



## IDENTIFYING THE LACHISH OF PAPYRUS HERMITAGE 1116A VERSO AND THE AMARNA LETTERS: IMPLICATIONS OF NEW RADIOCARBON DATING

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### ABSTRACT

*Difficulties reconciling Late Bronze Age archaeological remains in the southern Levant with the texts of the Amarna Age and preceding formative years of Late Bronze Age society have long been noted. At some prominent tell sites that according to the texts were major city-states, little to no settlement remains have been identified. Here we revisit this issue at Tel Lachish, showing on the basis of renewed radiocarbon dating that two previously exposed occupation layers should be re-assigned to this timeframe—one to the second half of the 15th century BCE, and the other predominantly to the first half of the 14th century BCE. These re-dated strata support the textual picture from Papyrus Hermitage 1116A and the Amarna Letters of a thriving town with which the Egyptians interacted.*

### INTRODUCTION

The 15th to 14th centuries BCE saw the southern Levantine city-states re-emerging from the turmoil that marked the Middle Bronze Age (MBA) to Late Bronze Age (LBA) transition and becoming vassals under Egyptian domination. Our clearest picture of Canaanite rulers interacting with the Egyptian administration comes, of course, from the Amarna Letters of the 14th century BCE;<sup>1</sup> yet other texts, such as the Ta'anach corpus,<sup>2</sup> indicate a similar Egyptian-Levantine dynamic at play already in the 15th century BCE. The administrative text of Papyrus Hermitage 1116A verso,<sup>3</sup> dated to the reign of Amenhotep II<sup>4</sup> and mentioning Maryannu (chariot

warrior aristocracy) envoys from various towns on their way to Egypt, provides further evidence of southern Levantine power centers and their strategic interest to the Egyptians.

From the textual evidence, one would reasonably expect to find convincing settlement remains at sites that feature prominently in the above-mentioned correspondence. The remains need not reflect particularly strong cities, but at least they might be expected to be significant settlements. Yet despite the excavation of many such sites—including Lachish, Gezer, Tell es-Safi (Gath), Ashkelon, Jerusalem, Shechem, Ta'anach, Megiddo, Yokneam, Acco, Keisan, Hazor and Pella—a mismatch between

textual and archaeological evidence is often observed.<sup>5</sup> Many sites exhibit a surprising paucity or lack of settlement evidence, and few monumental buildings of this period (LB I–IIA)<sup>6</sup> have been identified. While occupation gaps rarely are suggested for LB IIA (given the strength of the Amarna textual evidence), they have often been proposed during LB I, not only directly following the transitional MB–LB destruction events but also later in LB IB.

In this article we revisit the apparent mismatch between text and archaeology at Lachish (Fig. 1) during the 15th–14th centuries BCE. Evidence of settlement on the mound proper during this time has been poor, despite the discovery of a long-lived LBA temple below the site. The previous excavators proposed that the mound was unsettled during LB IB,<sup>7</sup> corresponding to the late 15th century BCE, despite a specific reference to Lachish from the time

of Amenhotep II in Papyrus Hermitage 1116A verso. Through the application of high-resolution radiocarbon (<sup>14</sup>C) dating we show that two previously excavated occupation layers were inaccurately dated, and in fact correspond to the 15th–14th centuries BCE.

#### LACHISH

According to the Amarna Letters, Lachish dominated the southern part of the Shephelah in the Late Bronze Age.<sup>8</sup> The town and/or its rulers appear in eight Amarna Letters, of which five are addressed from a ruler of Lachish to the king of Egypt.<sup>9</sup> The ruler of Lachish was evidently deeply involved in the power struggles of the 14th century BCE, both with Egypt and with fellow city-states. The provisioning of an envoy of Lachish mentioned in Papyrus Hermitage 1116A verso (although separate from the main list of towns)<sup>10</sup> suggests that a

