Dynamic Funerary Monuments of North-western Europe: Chronological Modelling of a Late Neolithic–Pre-Roman Iron Age Cemetery Complex at Mang de Bargen, Northern Germany

By HELENE AGERSKOV ROSE, STEFANIE SCHAEFER-DI MAIDA, *and* JUTTA KNEISEL

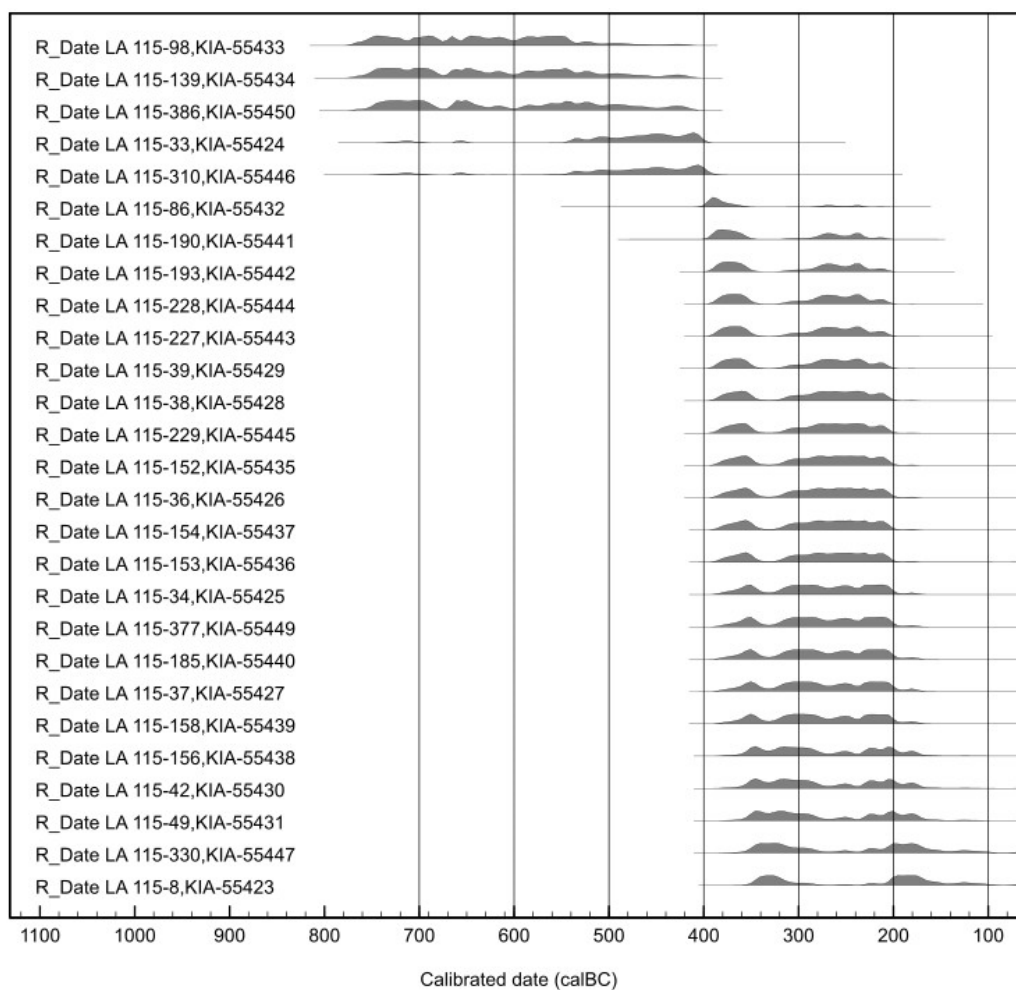APPENDIX S1: RADIOCARBON DATING; SUPPORTING FIGURES AND TABLE

Fig. S1.
Calibrated radiocarbon dates from the urnfield LA 115 at Mang de Bargen (Bronk Ramsey 2009; Reimer 2020), demonstrating the negative effect of the so-called Hallstatt radiocarbon calibration plateau *c.* 750–400 cal BC (Pearson *et al.* 1983; Stuiver & Becker 1986; Wijma *et al.* 1996; Stäuble & Hiller 1997) on the unmodelled dates
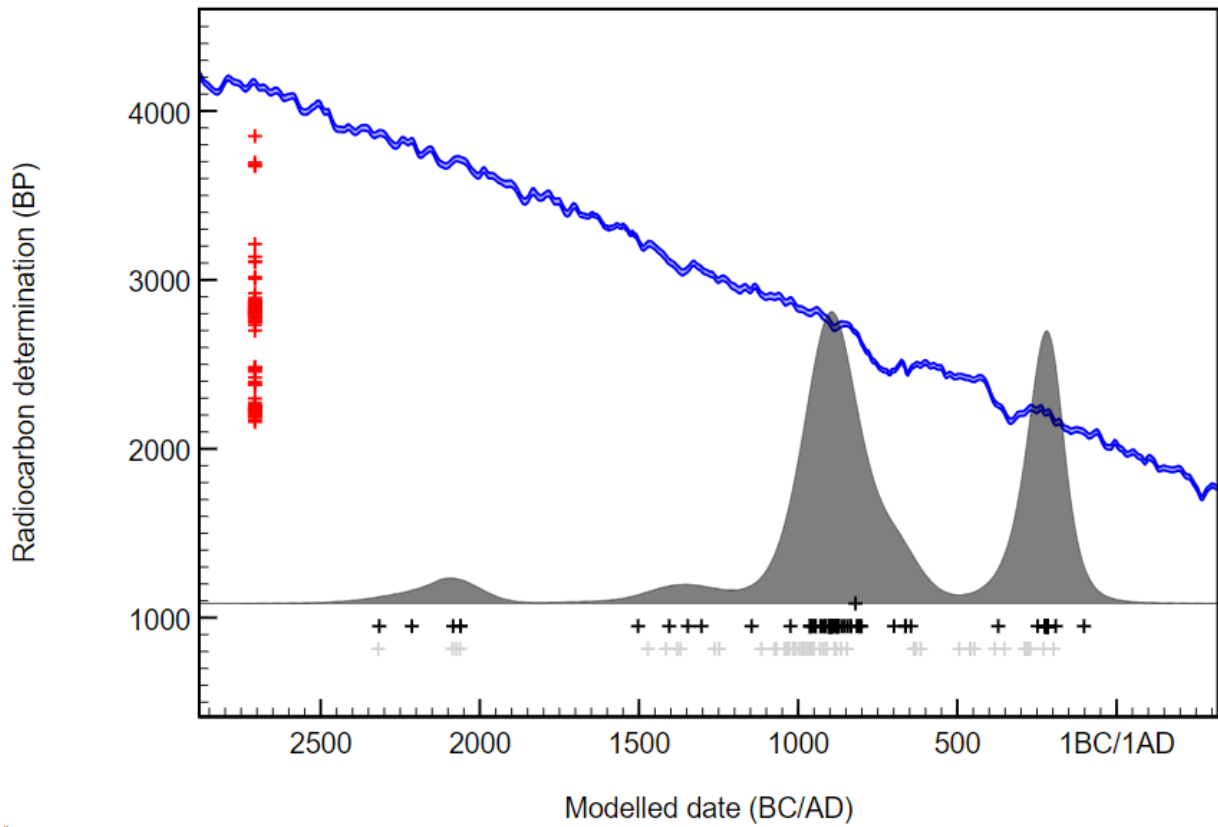
1

Fig. S2
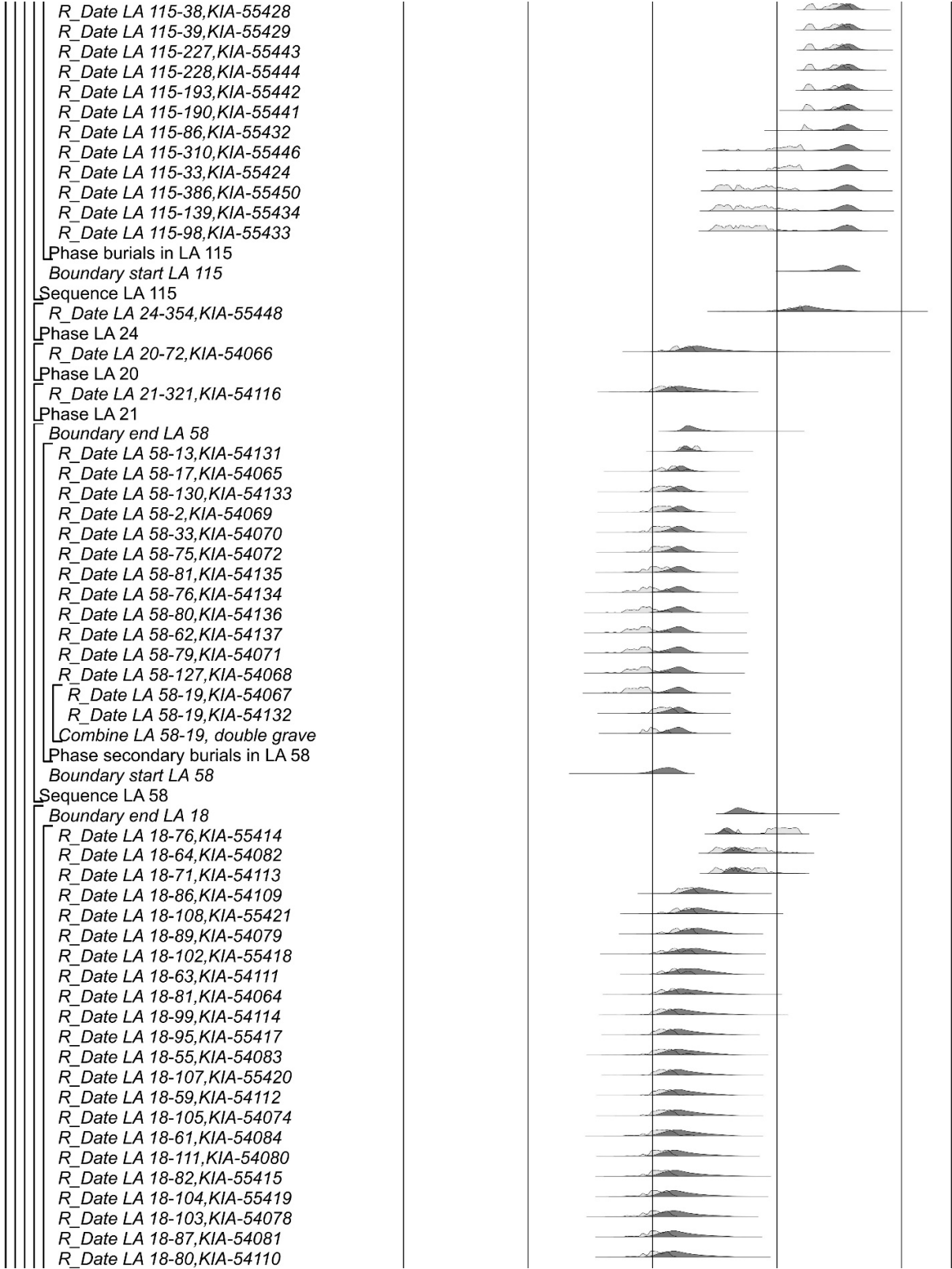Kernel density estimate summarising burial activity at Mang de Bargen as estimated by Model A. Red crosses (left) show median uncalibrated radiocarbon ages, black crosses (below) show median modelled calibrated dates, grey crosses (below) show median of simple calibrated dates (Bronk Ramsey 2017). The relevant section of the IntCal20 calibration curve is shown for references (Reimer *et al.* 2020)

