IV. Framework of Archaeological Work on Tall Zirā‘a

by Dieter Vieweger/Jutta Häser

4.1. The Grid System Used at the Excavations

The regional Israel or Palestine Grid is generally used for archaeological mapping in the Southern Levant. This system (was originally established by the the British Army during World War I and later designed for the English Mandate Administration in 1923) is orientated towards a triangulation station located on the Alī al-Munṭār Mountain, to the south-east of Gaza (fixed point: East 100000 m, North 100000 m). All coordinates given in this volume are in the order of ‘East.North’, whereby the eastern and northern coordinates are separated by a period or full stop. If the coordinates are rounded to 100 m, the last two points are not written. According to the Israel or Palestine Grid 1923, the coordinates of Tall Zirā‘a are 2119.2252 (rounded to 100 m; 32°37’14.19´N; 35°39’ 22.01´O).

The Tall Zirā‘a excavation grid is also orientated by this coordinate system. In autumn 2001, the tall was divided into 5 m x 5 m squares (*Fig. 4.2*). The x-coordinate running from west to east is labeled with numbers, and begins with 101. The y-coordinate of the excavation grid is labeled with the letters A to Z; however, the letter J was not assigned to remove the chance of confusion between the letters I and J. As the system required futher coordinates after the letter Z had been assigned, the system first used AA, AB, AC to AZ, and then continued with BA, BB, BC to BZ. The excavation squares are named as ‘y-coordinate x-coordinate’, for example, A 101.

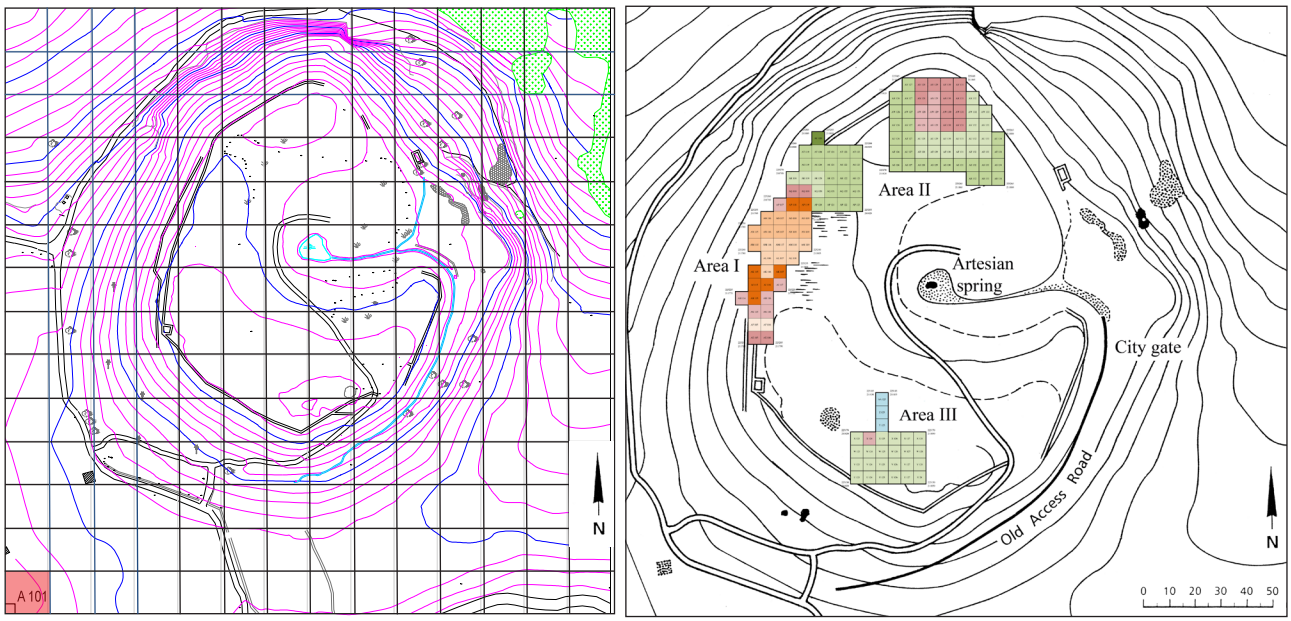
Square A 101 is located in the south-western part of the tall. It was deliberately located at some distance from the hill (*Fig. 4.2*), in order to include any extant installations or lower cities/suburbs into the same grid system, so that all squares or site locations are directly connected with the excavation. The south-western edge of Square A 101 has the Israel or Palestine Grid coordinate 211700.225060.

For the purpose of the Tall Survey, 16 squares comprised one survey square of 20 m x 20 m. To simplify matters, survey squares were labeled with the name of the south-westernmost 5 m x 5 m. Thus, Survey Square V 117, for example, identifies all squares on the coordinates V–Y 117–120 (see *Fig. 4.1*)

Y 117	**Y 118**	**Y 119**	**Y 120**
X 117	**X 118**	**X 119**	**X 120**
W 117	**W 118**	**W 119**	**W 120**
V 117	**V 118**	**V 119**	**V 120**

Fig. 4.1 Survey squares and their denotation

The *Fig. 4.2* provides an overview of the excavation grid and *Fig. 4.3* of the excavation Areas I–III (*Figs. 4.4–4.6*).



Figs. 4.2–4.3 Tall Zirā‘a. Left: Topographical map with the starting point Square A 101 (red), survey squares: 20 m x 20 m; right: with Areas I–III, excavation squares: 5 m x 5 m (Source: BAI/GPIA).

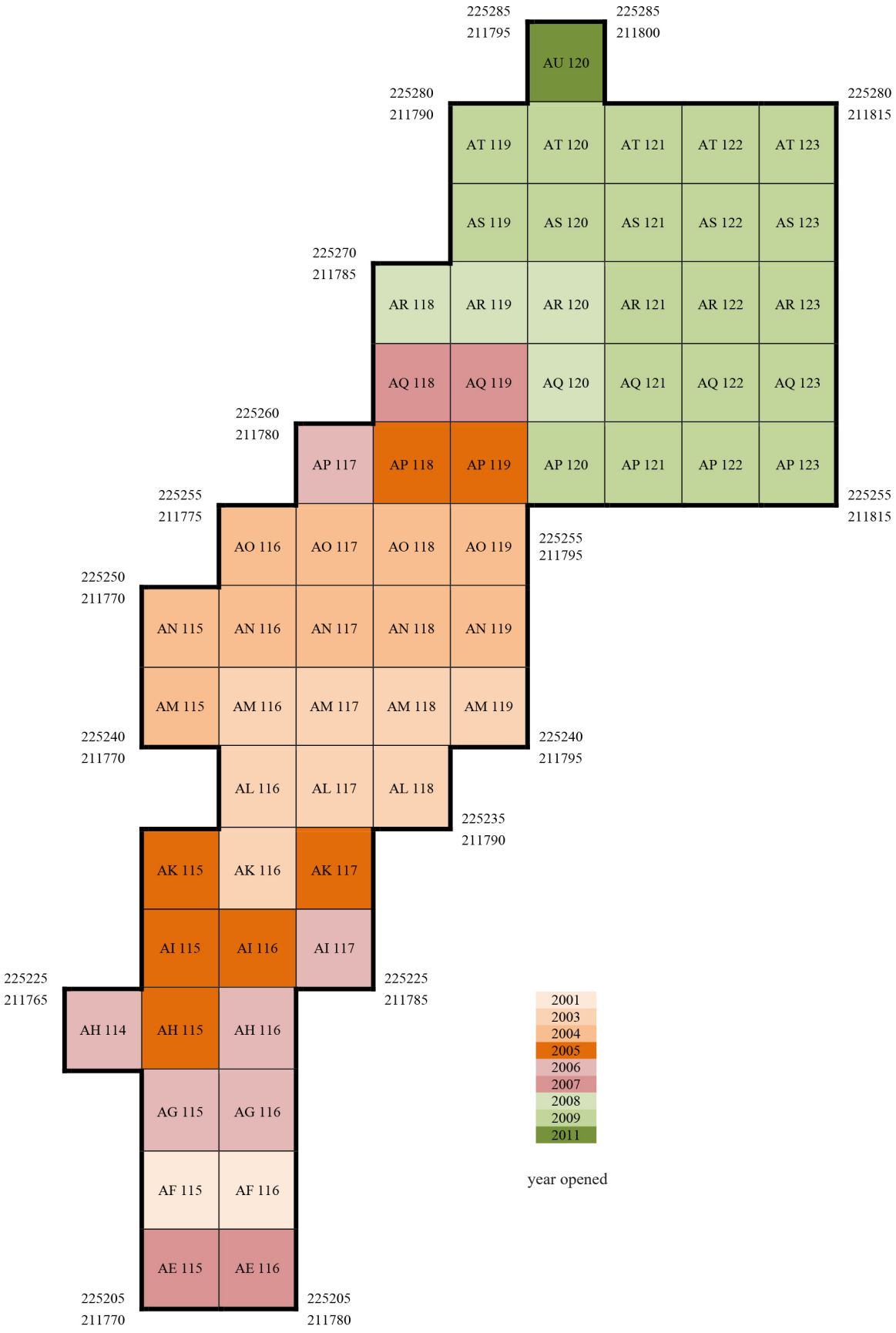


Fig. 4.4 Area I and its excavation squares (Source: BAI/GPIA).

