Radiocarbon dating archaeobotanical remains from West Cotton, Raunds

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Between 1985 and 1989, Northamptonshire County Council Archaeology Unit excavated almost half the area of a deserted medieval settlement at West Cotton, near Raunds (Northants), in the Nene valley. The excavation took place under the auspices of the Raunds Area Project, jointly managed by Northamptonshire County Council and English Heritage. It discovered an occupation sequence spanning sparse Early and Middle Saxon activity (sixth to ninth centuries), to a Late Saxon planned settlement with a timber hall and watermill (mid-tenth to eleventh centuries), to a medieval manor house (twelfth to thirteenth centuries), to the later medieval tenements which were gradually abandoned between the fourteenth and mid-fifteenth centuries (Chapman 2010).

Environmental sampling produced a large assemblage of archaeobotanical remains from contexts throughout the settlement sequence (Campbell and Robinson 2010). These were of interest to the Feeding Anglo-Saxon England project (FeedSax), which sought to use charred plant remains as a proxy for Anglo-Saxon and medieval agricultural practices and environments. It was considered essential that the material – especially the samples richest in charred plant remains – be securely dated, so that diachronic changes might be reliably discerned.

Charred grains from eight samples were therefore submitted to the Oxford Radiocarbon Accelerator Unit for radiocarbon dating. Two of the samples were originally dated to the Late Saxon phase (mid-tenth to eleventh centuries), and the remaining six belonged to the twelfth- to thirteenth-century manorial phase. These cereal grains – identifiable as free-threshing wheat (*Triticum* L. free-threshing type) or barley (*Hordeum vulgare* L.) – had been analysed by Gill Campbell as part of the original post-excavation project (Campbell and Robinson 2010). For the FeedSax dating programme, grains were selected from the archive and photographed at the University of Oxford by the author; the photographs are included in the project photographic archive (McKerracher *et al.* in prep.).

The radiocarbon determinations obtained for these samples have been calibrated using IntCal20 (Reimer *et al.* 2020) and OxCal 4.4.2 (Bronk Ramsey 2009), as shown in the table below and figures at the end of this report.

Results

sample	grains	laboratory no.	original phase	age BP	calibrated dates AD (confidence)
1036	3 x wheat	OxA-37319	950–1100	1060±23	955–1028 (83.9%)
1080	3 x barley	OxA-37393	950–1100	1015±25	990–1047 (86.0%)
615	3 x wheat	OxA-37320	1100–1250	885±23	1150–1223 (78.5%)
58	3 x wheat	OxA-37321	1100–1250	918±24	1038–1179 (90.8%)
45	3 x wheat	OxA-37322	1100–1250	941±24	1034–1160 (95.4%)
804	3 x wheat	OxA-37624	1100–1150	977±24	1020–1054 (30.6%), 1075–1157 (64.2%)
1058	3 x wheat	OxA-37365	1100–1150	988±24	1016–1052 (39.7%), 1079–1154 (51.4%)
30	3 x wheat	OxA-37366	1100–1250	879±24	1151–1224 (83.4%)

The new date ranges for the Late Saxon samples 1036 and 1080 are broadly consistent with their original phasing. Ditch LSD18, from which sample 1036 derives, was originally dated by St Neots-type ware to *c.* AD 950–975 (Chapman 2010, 75), and this date fits well with the probability distribution of the new radiocarbon result (cal. AD 955–1028 with 83.9% confidence). Sample 1080 derives from the settlement's earliest watermill (M27), whose use-life is dated by pottery to the latter part of the tenth century, *c.* AD 950–1000 (Chapman 2010, 121), but the new radiocarbon determination could indicate a slightly later date (cal. AD 990–1047 with 86.0% confidence).

Sample 615 comes from an oven (4039) belonging to the twelfth- to thirteenth-century manorial settlement, and has been specifically dated to the early twelfth century (Chapman 2010, 495). The new radiocarbon date range (cal. AD 1150–1223 with 78.5% confidence) is consistent with the broader phasing of the manor, but renders an early twelfth-century date unlikely. Sample 58 derives from a pit which contained a coin of AD 1160 (Chapman 2010, 310), and the new radiocarbon result for the charred plant remains (cal. AD 1038–1179 with 90.8% confidence) confirms that the coin's date is a likely *terminus ante quem* for the pit's fill. Sample 45 returned a date range very similar to this (cal. AD 1034–1160 with 95.4% confidence).