=LA 115-227,KIA-55443
=LA 115-158,KIA-55439
=LA 115-153,KIA-55436
Phase IA II
=LA 115-193,KIA-55442
=LA 115-139,KIA-55434
=LA 115-49,KIA-55431
=LA 115-8,KIA-55423
=LA 18-71,KIA-54113
=LA 18-64,KIA-54082
Phase IA I
=LA 115-154,KIA-55437
Phase IA burials
transition YBA/EIA burials
=LA 18-107,KIA-55420
=LA 18-104,KIA-55419
=LA 18-102,KIA-55418
=LA 18-95,KIA-55417
=LA 18-76,KIA-55414
=LA 18-58,KIA-55413
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=LA 58-2,KIA-54069
=LA 18-88b,KIA-54063
=LA 18-88a,KIA-54115
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=LA 18-109,KIA-54138
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=LA 18-86,KIA-54109
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=LA 18-30,KIA-54108
=LA 21-321,KIA-54116
Phase YBA burials
Sequence relatively dated burials
Boundary end burial activity
Boundary end LA 115
R_Date LA 115-8,KIA-55423
R_Date LA 115-330,KIA-55447
R_Date LA 115-49,KIA-55431
R_Date LA 115-42,KIA-55430
R_Date LA 115-156,KIA-55438
R_Date LA 115-158,KIA-55439
R_Date LA 115-37,KIA-55427
R_Date LA 115-185,KIA-55440
R_Date LA 115-377,KIA-55449
R_Date LA 115-34,KIA-55425
R_Date LA 115-153,KIA-55436
R_Date LA 115-154,KIA-55437
R_Date LA 115-36,KIA-55426
R_Date LA 115-152,KIA-55435
R_Date LA 115-229,KIA-55445

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R_Date LA 115-227,KIA-55443
R_Date LA 115-228,KIA-55444
R_Date LA 115-193,KIA-55442
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R_Date LA 115-86,KIA-55432
R_Date LA 115-310,KIA-55446
R_Date LA 115-33,KIA-55424
R_Date LA 115-386,KIA-55450
R_Date LA 115-139,KIA-55434
R_Date LA 115-98,KIA-55433
Phase burials in LA 115
Boundary start LA 115
Sequence LA 115
R_Date LA 24-354,KIA-55448
Phase LA 24
R_Date LA 20-72,KIA-54066
Phase LA 20
R_Date LA 21-321,KIA-54116
Phase LA 21
Boundary end LA 58
R_Date LA 58-13,KIA-54131
R_Date LA 58-17,KIA-54065
R_Date LA 58-130,KIA-54133
R_Date LA 58-2,KIA-54069
R_Date LA 58-33,KIA-54070
R_Date LA 58-75,KIA-54072
R_Date LA 58-81,KIA-54135
R_Date LA 58-76,KIA-54134
R_Date LA 58-80,KIA-54136
R_Date LA 58-62,KIA-54137
R_Date LA 58-79,KIA-54071
R_Date LA 58-127,KIA-54068
R_Date LA 58-19,KIA-54067
R_Date LA 58-19,KIA-54132
Combine LA 58-19, double grave
Phase secondary burials in LA 58
Boundary start LA 58
Sequence LA 58
Boundary end LA 18
R_Date LA 18-76,KIA-55414
R_Date LA 18-64,KIA-54082
R_Date LA 18-71,KIA-54113
R_Date LA 18-86,KIA-54109
R_Date LA 18-108,KIA-55421
R_Date LA 18-89,KIA-54079
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R_Date LA 18-81,KIA-54064
R_Date LA 18-99,KIA-54114
R_Date LA 18-95,KIA-55417
R_Date LA 18-55,KIA-54083
R_Date LA 18-107,KIA-55420
R_Date LA 18-59,KIA-54112
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R_Date LA 18-61,KIA-54084
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R_Date LA 18-104,KIA-55419
R_Date LA 18-103,KIA-54078
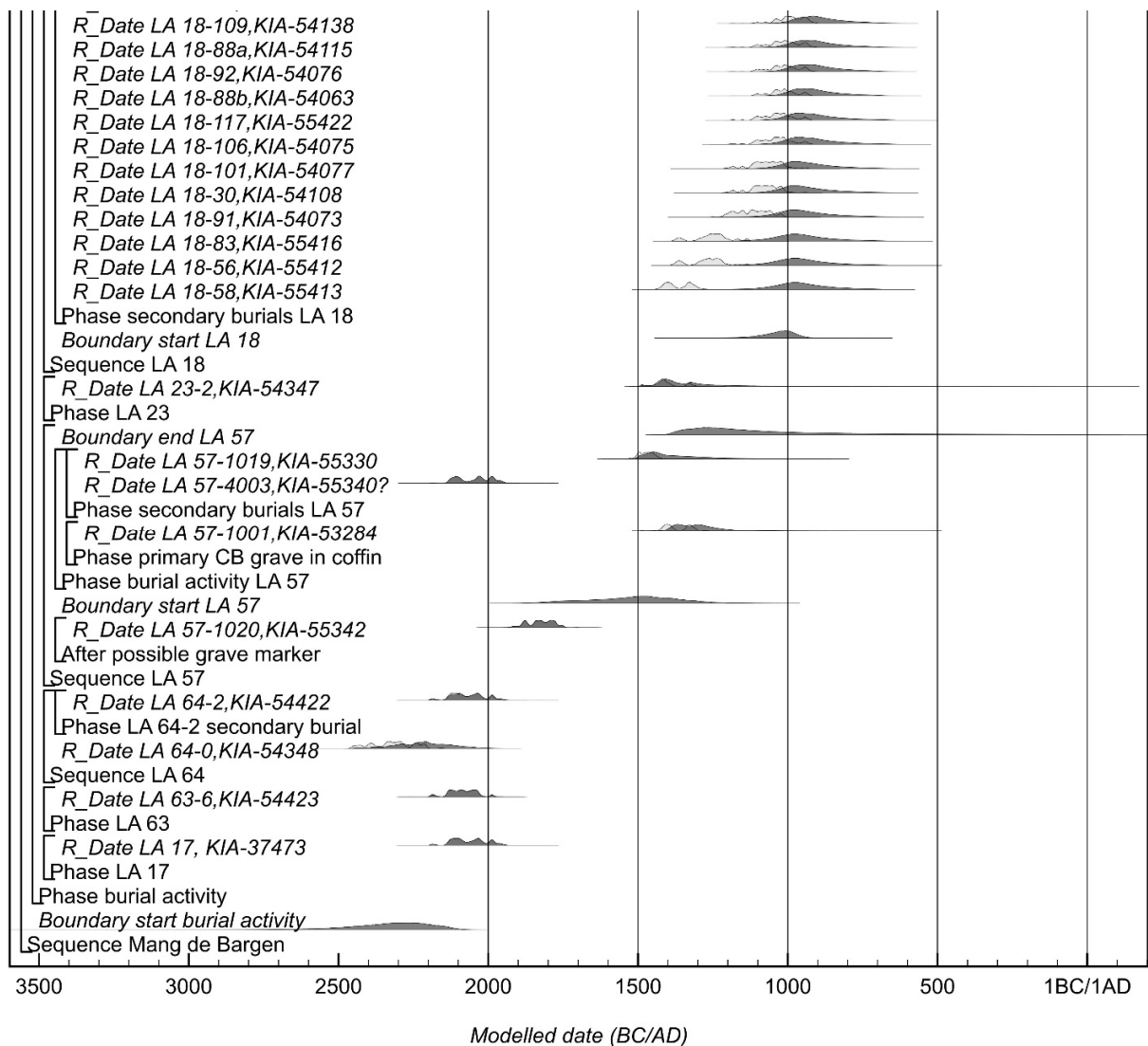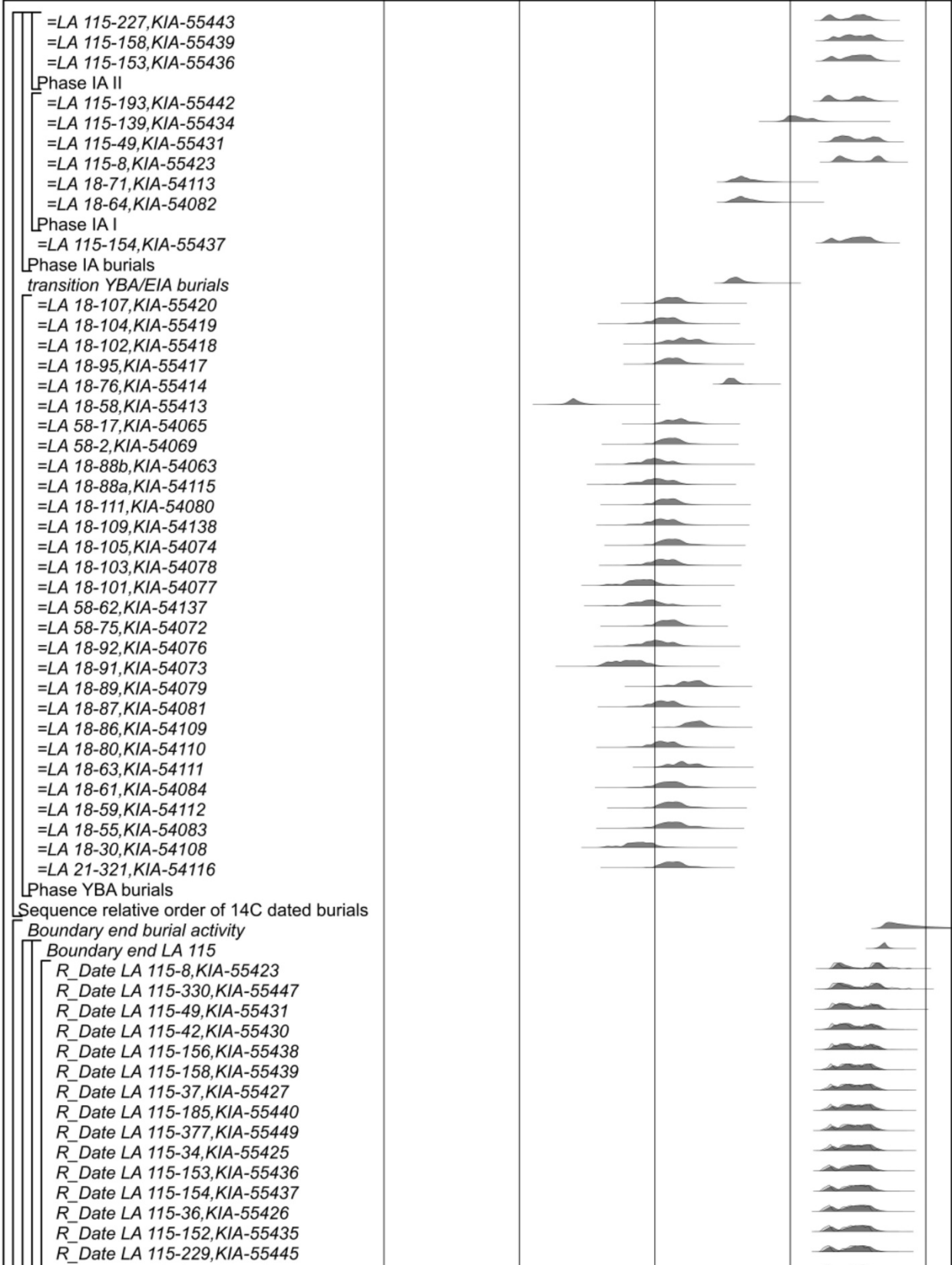R_Date LA 18-87,KIA-54081
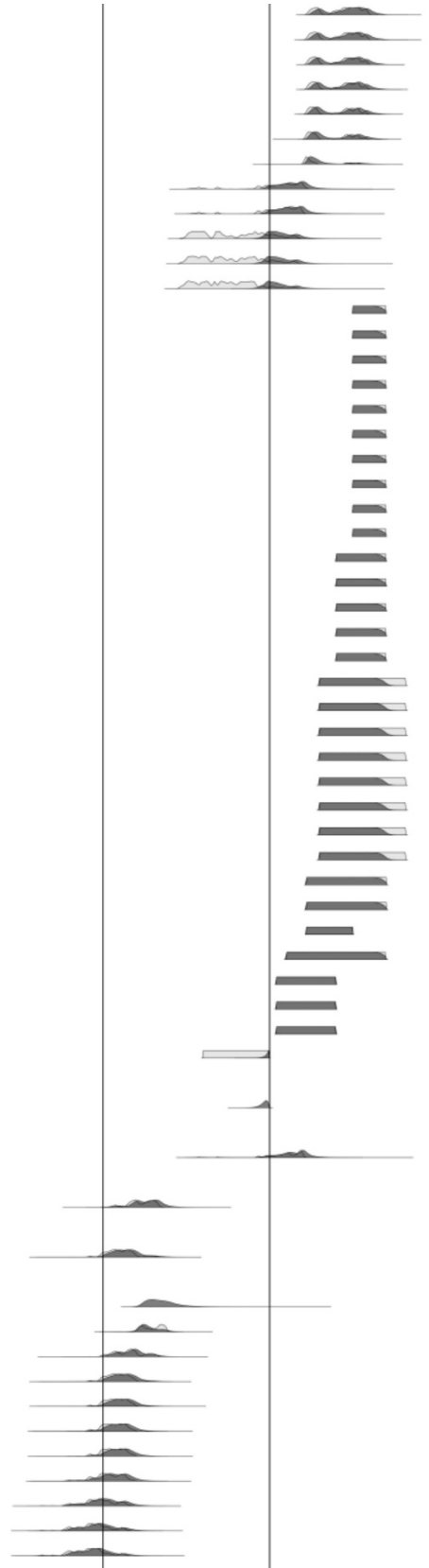R_Date LA 18-80,KIA-54110