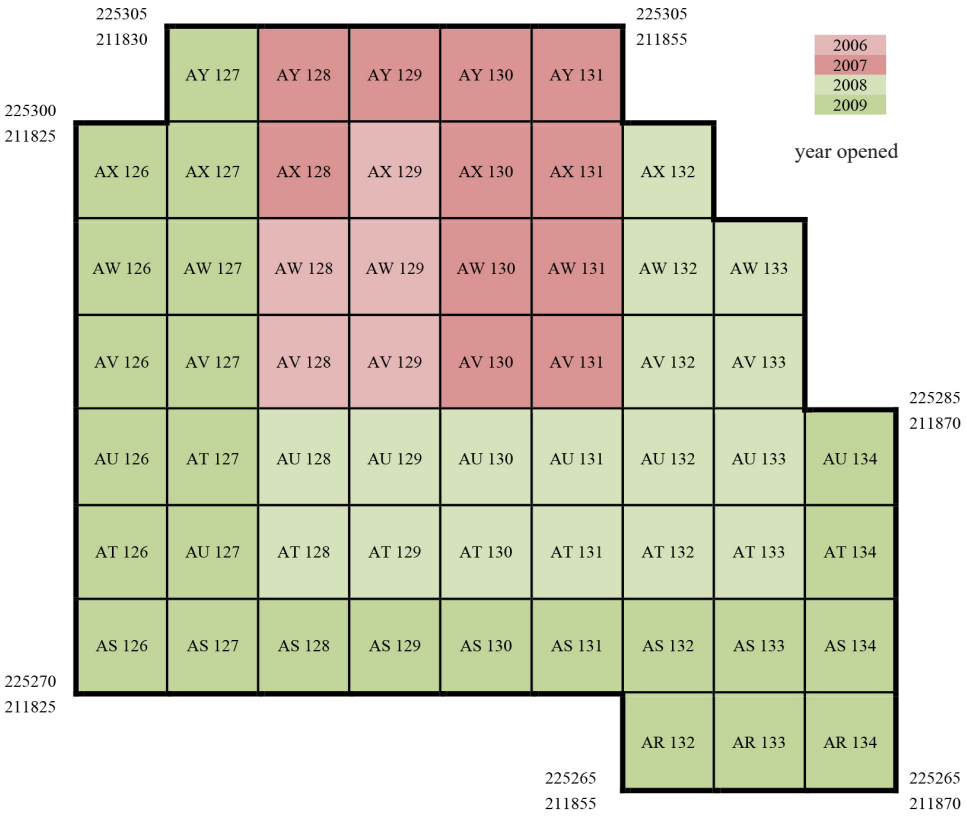


Fig. 4.5 Area II with its excavation squares (Source: BAI/GPIA).

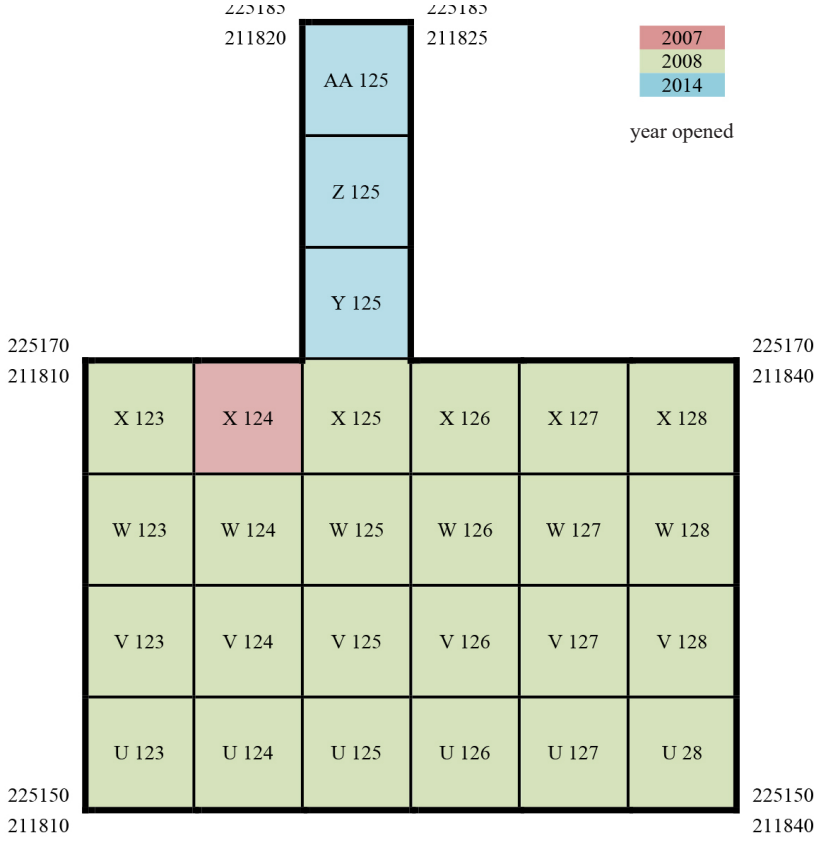


Fig. 4.6 Area III with its excavation squares (Source: BAI/GPIA).

4.2. Stratigraphic Nomenclature and Definition of Areas, Contexts, and Finds

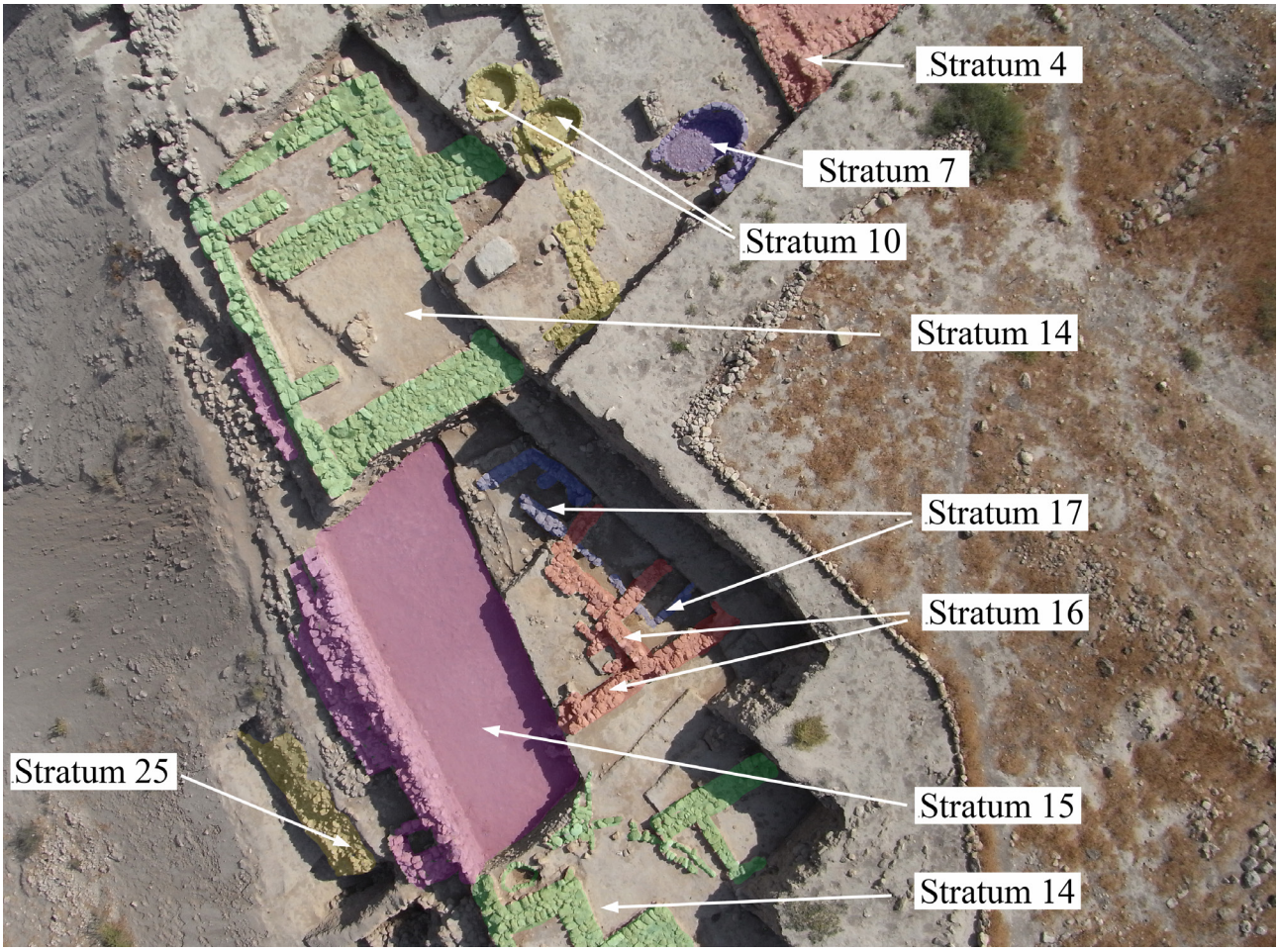


Fig. 4.7 Strata 25, 17–14, 10, 7, and 4 in Area I. Photograph taken in 2009 (Source: BAI/GPIA).