Samples 804 and 1058 are from contexts associated with West Cotton's third and final watermill (M25), whose construction was dated by pottery finds to the eleventh century, with later refurbishment in the first half of the twelfth century (Chapman 2010, 136). The radiocarbon date ranges returned by both samples, spanning the early eleventh to mid-twelfth centuries, are compatible with this broad phasing. While the probability distributions point particularly towards a date between the late eleventh and mid-twelfth centuries for the samples, we cannot rule out an earlier eleventh-century date for either of them. Such a date would be in accord with sample 1058's stratigraphic origin, in 'early accumulations' in the wheel pit (Campbell and Robinson 2010, 456).

Finally, sample 30 comes from a ditch system which, on the basis of its ceramic contents, was thought to have been 'largely filled by the middle of the twelfth century', although a smaller amount of later pottery (*c.* AD 1150–1225) was also present (Chapman 2010, 65). The probability distribution of the new radiocarbon date range (cal. AD 1151–1224 with 83.4% confidence) fits very well with this latter ceramic date, suggesting that the charred plant remains are associated with the latest filling of the ditch between the mid-twelfth and early thirteenth century.

Overall, the new radiocarbon determinations help to refine the dating of the charred plant remains but do not necessitate any major revisions to the overall site chronology.

Acknowledgements

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References

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Chapman, A. (2010). *West Cotton, Raunds. A study of medieval settlement dynamics AD 450–1450. Excavations of a deserted medieval hamlet in Northamptonshire, 1985–89* (Oxford: Oxbow Books).