Fig. S3

Chronological model of Mang de Bargen, as estimated by Model A. For each sample, the probability density function of the simple calibrated date is shown in light grey, while the model's posterior density estimate of the sample date is shown in dark grey. Uniform distributions are employed for the typo-chronological dates of burials without absolute dates. The exact model specifications are given in Appendix S3

```
=LA 115-227,KIA-55443
  =LA 115-158,KIA-55439
  =LA 115-153,KIA-55436
Phase IA II
  =LA 115-193,KIA-55442
  =LA 115-139,KIA-55434
  =LA 115-49,KIA-55431
  =LA 115-8,KIA-55423
  =LA 18-71,KIA-54113
  =LA 18-64,KIA-54082
Phase IA I
  =LA 115-154,KIA-55437
Phase IA burials
transition YBA/EIA burials
  =LA 18-107,KIA-55420
  =LA 18-104,KIA-55419
  =LA 18-102,KIA-55418
  =LA 18-95,KIA-55417
  =LA 18-76,KIA-55414
  =LA 18-58,KIA-55413
  =LA 58-17,KIA-54065
  =LA 58-2,KIA-54069
  =LA 18-88b,KIA-54063
  =LA 18-88a,KIA-54115
  =LA 18-111,KIA-54080
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  =LA 18-61,KIA-54084
  =LA 18-59,KIA-54112
  =LA 18-55,KIA-54083
  =LA 18-30,KIA-54108
  =LA 21-321,KIA-54116
Phase YBA burials
Sequence relative order of 14C dated burials
Boundary end burial activity
  Boundary end LA 115
    R_Date LA 115-8,KIA-55423
    R_Date LA 115-330,KIA-55447
    R_Date LA 115-49,KIA-55431
    R_Date LA 115-42,KIA-55430
    R_Date LA 115-156,KIA-55438
    R_Date LA 115-158,KIA-55439
    R_Date LA 115-37,KIA-55427
    R_Date LA 115-185,KIA-55440
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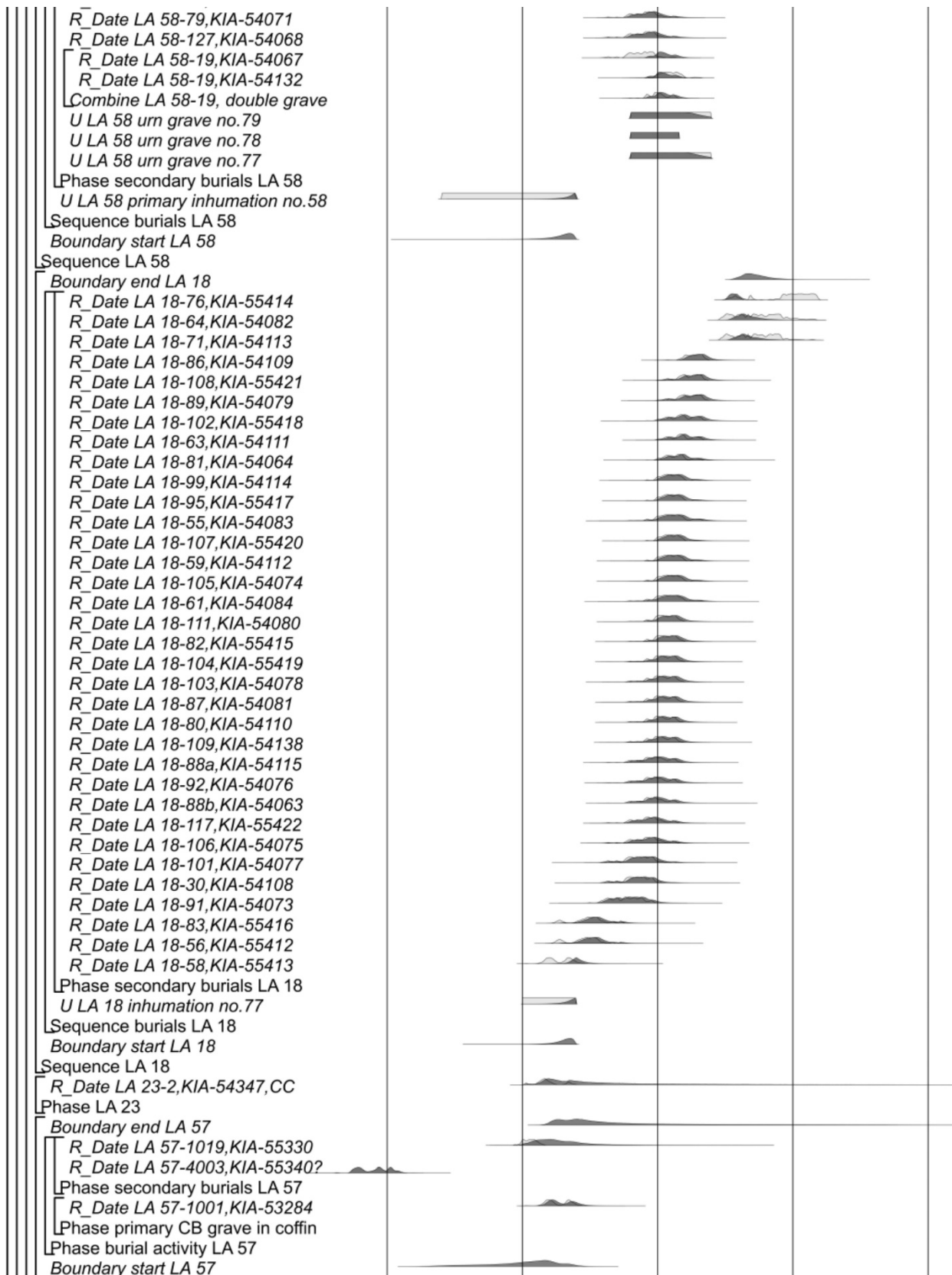
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R_Date LA 115-228,KIA-55444
R_Date LA 115-193,KIA-55442
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R_Date LA 115-310,KIA-55446
R_Date LA 115-33,KIA-55424
R_Date LA 115-386,KIA-55450
R_Date LA 115-139,KIA-55434
R_Date LA 115-98,KIA-55433
U LA 115 grave no.362
U LA 115 grave no.245
U LA 115 grave no.241
U LA 115 grave no.233
U LA 115 grave no.183
U LA 115 grave no.162
U LA 115 grave no.147
U LA 115 grave no.61
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U LA 115 grave no.239
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U LA 115 grave no.211
U LA 115 grave no.205
U LA 115 grave no.180
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U LA 115 grave no.370
U LA 115 grave no.361
U LA 115 grave no.198
U LA 115 grave no.230
U LA 115 grave no.53
U LA 115 grave no.35
U LA 115 grave no.22
U LA 115 grave no.246
U LA 115 grave no.82
U LA 115 grave no.80
U LA 115 grave no.208
U LA 115 grave no.214
U LA 115 grave no.213
U LA 115 grave no.88
U LA 115 grave no.92
Phase burials LA 115
Boundary start LA 115
Sequence LA 115
R_Date LA 24-354,KIA-55448
Phase LA 24
R_Date LA 20-72,KIA-54066
Phase LA 20
R_Date LA 21-321,KIA-54116
Phase LA 21
Boundary end LA 58
R_Date LA 58-13,KIA-54131
R_Date LA 58-17,KIA-54065
R_Date LA 58-130,KIA-54133
R_Date LA 58-2,KIA-54069
R_Date LA 58-33,KIA-54070
R_Date LA 58-75,KIA-54072
R_Date LA 58-81,KIA-54135
R_Date LA 58-76,KIA-54134
R_Date LA 58-80,KIA-54136
R_Date LA 58-62,KIA-54137

R_Date LA 58-79,KIA-54071
R_Date LA 58-127,KIA-54068
R_Date LA 58-19,KIA-54067
R_Date LA 58-19,KIA-54132
Combine LA 58-19, double grave
U LA 58 urn grave no.79
U LA 58 urn grave no.78
U LA 58 urn grave no.77
Phase secondary burials LA 58
U LA 58 primary inhumation no.58
Sequence burials LA 58
Boundary start LA 58
Sequence LA 58
Boundary end LA 18
R_Date LA 18-76,KIA-55414
R_Date LA 18-64,KIA-54082
R_Date LA 18-71,KIA-54113
R_Date LA 18-86,KIA-54109
R_Date LA 18-108,KIA-55421
R_Date LA 18-89,KIA-54079
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R_Date LA 18-95,KIA-55417
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Phase secondary burials LA 18
U LA 18 inhumation no.77
Sequence burials LA 18
Boundary start LA 18
Sequence LA 18
R_Date LA 23-2,KIA-54347,CC
Phase LA 23
Boundary end LA 57
R_Date LA 57-1019,KIA-55330
R_Date LA 57-4003,KIA-55340?
Phase secondary burials LA 57
R_Date LA 57-1001,KIA-53284
Phase primary CB grave in coffin
Phase burial activity LA 57
Boundary start LA 57

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Fig. S4.

Chronological model of Mang de Bargen, as estimated by Model B. For each sample, the probability density function of the simple calibrated date is shown in light grey, while the model's posterior density estimate of the sample date is shown in dark grey. Uniform distributions are employed for the typo-chronological dates of burials without absolute dates. The exact model specifications are given in Appendix S3

Fig. S5.

Kernel density estimate summarizing burial activity at Mang de Bargen as estimated by Model B. Red crosses (left) show median uncalibrated radiocarbon ages, black crosses (below) show median modelled calibrated dates, grey crosses (below) show median of simple calibrated dates (Bronk Ramsey 2017). The relevant section of the IntCal20 calibration curve is shown for references (Reimer *et al.* 2020)

TABLE S1: RELATIVE AND ABSOLUTE CONSTRUCTION DATES OF BARROWS AT MANG DE BARGEN. RELATIVE DATES RELY ON TYPO-CHRONOLOGICAL DATING OF BURIAL GOODS AND ABSOLUTE DATES ARE POSTERIOR ESTIMATES FROM MODEL B

LA	Relative start date	Modelled start date cal BC (68.3% probability)
17	LN I	2216–2039
63	–	2134–2035 *
64	LN II	2351–2087
59	LN/EBA	–
58	EBA/OBA	1387–1309
69	BA per. I–II	–
18	BA per. II	1356–1306
23	–	1441–1235 *
60	BA per. II	–
57	–	1735–1302
20	–	902–798 *
21	–	970–865 *
24	–	461–351 *
115	BA per. VI	522–504

*Relies on posterior density estimate of a single date

APPENDIX S2: RADIOCARBON DATES FROM MANG DE BARGEN, BORNHÖVED

Site	Feature no.	Description	Lab code	Material	Extraction yield %wt	%C	AMS δ¹³C (‰VPDB)	CI	¹⁴C age (BP)	uncer.	Ref.
LA 17		Secondary inhumation burial	KIA-37473	human skull (collagen)	14.6	51.1	–20.7		3670	35	1
LA 18	78	posthole	KIA-40037	cereal grain, *Triticum spelta*	20.6	60.1	–23.3		3168	29	1
LA 18	78	posthole	KIA-54920	cereal grain, *Triticum spelta*	54.1	64.5	–21.9		3116	28	2
LA 18	79	Traces of fire	KIA-40038	cereal grain, *Triticum dicoccum*	68.5	60.1	–22.8		3111	24	1
LA 18	119	Traces of fire	KIA-40039	cereal grain, *Triticum dicoccum/Hordeum vulgare*	27.2	62.4	–24.9		3536	26	1
LA 18	120	posthole	KIA-40040	cereal grain, *Triticum spelta*	74.1	58.9	–23.9		3111	24	1
LA 18	120	posthole	KIA-54921	cereal grain, *Triticum spelta*	60.6	72.7	–23.9		3085	29	2
LA 18	46	barrow mound filling	KIA-40041	cereal grain, *Triticum dicoccum*	24.3	70.4	–22.5		3200	25	1
LA 18	30	Urn grave, MNI = 1	KIA-54108	cremated bone (apatite)	94.3	0.1	–23.6	6.9	2893	24	1
LA 18	55	Urn grave, MNI = 1	KIA-54083	cremated bone (apatite)	86.7	0.1	–24.7	6.9	2800	35	1
LA 18	56	Leichenbrandschüttungsgrab, MNI = 1	KIA-55412	cremated bone (apatite)	86.9	0.2	–20.2	7.7	3017	26	1
LA 18	58	Urn grave, MNI = 1	KIA-55413	cremated bone (apatite)	86.7	0.1	–24.7	6.8	3105	26	1
LA 18	59	Leichenbrandschüttungsgrab, MNI = 1	KIA-54112	cremated bone (apatite)	94.6	0.1	–24.0	7.0	2801	27	1
LA 18	61	Urn grave, MNI = 1	KIA-54084	cremated bone (apatite)	93.8	0.1	–27.4	7.0	2810	35	1
LA 18	63	Urn grave, MNI = 1	KIA-54111	cremated bone (apatite)	77.7	0.2	–26.8	7.5	2772	24	1
LA 18	64	Urn grave, MNI = 1	KIA-54082	cremated bone (apatite)	91.7	0.1	–24.1	7.3	2479	27	1
LA 18	71	Urn grave, MNI = 1	KIA-54113	cremated bone (apatite)	92.9	0.2	–23.2	6.2	2484	23	1
LA 18	76	Urn grave, MNI = 1	KIA-55414	cremated bone (apatite)	92.5	0.2	–20.3	6.4	2423	25	1
LA 18	80	Urn grave, MNI = 1	KIA-54110	cremated bone (apatite)	89.8	0.2	–24.2	6.6	2835	23	1

Site	Feature no.	Description	Lab code	Material	Extraction yield %wt	%C	AMS $\delta^{13}C$ (‰VPDB)	CI	^{14}C age (BP)	uncer.	Ref.
LA 18	81	*Leichenbrandschüttungsgrab*, MNI = 1	KIA-54064	cremated bone (apatite)	88.7	0.2	–24.6	5.9	2784	24	1
LA 18	82	Urn grave, MNI = 1	KIA-55415	cremated bone (apatite)	94.2	0.2	–19.1	6.2	2822	26	1
LA 18	83	*Leichenbrandschüttungsgrab*, MNI = 1	KIA-55416	cremated bone (apatite)	89.2	0.2	–23.0	7.7	3007	27	1
LA 18	86	Urn grave, MNI = 1	KIA-54109	cremated bone (apatite)	92.4	0.2	–25.5	6.4	2733	23	1
LA 18	87	Urn grave, MNI = 1	KIA-54081	cremated bone (apatite)	89.4	0.2	–22.7	6.4	2834	25	1
LA 18	89	Urn grave, MNI = 1	KIA-54079	cremated bone (apatite)	88.4	0.1	–23.7	7.6	2753	29	1
LA 18	91	Urn grave, MNI = 1	KIA-54073	cremated bone (apatite)	93.0	0.2	–21.2	5.4	2921	27	1
LA 18	92	Urn grave, MNI = 1	KIA-54076	cremated bone (apatite)	92.3	0.2	–21.5	6.3	2851	27	1
LA 18	95	Urn grave, MNI = 1	KIA-55417	cremated bone (apatite)	89.3	0.1	–26.2	7.0	2800	22	1
LA 18	99	Urn grave, MNI = 1	KIA-54114	cremated bone (apatite)	93.9	0.2	–21.2	5.9	2800	24	1
LA 18	101	Urn grave, MNI = 1	KIA-54077	cremated bone (apatite)	91.5	0.1	–25.7	6.8	2887	28	1
LA 18	102	Urn grave, MNI = 1	KIA-55418	cremated bone (apatite)	89.0	0.1	–20.7	9.1	2770	30	1
LA 18	103	Urn grave, MNI = 1	KIA-54078	cremated bone (apatite)	91.7	0.1	–23.8	5.9	2834	28	1