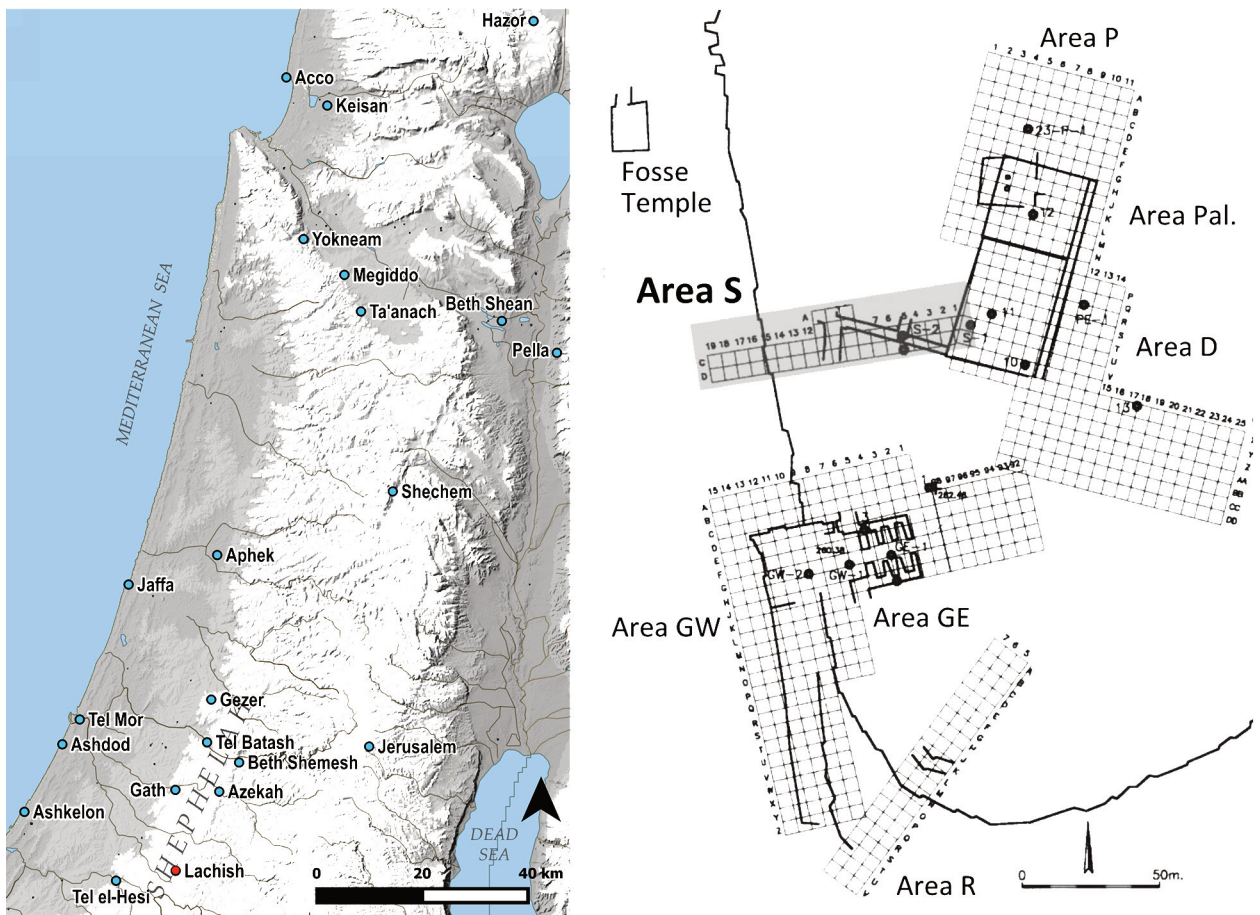


FIGURE 1: (left) Tel Lachish location, among other Late Bronze Age sites; (right) site plan of Tel Lachish highlighting the position of Area S (adapted from Ussishkin 2004d, fig. 2.10).

significant town had been re-established by the late 15th century BCE, already with close diplomatic connections to Egypt.

The identification of Tell ed-Duweir<sup>11</sup> with ancient Lachish is well accepted, and the site is more commonly referred to as Tel Lachish. A large site for this region (7 ha at the summit, 12 ha at the base), Tel Lachish guards a fertile valley connecting the coastal plain in the west with the highlands to the east. Five archaeological projects at the site have been completed;<sup>12</sup> two of these in particular addressed the timeframe of interest here (LB I–IIA): the British excavation in the 1930s,<sup>13</sup> and the Tel Aviv University excavation led by David Ussishkin in the 1970s–90s.<sup>14</sup>

The sole substantial evidence for continuous activity at Tel Lachish during LB IB–IIA is the Fosse Temple (phases I–III), a small temple at the foot of the mound excavated by the British in the 1930s (Fig. 1).<sup>15</sup> The temple contained rich finds attesting to strong international connections, particularly with Egypt. However, subsequent exploration of Bronze Age stratigraphy on the mound itself, by David Ussishkin, failed to identify evidence of contemporary settlement. In Area P on the summit, very little was identified stratigraphically between the domestic remains of Level P-2 (assigned to late LB IIA) and Level P-3 (the last use of the Middle Bronze palace structure).<sup>16</sup> A few pits and a possible surface in Area P were attributed to LB IA, to which may be added pits in the vicinity of the Fosse Temple and a few LB I tombs.<sup>17</sup> On the basis of this evidence, it was suggested that a sparse settlement existed during LB IA but that it was followed by a period of abandonment during LB IB. In addition to difficulty reconciling this with Papyrus Hermitage 1116A, as the excavators noted,<sup>18</sup> this situation also left a question mark over the population Fosse Temple I served.<sup>19</sup>

No domestic remains in Area P were attributed to the LB IIA proper (i.e., the Amarna period).<sup>20</sup> Ussishkin did not suggest the site was unsettled, though he noted the uneasiness between text and archaeological evidence.

Area S—a deep trench previously excavated by Ussishkin’s team on the western side of Tel Lachish (Fig. 1)—provided an important sequence of Late Bronze Age occupation levels.<sup>21</sup> However, the lowest levels (S-3 to S-1) were dated only to the late LB IIA (late 14th century BCE),<sup>22</sup> and it was thus thought

that no occupation level of the Amarna period or earlier had yet been reached.

In 2017 a new Austrian-Israeli excavation project commenced at Tel Lachish,<sup>23</sup> aiming to re-examine the chronology of early Late Bronze Age and late Middle Bronze Age (MBA) strata with the aid of high-resolution <sup>14</sup>C dating. Area S offered the best opportunity to investigate this period, continuing from where the previous excavation left off. A starting point of the new research was to precisely date the lowest levels reached in the area by Ussishkin, connecting the old and new excavations and establishing a high-quality radiocarbon sequence that may be extended as excavation continues deeper. It is the new <sup>14</sup>C dating of these lowest previously excavated levels (specifically S-3 and S-2), which now alters the picture of settlement at Lachish in the 15th–14th centuries BCE.

Level S-3 (Fig. 2), at the bottom of the Area S LBA sequence, features a monumental building with thick stone walls topped with mud brick (Ussishkin: W1077/1075); unfortunately, most of this structure extends beyond the northern limit of the excavation. Adjoining the structure to the south are smaller external structures; continued excavation by the new Austrian-Israeli excavation has shown that at least two successive sub-phases of external architecture (S-3b and S-3a) abutted the monumental building. Level S-3 undoubtedly represents a well-organized settlement.

After the Level S-3 architecture went out of use and the mud-brick walls had collapsed or been removed, a thick (0.5–1.6 m) laminated deposit of alternating clay and charred organic layers built up over most of the area. The layers are rich in seeds and seem to reflect an area for food processing or waste disposal, which was periodically burnt (perhaps to eliminate vermin).<sup>24</sup> No architecture was found in association with the S-2 deposit, and thus one may question whether this indeed represents a settlement rather than utilization of space for agricultural activity during a period of abandonment. Two aspects point towards the former: Firstly, the S-2 deposit contains substantial quantities of pottery, animal bones, flint tools, and small finds. As the previous excavators argued, this best fits an open area adjacent to a settlement.<sup>25</sup> Secondly, the Austrian-Israeli excavations revealed similar charred seed-rich layers sandwiched between and associated with S-3 architecture,