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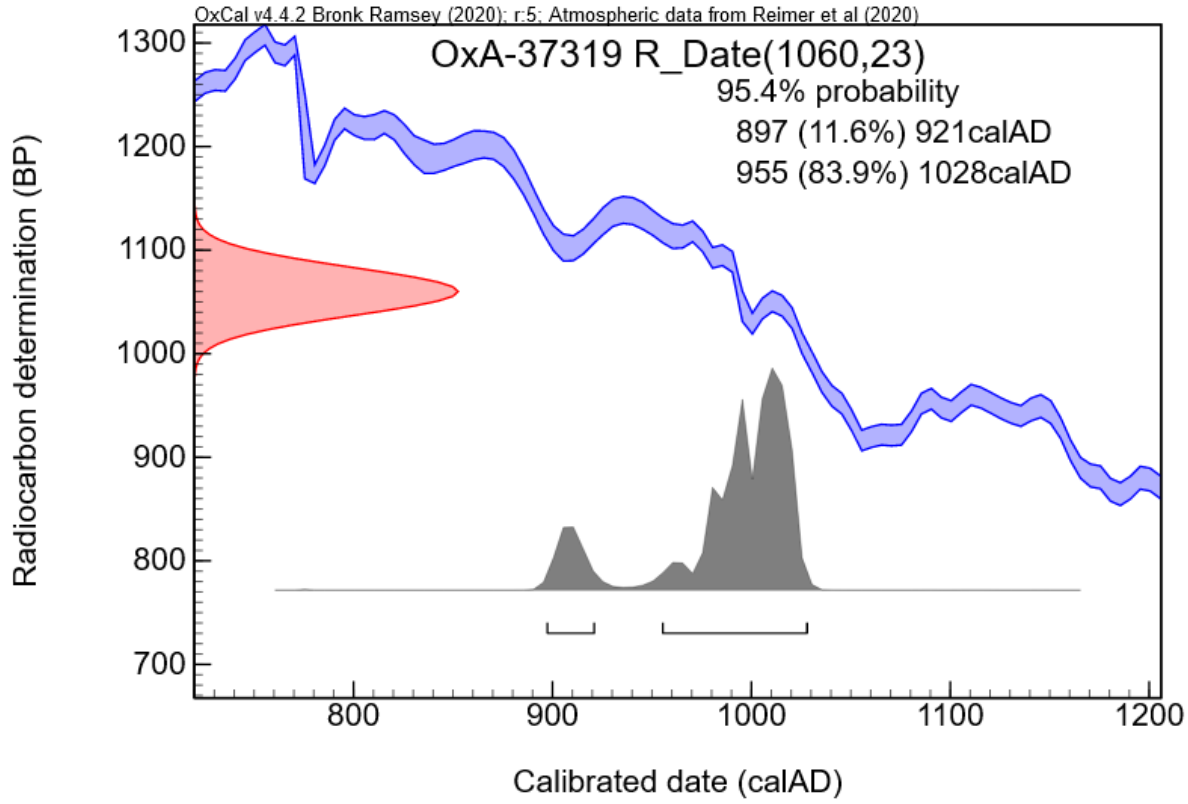