LA 18	104	Urn grave, MNI = 1	KIA-55419	cremated bone (apatite)	88.0	0.2	–21.8	7.3	2829	26	1
LA 18	105	Urn grave, MNI = 1	KIA-54074	cremated bone (apatite)	91.9	0.2	–19.8	5.9	2804	27	1
LA 18	106	Urn grave, MNI = 1	KIA-54075	cremated bone (apatite)	91.6	0.1	–21.6	6.9	2866	28	1
LA 18	107	Urn grave, MNI = 1	KIA-55420	cremated bone (apatite)	91.3	0.2	–24.9	6.8	2801	22	1
LA 18	108	Urn grave, MNI = 1	KIA-55421	cremated bone (apatite)	92.4	0.2	–23.8	8.0	2752	27	1
LA 18	109	Urn grave, MNI = 1	KIA-54138	cremated bone (apatite)	90.0	0.1	–29.1	7.2	2837	26	1
LA 18	111	Urn grave, MNI = 1	KIA-54080	cremated bone (apatite)	94.0	0.2	–23.7	6.6	2822	23	1

Site	Feature no.	Description	Lab code	Material	Extraction yield %wt	%C	AMS δ¹³C (‰VPDB)	CI	¹⁴C age (BP)	uncer.	Ref.
LA 18	117	Urn grave, MNI = 1	KIA-55422	cremated bone (apatite)	85.7	0.2	–23.1	6.5	2863	26	1
LA 18	88a	Urn grave, MNI = 1	KIA-54115	cremated bone (apatite)	92.9	0.1	–23.6	7.8	2850	30	1
LA 18	88b	*Leichenbrandschüttunsggrab*, MNI = 1	KIA-54063	cremated bone (apatite)	93.5	0.2	–21.3	6.1	2854	23	1
LA 20	72	Pit with cremated bone, MNI = 1	KIA-54066	cremated bone (apatite)	93.0	0.3	–18.1	5.1	2756	23	1
LA 23	2	Grave no. 1 (inhumation?), MNI = 1	KIA-54347	charcoal, *Quercus* sp.	60.1	59.5	–25.3		3137	26	1
LA 57	1001	Primary *Leichenbrandschüttungsgrab*, MNI = 1	KIA-53284	cremated bone (apatite)	82.7	0.4	–25.7		3109	25	1
LA 57	1019	Disturbed cremation grave, MNI = 1	KIA-55330	charcoal, *Quercus* sp.	56.4	54.6	–23.3		3212	26	1
LA 57	4003	Urn grave, MNI = 1, poss. disturbed	KIA-55340	charcoal, *Corylus* sp.	59.2	62.1	–24.3		3662	27	1
LA 57	3038	post-hole	KIA-55328	cereal grain, *Triticum aestivum/durum/turgidum*	61.9	61.9	–22.8		3448	26	1
LA 57	loose find	From bottom of colluvial layer, above mound	KIA-55329	cereal grain, *Hordeum vulgare*	50.0	59.4	–23.4		2510	26	1
LA 57	1008	pit/post-hole	KIA-55331	charcoal, *Pinus* sp.	62.9	73.8	–22.7		9450	40	1
LA 57	1020	find beneath grave	KIA-55332	charcoal, *Pinus* sp.	57.6	67.6	–25.2		8810	40	1
LA 57	1006	pit	KIA-55333	charcoal, *Carpinus betulus*	57.6	63.3	–26.0		1274	23	1
LA 57	2032	charcoal concentration in stone setting	KIA-55334	charcoal, *Corylus* sp.	61.1	62.7	–22.6		1272	23	1
LA 57	2032	charcoal concentration in stone setting	KIA-55335	charcoal, *Corylus* sp.	61.0	61.9	–25.2		1303	20	1
LA 57	2022	post-hole	KIA-55336	charcoal, *Pinus* sp.	68.3	62.4	–24.2		8985	35	1
LA 57	2031	post-hole	KIA-55337	charcoal, *Pinus* sp.	69.5	63.7	–21.3		8895	35	1
LA 57	3048	large pit, possible grave	KIA-55338	charcoal, *Corylus* sp.	57.2	58.5	–21.0		3622	28	1

Site	Feature no.	Description	Lab code	Material	Extraction yield %wt	%C	AMS $\delta^{13}C$ (‰VPDB)	CI	^{14}C age (BP)	uncer.	Ref.
LA 57	3048	large pit, possible grave	KIA-55339	charcoal, *Alnus* sp.	33.9	58.2	–22.1		3644	27	1
LA 57	4002	pit/disturbance	KIA-55341	charcoal, *Quercus* sp.	55.6	58.0	–21.5		1372	24	1
LA 57	1020	find beneath grave	KIA-55342	charcoal, *Quercus* sp.	67.3	66.5	–24.5		3510	23	1
LA 57	3048	large pit, possible grave	KIA-55343	charred hazelnut shell	45.1	59.7	–24.3		3571	24	1
LA 57	3021	post-hole with trace of post	KIA-55344	charcoal, *Quercus* sp.	33.8	59.8	–25.4		5097	26	1
LA 58	2	Urn grave, MNI = 1	KIA-54069	cremated bone (apatite)	91.7	0.2	–22.2	6.0	2808	24	1
LA 58	13	Urn grave, MNI = 1	KIA-54131	cremated bone (apatite)	88.7	0.2	–21.1	7.0	2699	26	1
LA 58	17	*Leichenbrandschüttunsggrab*, MNI = 1	KIA-54065	cremated bone (apatite)	93.9	0.1	–20.8	6.6	2778	24	1
LA 58	19, n. urn	Double urn grave; MNI = 2	KIA-54132	cremated bone (apatite)	92.0	0.1	–24.1	7.0	2803	26	1
LA 58	19, s. urn	Double urn grave; MNI = 2	KIA-54067	cremated bone (apatite)	94.5	0.2	–22.5	6.5	2880	24	1
LA 58	33	Urn grave, MNI = 1	KIA-54070	cremated bone (apatite)	94.1	0.2	–20.5	6.1	2818	23	1
LA 58	62	Urn grave, MNI = 1	KIA-54137	cremated bone (apatite)	90.9	0.2	–25.3	7.1	2869	26	1
LA 58	75	Urn grave, MNI = 1	KIA-54072	cremated bone (apatite)	89.1	0.4	–19.1	5.6	2819	23	1
LA 58	76	Urn grave, MNI = 1	KIA-54134	cremated bone (apatite)	82.9	0.3	–23.2	6.4	2851	26	1
LA 58	79	Urn grave, MNI = 1	KIA-54071	cremated bone (apatite)	93.8	0.2	–24.1	6.6	2870	24	1
LA 58	80	Urn grave, MNI = 1	KIA-54136	cremated bone (apatite)	92.7	0.2	–22.3	7.9	2861	26	1
LA 58	81	Urn grave, MNI = 1	KIA-54135	cremated bone (apatite)	90.0	0.3	–21.7	6.3	2833	26	1
LA 58	127	Urn grave, MNI = 1	KIA-54068	cremated bone (apatite)	92.8	0.1	–22.0	6.7	2871	25	1
LA 58	130	Urn grave, MNI = 1	KIA-54133	cremated bone (apatite)	91.6	0.3	–21.5	6.8	2804	25	1
LA 63	6	central burial (inhumation/ *Leichenbrandschüttungsgrab*), MNI = 1	KIA-54423	cereal grain	52.4	55.5	–24.9		3695	25	1

Site	Feature no.	Description	Lab code	Material	Extraction yield %wt	%C	AMS $\delta^{13}C$ (‰VPDB)	CI	^{14}C age (BP)	uncer.	Ref.
LA 64	2	Inhumation burial no.2, MNI = 1	KIA-54422	cereal grain	46.1	56.2	–23.9		3679	29	1
			KIA-54348	charcoal, *Betula* sp., single ring, max. 6 rings	65.7	61.5	–23.5		3851	27	1
LA 115	8	Urn grave, MNI = 1	KIA-55423	cremated bone (apatite)	84.3	0.2	–18.7	7.2	2160	24	1
LA 115	33	Urn grave, MNI = 1	KIA-55424	cremated bone (apatite)	87.1	0.1	–23.0	6.5	2395	25	1
LA 115	34	Urn grave, MNI = 1	KIA-55425	cremated bone (apatite)	87.1	0.1	–23.0	6.5	2217	25	1
LA 115	36	Urn grave, MNI = 1	KIA-55426	cremated bone (apatite)	84.8	0.4	–21.4	6.1	2231	25	1
LA 115	37	Urn grave, MNI = 1	KIA-55427	cremated bone (apatite)	87.7	0.1	–23.3	6.2	2211	26	1
LA 115	38	Urn grave, MNI = 1	KIA-55428	cremated bone (apatite)	87.7	0.2	–20.8	6.3	2239	25	1
LA 115	39	Urn grave, MNI = 1	KIA-55429	cremated bone (apatite)	87.4	0.2	–22.2	7.6	2248	25	1
LA 115	42	Urn grave, MNI = 1	KIA-55430	cremated bone (apatite)	92.3	0.3	–23.3	6.5	2192	25	1
LA 115	49	Urn grave, MNI = 1	KIA-55431	cremated bone (apatite)	88.3	0.2	–19.4	7.0	2185	25	1
LA 115	86	*Leichenbrandepot*, MNI = 1	KIA-55432	cremated bone (apatite)	89.8	0.1	–21.9	7.1	2298	24	1
LA 115	98	Urn grave, MNI = 1	KIA-55433	cremated bone (apatite)	92.0	0.2	–24.9	7.1	2479	25	1
LA 115	139	Urn grave, MNI = 1	KIA-55434	cremated bone (apatite)	92.3	0.1	–21.2	6.8	2467	26	1
LA 115	152	Urn grave, MNI = 1	KIA-55435	cremated bone (apatite)	91.4	0.2	–20.0	6.8	2233	24	1
LA 115	153	Urn grave, MNI = 1	KIA-55436	cremated bone (apatite)	91.6	0.2	–17.8	6.8	2230	24	1
LA 115	154	Urn grave, MNI = 1	KIA-55437	cremated bone (apatite)	91.2	0.2	–21.0	6.0	2231	24	1
LA 115	156	Urn grave, MNI = 1	KIA-55438	cremated bone (apatite)	91.8	0.2	–19.2	6.3	2194	24	1
LA 115	158	Urn grave, MNI = 1	KIA-55439	cremated bone (apatite)	91.2	0.2	–18.8	6.1	2210	24	1
LA 115	185	Urn grave, MNI = 1	KIA-55440	cremated bone (apatite)	89.7	0.2	–22.0	7.1	2214	24	1

Site	Feature no.	Description	Lab code	Material	Extraction yield %wt	%C	AMS $\delta^{13}C$ (‰VPDB)	CI	^{14}C age (BP)	uncer.	Ref.
LA 115	190	Urn grave, MNI = 1	KIA-55441	cremated bone (apatite)	92.0	0.2	−19.7	7.1	2272	25	1
LA 115	193	Urn grave, MNI = 1	KIA-55442	cremated bone (apatite)	87.4	0.1	−16.1	7.1	2260	24	1
LA 115	227	Urn grave, MNI = 1	KIA-55443	cremated bone (apatite)	90.5	0.2	−16.5	7.0	2250	24	1
LA 115	228	Urn grave, MNI = 1	KIA-55444	cremated bone (apatite)	90.8	0.3	−21.4	6.6	2251	23	1
LA 115	229	Urn grave, MNI = 1	KIA-55445	cremated bone (apatite)	89.4	0.2	−21.0	7.0	2238	23	1
LA 115	310	Urn grave, MNI = 1	KIA-55446	cremated bone (apatite)	100.0	0.1	−15.3	8.4	2380	35	1
LA 115	330	*Leichenbranddepot*, MNI = 1	KIA-55447	cremated bone (apatite)	82.3	0.1	−18.2	7.3	2170	30	1
LA 115	377	Urn grave, MNI = 1	KIA-55449	cremated bone (apatite)	92.1	0.2	−21.9	6.3	2216	24	1
LA 115	386	Urn grave, MNI = 1	KIA-55450	cremated bone (apatite)	82.0	0.3	−23.5	7.1	2458	24	1
LA 21	321	Urn grave, might belong to LA 115	KIA-54116	cremated bone (apatite)	92.8	0.1	−22.5	7.2	2798	26	1
LA 24	354	Urn grave, might belong to LA 115	KIA-55448	cremated bone (apatite)	89.5	0.2	−20.9	6.1	2381	24	1
AU2018-173	1001	cooking pit *c.* 500 m NW of LA 115	KIA-53555	charcoal, *Quercus* sp.	57.4	28.3	−24.9		3072	24	3
AU2018-173	1008	cooking pit *c.* 500 m NW of LA 115	KIA-53556	charcoal, *Corylus* sp.	38.7	25.7	−32.4		3021	25	3
AU2018-173	11008	cooking pit *c.* 500 m NW of LA 115	KIA-53557	charcoal, *Corylus* sp.	9.6	24.3	−27.8		3119	24	3
LA 116	2	oven pit	KIA-54349	charcoal, *Pinus* sp., max. 11 rings	51.8	62.5	−25.5		8895	40	1
LA 116	2	oven pit, sample interpreted as firing material	KIA-55451	Archaeobotanical bulk sample	38.2	63.1	−22.9		8900	40	1
LA 116	8	pit	KIA-54421	cereal grain	56.7	64.8	−22.4		2496	24	1

References: 1. Schaefer-di Maida 2023; 2. Filipovic 2023; 3. Schaefer-di Maida 2022

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APPENDIX S3: OXCAL CQL CODE

The following OxCal CQL code (Bronk Ramsey 2009) provides the necessary data to recreate models mentioned the main text. For an explanation of each function, readers are referred to the OxCal online help manual, at http://c14.arch.ox.ac.uk/oxcalhelp/hlp_contents.html, and the references listed there.

Non-burial related activity