4.2.1. Stratigraphic Nomenclature

Tall Zirā'a provides the opportunity to explore settlement layers from the Early Bronze Age to the Ottoman period. There are no real settlement gaps within a 5,000 year time span, because:

- The artesian spring (*Fig. 1.12*) delivered a continuously fresh water supply throughout summer and winter (see *Chaps. 1.2.1.* and *1.2.2.*).
- The sinter hill provided a natural protective barrier for the settlement (see *Chaps. 1.2.1.* and *1.2.2.*)
- The fertile and water-rich Wādī al-'Arab provided sufficient arable land (see *Chap. 1.3.*)
- The access to (trans-)regional trade routes (see *Chap. 1.3.2.*)

J. W. Hanbury-Tenison has already written about the temporal classification for finds he found on the Tall Zirā'a:

> „Tell Zira'a (…) Large tell 150.00 m. (n/s) x 100 m. (e/w) on top of steepsided natural crag above Wadi Arab. Strong natural spring in the centre of the top of hill. Occupation of all periods, Chalco/EB to mediaeval. Cisterns, casemate walls (?), and mediaeval structures. The early material is mainly on the west slope"[1].

In fact, the settlements on Tall Zirā'a differ widely during these five millennia. Historic-cultural changes, climatic variations and political situations are reflected in continuity and discontinuity of cultural development on the tall, for example, the succession of walled or open cities, and some small settlements or hamlets, and also

1 Hanbury-Tenison et al. 1984, 389.

a relatively sedentary population during the Transitional period in the Early Bronze Age IV and Middle Bronze Age I.

The excavations on Tall Zirā'a were conducted in three Areas (I–III) (*Chap. 1.4.4.1.; Fig. 4.3*). These areas were correlated according to finds dating, as well as survey works. In total 25 strata have been identified so far (see *Tab. 4.1*; see also *Figs. 4.7* and *4.8*).

It was initially intended to excavate the whole stratigraphic sequence of Tall Zirā'a in Area I; however, nearly all of this area was affected by a landslide which occurred around 1500 BC and which destroyed large sections of the western area of the settlement (Stratum 16; *Chap. 1.4.4.16.*). The inhabitants of the hill, however, were obviously unable to leave the western part of the tall unused, which is why they put a great deal of effort into carefully rebuilding the lost area (Stratum 15; *Fig. 1.64*). On top of this reconstructed area of the hill, a completely new part of the settlement was built (Stratum 14). It comprises a city wall, a tower with a integrated small temple, a casemate wall, a large temple area, and several courtyard houses (*Fig. 1.52*).

In order to evaluate the thickness of the filling of Stratum 15 and the possibility of reaching remains of earlier strata below this filling, a trench was opened in the centre of Area I. Since there was no end of the filling layers recognizable after 4.5 m, it was decided to stop excavations in most parts of Area I, and to leave Stratum 14 at the point where the excavation had already reached; this stratum has not been further excavated until the present time, and is still visible on the tall.

Earlier strata than Stratum 15 could be reached in small parts of Area I which were not effected by the landslide. Remains of Stratum 16 (Late Bronze Age) were found north of the large temple area of Stratum 14. Remains of Strata 24 to 16 (Middle to Early Bronze Age) could be excavated in a small section in the centre of Area I just east of the test trench for the evaluation of the filling of Stratum 15.

Another area with earlier remains was the western slope of Area I. In a step trench a massive Early Bronze Age city wall with its glacis came to light (Stratum 25). However, it was not possible to complete the excavation, as this wall could not be correlated with the excavated settlement layers of the Early Bronze Age in this area. Furthermore, it was not possible to explore earlier strata because of the possible collapse of the trench.

The natural shape of Tall Zirā'a together with the results of the survey conducted on the tall surface suggest there may be some earlier settlement layers beneath Stratum 24. Depending on the local situation on the tall, a further settlement layer of at least 3 m can be expected.

Tab. 4.1 illustrates the strata, and the period to which each has been assigned:

In general, a destruction layer was associated with the related horizon, as well as the fill immediately above the same destruction layer; that is, the destruction and levelling debris of Stratum 5 were designated as Stratum 5. Only rebuilding or construction activities of the new settlement were associated with the new stratum above.

Strata are complex archaeological horizons; for example, a widely disseminated level of common art and artefacts at an archaeological site or area. Each stratum is a distinctive level in that site or area's archaeological sequence, and as such can be understood as a break in context, which denotes a change in epoch on a given site by delineation in time of the finds found within each context.

If there are different layers (e.g. floors) in one architectural unit, or smaller changes in architectural style/architectural modifications in a large complex, these layers or changes are designated as different phases in one single stratum. Larger building activities in one complex are designated as a new stratum if they are accompanied by a change in period, which is demonstrated by the finds.

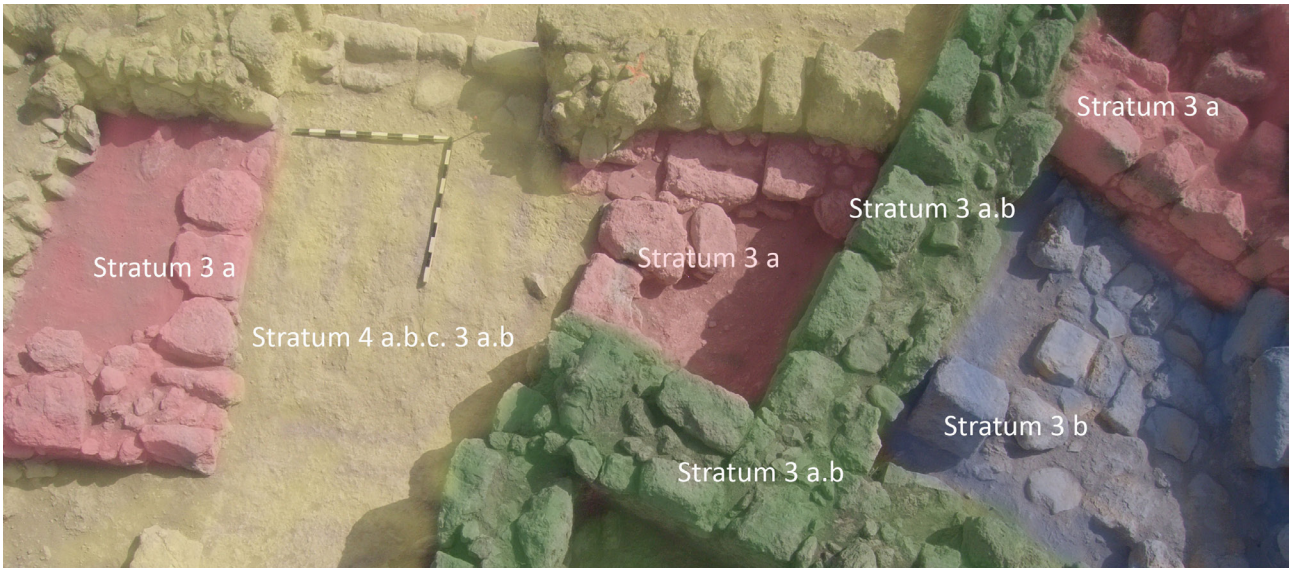


Fig. 4.8 Strata 3 a, 3 a.b. and 4 a.b.c. in Area II, Square AT 126 (Source: BAI/GPIA).