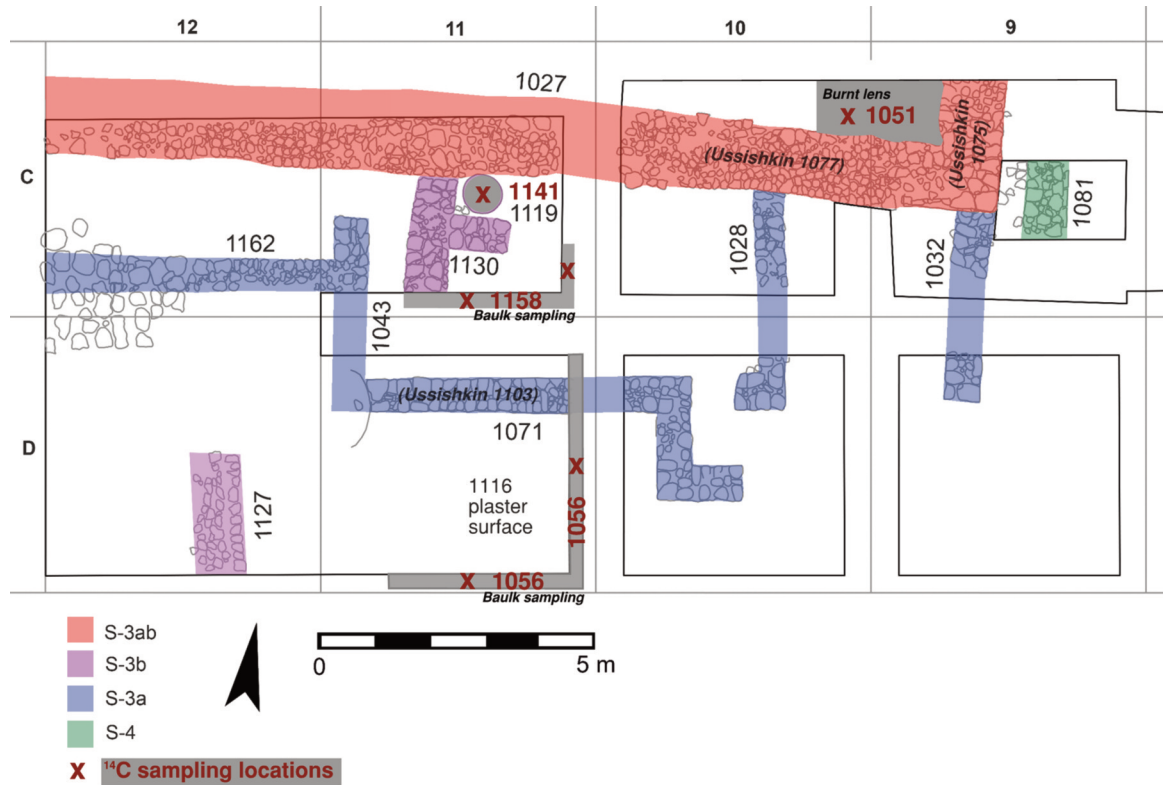


FIGURE 2: Plan of Area S, and <sup>14</sup>C sampling locations.

suggesting that S-2 does not represent a completely new pattern of activity.

Above Level S-2 were found meager architectural remains of Level S-1; this level has not been radiocarbon dated. Above S-1 to S-3 are the better-known later LBA Levels VI and VII, which represent prosperous cities of the 13th–12th centuries BCE.

Yannai<sup>26</sup> considered the pottery assemblages of S-3–S-1 to be chronologically indistinguishable and noted similarity to the Fosse Temple II pottery. Fosse Temple II could not have commenced prior to the reign of Amenhotep III, since a plaque bearing this king’s name was found below its foundations.<sup>27</sup> A seal of Amenhotep III was also found in an S-2 context.<sup>28</sup> Yannai favoured dating both Fosse Temple II and S-3–S-1 after Amenhotep III, in the late 14th century BCE. Ussishkin<sup>29</sup> accepted Tufnell’s<sup>30</sup> date for the Fosse Temple II enlargement during the reign of Amenhotep III, but took S-3–S-1 as contemporaneous only with the later part of Fosse Temple II.

#### NEW <sup>14</sup>C DATING OF EARLY LBA STRATA AT TEL LACHISH

The Austrian-Israeli expedition to Lachish has sought to develop a high-resolution radiocarbon sequence for S-2 and S-3 using only short-lived organic samples. It may be noted that Ussishkin’s team previously published a set of <sup>14</sup>C dates from LBA strata, mainly in Area S.<sup>31</sup> While this dataset is valuable, particularly for considering later LBA strata,<sup>32</sup> it has significant precision limitations, including the fact that most dates are from wood charcoal and thus subject to the so-called old wood effect. Only a few dates with large spread address the earliest levels, and Bayesian modeling is thus able to add little clarity.<sup>33</sup> A new dataset covering Levels S-3 and S-2 is certainly warranted.

Upon re-opening Area S, these two occupation levels could readily be recognized in the architecture and baulks left by the previous excavation (Figs. 2–3).<sup>34</sup> For Level S-3, Ussishkin’s team had stopped before reaching many relevant surfaces and dateable

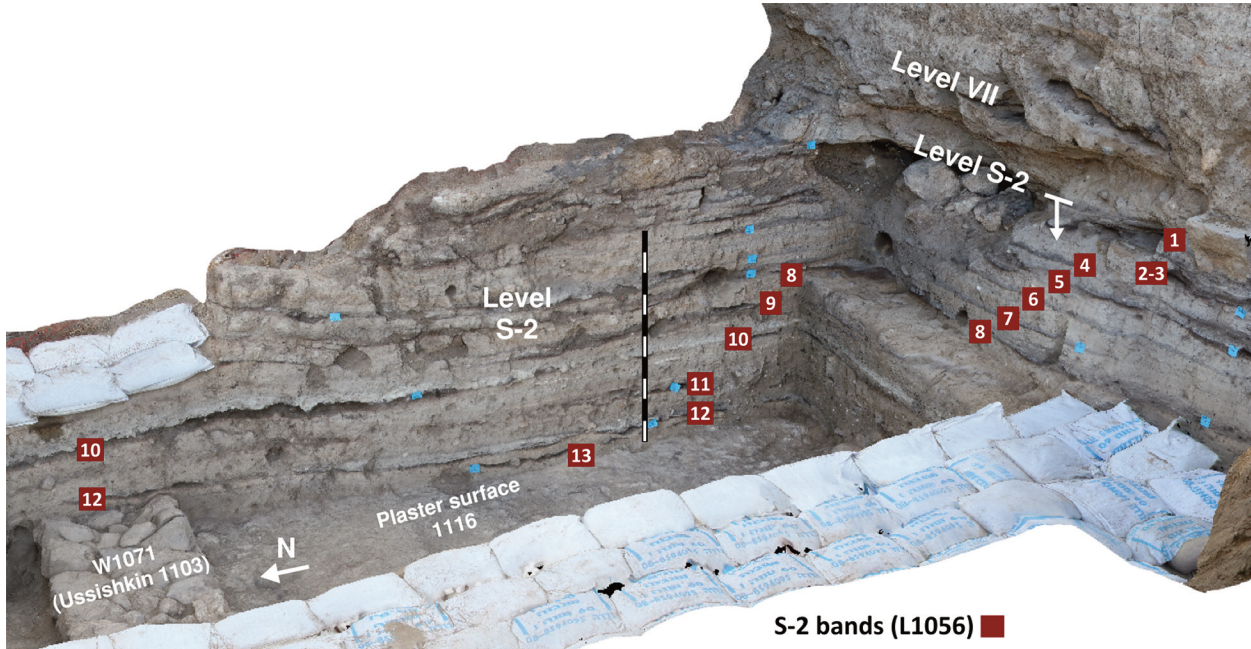


FIGURE 3: Sampling of Level S-2 from standing baulks.