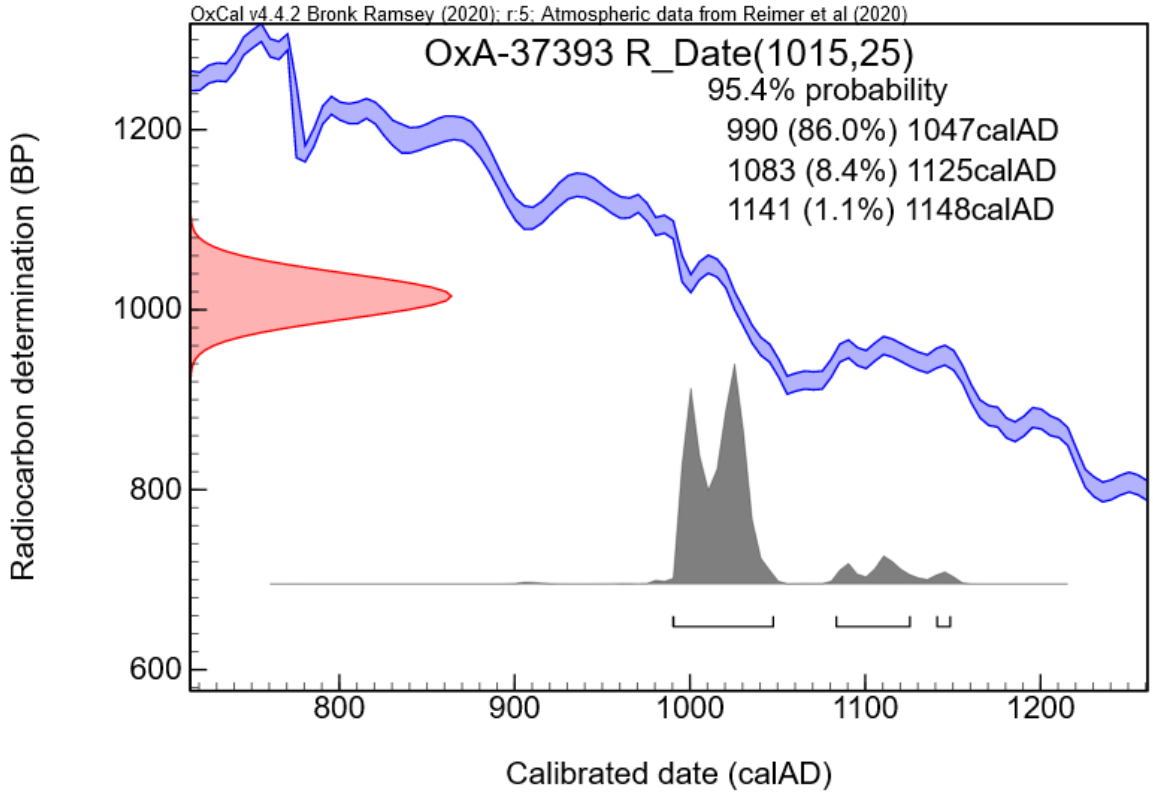
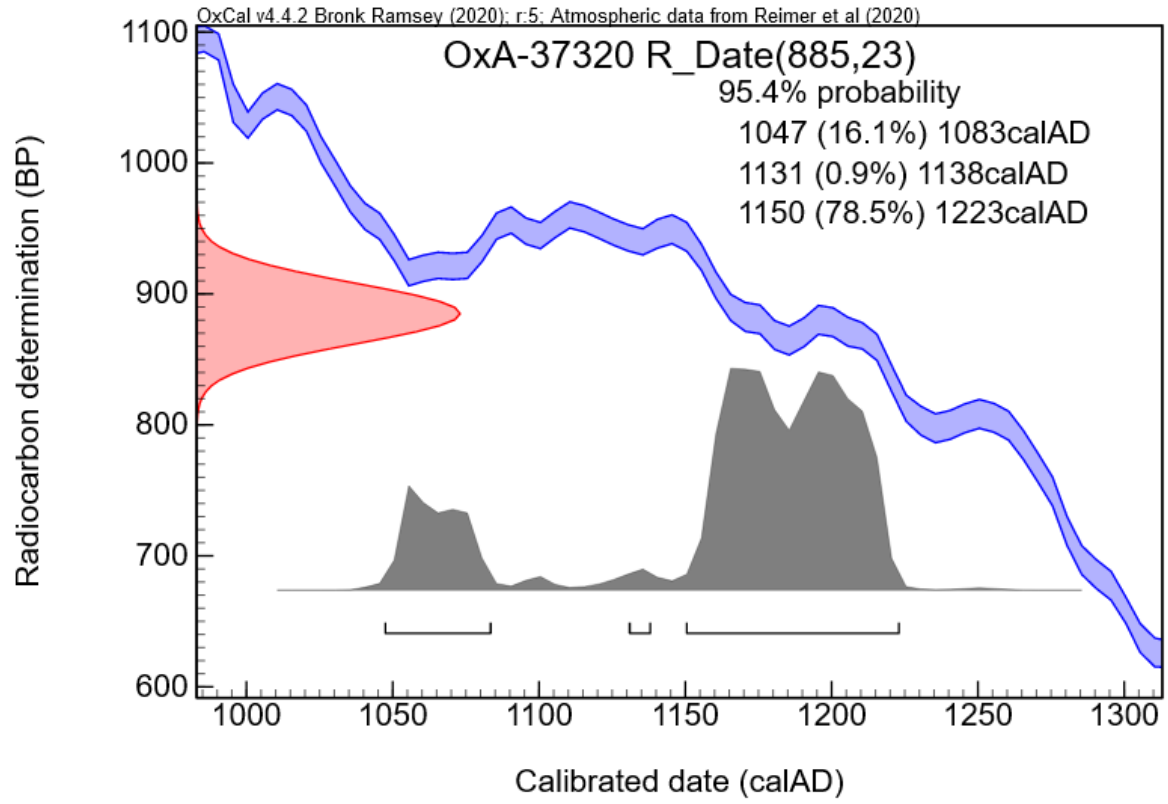