```
//non-burial related features at Mang de Bargen (CC=charcoal)
 Plot()
 {
 Phase("non-burial activity at Mang de Bargen")
 {
  Phase("LA 18, non-burial activity")
  {
  R_Date("LA 18-119,KIA-40039,grain", 3536,26);
  R_Date("LA 18-46,KIA-40041,grain", 3200,26);
  R_Date("LA 18-79,KIA-40038,grain", 3111,24);
  Phase("LA 18, feature 78")
  {
   R_Date("LA 18-78,KIA-40037,grain", 3168,29);
   R_Date("LA 18-78,KIA-54920,grain", 3116,28);
  };
  Phase("LA 18, feature 120")
  {
   R_Date("LA 18-120,KIA-40040,grain", 3111,24);
   R_Date("LA 18-120,KIA-54921,grain", 3085,29);
  };
 };
  Phase("LA 57, non-burial activity")
  {
  //pit/posthole, Pinus
  R_Date("LA 57-1008,KIA-55331,CC", 9450,40);
  //posthole, Pinus
  R_Date("LA 57-2031,KIA-55337,CC", 8895,35);
  //posthole, Pinus
  R_Date("LA 57-2022,KIA-55336,CC", 8985,35);
  //find beneath grave, Corylus
  R_Date("LA 57-1020,KIA-55332,CC", 8810,40);
  //posthole, Quercus
  R_Date("LA 57-3021,KIA-55344,CC", 5097,26);
  Phase("feature 3048")
  {
   //large pit/possible grave, Alnus
   R_Date("LA 57-3048,KIA-55339,CC", 3644,27);
   //large pit/possible grave, Corylus
   R_Date("LA 57-3048,KIA-55338,CC", 3622,28);
   //large pit/possible grave
   R_Date("LA 57-3048,KIA-55343,hazelnut", 3571,24);
  };
  //find beneath grave, Quercus
  R_Date("LA 57-1020,KIA-55342,CC", 3510,23);
  //posthole
```

```
  R_Date("LA 57-3038,KIA-55328,grain", 3448,26);
  //bottom of colluvial layer above mound
  R_Date("LA 57-loose find,KIA-55329,grain", 2510,26);
  //pit/disturbance, Quercus
  R_Date("LA 57-4002,KIA-55341,CC", 1372,24);
  //charcoal concentration in stone setting, Corylus
  R_Date("LA 57-2032,KIA-55335,CC", 1303,20);
  //pit, Betulus
  R_Date("LA 57-1006,KIA-55333,CC", 1274,23);
  //charcoal concentration in stone setting, Corylus
  R_Date("LA 57-2032,KIA-55334,CC", 1272,23);
  };
 Phase("LA 116, non-burial activity")
 {
  //oven pit, firing material
  R_Date("LA 116-2,KIA-55451,CC", 8900,40);
  //oven pit
  R_Date("LA 116-2,KIA-54349,CC", 8895,40);
  //pit
  R_Date("LA 116-8,KIA-54421,grain", 2496,24);
  };
  R_Date("AU2017_54-AU2018-173, Bef. 11008,KIA-53557,CC", 3119,24);
  R_Date("AU2017_54-AU2018-173, Bef. 1001,KIA-53555,CC", 3072,24);
  R_Date("AU2017_54-AU2018-173, Bef. 1008,KIA-53556,CC", 3021,25);
 };
 };
```

Model A
```
//Model A: only 14 dates related to burial activities, including relative order of burials based on typo-
chronology
 Plot()
 {
 MCMC_Sample()
 {
 };
 Outlier_Model("charcoal",Exp(1,-10,0),U(0,3),"t");
 Outlier_Model ("cremation", Exp(0.9,-10,-0.1), U(1,3),"t");
 Sequence("Mang de Bargen")
 {
 Boundary("start burial activity");
 Phase("burial activity")
 {
 Phase("LA 17")
 {
  R_Date("LA 17, KIA-37473", 3673, 30);
 };
 Phase("LA 63")
 {
  R_Date("LA 63-6,KIA-54423 ", 3695,25);
 };
 Sequence("LA 64")
```

```
{
 //CC from LA 64-2
 R_Date("LA 64-0,KIA-54348", 3851,27)
 {
  Outlier("charcoal", 1);
 };
 Phase("LA 64-2 secondary burial")
 {
  R_Date("LA 64-2,KIA-54422", 3679,29);
 };
};
Sequence("LA 57")
{
 After("possible grave marker")
 {
  R_Date("LA 57-1020,KIA-55342", 3510,23);
 };
 Boundary("start LA 57");
 Phase("burial activity LA 57")
 {
  Phase("primary CB grave in coffin")
  {
   R_Date("LA 57-1001,KIA-53284", 3109,25)
   {
    Outlier("cremation", 1);
   };
  };
  Phase("secondary burials LA 57")
  {
   //disturbed, Corylus
   R_Date("LA 57-4003,KIA-55340", 3662,27)
   {
    Outlier();
   };
   //Quercus, possibly disturbed
   R_Date("LA 57-1019,KIA-55330", 3212,26)
   {
    Outlier("charcoal", 1);
   };
  };
 };
 Boundary("end LA 57");
};
Phase("LA 23")
{
 R_Date("LA 23-2,KIA-54347", 3137,26)
 {
  Outlier("charcoal", 1);
 };
};
Sequence("LA 18")
```