features, and thus new samples could be obtained largely as part of the renewed excavation process. Level S-2 could be accessed only from the standing baulks.

During the first two seasons of renewed excavation (2017–2018), the team obtained samples from contexts inside and outside the Level S-3 monumental building (Fig. 2). Inside the building (Ussishkin: W1077/1075) a seed-rich burnt lens (L1051) was found, clearly abutting the structure. Samples from the sequence of external architecture include the following contexts—all clear burnt deposits: tabun L1141 (S-3b), and a series of burnt layers similar to S-2 that were deposited between the S-3b and S-3a architecture (mainly L1158). The uppermost context is from charred material lying directly on plaster surface L1116. This surface runs below S-3a wall 1071 (Ussishkin: W1103), rather than abutting it as suggested by the previous excavation.<sup>35</sup>

The thick S-2 deposit, laid down over all the S-3 architecture, was sampled in square D11, where it clearly overlies S-3a wall 1071 (Fig. 3). With its series of distinct burn layers (L1056), this deposit yielded a large sample set with a clear sequential relationship—ideal for Bayesian modeling. For both

the S-2 deposit and the burnt layers between S-3a and S-3b architecture, collection was done directly from the sections rather than excavating down through the baulks, to facilitate precise extraction of material from each layer.

Fig. 4 shows the revised radiocarbon-based dating of Lachish Levels S-2 and S-3. The chronological model uses a Bayesian approach to combine the <sup>14</sup>C data with prior knowledge of stratigraphic order, thereby improving precision.<sup>36</sup> The calibrated <sup>14</sup>C dates considered alone (before modeling) are shown in light grey. The narrowed probability distributions after taking stratigraphic order into account are shown in dark grey, with 1σ and 2σ ranges marked. Further details regarding samples, raw <sup>14</sup>C data, and technical descriptions of the Bayesian model are provided elsewhere.<sup>37</sup> Dates are arranged in phases according to stratigraphy, with Level S-2 immediately following S-3. The S-3 dates are arranged in two parallel phases, since the relative ordering of samples internal and external to the monumental building is difficult to know with certainty. Inside the building are measurements of three seeds in burnt lens L1051; external to the building the S-3 sequence is formed by data from

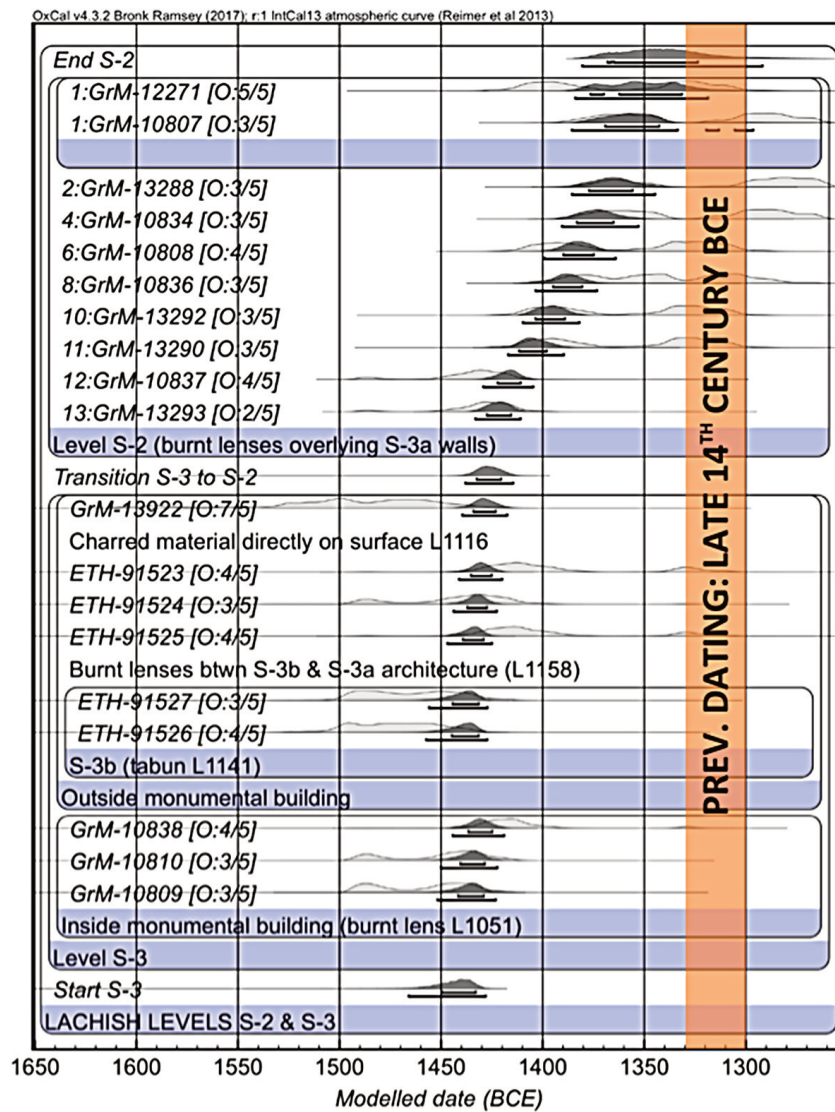


FIGURE 4: Radiocarbon-based Bayesian chronological model of Lachish Levels S-3 and S-2.

tabun L1141 (S2-3b), overlying charred lenses L1158, and one date from directly on surface L1116. None of the dated contexts can be unequivocally associated with the use of S-3a architecture, but burnt lenses running directly above and below wall 1071 can readily constrain its date. Level S-2 is represented by a set of dates made throughout the well-ordered sequence of burnt layers (L1056) overlying wall 1071.