Strata	Period		Area I	Area II	Area III
0	-	colluvium	x	x	x
1	Ottoman	hamlets/tombs	x	x	x
2	Abbassid–Mamluk	open settlement	x	x	x
3 a	Umayyad: 1. Phase	monastery	x	x	x
3 b	Umayyad: 2. Phase	monastery	x	x	x
4 a	Byzantine – 1. Phase	monastery	x	x	x
4 b	Byzantine – 2. Phase	monastery	x	x	x
4 c	Byzantine – 3. Phase	monastery	x	x	x
5	Late Roman–Early Byzantine	small settlement	x	x	x
6 a	(Early-)Roman – 1. Phase	roman villa	x	x	-
6 b	(Early-)Roman – 2. Phase	roman villa	x	x	-
6 c	(Early-)Roman – 3. Phase	roman villa	x	x	-
7 a	Early Roman – 1. Phase	roman villa	x	x	-
7 b	Early Roman – 2. Phase	roman villa	x	x	-
7 c	Early Roman – 3. Phase	roman villa	x	x	-
8	Hellenistic	fortified structure	x	x	-
9	Persian(–Hellenistic)	fortified structure? and ceramic sherds	x	x	-
10	Iron Age IIC	open settlement	x	x	-
11	Iron Age IIA/B (younger)	walled settlement	x	-	-
12	Iron Age IIA/B (older)	walled settlement	x	-	-
13	Iron Age I	open settlement	x	-	-
14 a	Late Bronze Age II – 1. Phase	walled settlement	x	-	-
14 b	Late Bronze Age II – 2. Phase	walled settlement	x	-	-
14 c	Late Bronze Age II – 3. Phase	walled settlement	x	-	-
14 d	Late Bronze Age II – 4. Phase	walled settlement	x	-	-
15	Late Bronze Age/Repair layer	constructional stratum	x	-	-
16	Middle Bronze Age IIC/Late Bronze Age I	settlement	x	-	-
17	Middle Bronze Age IIB	settlement	x	-	-
18	Middle Bronze Age IIA (younger)	settlement	x	-	-
19	Middle Bronze Age IIA (older)	settlement	x	-	-
20	Early Bronze Age IV/Middle Bronze Age I (younger)	(permanent?) settlement	x	-	-
21	Early Bronze Age IV/Middle Bronze Age I (older)	(permanent?) settlement	x	-	-
22	Early Bronze Age III	settlement (walled?)	x	-	-
23	Early Bronze Age II/III	settlement (walled?)	x	-	-
24	Early Bronze Age II	settlement (walled?)	x	-	-
25	Early Bronze Age	walled settlement	x	-	-

Tab. 4.1. Strata on Tall Zirāʿa in correlation with the periods (Source: BAI/GPIA).

4.2.2. Definition and Numbering System of Areas, Contexts, and Finds

The excavations on Tall Zirā'a were carried out in three different excavation areas, which were named with Roman numerals: Area I in the west and in the north-west, Area II in the north, and Area III in the south (*Fig. 4.3*)[2]. The excavation started with squares of 5 m x 5 m, which were sometimes extended to 10 m x 10 m when very large building complexes came to light[3]. The baulks had to be removed after recording, due to security reasons.

The material dug out during the excavations was dumped west of the road stretching along the western foot of the tall, ground owned by the 'Water Authority of Jordan'.

All archaeological features were designated as 'contexts' without differentiation between e.g. walls, installations, fillings, etc. Each context received a 'context number'. The numbering of the contexts started separately for each excavation area in order to avoid confusing the numbers and thus the contexts. The context numbers in Area I went from 1 to 6,516, in Area II from 10,000 to 11,477, and in Area III from 30,000 to 30,427[4]. The finds were collected and recorded on a daily basis. The pottery of each context was given an 'assemblage number'. When registering the sherds of each assemblage, each sherd received the appropriate assemblage number, and each diagnostic sherd was moreover assigned an 'extension number'. Thus, the pottery of Context 1234 received the assemblage number 2809 and diagnostic sherds the consecutive numbers 1, 2, 3, and so forth. The complete number of a diagnostic sherd is cited in the publication as, e.g. TZ 002809-001. This way, each diagnostic sherd can be identified and found under its specific number.

If the excavation of a context continued, e.g. the next day or later, the pottery from this new dig received a new assemblage number. It is therefore possible that several pottery assemblage numbers belong to one context number, e.g. Context 2236 yielded the pottery assemblages 3935, 3950, 3953, 3960, 3968, 3988, 3999, and 4017.

This kind of numbering system has been used for all find groups containing many single objects in one context, e.g. flint assemblages. However, small finds of metal, faience, glass, bone, ivory, etc., were normally registered with an individual find number for each single find.

Similar to the assignation of the context numbers, also the numbering system of the finds is based on the area where they were found[5]. In Area I the numbering for the pottery and small finds started with 1001 and ended with 21,815. In Area II the numbering of the pottery went from 100,000 to 112,238 and the numbering of the small finds from 110,000 to 112,757. In Area III the numbering of the pottery sherds went from 300,000 to 300,238 and that of the small finds from 310,000 to 310,703.

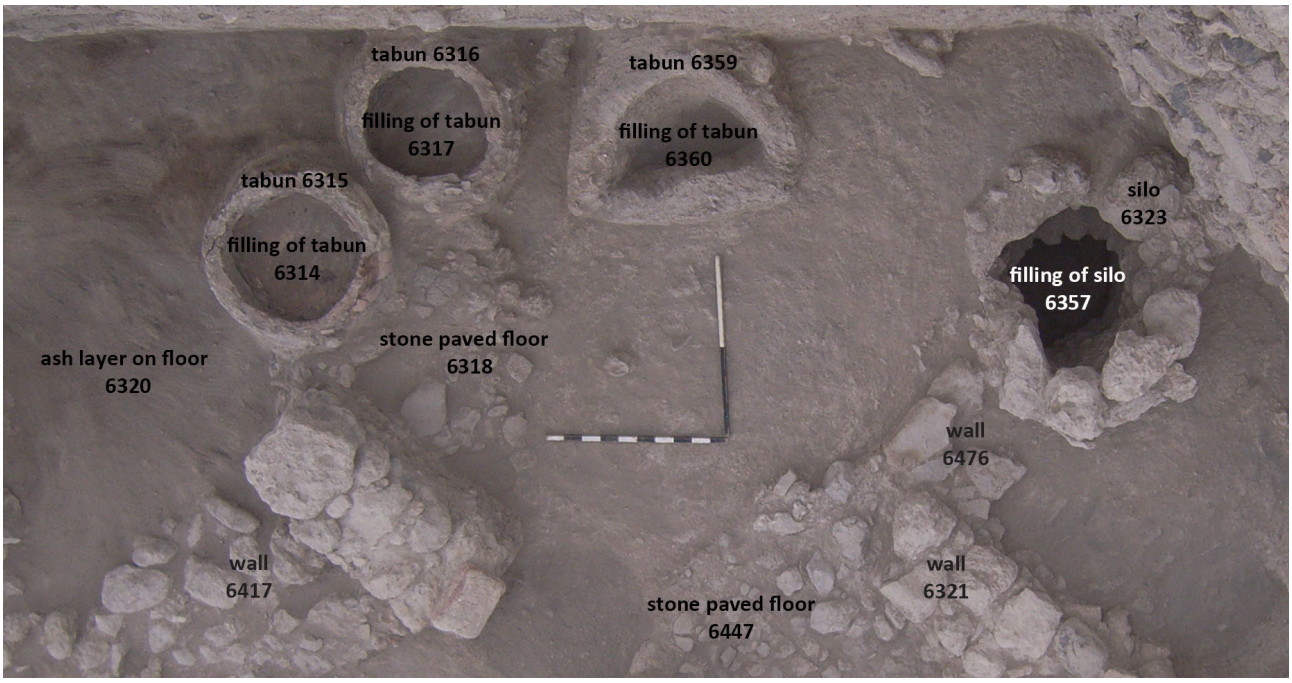


Fig. 4.9 Contexts in Area I, Square AT 122, Complex A2–B1 (Source: BAI/GPIA).

2 The scientific aims for opening these three areas are explained in *Chap. 1.4.4.1*.

3 For the grid system and the numbering of the squares cf. *Chap. 4.1*.

4 The data are the status of 2016.

5 The data are the status of summer 2016.

4. 3. Archaeological Periods in the Southern Levant (a Short Chronology)

The time data table *Tab. 4.3* illustrates the chronology for the Southern Levant in an historical context. The absolute year dates are determined by examination of a variety of sources to determine duration or time of historical events, in particular from:

- Written records, astronomical data and coin finds, i.a.
- 'Classical' dating methods (e.g. stratigrafic results, knowledge of typology and seriation)
- Scientific dating methods for age determination (e.g. radiocarbon dating, dendrochronology)
- Synchronism (e.g. between Egypt, Mesopotamia and Syria/Palestine) with area-covering correlations

Reliable dates can only be ascertained if several methodological steps consistently secure an age determination. However, uncertainty factors for each method must always be taken into consideration; even with scientific measurement results, diverse chronological variabilities are to be taken into account.

The chronological dates for Egypt and Mesopotamia are used as decisive for the early periods. Both systems are used for the 'Short Chronology'.

For detailed explanations of the chronology of the Southern Levant in the scope of history of Egypt, Syria and Mesopotamia, see Vieweger 2012, 459–507. An extract of this publication, with a chronological table (in German) is found in the appendices of this volume (*App. 4.1*).

There is no justified necessity for the first half of the third millennium to lower further the available dates of the Southern Levant 'Short Chronology'. The scientific results gained by radiocarbon dating do not allow such conclusion in its entirety.

A further problem can be illustrated concerning the dating of the beginning of the Early Bronze Age. The date of 3600 BC represented here is derived from the archaeological context of Tall 'Arād. There the oldest, still unwalled, Bronze Age settlement (Stratum IV) had ceramic of Egyptian origin and thus already had trade contacts with the land of the Nile in its early periods. An Egyptian vessel fragment with the Sereḫ sign of Narmer, the last pharaoh of the Predynastic period (Negade III), enables the temporal synchronisation between the Negade II/III period in Egypt and the Early Bronze Age I in Palestine, according to R. Amiran (*Tab. 4.2*)[6].