```
{
 Boundary("start LA 18");
 Phase("secondary burials LA 18")
 {
  R_Date("LA 18-58,KIA-55413", 3105,26)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-56,KIA-55412", 3017,26)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-83,KIA-55416", 3007,27)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-91,KIA-54073", 2921,27)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-30,KIA-54108", 2893,24)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-101,KIA-54077", 2887,28)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-106,KIA-54075", 2866,28)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-117,KIA-55422", 2863,26)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-88b,KIA-54063", 2854,23)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-92,KIA-54076", 2851,27)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-88a,KIA-54115", 2850,30)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-109,KIA-54138", 2837,26)
  {
   Outlier("cremation", 1);
```

```
};
R_Date("LA 18-80,KIA-54110", 2835,23)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-87,KIA-54081", 2834,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-103,KIA-54078", 2834,28)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-104,KIA-55419", 2829,26)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-82,KIA-55415", 2822,26)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-111,KIA-54080", 2822,23)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-61,KIA-54084", 2810,35)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-105,KIA-54074", 2804,27)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-59,KIA-54112", 2801,27)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-107,KIA-55420", 2801,22)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-55,KIA-54083", 2800,35)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-95,KIA-55417", 2800,22)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-99,KIA-54114", 2800,24)
{
```

```
  Outlier("cremation", 1);
 };
 R_Date("LA 18-81,KIA-54064", 2784,24)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 18-63,KIA-54111", 2772,24)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 18-102,KIA-55418", 2770,30)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 18-89,KIA-54079", 2753,29)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 18-108,KIA-55421", 2752,27)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 18-86,KIA-54109", 2733,23)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 18-71,KIA-54113", 2484,23)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 18-64,KIA-54082", 2479,27)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 18-76,KIA-55414", 2423,25)
 {
  Outlier("cremation", 1);
 };
 };
 Sum("LA 18, n=34");
 Span("duration LA 18");
 Boundary("end LA 18");
 };
 Sequence("LA 58")
 {
 Boundary("start LA 58");
 Phase("secondary burials LA 58")
 {
  Combine("LA 58-19, double grave")
  {
   R_Date("LA 58-19,KIA-54132", 2803,26)
```

```
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 58-19,KIA-54067", 2880,24)
 {
  Outlier("cremation", 1);
 };
};
R_Date("LA 58-127,KIA-54068", 2871,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 58-79,KIA-54071", 2870,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 58-62,KIA-54137", 2869,26)
{
 Outlier("cremation", 1);
};
R_Date("LA 58-80,KIA-54136", 2861,26)
{
 Outlier("cremation", 1);
};
R_Date("LA 58-76,KIA-54134", 2851,26)
{
 Outlier("cremation", 1);
};
R_Date("LA 58-81,KIA-54135", 2833,26)
{
 Outlier("cremation", 1);
};
R_Date("LA 58-75,KIA-54072", 2819,23)
{
 Outlier("cremation", 1);
};
R_Date("LA 58-33,KIA-54070", 2818,23)
{
 Outlier("cremation", 1);
};
R_Date("LA 58-2,KIA-54069", 2808,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 58-130,KIA-54133", 2804,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 58-17,KIA-54065", 2778,24)
{
 Outlier("cremation", 1);
```

```
 };
 R_Date("LA 58-13,KIA-54131", 2699,26)
 {
  Outlier("cremation", 1);
 };
 };
 Sum("LA 58, n=14");
 Span("duration LA 58");
 Boundary("end LA 58");
};
Phase("LA 21")
{
 R_Date("LA 21-321,KIA-54116", 2798,26)
 {
  Outlier("cremation", 1);
 };
};
Phase("LA 20")
{
 R_Date("LA 20-72,KIA-54066", 2756,23)
 {
  Outlier("cremation", 1);
 };
};
Phase("LA 24")
{
 R_Date("LA 24-354,KIA-55448", 2381,24)
 {
  Outlier("cremation", 1);
 };
};
Sequence("LA 115")
{
 Boundary("start LA 115");
 Phase("burials LA 115")
 {
 R_Date("LA 115-98,KIA-55433", 2479,25)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 115-139,KIA-55434", 2467,26)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 115-386,KIA-55450", 2458,24)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 115-33,KIA-55424", 2395,25)
 {
  Outlier("cremation", 1);
```

```
};
R_Date("LA 115-310,KIA-55446", 2380,35)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-86,KIA-55432", 2298,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-190,KIA-55441", 2272,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-193,KIA-55442", 2260,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-228,KIA-55444", 2251,23)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-227,KIA-55443", 2250,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-39,KIA-55429", 2248,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-38,KIA-55428", 2239,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-229,KIA-55445", 2238,23)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-152,KIA-55435", 2233,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-36,KIA-55426", 2231,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-154,KIA-55437", 2231,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-153,KIA-55436", 2230,24)
{
```

```
  Outlier("cremation", 1);
 };
 R_Date("LA 115-34,KIA-55425", 2217,25)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 115-377,KIA-55449", 2216,24)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 115-185,KIA-55440", 2214,24)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 115-37,KIA-55427", 2211,26)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 115-158,KIA-55439", 2210,24)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 115-156,KIA-55438", 2194,24)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 115-42,KIA-55430", 2192,25)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 115-49,KIA-55431", 2185,25)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 115-330,KIA-55447", 2170,30)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 115-8,KIA-55423", 2160,24)
 {
  Outlier("cremation", 1);
 };
 };
 Sum("LA 115, n=29");
 Span("duration LA 115");
 Boundary("end LA 115");
 };
};
KDE_Plot("MdB burial activity",);
Span("duration of burial activity");
Boundary("end burial activity");
```

```
};
Sequence("relatively dated burials")
{
 Phase("YBA burials")
 {
  Date("=LA 21-321,KIA-54116");
  Date("=LA 18-30,KIA-54108");
  Date("=LA 18-55,KIA-54083");
  Date("=LA 18-59,KIA-54112");
  Date("=LA 18-61,KIA-54084");
  Date("=LA 18-63,KIA-54111");
  Date("=LA 18-80,KIA-54110");
  Date("=LA 18-86,KIA-54109");
  Date("=LA 18-87,KIA-54081");
  Date("=LA 18-89,KIA-54079");
  Date("=LA 18-91,KIA-54073");
  Date("=LA 18-92,KIA-54076");
  Date("=LA 58-75,KIA-54072");
  Date("=LA 58-62,KIA-54137");
  Date("=LA 18-101,KIA-54077");
  Date("=LA 18-103,KIA-54078");
  Date("=LA 18-105,KIA-54074");
  Date("=LA 18-109,KIA-54138");
  Date("=LA 18-111,KIA-54080");
  Date("=LA 18-88a,KIA-54115");
  Date("=LA 18-88b,KIA-54063");
  Date("=LA 58-2,KIA-54069");
  Date("=LA 58-17,KIA-54065");
  Date("=LA 18-58,KIA-55413");
  Date("=LA 18-76,KIA-55414");
  Date("=LA 18-95,KIA-55417");
  Date("=LA 18-102,KIA-55418");
  Date("=LA 18-104,KIA-55419");
  Date("=LA 18-107,KIA-55420");
 };
 Date("transition YBA/EIA burials");
 Phase("IA burials")
 {
 Date("=LA 115-154,KIA-55437");
 Phase("IA I")
 {
  Date("=LA 18-64,KIA-54082");
  Date("=LA 18-71,KIA-54113");
  Date("=LA 115-8,KIA-55423");
  Date("=LA 115-49,KIA-55431");
  Date("=LA 115-139,KIA-55434");
  Date("=LA 115-193,KIA-55442");
 };
 Phase("IA II")
 {
  Date("=LA 115-153,KIA-55436");
```

```
    Date("=LA 115-158,KIA-55439");
    Date("=LA 115-227,KIA-55443");
   };
  };
 };
};
```

Model B
```
//Model B: only dates related to burial activities, including all relative dating information
Plot()
{
 MCMC_Sample()
 {
 };
 Outlier_Model("charcoal",Exp(1,-10,0),U(0,3),"t");
 Outlier_Model ("cremation", Exp(0.9,-10,-0.1), U(1,3),"t");
 Sequence("Mang de Bargen")
 {
  Boundary("start burial activity");
  Phase("burial activity")
  {
   Sequence("LA 17")
   {
    Boundary("start LA 17");
    Sequence("burials in LA 17")
    {
     Date("LA 17 primary grave no.1", U(-2200, -1950));
     R_Date("LA 17, KIA-37473", 3673, 30);
    };
    Boundary("end LA 17");
   };
   Phase("LA 63")
   {
    R_Date("LA 63-6,KIA-54423", 3695,25);
   };
   Sequence("LA 64")
   {
    Boundary("start LA 64");
    Phase("burials LA 64")
    {
     R_Date("LA 64-0,KIA-54348", 3851,27)
     {
      Outlier("charcoal", 1);
     };
     Sequence("primary-secondary grave")
     {
      Phase("primary inhumations")
      {
       Date("LA 64 inhumation no.1", U(-1950, -1800));
       R_Date("LA 64-2,KIA-54422", 3679,29);
```

```
  };
  Phase("secondary urn grave")
  {
   Date("LA 64 urn grave no.9", U(-1100, -700));
  };
 };
 };
 Boundary("end LA 64");
};
Sequence("LA 57")
{
 After("possible grave marker")
 {
  R_Date("LA 57-1020,KIA-55342", 3510,23);
 };
 Boundary("start LA 57");
 Phase("burial activity LA 57")
 {
  Phase("primary CB grave in coffin")
  {
   R_Date("LA 57-1001,KIA-53284", 3109,25)
   {
    Outlier("cremation", 1);
   };
  };
  Phase("secondary burials LA 57")
  {
   //disturbed, Corylus
   R_Date("LA 57-4003,KIA-55340", 3662,27)
   {
    Outlier();
   };
   //Quercus, possibly disturbed
   R_Date("LA 57-1019,KIA-55330", 3212,26)
   {
    Outlier("charcoal", 1);
   };
  };
 };
 Boundary("end LA 57");
};
Phase("LA 23")
{
 R_Date("LA 23-2,KIA-54347", 3137,26)
 {
  Outlier("charcoal", 1);
 };
};
Sequence("LA 18")
{
 Boundary("start LA 18");
```

```
Sequence("burials LA 18")
{
 Date("LA 18 inhumation no.77", U(-1500, -1300));
 Phase("secondary CB burials LA 18")
 {
  R_Date("LA 18-58,KIA-55413", 3105,26)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-56,KIA-55412", 3017,26)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-83,KIA-55416", 3007,27)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-91,KIA-54073", 2921,27)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-30,KIA-54108", 2893,24)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-101,KIA-54077", 2887,28)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-106,KIA-54075", 2866,28)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-117,KIA-55422", 2863,26)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-88b,KIA-54063", 2854,23)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-92,KIA-54076", 2851,27)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-88a,KIA-54115", 2850,30)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 18-109,KIA-54138", 2837,26)
  {
```

```
 Outlier("cremation", 1);
};
R_Date("LA 18-80,KIA-54110", 2835,23)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-87,KIA-54081", 2834,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-103,KIA-54078", 2834,28)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-104,KIA-55419", 2829,26)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-82,KIA-55415", 2822,26)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-111,KIA-54080", 2822,23)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-61,KIA-54084", 2810,35)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-105,KIA-54074", 2804,27)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-59,KIA-54112", 2801,27)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-107,KIA-55420", 2801,22)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-55,KIA-54083", 2800,35)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-95,KIA-55417", 2800,22)
{
 Outlier("cremation", 1);
};
R_Date("LA 18-99,KIA-54114", 2800,24)
```