As is clear from Fig. 4, Levels S-3 and S-2 are substantially earlier than Yannai's original dating, which placed both in the late 14th century BCE. The S-3 architecture dates to the second half of the 15th century BCE, some 100 years earlier. S-3 was evidently established by the mid-15th century BCE (perhaps earlier, as the excavation has not yet progressed deeper), and went out of use in the late 15th century BCE. The thick deposit of Level S-2 was

progressively laid down, starting in the late 15th century BCE and continuing through the first half of the 14th century BCE. It may be noted that the upper S-2 dates before modeling (Fig. 4, light grey) have probabilities extending into the late 14th and 13th centuries BCE, due to wiggles in the <sup>14</sup>C calibration curve. However when relative stratigraphic order is taken into account, the dating is largely confined to the first half of the 14th century BCE. The endpoint of S-2 was most likely in the middle third of the century, but the late 14th century BCE must also be considered; without <sup>14</sup>C data from the strata immediately above (Levels S-1 and VIIb), this cannot be better constrained.

Fig. 5 provides an overview of the revised dating, showing the start and end boundaries of Lachish S-3 and S-2 as calculated by the model, alongside the radiocarbon-based accession dates of New Kingdom pharaohs according to models developed by the Oxford project.<sup>38</sup> Two variations for the Egyptian radiocarbon chronology are included (2σ or 95.4% ranges): the first assumes the standard high chronology reign lengths in Shaw,<sup>39</sup> while the second model uses the “ultra-high” chronology reign

lengths suggested by Aston.<sup>40</sup> According to the revised synchronization between Lachish strata and Egyptian history, Level S-3 now represents a settlement from the time of Thutmose III to Amenhotep II, perhaps overlapping with Thutmose IV. Level S-2 began during the reigns of Amenhotep II or Thutmose IV; it certainly overlapped the reigns of Thutmose IV and Amenhotep III, and probably continued into the reign of Akhenaten.

The contemporaneity of Amenhotep II with Levels S-3–early S-2 as identified by radiocarbon dating provides a new and important point of agreement with textual evidence for Egyptian-Levantine relations. As noted, the reference to Lachish in Papyrus Hermitage 1116A indicates this location was of some strategic interest to the Egyptians already in the 15th century BCE and that a settlement—the home of the mentioned envoy—existed at the site. The <sup>14</sup>C data corroborates this, eliminating the gap previously proposed for the second half of the 15th century BCE. The monumental architecture of S-3 is particularly clear evidence that the settlement was substantial and well organized. S-3–early S-2 should probably be

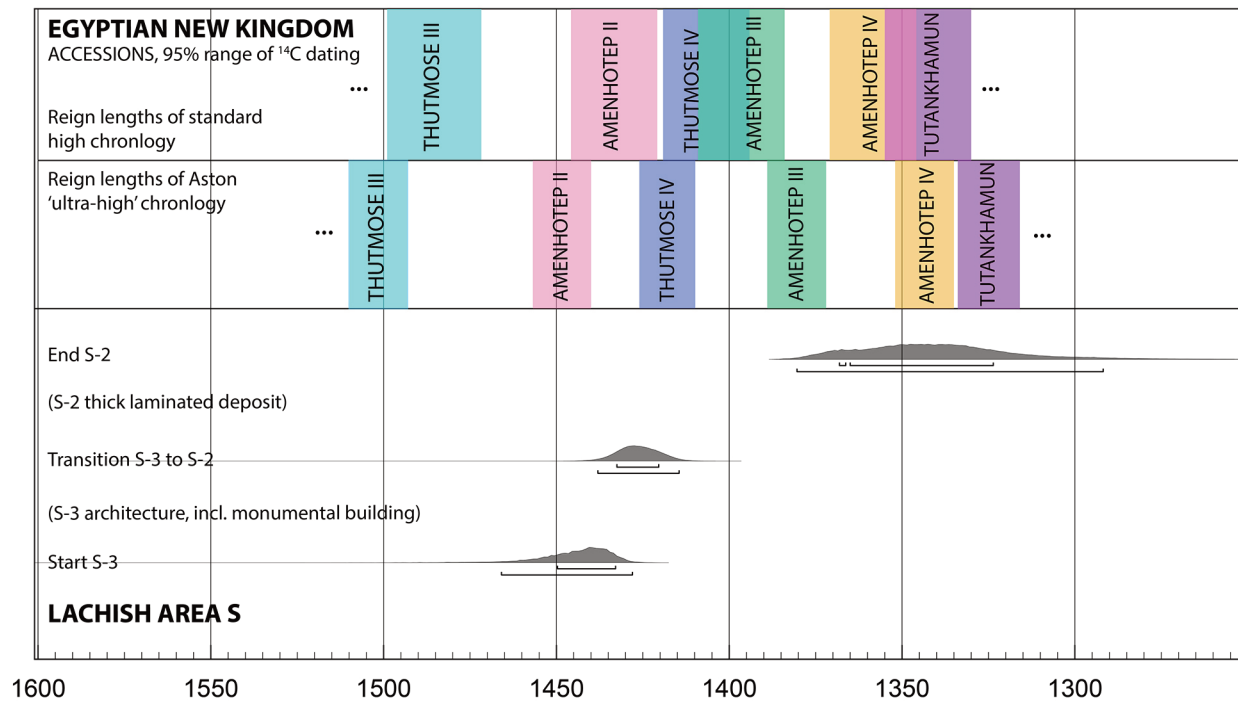


FIGURE 5: Revised synchronization of Lachish Levels S-3 and S-2 with the Egyptian radiocarbon-based chronology.

associated with Fosse Temple I, making it easier to address the question of whom this temple served.

Evidence of intensive activity on the mound of Lachish during the Amarna Period is clearly identified within Level S-2. As noted, the lowest layers of the deposit are earlier and probably pre-date Fosse Temple II (built during or after Amenhotep III). A starting date for S-2 prior to Amenhotep III is not contradicted by the seal of this king found in S-2, as it was retrieved from the upper layers of the deposit.<sup>41</sup> Viewed together with the radiocarbon evidence, the seal confirms that S-2 must indeed overlap Amenhotep III's reign. That the S-2 deposit represents a substantial settlement on the mound is somewhat open to question, as already discussed. However, following the arguments of Ussishkin and our additional observations of similar charred layers within Level S-3, we believe that the deposit does reflect the presence of a settlement.