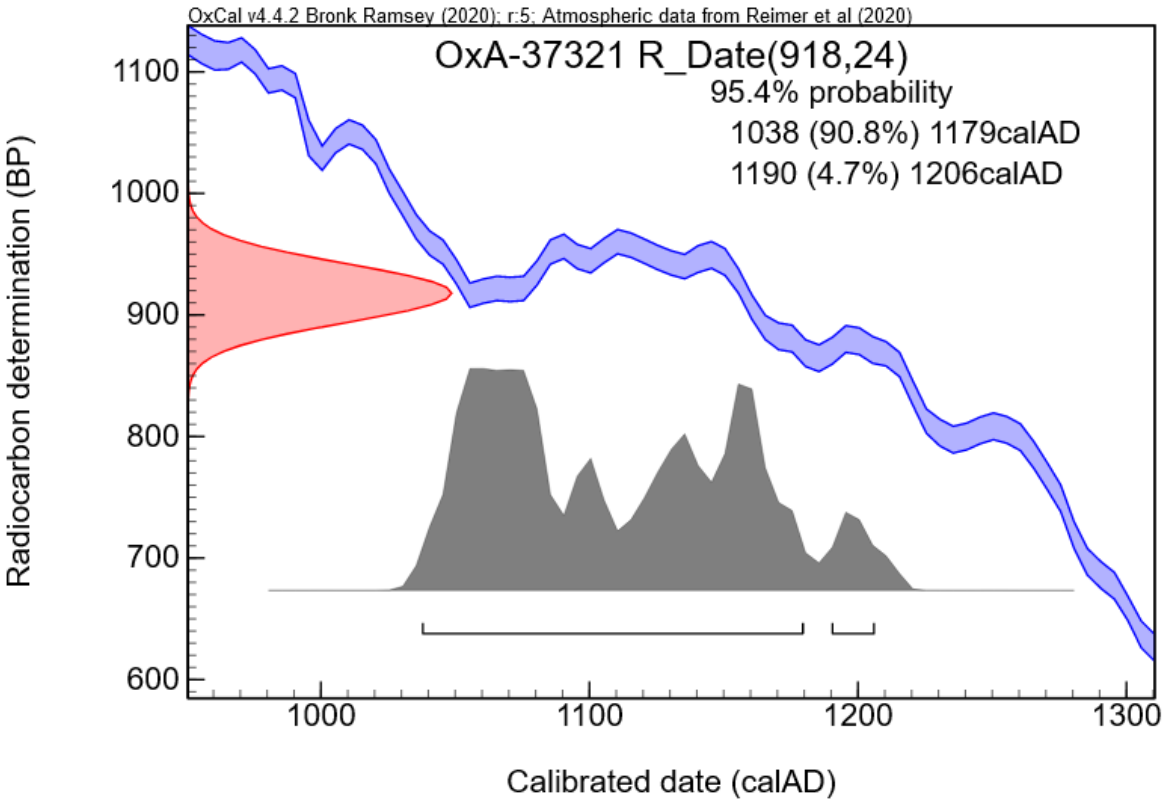
Calibration of radiocarbon determinations