```
   {
    Outlier("cremation", 1);
   };
   R_Date("LA 18-81,KIA-54064", 2784,24)
   {
    Outlier("cremation", 1);
   };
   R_Date("LA 18-63,KIA-54111", 2772,24)
   {
    Outlier("cremation", 1);
   };
   R_Date("LA 18-102,KIA-55418", 2770,30)
   {
    Outlier("cremation", 1);
   };
   R_Date("LA 18-89,KIA-54079", 2753,29)
   {
    Outlier("cremation", 1);
   };
   R_Date("LA 18-108,KIA-55421", 2752,27)
   {
    Outlier("cremation", 1);
   };
   R_Date("LA 18-86,KIA-54109", 2733,23)
   {
    Outlier("cremation", 1);
   };
   R_Date("LA 18-71,KIA-54113", 2484,23)
   {
    Outlier("cremation", 1);
   };
   R_Date("LA 18-64,KIA-54082", 2479,27)
   {
    Outlier("cremation", 1);
   };
   R_Date("LA 18-76,KIA-55414", 2423,25)
   {
    Outlier("cremation", 1);
   };
  };
 };
 Sum("LA 18, n=34");
 Span("duration LA 18");
 Boundary("end LA 18");
};
Sequence("LA 58")
{
 Boundary("start LA 58");
 Sequence("burials LA 58")
 {
  Date("LA 58 primary inhumation no.58", U(-1800, -1300));
```

```
Phase("secondary burials LA 58")
{
 Date("LA 58 urn grave no.77", U(-1100, -800));
 Date("LA 58 urn grave no.78", U(-1100, -920));
 Date("LA 58 urn grave no.79", U(-1100, -800));
 Combine("LA 58-19, double grave")
 {
  R_Date("LA 58-19,KIA-54132", 2803,26)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 58-19,KIA-54067", 2880,24)
  {
   Outlier("cremation", 1);
  };
 };
 R_Date("LA 58-127,KIA-54068", 2871,25)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 58-79,KIA-54071", 2870,24)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 58-62,KIA-54137", 2869,26)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 58-80,KIA-54136", 2861,26)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 58-76,KIA-54134", 2851,26)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 58-81,KIA-54135", 2833,26)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 58-75,KIA-54072", 2819,23)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 58-33,KIA-54070", 2818,23)
 {
  Outlier("cremation", 1);
 };
 R_Date("LA 58-2,KIA-54069", 2808,24)
 {
  Outlier("cremation", 1);
```

```
};
R_Date("LA 58-130,KIA-54133", 2804,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 58-17,KIA-54065", 2778,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 58-13,KIA-54131", 2699,26)
{
 Outlier("cremation", 1);
};
};
};
Sum("LA 58, n=14");
Span("duration LA 58");
Boundary("end LA 58");
};
Phase("LA 21")
{
R_Date("LA 21-321,KIA-54116", 2798,26)
{
 Outlier("cremation", 1);
};
};
Phase("LA 20")
{
R_Date("LA 20-72,KIA-54066", 2756,23)
{
 Outlier("cremation", 1);
};
};
Phase("LA 24")
{
R_Date("LA 24-354,KIA-55448", 2381,24)
{
 Outlier("cremation", 1);
};
};
Sequence("LA 115")
{
Boundary("start LA 115");
Phase("burials LA 115")
{
 Date("LA 115 grave no.92", U(-700, -500));
 Date("LA 115 grave no.88", U(-480, -300));
 Date("LA 115 grave no.213", U(-480, -300));
 Date("LA 115 grave no.214", U(-480, -300));
 Date("LA 115 grave no.208", U(-450, -150));
 Date("LA 115 grave no.80", U(-390, -250));
```

```
Date("LA 115 grave no.82", U(-390, -150));
Date("LA 115 grave no.246", U(-390, -150));
Date("LA 115 grave no.22", U(-350, -90));
Date("LA 115 grave no.35", U(-350, -90));
Date("LA 115 grave no.53", U(-350, -90));
Date("LA 115 grave no.230", U(-350, -90));
Date("LA 115 grave no.198", U(-350, -90));
Date("LA 115 grave no.361", U(-350, -90));
Date("LA 115 grave no.370", U(-350, -90));
Date("LA 115 grave no.374", U(-350, -90));
Date("LA 115 grave no.180", U(-300, -150));
Date("LA 115 grave no.205", U(-300, -150));
Date("LA 115 grave no.211", U(-300, -150));
Date("LA 115 grave no.231", U(-300, -150));
Date("LA 115 grave no.239", U(-300, -150));
Date("LA 115 grave no.45", U(-250, -150));
Date("LA 115 grave no.51", U(-250, -150));
Date("LA 115 grave no.61", U(-250, -150));
Date("LA 115 grave no.147", U(-250, -150));
Date("LA 115 grave no.162", U(-250, -150));
Date("LA 115 grave no.183", U(-250, -150));
Date("LA 115 grave no.233", U(-250, -150));
Date("LA 115 grave no.241", U(-250, -150));
Date("LA 115 grave no.245", U(-250, -150));
Date("LA 115 grave no.362", U(-250, -150));
R_Date("LA 115-98,KIA-55433", 2479,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-139,KIA-55434", 2467,26)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-386,KIA-55450", 2458,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-33,KIA-55424", 2395,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-310,KIA-55446", 2380,35)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-86,KIA-55432", 2298,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-190,KIA-55441", 2272,25)
{
```

```
 Outlier("cremation", 1);
};
R_Date("LA 115-193,KIA-55442", 2260,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-228,KIA-55444", 2251,23)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-227,KIA-55443", 2250,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-39,KIA-55429", 2248,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-38,KIA-55428", 2239,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-229,KIA-55445", 2238,23)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-152,KIA-55435", 2233,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-36,KIA-55426", 2231,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-154,KIA-55437", 2231,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-153,KIA-55436", 2230,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-34,KIA-55425", 2217,25)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-377,KIA-55449", 2216,24)
{
 Outlier("cremation", 1);
};
R_Date("LA 115-185,KIA-55440", 2214,24)
```

```
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 115-37,KIA-55427", 2211,26)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 115-158,KIA-55439", 2210,24)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 115-156,KIA-55438", 2194,24)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 115-42,KIA-55430", 2192,25)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 115-49,KIA-55431", 2185,25)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 115-330,KIA-55447", 2170,30)
  {
   Outlier("cremation", 1);
  };
  R_Date("LA 115-8,KIA-55423", 2160,24)
  {
   Outlier("cremation", 1);
  };
  };
  Sum("LA 115, n=29");
  Span("duration LA 115");
  Boundary("end LA 115");
 };
 };
 KDE_Plot("MdB burial activity",);
 Span("duration of burial activity");
 Boundary("end burial activity");
};
Sequence("relative order of 14C dated burials")
{
 Phase("YBA burials")
 {
 Date("=LA 21-321,KIA-54116");
 Date("=LA 18-30,KIA-54108");
 Date("=LA 18-55,KIA-54083");
 Date("=LA 18-59,KIA-54112");
 Date("=LA 18-61,KIA-54084");
 Date("=LA 18-63,KIA-54111");
```

```
 Date("=LA 18-80,KIA-54110");
 Date("=LA 18-86,KIA-54109");
 Date("=LA 18-87,KIA-54081");
 Date("=LA 18-89,KIA-54079");
 Date("=LA 18-91,KIA-54073");
 Date("=LA 18-92,KIA-54076");
 Date("=LA 58-75,KIA-54072");
 Date("=LA 58-62,KIA-54137");
 Date("=LA 18-101,KIA-54077");
 Date("=LA 18-103,KIA-54078");
 Date("=LA 18-105,KIA-54074");
 Date("=LA 18-109,KIA-54138");
 Date("=LA 18-111,KIA-54080");
 Date("=LA 18-88a,KIA-54115");
 Date("=LA 18-88b,KIA-54063");
 Date("=LA 58-2,KIA-54069");
 Date("=LA 58-17,KIA-54065");
 Date("=LA 18-58,KIA-55413");
 Date("=LA 18-76,KIA-55414");
 Date("=LA 18-95,KIA-55417");
 Date("=LA 18-102,KIA-55418");
 Date("=LA 18-104,KIA-55419");
 Date("=LA 18-107,KIA-55420");
 };
 Date("transition YBA/EIA burials");
 Phase("IA burials")
 {
 Date("=LA 115-154,KIA-55437");
 Phase("IA I")
 {
 Date("=LA 18-64,KIA-54082");
 Date("=LA 18-71,KIA-54113");
 Date("=LA 115-8,KIA-55423");
 Date("=LA 115-49,KIA-55431");
 Date("=LA 115-139,KIA-55434");
 Date("=LA 115-193,KIA-55442");
 };
 Phase("IA II")
 {
 Date("=LA 115-153,KIA-55436");
 Date("=LA 115-158,KIA-55439");
 Date("=LA 115-227,KIA-55443");
 };
 };
 };
 Order("construction sequence")
 {
 Date("=start LA 64");
 Date("=start LA 17");
 Date("=start LA 57");
 Date("=start LA 18");
```

```
 Date("=start LA 58");
 Date("=start LA 115");
};
Phase("summarizing grave types")
{
 Phase("inhumation in coffin")
 {
  Date("=LA 17, KIA-37473");
  Date("=LA 63-6,KIA-54423");
  Date("=LA 64-2,KIA-54422");
  Date("=LA 18 inhumation no.77");
  Date("=LA 58 primary inhumation no.58");
  Last("end inhumation");
  First("start inhumation");
  KDE_Plot("MdB - inhumation in coffin (n=5)",);
 };
 Phase("MdB - cremation in coffin (n=1)")
 {
  Date("=LA 57-1001,KIA-53284");
 };
 Phase("other cremation deposit")
 {
  Date("=LA 58-17,KIA-54065");
  Date("=LA 18-56,KIA-55412");
  Date("=LA 18-59,KIA-54112");
  Date("=LA 18-81,KIA-54064");
  Date("=LA 18-83,KIA-55416");
  Date("=LA 18-88b,KIA-54063");
  Date("=LA 115-86,KIA-55432");
  Date("=LA 115-330,KIA-55447");
  First("start other cremation deposit");
  Last("end other cremation deposit");
  KDE_Plot("MdB - other CB deposit (n=8)",);
 };
 Phase("urn grave")
 {
  Date("=LA 58-19, double grave");
  Date("=LA 58-127,KIA-54068");
  Date("=LA 58-79,KIA-54071");
  Date("=LA 58-62,KIA-54137");
  Date("=LA 58-80,KIA-54136");
  Date("=LA 58-76,KIA-54134");
  Date("=LA 58-81,KIA-54135");
  Date("=LA 58-75,KIA-54072");
  Date("=LA 58-33,KIA-54070");
  Date("=LA 58-2,KIA-54069");
  Date("=LA 58-130,KIA-54133");
  Date("=LA 58-13,KIA-54131");
  Date("=LA 18-58,KIA-55413");
  Date("=LA 18-91,KIA-54073");
  Date("=LA 18-30,KIA-54108");
```

Date("=LA 18-101,KIA-54077");
Date("=LA 18-106,KIA-54075");
Date("=LA 18-117,KIA-55422");
Date("=LA 18-92,KIA-54076");
Date("=LA 18-88a,KIA-54115");
Date("=LA 18-109,KIA-54138");
Date("=LA 18-80,KIA-54110");
Date("=LA 18-87,KIA-54081");
Date("=LA 18-103,KIA-54078");
Date("=LA 18-104,KIA-55419");
Date("=LA 18-82,KIA-55415");
Date("=LA 18-111,KIA-54080");
Date("=LA 18-61,KIA-54084");
Date("=LA 18-105,KIA-54074");
Date("=LA 18-107,KIA-55420");
Date("=LA 18-55,KIA-54083");
Date("=LA 18-95,KIA-55417");
Date("=LA 18-99,KIA-54114");
Date("=LA 18-63,KIA-54111");
Date("=LA 18-102,KIA-55418");
Date("=LA 18-89,KIA-54079");
Date("=LA 18-108,KIA-55421");
Date("=LA 18-86,KIA-54109");
Date("=LA 18-71,KIA-54113");
Date("=LA 18-64,KIA-54082");
Date("=LA 18-76,KIA-55414");
Date("=LA 21-321,KIA-54116");
Date("=LA 24-354,KIA-55448");
Date("=LA 115-98,KIA-55433");
Date("=LA 115-139,KIA-55434");
Date("=LA 115-386,KIA-55450");
Date("=LA 115-33,KIA-55424");
Date("=LA 115-310,KIA-55446");
Date("=LA 115-190,KIA-55441");
Date("=LA 115-193,KIA-55442");
Date("=LA 115-228,KIA-55444");
Date("=LA 115-227,KIA-55443");
Date("=LA 115-39,KIA-55429");
Date("=LA 115-38,KIA-55428");
Date("=LA 115-229,KIA-55445");
Date("=LA 115-152,KIA-55435");
Date("=LA 115-36,KIA-55426");
Date("=LA 115-154,KIA-55437");
Date("=LA 115-153,KIA-55436");
Date("=LA 115-34,KIA-55425");
Date("=LA 115-377,KIA-55449");
Date("=LA 115-185,KIA-55440");
Date("=LA 115-37,KIA-55427");
Date("=LA 115-158,KIA-55439");
Date("=LA 115-156,KIA-55438");
Date("=LA 115-42,KIA-55430");