The <sup>14</sup>C results lead not only to an adjustment in the absolute dating of Levels S-2 and S-3 but also suggest that the assigned cultural sub-periods should be re-considered. While a review of the pottery is beyond the scope of the present article, it should be noted that the S-3–S-1 ceramic assemblages were modest, consisting predominantly of sherd material with few restorable vessels (unlike the much larger whole-vessel assemblages of later Levels VII and VI). Inherent challenges in differentiating LB IB and IIA pottery only add to the difficulty of correctly assigning an LBA sub-period. Thus, while Yannai placed S-1-3 in LB IIA, a re-attribution of S-3 to LB IB should be considered.<sup>42</sup> For now, the results should not be viewed as evidence for a wider adjustment to the absolute dating of cultural periods or transitions.

The new Lachish dataset is one of few detailed <sup>14</sup>C sequences covering this timeframe at major LBA sites in the southern Levant,<sup>43</sup> and it highlights the potential of <sup>14</sup>C dating to help correct our picture of local history and wider Egyptian-Levantine interconnections. The Lachish results are part of the lead author's efforts to generate <sup>14</sup>C data for early LBA strata, with a particular focus on sites in the Shephelah region. Related <sup>14</sup>C work at Tel Azekah<sup>44</sup> and Tel Gezer<sup>45</sup> are also adding to our knowledge of this period. Though Azekah is not mentioned in second millennium BCE sources, recent <sup>14</sup>C results offer evidence of a thriving Amarna-era town, including public architecture.

## CONCLUSION

Precise absolute dating of southern Levantine strata is a crucial prerequisite for developing an accurate picture of this region through the Late Bronze Age and for reliably reconstructing the trajectory of Egyptian-Levantine interconnections. The re-dating of two occupation levels at Lachish by up to 100 years, as presented in this article, highlights the challenges encountered in correctly dating LBA strata in the southern Levant through traditional means, particularly when ceramic assemblages are limited, and underscores the need for further <sup>14</sup>C studies of early LBA strata.

In the case presented here, high-resolution radiocarbon dating provides better agreement between text and archaeology during the 15th and 14th centuries BCE, while helping to fill an important gap in our understanding of settlement history at Tel Lachish. We now have evidence of a prominent, well-organized settlement (S-3) during the second half of the 15th century BCE, from which an envoy could well be envisioned interacting with the administration of Amenhotep II as reflected in Papyrus Hermitage 1116A. Further, we can reasonably identify the population (or elite) of this settlement as the ones served by the founding phase of the Fosse Temple—a building that attests to long-running Egyptian connections. In the 14th century BCE, corresponding to the Amarna period, evidence of continued settlement can be recognized in the S-2 deposit.

It is hoped that similar <sup>14</sup>C-based research will continue to assist in the identification of 15th and 14th century BCE remains at other southern Levantine sites, building a clearer picture of the city-states and towns over which the Egyptians sought to strengthen their influence and control.

## ACKNOWLEDGMENTS

This research was funded by Austrian Science Fund (FWF) START grant Y-932, "Tracing transformations in the southern Levant: from collapse to consolidation in the mid-second millennium BC," directed by Dr Felix Höflmayer. The work forms part of the leading author's PhD research. Insightful comments offered by Stephen Bourke and Yuval Gadot are gratefully acknowledged.



## NOTES

- 1 William L. Moran, *The Amarna Letters* (Baltimore: Johns Hopkins University Press, 1992); Anson F. Rainey, *The El-Amarna Correspondence: A New Edition of the Cuneiform Letters From the Site of El-Amarna Based on Collations of All Extant Tablets* (Leiden: Brill, 2015).
- 2 Wayne Horowitz, Takayoshi Oshima, and Seth L. Sanders, *Cuneiform in Canaan: Cuneiform Sources from the Land of Israel in Ancient Times* (Jerusalem: Israel Exploration Society, 2006), 127–151. Ta'anach Letters nos. 5–6 are of particular interest, addressed to the prince of Ta'anach by a certain Amenhotep—an Egyptian official, or perhaps Amenhotep II. Refer to William F. Albright, "A Prince of Taanach in the Fifteenth Century BC," *Bulletin of the American Schools of Oriental Research* 94 (1944): 12–27; and Abraham Malamat, "Campaigns of Amenhotep II and Thutmose IV to Canaan," *Scripta Hierosolymitana* 8 (1961): 218–231.
- 3 Wladimir S. Golénischeff, *Les papyrus hiératiques nos. 1115, 1116A, et 1116B de l'Ermitage impérial à St.-Petersbourg* (St Petersburg: Manufacture des Papiers de l'État, 1913).
- 4 Donald B. Redford, "The Coregency of Tuthmosis III and Amenophis II," *Journal of Egyptian Archaeology* 51 (1965): 107–122.
- 5 See discussion, for example, in: Yuval Goren, Israel Finkelstein and Nadav Na'aman, *Inscribed in Clay* (Institute of Archaeology, Tel Aviv University, 2004), 321; David Ussishkin, "A Synopsis of the Stratigraphical, Chronological and Historical Issues," in David Ussishkin (ed.), *The Renewed Archaeological Excavations at Lachish (1973-1994), Vol. I* (Tel Aviv: Institute of Archaeology of Tel Aviv University, 2004a), 7–5; Nadav Na'aman, "The Shephelah According to the Amarna Letters," in Israel Finkelstein and Nadav Na'aman (eds.), *The Fire Signals of Lachish* (Winona Lake: Eisenbrauns, 2011), 281–299.
- 6 The Late Bronze Age and its subdivisions were defined with close reference to Egyptian chronology, though the terms are used to denote the pottery characterizing these timeframes. With minor variation, LB IA (or a transitional MB–LB phase) are taken to end with the campaign of Thutmose III, followed by LB IB until the ascension of Amenhotep III; LB IIA covers the so-called Amarna period and the last kings of the 18th Dynasty, circa 1300 BCE. See, for example, Mario A. S. Martin, *Egyptian-Type Pottery in the Late Bronze Age Southern Levant* (Vienna: Verlag der Österreichische Akademie der Wissenschaften, 2011), 20; Nava Panitz-Cohen, "The Southern Levant (Cisjordan) During the Late Bronze Age," in Margreet L. Steiner and Ann E. Killebrew (eds.), *The Oxford Handbook of the Archaeology of the Levant c. 8000–332 BCE* (Oxford: Oxford University Press, 2014), 542.
- 7 Lily Singer-Avitz, "The Pottery of the Late Bronze I Phase. Section A: The Area P Assemblage," in David Ussishkin (ed.), *The Renewed Archaeological Excavations at Lachish (1973-1994), Vol. III* (Tel Aviv: Institute of Archaeology of Tel Aviv University, 2004a), 1021; Ussishkin 2004a, 57–58.
- 8 Israel Finkelstein, "The Territorial-Political System of Canaan in the Late Bronze Age," *Ugarit-Forschungen* 28 (1996): 221–255; Nadav Na'aman, "The Network of Canaanite Late Bronze Kingdoms and the City of Ashdod," *Ugarit-Forschungen* 29 (1997): 599–626; Na'aman 2011.
- 9 EA 328–332. See Moran 1992 and Rainey 2015. Letters from rulers of Lachish may also include EA 311 (see Goren et al. 2004, 289) and EA 294 (see Rainey 2015, 1599–1600; but Goren et al. 2004, 294).
- 10 Claire Epstein, "A New Appraisal of Some Lines from a Long-Known Papyrus," *Journal of Egyptian Archaeology* 49 (1963): 49–56; and Wolfgang Helck, *Die Beziehungen Aegyptens Zu Vorderasien Im 3. Und. 2. Jahrtausend v. Chr* (Wiesbaden: Harrassowitz, 1971).
- 11 ITM/NIG grid reference 185660, 608200.
- 12 Completed excavation projects: Starkey in 1932–1938; Aharoni in 1966–1968; Ussishkin in 1973–1994; Garfinkel and Hasel in 2013–2017; Ganor in 2016.
- 13 Olga Tufnell, *Lachish IV: The Bronze Age* (London: Oxford University Press, 1958); Olga Tufnell, Charles H. Inge and Lankester Harding, *Lachish II: The Fosse Temple* (London: Oxford University