Furthermore, this is the earliest possible chronological synchronization between Egypt and Palestine.

Inevitably, all attempts to classify dates for Prehistory remain schematic. The flat time span presented in this volume for Tall Zirā'a and in Vieweger 2012, should be regarded as approximate. Generally, one has to expect an uncertainty factor of decades (or perhaps more) for the third millennium BC, and of several years (up to decades), for the second millennium BC. Secure, absolute dating is possible only from the second third of the first millennium BC.

All dates in this volume are recorded and marked as BC or AD.

Selected literature for the chronological problems described above are:

- Bietak 1989, 78–120.
- Dever 1980, 35–64.
- Matthiae 1989, 163–169.
- Reade 1981, 1–9.
- Schwartz – Weiss 1992a, 221–24 and Schwartz – Weiss 1992b 185–202.
- Stager 1992a, 22–41 and Stager 1992b, 46–60.
- Wright 1959, 13–29.

'Arād	Southern Levant	Egypt
'Arād Stratum V	Chalcolithic	Badārī-/Negade I–IIb period
	Early Bronze Age IA	End of Negade IIc–d2 period
'Arād Stratum IV	Early Bronze Age IB	Negade III period (incl. Narmer)
'Arād Stratum III	Early Bronze Age II	Thinite period (beginning of 1. Dynasty)
'Arād Stratum II/I	Early Bronze Age II	Thinite period (1. Dynasty – end of 2. Dynasty)

Tab. 4.2 Temporal Synchronisation between the Negade II/III period in Eypt and the Early Bronze Age in Palestine (Source: BAI/GPIA).

6 Amiran 1974, 4–12; Amiran – Ilan 1992, 76.

Palaeolithic	1.76 Mio–16000 BC	
Epipalaeolithic	16000–9300/8500 BC	
Neolithic	9300/8500–3600 BC	
Chalcolithic	5000/4500–3600 BC	
Bronze Age	3600–1200/1150 BC	
Early Bronze Age I–III	3600–2300 BC	
Early Bronze Age I	3600–3000 BC	
Early Bronze Age II	3000–2700 BC	
Early Bronze Age III	2700–2300 BC	
Transitional period	2300–1950 BC	
Early Bronze Age IV	2300–2150 BC	
Middle Bronze Age I	2150–1950 BC	
Middle Bronze Age II	1950–1550 BC	
Middle Bronze Age IIA	1950–1750 BC	
Middle Bronze Age IIB	1750–1630 BC	
Middle Bronze Age IIC	1630–1550 BC	
Late Bronze Age	1550–1200/1150 BC	
Late Bronze Age I	1550–1400 BC	
Late Bronze Age IIA	1400–1300 BC	
Late Bronze Age IIB	1300–1200/1150 BC	
Iron Age	1200/1150–520 BC	
Iron Age I	1200/1150–980 BC or 1200/1190–930/20 BC	
Late Bronze Age IIB/Iron Age IA	after 1200/1190 BC (Modified Conventional Chronology according to A. Mazar)	1200/1190–1140/1130 BC (Low Cronology according to I. Finkelstein])
Iron Age IA	1200/1150–1040/1030 BC	1140/1130–1050 BC
Iron Age IB	1040/1030–980 BC	1050–930/920 BC
Iron Age II	980–520 BC or 930/20–520 BC	
Iron Age IIA	980–830 BC	930/920–800 BC
Iron Age IIB	830–700 BC	800–700 BC
Iron Age IIC	700–520 BC	
Persian period (Iron Age III)	520–332 BC	
Hellenistic period	332–63 BC	
Early Hellenistic	332–167 BC	
Late Hellenistic	167–63 BC	
Ptolemaic Rule	301–198 BC	
Seleucid Rule	198–63 BC	
Hasmonean Rule	166–63 BC	
Roman period	63 BC–324 AD	
Early Roman	63 BC–132 AD	
Late Roman	132–324 AD	
Byzantine period	324–638 AD	
Islamic period	638–1516/17 AD	
Early Islamic	638–1099 AD	
Umayyad period	638–749/750 AD	
Abbasid period	749/750–1258 AD	
Fatimid period	969–1171 AD	
Crusader/Ayyubid	1099–1291 AD	
Ayyubid period	1171–1251/1262 AD	
Late Islamic	1291–1516/1517 AD	
Mamluk period	1291–1516/1517 AD	
Ottoman period	1516/1517–1918 AD	

Tab. 4.3 Time data for the Southern Levant (Source: BAI/GPIA).

4.4. Radiocarbon Samples from Tall Zirā‘a

All samples originate from burnt wooden finds. Grains, seeds and other ephemeral botanical remains (which can also be used for radiocarbon sampling) were either not available on the tall or did not occur in the required condition or stratified spots. The reason for the poor state of preservation for the botanical remains appears to be the microclimate; the deposits on Tall Zirā‘a underwent an annual change from wet to dry and then back to wet again because of the presence of the artesian spring in the centre of the tall.

A total of 48 radiocarbon samples were sent for analysis, most of them at the Poznań Radiocarbon Laboratory[7]; T. Goslar was responsible for most of the processing. The ‘Institute for Isotope Research and Nuclear Physics’ in Vienna was assigned not only to control the acquired results, but also to analyse some of the samples; E. M. Wild was responsible for this. Sample analysis results were consistent from both the laboratories, with no significant differences.

In all 47 samples were analysed from Area I, which is the major area for determining stratification of the tall; one sample has been analyzed from Area II[8]. Specific measurements will be discussed in detail in the context of their respective strata; in this chapter, the radiocarbon dates and their interrelation will be discussed briefly, followed by conclusions drawn from the results.

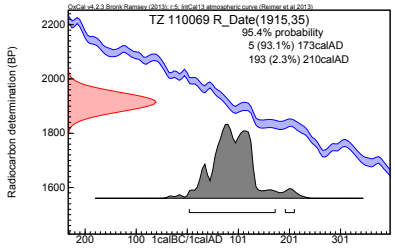
4.4.1. Area II

The radiocarbon sample from Area II was used to ensure the chronological reference of the stratigraphy of Areas I and II, based on the stratigraphic sequence and the artefacts that were found. Sample TZ 110069-001 (charcoal) was found in Context 11110 (Square AW 128; Strata 6 and 5, which underlay the chalk bed [Context 10041, Strata 4 and 3] for the paving [Context 10022] of a courtyard, which was located in Strata 4 and 3 [assigned to the Byzantine and Umayyad period]). Thus, the sample belongs to the destruction and fill layer of the Early to Late Roman architecture. The ceramic finds from this context date to the Hellenistic and Early Roman periods[9].

Sample TZ 110069-001

Context 11110 from Square AW 128:
The sample dates to 1915 ±35 BP:

- 57–127 AD (= 1 Sigma: 68.2 %)
- 5–173 AD (93.1 %); 193–210 AD (2.3 %) (= 2 Sigma: 95.4 %)
- 39 BC–230 AD (= 3 Sigma: 99.7 %)



4.4.2. Area I

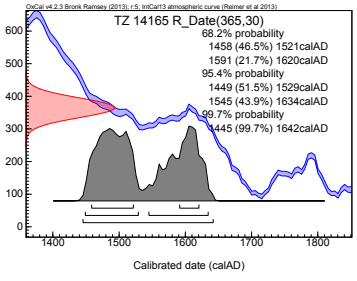
4.4.2.1. Ottoman Period (Stratum 1)

Sample TZ 014165-001 (charcoal) comes from Context 3940 (Square AR 121) and was found in Stratum 1[10]. This suggests a dating of the sample to the Ottoman period.

Sample TZ 014165-001

Context 3940 from Square AR 121
The sample dates to 365 ± 30 BP:

- 1458–1521 AD (46.5 %); 1591–1620 AD (21.7 %) (= 1 Sigma: 68.2 %)
- 1449–1529 AD (51.5 %); 1545–1634 AD (43.9 %) (= 2 Sigma: 95.4 %)
- 1445–1642 AD (= 3 Sigma: 99.7 %)



7 Prof Dr Tomasz Goslar, Poznań Radiocarbon Laboratory, ul. Rubież 46, 61612 Poznań, Poland.

8 All calibration details are given according to OxCal v4.2.2 Bronk Ramsey – Lee 2013; r:5; Atmospheric data from Reimer et al. 2013.

9 Finding place -20.35 m below NN. The associated ceramic with the find numbers TZ 100048 and TZ 100058 are mainly Late Hellenistic to Early Roman/Roman period mixed with some Early Bronze Age and Iron Age material caused by pits and building activities.

10 In terms of height (-21.21 m), Context 3940 lies above medieval graves Contexts 4315 and 4290 (-21.31 m and -21.24 m resp.).