OxCal v4.4.2 Bronk Ramsey (2020); r:5; Atmospheric data from Reimer et al (2020)
OxA-37320 R_Date(885,23)
95.4% probability
1047 (16.1%) 1083calAD
1131 (0.9%) 1138calAD
1150 (78.5%) 1223calAD
Radiocarbon determination (BP)
Calibrated date (calAD)
1100
1000
900
800
700
600
1000
1050
1100
1150
1200
1250
1300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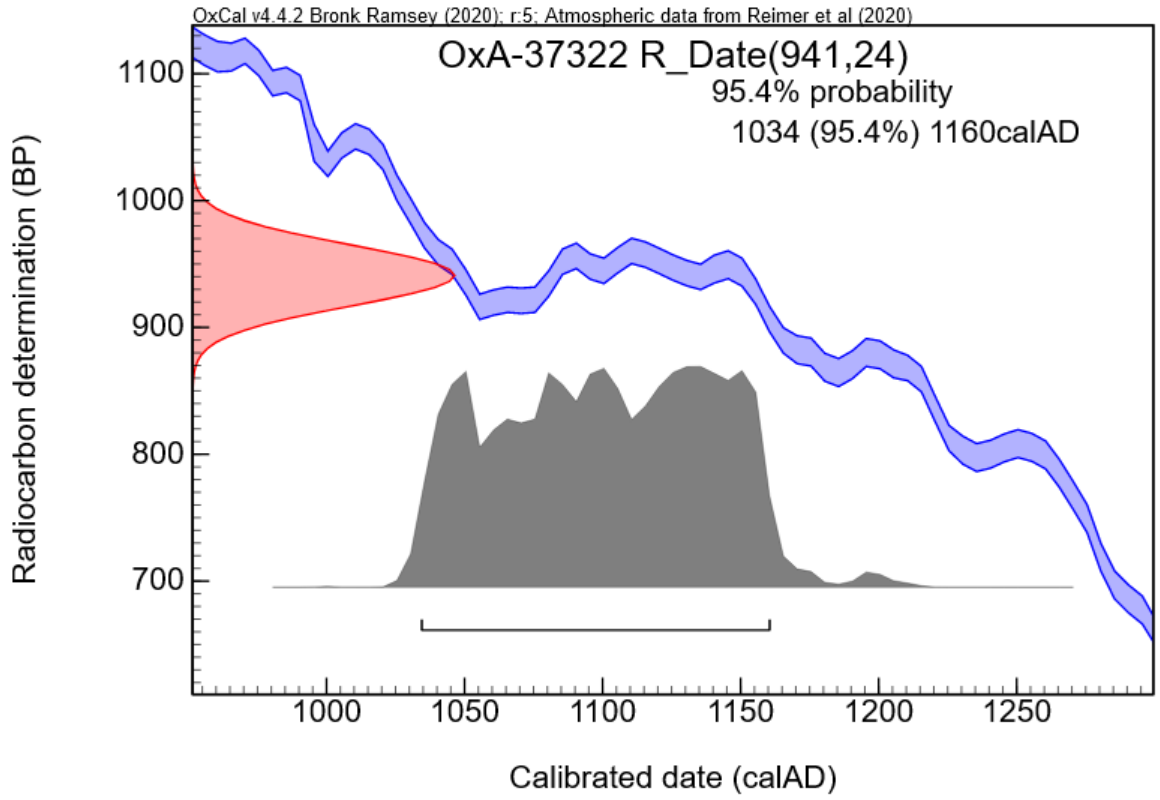
OxA-37321 R_Date(918,24)
95.4% probability
1038 (90.8%) 1179calAD
1190 (4.7%) 1206calAD
Radiocarbon determination (BP)
Calibrated date (calAD)
1100
1000
900
800
700
600
1000
1100
1200