- Press, 1940).
- <sup>14</sup> David Ussishkin (ed.), *The Renewed Archaeological Excavations at Lachish (1973–1994)* (Tel Aviv: Institute of Archaeology of Tel Aviv University, 2004b).
- <sup>15</sup> Tufnell et al. 1940. Fosse Temple I is dated to LB IB, in the 15th century BCE. The re-modelling of the structure as Fosse Temple II is generally assigned, following Tufnell’s dating, to the reign of Amenhotep III. Fosse Temple III functioned during the Egyptian 19th Dynasty.
- <sup>16</sup> David Ussishkin, “Area P: The Late Bronze Age Strata,” in David Ussishkin (ed.), *The Renewed Archaeological Excavations at Lachish (1973–1994), Vol. I* (Tel Aviv: Institute of Archaeology of Tel Aviv University, 2004c), 188; Christa Clamer, “Additional Late Bronze Age Pottery Assemblages. Section A: The Pottery From Levels P-2 and P-1 in Area P,” in David Ussishkin (ed.), *The Renewed Archaeological Excavations at Lachish (1973–1994), Vol. III* (Tel Aviv: Institute of Archaeology of Tel Aviv University, 2004), 1155–1234.
- <sup>17</sup> Singer-Avitz 2004a, 1021; Lily Singer-Avitz, “The Pottery of the Late Bronze I Phase. Section B: The Cypriot Bichrome Ware,” in David Ussishkin (ed.), *The Renewed Archaeological Excavations at Lachish (1973–1994), Vol. III* (Tel Aviv: Institute of Archaeology of Tel Aviv University, 2004b), 1026; Ussishkin 2004a, 57–58.
- <sup>18</sup> Ussishkin 2004a, 58.
- <sup>19</sup> See, for example: Israel Finkelstein, *The Archaeology of the Israelite Settlement* (Jerusalem: Israel Exploration Society, 1988), 343; Manfred Bietak, “The Function and Some Architectural Roots of the Fosse Temple at Lachish,” in Shmuel Ahituv and Eliezer D. Oren (eds.), *Aharon Kempinski Memorial Volume: Studies in Archaeology and Related Disciplines* (Beer Sheva: Ben Gurion University of the Negev Press, 2002), 56–85; and Ussishkin 2004a, 58–59.
- <sup>20</sup> Ussishkin 2004a, 59–60.
- <sup>21</sup> Gabriel Barkay and David Ussishkin, “Area S: The Late Bronze Age Strata,” in David Ussishkin (ed.), *The Renewed Archaeological Excavations at Lachish (1973–1994), Vol. I* (Tel Aviv: Institute of Archaeology of Tel Aviv University, 2004), 316–
410. Note that levels S-3 to S-1 carry local area designations rather than the general site phasing (cf. Level VII, VI), as they could not be connected into a unified site stratigraphy. See David Ussishkin, “The Mound and Excavation Strategy,” in David Ussishkin (ed.), *The Renewed Archaeological Excavations at Lachish (1973–1994), Vol. I* (Tel Aviv: Institute of Archaeology of Tel Aviv University, 2004d), 43–44.
- <sup>22</sup> Eli Yannai, “The Late Bronze Age Pottery From Area S,” in David Ussishkin (ed.), *The Renewed Archaeological Excavations at Lachish (1973–1994), Vol. III* (Tel Aviv: Institute of Archaeology of Tel Aviv University, 2004), 1061–1062.
- <sup>23</sup> The Austrian-Israeli excavation is directed by Felix Höflmayer and Katharina Streit under the auspices of the Institute of Oriental and European Archaeology (OREA) at the Austrian Academy of Sciences (ÖAW), together with the Institute of Archaeology at the Hebrew University of Jerusalem and the University of Vienna. For an overview of the first two excavation seasons refer to Katharina Streit, Lyndelle Webster, Vanessa Becker, Ann-Kathrin Jeske, Hadas Misgav, and Felix Höflmayer, “Between Destruction and Diplomacy in Canaan: The Austrian-Israeli Expedition to Tel Lachish,” *Near Eastern Archaeology* 81 (2018): 259–268.
- <sup>24</sup> Laminated features similar to Level S-2 have been noted at other sites, with some particularly striking examples (by depth and extent) at Tel Gezer, Tel Aphek and Tel Hesi. Refer to William G. Dever, *Gezer IV: The 1969–1971 Seasons in Field VI, the “Acropolis”* (Jerusalem: Annual of the Nelson Glueck School of Biblical Archaeology, 1986), 61–63, 73–76; Yuval Gadot and Esther Yadin (eds.), *Aphek-Antipatris II* (Tel Aviv: Institute of Archaeology of Tel Aviv University, 2009), 96–8; William M. F. Petrie, *Tell El Hesi (Lachish)* (London: Palestine Exploration Fund, 1891), pl. III; Frederick J. Bliss, *A Mound of Many Cities: Tell El-Hesi Excavated* (London: Macmillan, 1894), 64–65. On the nature of these deposits there is lack of agreement; explanations have included threshing floors, waste disposal areas, animal pens, industrial deposits, or destruction layers. For a recent geoarchaeological assessment of a smaller deposit at Megiddo, see