4.4.2.2. Early Roman Period (Stratum 7 c)

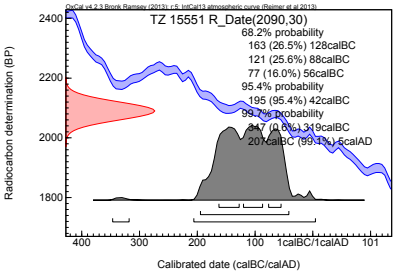
Sample TZ 015551-001 proves that Context 5201 (Square AQ 123) can be assigned to the Classical periods; radiocarbon dating points to a time in the second or first century BC, thus confirming the context dating from Stratum 7 c as Early Roman.

Context 5201 belongs to the rubble of a workshop or kitchen. The coin TZ 015292-001 from Context 5201 depicts a *cornucopia,* and has an inscription which may mention the name Yehohanan (135–104 BC).

Sample TZ 015551-001

Context 5201 from Square AQ 123
The sample dates to 2090 ± 30 BP:

- 163–128 BC (26.5 %); 121–88 BC (25.6 %); 77–56 BC (16 %) (= 1 Sigma: 68.2 %)
- 195–42 BC (= 2 Sigma: 95.4 %)
- 347–319 (0.6 %); 207–5 BC (99.1 %) (= 3 Sigma: 99.7 %).



4.4.2.3. Iron Age (Strata 13–10)

In the following Pre-Classical periods, ceramic artefacts provided the main dating for the contexts. They are on the whole consistent with the radiocarbon dating presented in this chapter, thereby confirming the stratigraphically obtained image. Some specific differences between the assigned date of the stratigraphic layer and the sampled radiocarbon data do occur in some cases, and are discussed below.

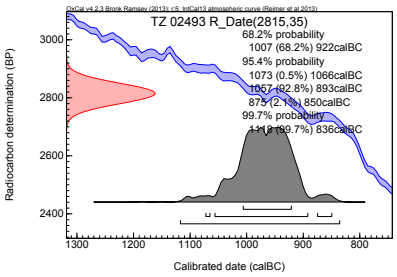
Stratum 10

Three samples were found in the Stratum 10 (in the Squares AO 118 and AP 121); they are assigned to Iron Age IIC: TZ 002493-001, TZ 014126-001 and TZ 015539-001.

Sample TZ 002493-001

Context 820 from Square AO 118
The sample dates to 2815 ± 35 BP:

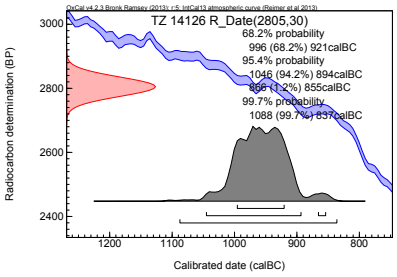
- 1007–922 BC (= 1 Sigma: 68.2 %)
- 1073–1066 BC (0.5 %); 1057–893 BC (92.8 %); 875–850 BC (2.1 %) (= 2 Sigma: 95.4 %)
- 1,118–836 BC (= 3 Sigma: 99.7 %)



Sample TZ 014126-001

Context 4418 from Square AP 121
The sample dates to 2,805 ± 30 BP:

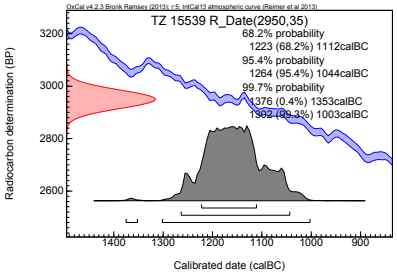
- 996–921 BC (= 1 Sigma: 68.2 %)
- 1046–894 BC (94.2 %); 866–855 BC (1.2 %) (= 2 Sigma: 95.4 %)
- 1088–837 BC (= 3 Sigma: 99.7 %)



Sample TZ 015539-001

Context 4674 from Square AP 121
The sample dates to 2950 ± 35 BP:

- 1223–1112 BC (= 1 Sigma: 68.2 %)
- 1264–1044 BC (= 2 Sigma: 95.4 %)
- 1376–1353 BC (0.4 %); 1302–1003 BC (99.3 %) (= 3 Sigma: 99.7 %)



Stratum 10 belongs to the Iron IIC settlement that followed the once thriving urban Iron Age IIA/B (Stratum 11), fortified by an impressive zigzag city wall. Stratum 11 and 12 represent the timeframe from the tenth to the eighth century BC.

There is a significant chronological difference between the radiocarbon dating for the samples TZ 002493-001 and TZ 014126-001 on the one hand, and Sample TZ 015539-001 on the other. The first two samples can be dated to the era of the Iron Age IIA/B (Strata 12 and 11). However, the last one, with a radiocarbon date to the Iron Age I (Stratum 13) is much earlier. Therefore it can be assumed that the reoccupied smaller Iron Age IIC settlement (without a city wall) reused extant wood residues from preceding settlements.

The archeological evidence for the Iron Age IIC settlement on Tall Zirā'a, is consistent with the evidence from other Iron Age IIC settlements (e.g. Tall al-Ǧuḥfīya) in the region where mostly villages can be found; this is in sharp contrast to the high level of culture found in the contemporary cities and kingdoms from the central area of Transjordan, such as Ammon, Moab and Edom.

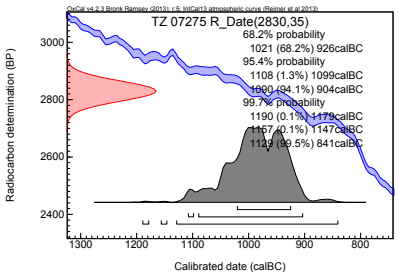
Stratum 11

Two samples were found in Stratum 11 (Squares AL 118 and AP 119); they are assigned to Iron Age II A/B younger phase: TZ 007275-001 and TZ 007253-001.

Both samples represent a prosperous walled city, which was built around 1000 BC (see Stratum 12), according to the evidence from the ceramics and other finds, with a partly existing horizon of destruction of stratum 12 during the tenth century (TZ 007275-001). Some contexts may have been rebuilt with reused material (TZ 007253-001) from the strata 12 or 11.

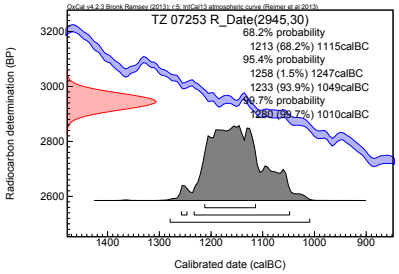
Sample TZ 007275-001
Context 1138 from Square AL 118
The sample dates to 2830 ± 35 BP:

- 1021–926 BC (= 1 Sigma: 68.2 %)
- 1108–1099 BC (1.3 %); 1090–904 BC (94.1 %) (= 2 Sigma: 95.4 %)
- 1190–1179 BC (0.1 %); 1157–1147 (0.1 %); 1129–841 BC (99.5 %) (= 3 Sigma: 99.7 %)



Sample TZ 007253-001
Context 1267 from Square AP 119
The sample dates to 2945 ± 30 BP:

- 1213–1115 BC (= 1 Sigma: 68.2 %)
- 1258–1247 BC (1.5 %); 1233–1049 BC (93.9 %) (= 2 Sigma: 95.4 %)
- 1280–1010 BC (= 3 Sigma: 99.7 %)

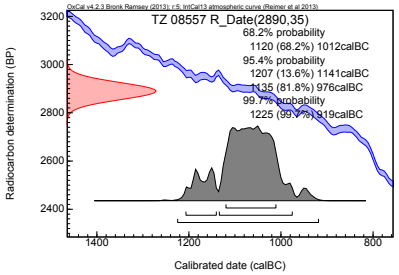


Stratum 12

Samples TZ 008557-001, TZ 002149-001, TZ 002391-001 and TZ 008668-001 are from Stratum 12 (Iron Age IIA/B older phase). The contexts of Stratum 12 describe a city built around 1000 BC, which was surrounded by a wall and marked an impressive change from the open settlement of Iron Age I (Stratum 13) to the flourishing city of Iron Age IIA/B (Strata 12 and 11).

