM Age (ka)	CAM Age (ka) with reduced beta dose rate	NLS ratio	Fading corrected CAM age (ka)	Fading corrected CAM age (ka) with reduced beta dose rate
RTCO1	Top	3/3	IR ₅₀	35.2 ± 0.5	29.1 ± 0.4	0	12.3 ± 0.7	10.2 ± 0.6	0.40 ± 0.10	30.8 ± 7.9	25.5 ± 6.5
		3/3	pIR ₁₁₀	48.5 ± 0.7	40.2 ± 0.6	0	16.9 ± 1.0	14.0 ± 0.8	0.75 ± 0.14	22.6 ± 4.5	18.7 ± 3.7
		3/3	pIR ₁₇₀	85.4 ± 8.7	70.7 ± 7.2	15	29.9 ± 3.5	24.8 ± 2.9	0.87 ± 0.06	34.4 ± 4.7	28.5 ± 3.9
		3/3	pIR ₂₂₅	105.7 ± 9.7	87.5 ± 8.0	15	37.1 ± 4.1	30.7 ± 3.4	0.96 ± 0.03	38.6 ± 4.4	32.0 ± 3.6
	Bottom	3/3	IR ₅₀	38.1 ± 2.0	31.5 ± 1.7	8.7	13.4 ± 1.1	11.1 ± 0.9	0.40 ± 0.10	33.4 ± 8.8	27.6 ± 7.3
		2/3	pIR ₁₁₀	49.0 ± 5.3	40.6 ± 4.4	15	17.1 ± 2.1	14.2 ± 1.7	0.75 ± 0.14	22.8 ± 5.1	18.9 ± 4.2
		3/3	pIR ₁₇₀	88.7 ± 27.7	73.4 ± 22.9	54	31.1 ± 9.9	25.7 ± 8.2	0.87 ± 0.06	35.8 ± 11.6	29.6 ± 9.6
		3/3	pIR ₂₂₅	106 ± 32	87.8 ± 26.5	56	37.3 ± 11.5	30.9 ± 9.5	0.96 ± 0.03	38.8 ± 12.1	32.1 ± 10.0

RTCO2	Top	4/4	IR ₅₀	37.4 ± 1.1	31.0 ± 0.9	5.1	12.4 ± 3.4	10.3 ± 2.8	0.46 ± 0.05	26.9 ± 7.9	22.3 ± 6.5
		4/4	pIR ₁₁₀	51.8 ± 2.0	42.9 ± 1.7	7.2	17.1 ± 4.7	14.2 ± 3.9	0.75 ± 0.01	22.8 ± 6.2	18.9 ± 5.1
		4/4	pIR ₁₇₀	65.7 ± 7.0	54.4 ± 5.8	22	22.3 ± 6.5	18.5 ± 5.4	0.85 ± 0.03	26.2 ± 7.7	21.7 ± 6.4
		4/4	pIR ₂₂₅	75.6 ± 9.0	62.6 ± 7.5	25	25.3 ± 7.5	20.9 ± 6.2	0.89 ± 0.09	28.4 ± 8.9	23.5 ± 7.4
LHCO1	Top	3/3	IR ₅₀	92.1 ± 1.4	76.2 ± 1.2	0	15.2 ± 1.1	12.6 ± 0.9	0.38 ± 0.01	40.1 ± 3.1	33.2 ± 2.6
		3/3	pIR ₁₁₀	139 ± 3	115 ± 3	0	23.0 ± 1.7	19.0 ± 1.4	0.65 ± 0.01	35.4 ± 2.7	29.3 ± 2.2
		3/3	pIR ₁₇₀	167 ± 11	138 ± 9	10	27.6 ± 2.7	22.8 ± 2.2	0.70 ± 0.02	39.4 ± 4.0	32.6 ± 3.3
		2/3	pIR ₂₂₅	133 ± 6	110 ± 5	0	21.9 ± 1.8	18.1 ± 1.5	0.83 ± 0.04	26.4 ± 2.5	21.9 ± 2.1
LHCO2	Top	2/3	IR ₅₀	76.9 ± 2.2	63.7 ± 1.8	3	14.8 ± 1.1	12.3 ± 0.9	0.38 ± 0.01	38.8 ± 3.0	32.1 ± 2.5
		2/3	pIR ₁₁₀	138 ± 4	114 ± 3	0	26.4 ± 1.9	21.9 ± 1.6	0.65 ± 0.01	40.7 ± 3.1	32.1 ± 2.5
		1/3	pIR ₁₇₀	117 ± 3	96.9 ± 2.5	--	22.4 ± 1.6	18.5 ± 1.3	0.70 ± 0.02	32.1 ± 2.5	26.6 ± 2.1
		0*/3	pIR ₂₂₅	--	--	--	--	--	0.83 ± 0.04	--	--
GHCO1	Top	3/3	IR ₅₀	592 ± 67	490 ± 55	8	120 ± 15	99.3 ± 12.4	0.63 ± 0.09	190 ± 36	157 ± 30
		3/3	pIR ₁₁₀	798 ± 68	661 ± 56	2	161 ± 16	133 ± 13	0.83 ± 0.13	194 ± 36	160 ± 30
		2/3	pIR ₁₇₀	1076 ± 26	891 ± 21	0	217 ± 12	180 ± 10	0.92 ± 0.08	236 ± 24	195 ± 20
		0*/3	pIR ₂₂₅	--	--	--	--	--	0.98 ± 0.01	--	--
GHCO2	Top	3/3	IR ₅₀	750 ± 23	621 ± 19	0	149 ± 13	123 ± 11	0.70 ± 0.09	213 ± 33	176 ± 27
		3/3	pIR ₁₁₀	1185 ± 75	981 ± 62	4	236 ± 24	195 ± 20	0.90 ± 0.09	262 ± 38	217 ± 31
		0*/3	pIR ₁₇₀	--	--	--	--	--	0.96 ± 0.06	--	--
		0*/3	pIR ₂₂₅	--	--	--	--	--	0.99 ± 0.01	--	--