1300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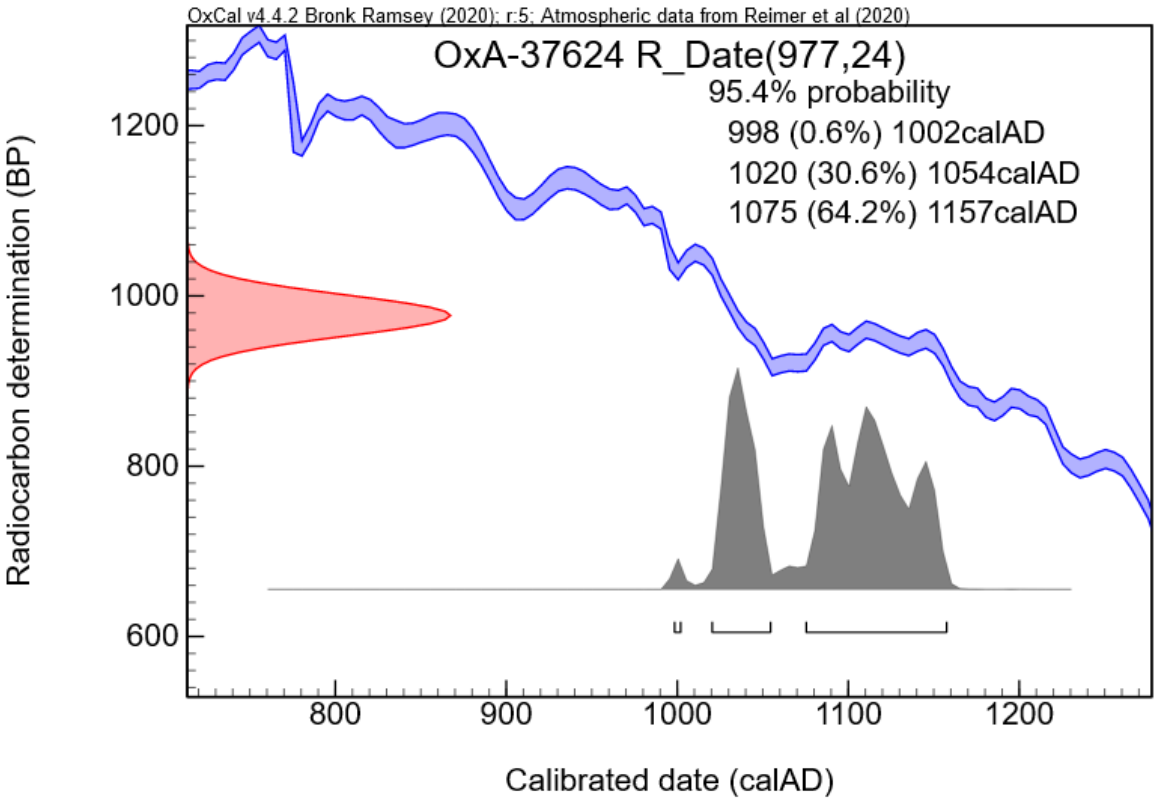
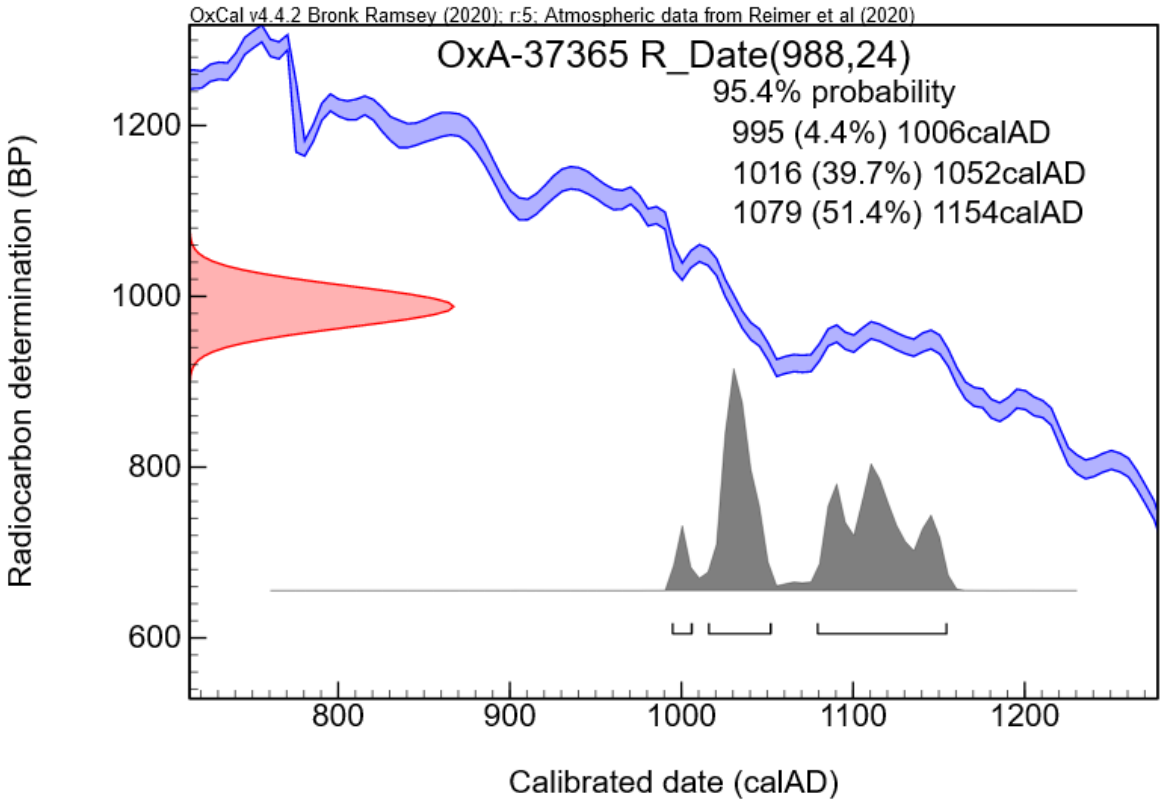
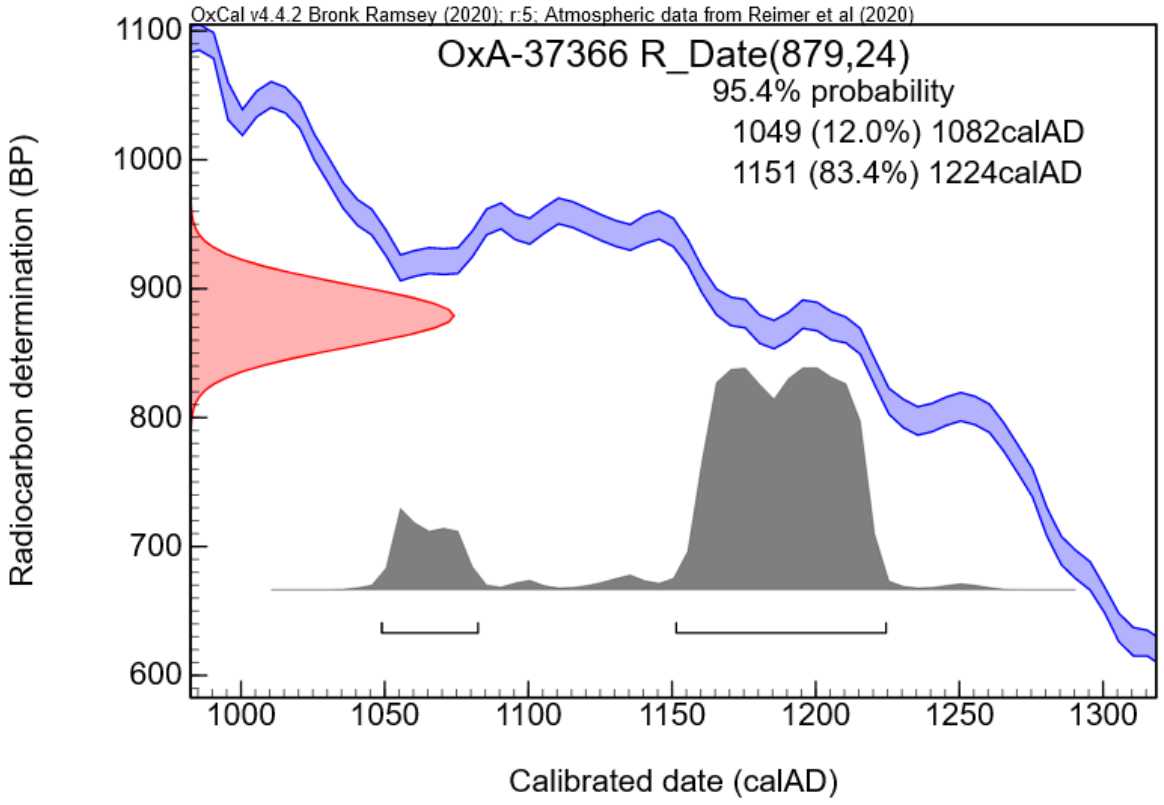
OxA-37322 R_Date(941,24)
95.4% probability
1034 (95.4%) 1160calAD
Radiocarbon determination (BP)
1100
1000
900
800
700
1000
1050
1100
1150
1200
1250
Calibrated date (calAD)


OxCal v4.4.2 Bronk Ramsey (2020); r:5; Atmospheric data from Reimer et al (2020)
OxA-37624 R_Date(977,24)
95.4% probability
998 (0.6%) 1002calAD
1020 (30.6%) 1054calAD
1075 (64.2%) 1157calAD
Radiocarbon determination (BP)
1200
1000
800
600
800
900
1000
1100
1200
Calibrated date (calAD)


OxCal v4.4.2 Bronk Ramsey (2020); r:5; Atmospheric data from Reimer et al (2020)
OxA-37365 R_Date(988,24)
95.4% probability
995 (4.4%) 1006calAD
1016 (39.7%) 1052calAD
1079 (51.4%) 1154calAD
Radiocarbon determination (BP)
1200
1000
800
600
800
900
1000
1100
1200
Calibrated date (calAD)


OxCal v4.4.2 Bronk Ramsey (2020); r:5; Atmospheric data from Reimer et al (2020)
OxA-37366 R_Date(879,24)
95.4% probability
1049 (12.0%) 1082calAD
1151 (83.4%) 1224calAD
Radiocarbon determination (BP)
1100
1000
900
800
700
600
1000
1050
1100
1150
1200
1250
1300
Calibrated date (calAD)