Sample TZ 008557-001
Context 1996 from Square AM 119
The sample dates to 2890 ± 35 BP:

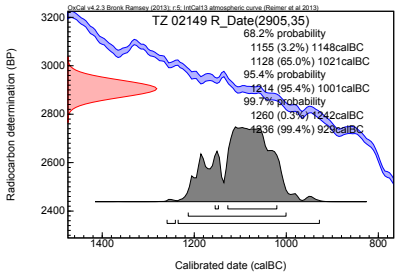
- 1120–1012 BC (= 1 Sigma: 68.2 %)
- 1207–1141 BC (1.5 %); 1135–976 BC (93.9 %) (= 2 Sigma: 95.4 %)
- 1225–919 BC (= 3 Sigma: 99.7 %)



Sample TZ 002149-001

Context 555 from Square AN 117
The sample dates to 2905 ± 35 BP:

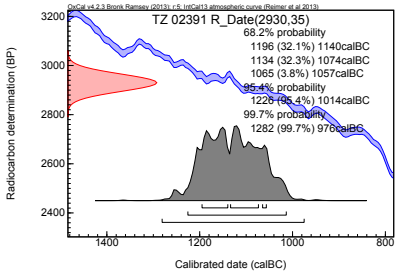
- 1155–1148 BC (3.2 %); 1128–1021 BC (65 %) (= 1 Sigma: 68.2 %)
- 1214–1001 BC (= 2 Sigma: 95.4 %)
- 1260–1242 BC (0.3 %); 1236–929 BC (99.4 %) (= 3 Sigma: 99.7 %)



Sample TZ 002391-001

Context 599 from Square AN 117
The sample dates to 2930 ± 35 BP:

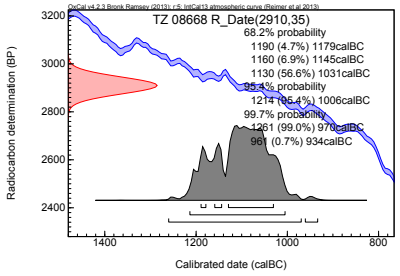
- 1196–1140 BC (32.1 %); 1134–1074 BC (32.3 %); 1065–1057 BC (3.8 %) (= 1 Sigma: 68.2 %)
- 1226–1014 BC (= 2 Sigma: 95.4 %)
- 1282–976 BC (= 3 Sigma: 99.7 %)



Sample TZ 008668-001

Context 2069 from Square AH 116
The sample dates to 2910 ± 35 BP:

- 1190–1179 BC (4.7 %); 1160–1145 BC (6.9 %); 1130–1031 BC (56.6 %) (= 1 Sigma: 68.2 %)
- 1214–1006 BC (= 2 Sigma: 95.4 %)
- 1261–970 BC (99 %); 961–934 BC (0.7 %) (= 3 Sigma: 99.7 %)



Stratum 13

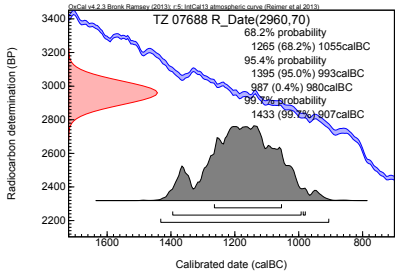
The samples from Stratum 13 (Iron Age I) suggest that the Early Iron Age settlement was established around 1200 BC; it followed the Late Bronze Age settlement immediately with no hiatus in habitation. Existing architectural units as well as building material (Sample TZ 007257-001) were reused in the new stratum. The other samples, (TZ 007688-001 and TZ 008858-001) have been assigned to Iron Age I. Context 1413 continues from the Iron Age I to Iron Age IIA/B (older phase).

Sample TZ 007688-001

Context 1413 from Square AO 118
The sample dates to 2960 ± 70 BP/Second examination to 2960 ± 30 BP:

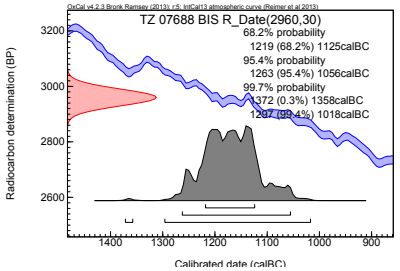
First examination:

- 1265–1055 BC (= 1 Sigma: 68.2 %)
- 1395–993 BC (95 %); 987–980 BC (0.4 %) (= 2 Sigma: 95.4 %)
- 1433–907 BC (= 3 Sigma: 99.7 %)



Second examination:

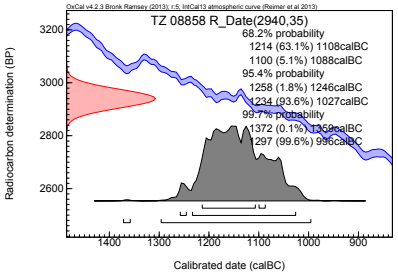
- 1219–1125 BC (= 1 Sigma: 68.2 %)
- 1263–1056 BC (= 2 Sigma: 95.4 %)
- 1372–1358 BC (0.3 %); 1297–1018 BC (99.4 %) (= 3 Sigma: 99.7 %)



Sample TZ 008858-001

Context 2115 from Square AN 119
The sample dates to 2940 ± 35 BP:

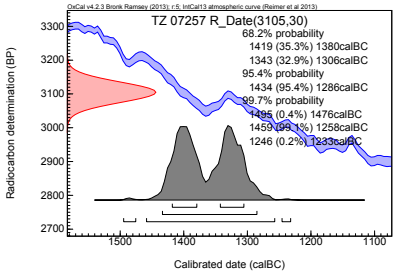
- 1214–1108 BC (63.1 %); 1100–1088 BC (5.1 %) (= 1 Sigma: 68.2 %)
- 1258–1246 BC (1.8 %); 1234–1027 (93.6 %) (= 2 Sigma: 95.4 %)
- 1372–1359 BC (0.1 %); 1297–996 (99.6 %) (= 3 Sigma: 99.7 %)

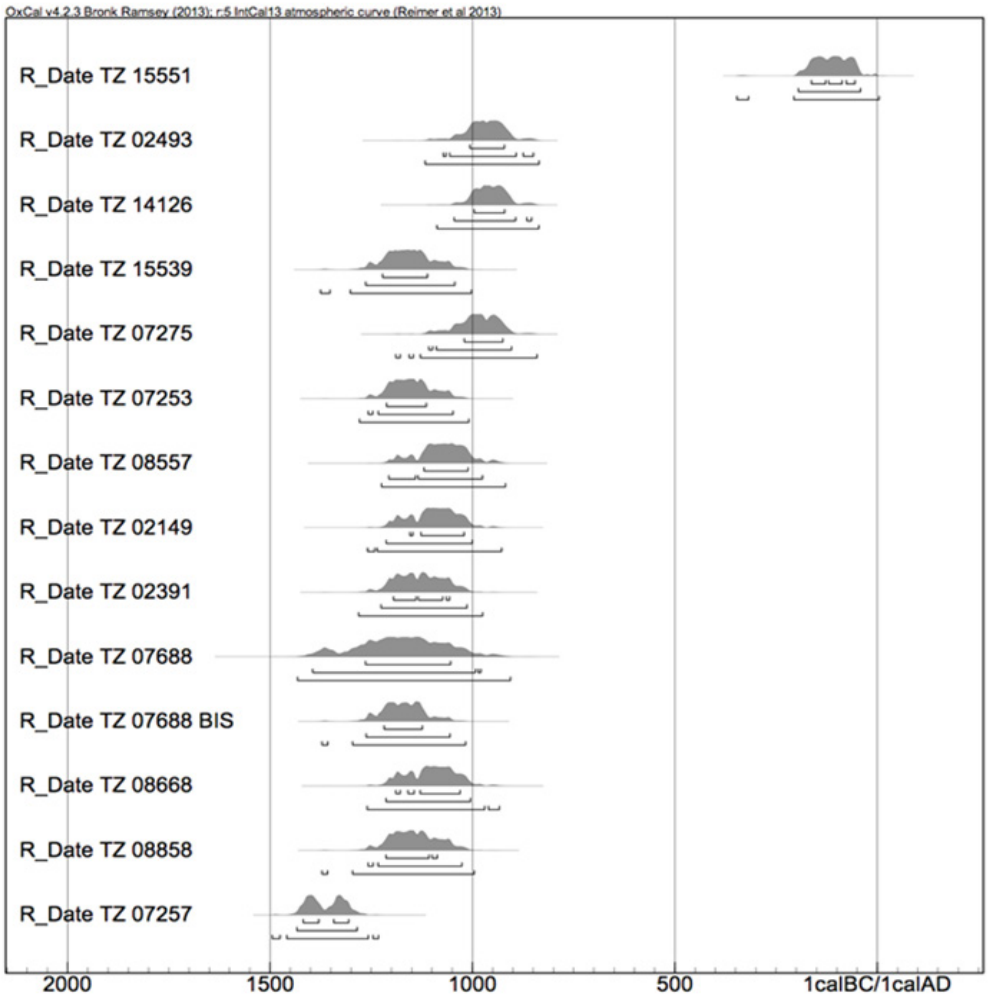


Sample TZ 007257-001

Context 1298 from Square AH 115
The sample dates to 3105 ± 30 BP:

- 1419–1380 BC (35.3 %); 1343–1306 BC (32.9 %) (= 1 Sigma: 68.2 %)
- 1434–1286 BC (= 2 Sigma: 95.4 %)
- 1495–1476 BC (0.4 %); 1459–125 BC (99.1 %); 1246–1233 BC (0.2 %) (= 3 Sigma: 99.7 %)





Graph. 4.1 Calibrated date (calBC/calAD): Radicarbon samples from the Early Roman and Iron Age (Source: BAI/GPIA).