```
Date("=LA 115-49,KIA-55431");
Date("=LA 115-8,KIA-55423");
Date("=LA 115 grave no.92");
Date("=LA 115 grave no.88");
Date("=LA 115 grave no.213");
Date("=LA 115 grave no.214");
Date("=LA 115 grave no.208");
Date("=LA 115 grave no.80");
Date("=LA 115 grave no.82");
Date("=LA 115 grave no.246");
Date("=LA 115 grave no.22");
Date("=LA 115 grave no.35");
Date("=LA 115 grave no.53");
Date("=LA 115 grave no.230");
Date("=LA 115 grave no.198");
Date("=LA 115 grave no.361");
Date("=LA 115 grave no.370");
Date("=LA 115 grave no.374");
Date("=LA 115 grave no.180");
Date("=LA 115 grave no.205");
Date("=LA 115 grave no.211");
Date("=LA 115 grave no.231");
Date("=LA 115 grave no.239");
Date("=LA 115 grave no.45");
Date("=LA 115 grave no.51");
Date("=LA 115 grave no.61");
Date("=LA 115 grave no.147");
Date("=LA 115 grave no.162");
Date("=LA 115 grave no.183");
Date("=LA 115 grave no.233");
Date("=LA 115 grave no.241");
Date("=LA 115 grave no.245");
Date("=LA 115 grave no.362");
First("start urn grave");
Last("end urn grave");
KDE_Plot("MdB - urn grave (n=99)",);
};
};
};
```

Model with simulated data

We create a simulated dataset with a uniform distribution by drawing 150 random numbers from the date range 2300–100 BC. The random numbers are transformed to simulated radiocarbon dates using the default R_Simulate function in OxCal with uncertainties of 25 years (Bronk Ramsey 1995). The simulated dates are modelled using the default KDE_Model function (Bronk Ramsey 2017).

```
Plot()
{
 KDE_Model("Simulated dataset", )
 {
  R_Simulate("RandomUniform_1", -1313, 25);
  R_Simulate("RandomUniform_2", -1353, 25);
  R_Simulate("RandomUniform_3", -1951, 25);
  R_Simulate("RandomUniform_4", -939, 25);
  R_Simulate("RandomUniform_5", -1680, 25);
  R_Simulate("RandomUniform_6", -1835, 25);
  R_Simulate("RandomUniform_7", -1492, 25);
  R_Simulate("RandomUniform_8", -884, 25);
  R_Simulate("RandomUniform_9", -1633, 25);
  R_Simulate("RandomUniform_10", -1996, 25);
  R_Simulate("RandomUniform_11", -1750, 25);
  R_Simulate("RandomUniform_12", -1517, 25);
  R_Simulate("RandomUniform_13", -993, 25);
  R_Simulate("RandomUniform_14", -1601, 25);
  R_Simulate("RandomUniform_15", -272, 25);
  R_Simulate("RandomUniform_16", -390, 25);
  R_Simulate("RandomUniform_17", -659, 25);
  R_Simulate("RandomUniform_18", -459, 25);
  R_Simulate("RandomUniform_19", -1312, 25);
  R_Simulate("RandomUniform_20", -1614, 25);
  R_Simulate("RandomUniform_21", -2219, 25);
  R_Simulate("RandomUniform_22", -1050, 25);
  R_Simulate("RandomUniform_23", -1078, 25);
  R_Simulate("RandomUniform_24", -159, 25);
  R_Simulate("RandomUniform_25", -1683, 25);
  R_Simulate("RandomUniform_26", -1791, 25);
  R_Simulate("RandomUniform_27", -1878, 25);
  R_Simulate("RandomUniform_28", -1128, 25);
  R_Simulate("RandomUniform_29", -2196, 25);
  R_Simulate("RandomUniform_30", -1169, 25);
  R_Simulate("RandomUniform_31", -1195, 25);
  R_Simulate("RandomUniform_32", -658, 25);
  R_Simulate("RandomUniform_33", -1514, 25);
  R_Simulate("RandomUniform_34", -415, 25);
  R_Simulate("RandomUniform_35", -1543, 25);
  R_Simulate("RandomUniform_36", -1368, 25);
  R_Simulate("RandomUniform_37", -791, 25);
  R_Simulate("RandomUniform_38", -2018, 25);
```

```
R_Simulate("RandomUniform_39", -691, 25);
R_Simulate("RandomUniform_40", -1651, 25);
R_Simulate("RandomUniform_41", -149, 25);
R_Simulate("RandomUniform_42", -1024, 25);
R_Simulate("RandomUniform_43", -1889, 25);
R_Simulate("RandomUniform_44", -1217, 25);
R_Simulate("RandomUniform_45", -520, 25);
R_Simulate("RandomUniform_46", -1271, 25);
R_Simulate("RandomUniform_47", -1578, 25);
R_Simulate("RandomUniform_48", -1294, 25);
R_Simulate("RandomUniform_49", -1493, 25);
R_Simulate("RandomUniform_50", -312, 25);
R_Simulate("RandomUniform_51", -289, 25);
R_Simulate("RandomUniform_52", -1063, 25);
R_Simulate("RandomUniform_53", -330, 25);
R_Simulate("RandomUniform_54", -900, 25);
R_Simulate("RandomUniform_55", -994, 25);
R_Simulate("RandomUniform_56", -1730, 25);
R_Simulate("RandomUniform_57", -1942, 25);
R_Simulate("RandomUniform_58", -809, 25);
R_Simulate("RandomUniform_59", -900, 25);
R_Simulate("RandomUniform_60", -1608, 25);
R_Simulate("RandomUniform_61", -1816, 25);
R_Simulate("RandomUniform_62", -554, 25);
R_Simulate("RandomUniform_63", -2077, 25);
R_Simulate("RandomUniform_64", -2207, 25);
R_Simulate("RandomUniform_65", -2128, 25);
R_Simulate("RandomUniform_66", -198, 25);
R_Simulate("RandomUniform_67", -117, 25);
R_Simulate("RandomUniform_68", -658, 25);
R_Simulate("RandomUniform_69", -1931, 25);
R_Simulate("RandomUniform_70", -1542, 25);
R_Simulate("RandomUniform_71", -1100, 25);
R_Simulate("RandomUniform_72", -262, 25);
R_Simulate("RandomUniform_73", -1307, 25);
R_Simulate("RandomUniform_74", -467, 25);
R_Simulate("RandomUniform_75", -862, 25);
R_Simulate("RandomUniform_76", -1486, 25);
R_Simulate("RandomUniform_77", -2142, 25);
R_Simulate("RandomUniform_78", -1457, 25);
R_Simulate("RandomUniform_79", -1928, 25);
R_Simulate("RandomUniform_80", -522, 25);
R_Simulate("RandomUniform_81", -2039, 25);
R_Simulate("RandomUniform_82", -171, 25);
R_Simulate("RandomUniform_83", -1988, 25);
R_Simulate("RandomUniform_84", -1734, 25);
R_Simulate("RandomUniform_85", -2073, 25);
R_Simulate("RandomUniform_86", -2104, 25);
```

```
R_Simulate("RandomUniform_87", -1722, 25);
R_Simulate("RandomUniform_88", -1747, 25);
R_Simulate("RandomUniform_89", -920, 25);
R_Simulate("RandomUniform_90", -1900, 25);
R_Simulate("RandomUniform_91", -1089, 25);
R_Simulate("RandomUniform_92", -1802, 25);
R_Simulate("RandomUniform_93", -576, 25);
R_Simulate("RandomUniform_94", -2060, 25);
R_Simulate("RandomUniform_95", -107, 25);
R_Simulate("RandomUniform_96", -1041, 25);
R_Simulate("RandomUniform_97", -1945, 25);
R_Simulate("RandomUniform_98", -105, 25);
R_Simulate("RandomUniform_99", -749, 25);
R_Simulate("RandomUniform_100", -1304, 25);
R_Simulate("RandomUniform_101", -1605, 25);
R_Simulate("RandomUniform_102", -1170, 25);
R_Simulate("RandomUniform_103", -691, 25);
R_Simulate("RandomUniform_104", -1960, 25);
R_Simulate("RandomUniform_105", -1949, 25);
R_Simulate("RandomUniform_106", -358, 25);
R_Simulate("RandomUniform_107", -615, 25);
R_Simulate("RandomUniform_108", -2079, 25);
R_Simulate("RandomUniform_109", -457, 25);
R_Simulate("RandomUniform_110", -1787, 25);
R_Simulate("RandomUniform_111", -1967, 25);
R_Simulate("RandomUniform_112", -1311, 25);
R_Simulate("RandomUniform_113", -611, 25);
R_Simulate("RandomUniform_114", -433, 25);
R_Simulate("RandomUniform_115", -1701, 25);
R_Simulate("RandomUniform_116", -1377, 25);
R_Simulate("RandomUniform_117", -1998, 25);
R_Simulate("RandomUniform_118", -580, 25);
R_Simulate("RandomUniform_119", -2247, 25);
R_Simulate("RandomUniform_120", -293, 25);
R_Simulate("RandomUniform_121", -1020, 25);
R_Simulate("RandomUniform_122", -109, 25);
R_Simulate("RandomUniform_123", -1563, 25);
R_Simulate("RandomUniform_124", -1874, 25);
R_Simulate("RandomUniform_125", -852, 25);
R_Simulate("RandomUniform_126", -1138, 25);
R_Simulate("RandomUniform_127", -242, 25);
R_Simulate("RandomUniform_128", -1635, 25);
R_Simulate("RandomUniform_129", -2055, 25);
R_Simulate("RandomUniform_130", -112, 25);
R_Simulate("RandomUniform_131", -525, 25);
R_Simulate("RandomUniform_132", -1039, 25);
R_Simulate("RandomUniform_133", -146, 25);
R_Simulate("RandomUniform_134", -1642, 25);
```

```
R_Simulate("RandomUniform_135", -791, 25);
R_Simulate("RandomUniform_136", -1164, 25);
R_Simulate("RandomUniform_137", -646, 25);
R_Simulate("RandomUniform_138", -588, 25);
R_Simulate("RandomUniform_139", -1895, 25);
R_Simulate("RandomUniform_140", -1596, 25);
R_Simulate("RandomUniform_141", -1470, 25);
R_Simulate("RandomUniform_142", -1963, 25);
R_Simulate("RandomUniform_143", -1384, 25);
R_Simulate("RandomUniform_144", -269, 25);
R_Simulate("RandomUniform_145", -226, 25);
R_Simulate("RandomUniform_146", -689, 25);
R_Simulate("RandomUniform_147", -1424, 25);
R_Simulate("RandomUniform_148", -2198, 25);
R_Simulate("RandomUniform_149", -349, 25);
R_Simulate("RandomUniform_150", -288, 25);
};
};
```