- Ruth Shahack-Gross, Mor Gafri and Israel Finkelstein, "Identifying Threshing Floors in the Archaeological Record: A Test Case at Iron Age Tel Megiddo, Israel," *Journal of Field Archaeology* 34 (2013): 171–184.
- <sup>25</sup> Barkay and Ussishkin 2004, 342.
- <sup>26</sup> Yannai 2004, 1061–1062.
- <sup>27</sup> Tufnell et al. 1940, 69, 90, pl. XXXIIA:5.
- <sup>28</sup> Scarab: Othmar Keel, "Scarabs, Stamp Seal-Amulets and Impressions," in David Ussishkin (ed.), *The Renewed Archaeological Excavations at Lachish (1973–1994), Vol. III* (Tel Aviv: Institute of Archaeology of Tel Aviv University, 2004), 1549 (list no. 25). Context: Barkay and Ussishkin 2004, 326 (locus 3938).
- <sup>29</sup> Ussishkin 2004a, 57–59.
- <sup>30</sup> Tufnell et al. 1940, 20.
- <sup>31</sup> Israel Carmi and David Ussishkin, "<sup>14</sup>C Dates," in David Ussishkin (ed.), *The Renewed Archaeological Excavations at Lachish (1973–1994), Vol. V* (Tel Aviv: Institute of Archaeology of Tel Aviv University, 2004), 2508–2513.
- <sup>32</sup> Lyndelle Webster, Omer Sergi, Sabine Kleiman, Oded Lipschits, Quan Hua, Geraldine E. Jacobsen, Yann Tristant, and Yuval Gadot, "Preliminary Radiocarbon Results for Late Bronze Age Strata at Tel Azekah and Their Implications," *Radiocarbon* 60 (2018): 322–326.
- <sup>33</sup> Webster et al. 2018, 325 (fig. 10).
- <sup>34</sup> Cf. Barkay and Ussishkin 2004, particularly fig. 8.13.
- <sup>35</sup> Barkay and Ussishkin 2004, 335. During the 2018 excavations it became clear that a ~5 cm deposit separates wall 1071 from surface L1116.
- <sup>36</sup> Regarding Bayesian modelling of radiocarbon data, refer to Caitlin E. Buck, James B. Kenworthy, Cliff D. Litton, and Adrian F. M. Smith, "Combining Archaeological and Radiocarbon Information: A Bayesian Approach to Calibration," *Antiquity* 65 (1991): 808–821; Caitlin E. Buck, Clifford D. Litton, and Adrian F. M. Smith, "Calibration of Radiocarbon Results Pertaining to Related Archaeological Events," *Journal of Archaeological Science* 19 (1992): 497–512; and Christopher Bronk Ramsey, "Bayesian Analysis of Radiocarbon Dates," *Radiocarbon* 51 (2009): 337–360.
- <sup>37</sup> Refer to Lyndelle Webster, Katharina Streit, Michael W. Dee, and Felix Höflmayer, "New Radiocarbon-Based Assessment Supports the Prominence of Tel Lachish During Late Bronze Age IB-IIA," *Radiocarbon* (forthcoming). The model of Fig. 4 was built using OxCal v. 4.3.2 (Bronk Ramsey 2009a) and the IntCal13 calibration curve. See Paula J Reimer, Edouard Bard, Alex Bayliss, J Warren Beck, Paul G Blackwell, Christopher Bronk Ramsey, et al., "IntCal13 and Marine13 Radiocarbon Age Calibration Curves 0–50,000 Years Cal BP," *Radiocarbon* 55 (2013): 1869–1887.
- <sup>38</sup> The Oxford radiocarbon-based chronological models for Egypt make use of traditional *relative* dating information—namely, the order and length of reigns. The results of the models are generally in good agreement with the traditionally derived absolute chronology for Egypt.
- <sup>39</sup> Model NKM1 from Michael W. Dee, "A Radiocarbon-Based Chronology for the New Kingdom," in Andrew J. Shortland and Christopher Bronk Ramsey (eds.), *Radiocarbon and the Chronologies of Ancient Egypt* (Oxford: Oxbow Books, 2013), 65–75; reign lengths following Ian Shaw (ed.), *The Oxford History of Ancient Egypt* (Oxford: Oxford University Press, 2000). The Oxford model based on reign lengths of the "low" New Kingdom chronology (NKM2) is not plotted in Fig. 5, since the differences in this timeframe are minor for our purposes.
- <sup>40</sup> This model was published by Sturt W. Manning (*A Test of Time and a Test of Time Revisited* [Oxford: Oxbow Books, 2014]), who adjusted the models of the Oxford project with the reign lengths proposed by David Aston ("Radiocarbon, Wine Jars and New Kingdom Chronology," *Ägypten Und Levante* 22/23 [2012]: 289–315).
- <sup>41</sup> Scarab: Keel 2004, 1549 (list no. 25). Context: Barkay and Ussishkin 2004, 326 (locus 3938).
- <sup>42</sup> While a detailed review of the local and imported S-1-3 pottery is pending, the earlier dating can probably be accommodated (personal communication, Eli Yannai).
- <sup>43</sup> The LBA <sup>14</sup>C sequence at Megiddo in the north includes the 15th–14th centuries BCE, though

data coverage of this timeframe is comparatively sparse. See Michael Toffolo, Eran Arie, Mario A. S. Martin, Elisabetta Boaretto, and Israel Finkelstein, "Absolute Chronology of Megiddo, Israel, in the Late Bronze and Iron Ages: High-Resolution Radiocarbon Dating," *Radiocarbon* 56 (2014): 221–244.

<sup>44</sup> Webster et al. 2018.

<sup>45</sup> Webster et al. in preparation.