4.4.2.4. Late Bronze Age II (Stratum 14)

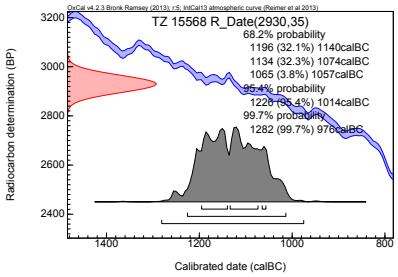
The samples from Stratum 14 are TZ 015568-001, TZ 007269-001, TZ 014477-001 and TZ 015531-001.

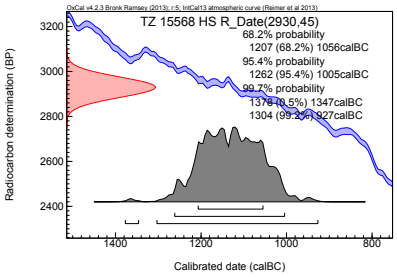
These samples cover the entire time period of Stratum 14, which has evidence of rebuilding no less than three times in some places. The reconstruction of the Late Bronze Age city after Stratum 16 which was destroyed by a large landslide, took place before 1500 BC. The following building activieties correspond with sample TZ 007269-001. Several rebuilding activities of Stratum 14 occurred during the fourteenth and thirteenth centuries BC. They are proven by the Samples TZ 014477-001, TZ 015568-001, and TZ 015531-001.

Sample TZ 015568-001

Context 4792 from Square AL 118
The sample dates to 2930 ± 35 BP/HS (Humic Acid) 2930 ± 45 BP:

- 1196–1140 BC (32.1 %); 1134–1074 BC (32.3 %); 1065–1057 BC (3.8 %) (= 1 Sigma: 68.2 %)/HS: 1207–1056 BC (= 1 Sigma: 68.2 %)
- 1226–1014 BC (= 2 Sigma: 95.4 %)/HS: 1262–1005 BC (= 2 Sigma: 95.4%)
- 1282–976 BC (= 3 Sigma: 99.7%)/HS: 1378–1347 BC (0.5%); 1304–927 BC (99.2%) (= 3 Sigma: 99.7 %)

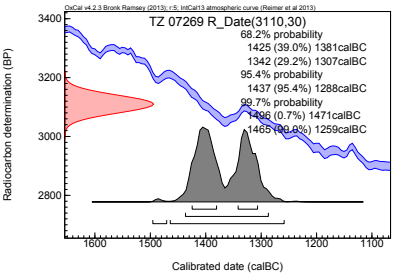




Sample TZ 007269-001

Context 1172 from Square AI 115
The sample dates to 3110 ± 30 BP:

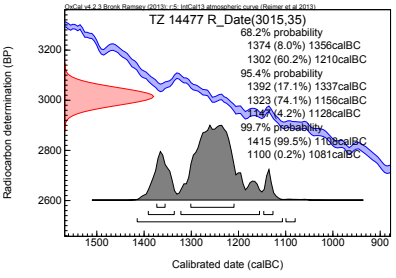
- 1425–1381 BC (39 %); 1342–1307 BC (29.2 %) (= 1 Sigma: 68.2 %)
- 1437–1288 BC (= 2 Sigma: 95.4 %)
- 1496–1471 BC (0.7 %); 1465–1259 BC (99.0 %) (= 3 Sigma: 99.7 %)



Sample TZ 014477-001

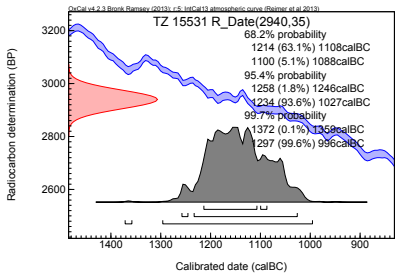
Context 3701 from Square AF 116
The sample dates to 3015 ± 35 BP:

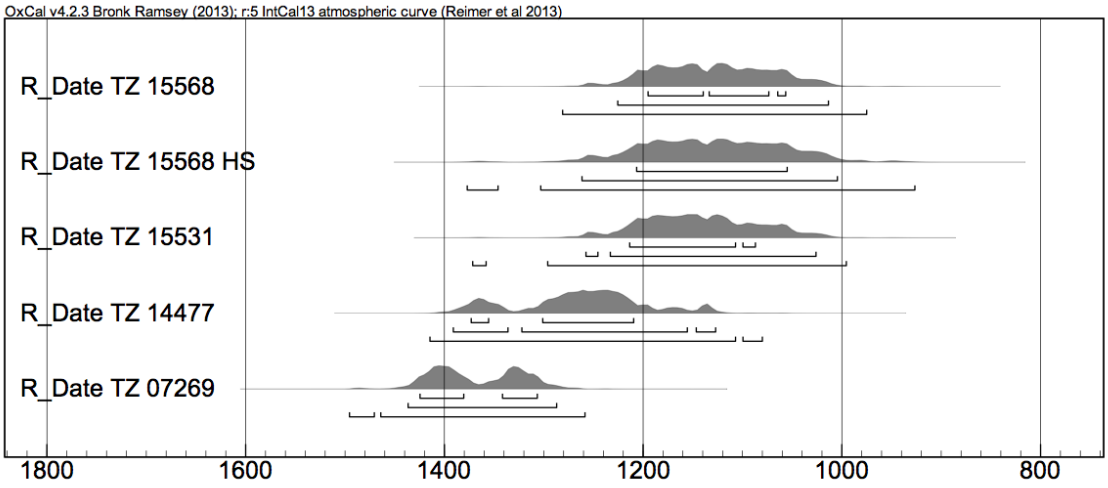
- 1347–1356 BC (8 %); 1302–1210 BC (60.2 %) (= 1 Sigma: 68.2 %)
- 1392–1337 BC (17.1 %); 1323–1156 BC (74.1 %); 1147–1128 BC (4.2 %) (= 2 Sigma: 95.4 %)
- 1415–1108 BC (99.5 %) 1100–1081 BC (0.2 %) (= 3 Sigma: 99.7 %)



Sample TZ 015531-001
Context 4793 from Square AL 118
The sample dates to 2940 ± 35 BP:

- 1214–1108 BC (63.1 %); 1100–1088 BC (5.1 %) (= 1 Sigma: 68.2 %)
- 1258–1246 BC (1.8 %); 1234–1027 BC (93.6 %) (= 2 Sigma: 95.4 %)
- 1372–1359 BC (0.1 %); 1297–996 BC (99.6 %) (= 3 Sigma: 99.7 %)





Graph. 4.2 Calibrated date (calBC): Radicarbon samples from the Late Bronze Age (Source: BAI/GPIA).

4.4.2.5. Constructional Stratum (Stratum 15)

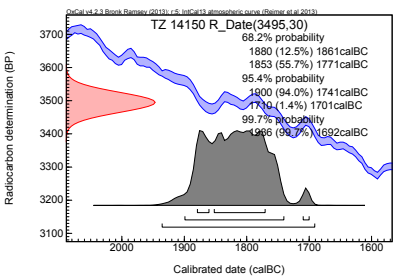
Samples TZ 014150-001, TZ 009090-001, TZ 007402-001, and TZ 014158-001 belong to the repair stratum immediately after the landslide, Stratum 15; this stratum restored lost areas of Stratum 16.

The samples of Stratum 15 analyzed here prove that the damaged Middle Bronze Age/Late Bronze Age city (Stratum 16) was repaired with existing material from the earlier strata. The filling layers contain ceramic finds dating from the Early Bronze Age to the Late Bronze Age. The sample TZ 007402-001 from the Context 5288 comes from a fire place. It was found on one of the constructional layer's top. It gives a glimpse of the repair activities which was undertaken most probably during the second half of the sixteenth century BC. The wooden waste from the fill (which do not have a constructive relevance) can be assigned to the Middle Bronze Age Contexts TZ 014150-001 and TZ 014158-001.

In the first analysis at the Poznań Radiocarbon Laboratory, the estimated date for sample TZ 009090-001 was 14500–13650 BC. As this was deemed to be an unreliable result, a second measurement was made, which points to a Chalcolithic origin (3946–3659 BC; 99.7 %). The latter date is quite better credible, because the majority of the ceramic finds in the repair layer date from the Early Bronze Age II and III; but under the circumstances, it was also deemed to be an unreliable result.

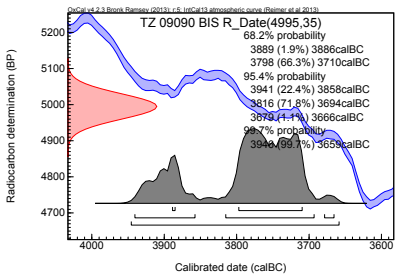
Sample TZ 014150-001
Context 4025 from Square AO 118
The sample dates to 3495 ± 30 BP:

- 1880–1861 BC (12.5 %); 1853–1771 BC (55.7 %) (= 1 Sigma: 68.2 %)
- 1900–1741 BC (94 %); 1710–1701 BC (1.4 %) (= 2 Sigma: 95.4 %)
- 1936–1692 BC (= 3 Sigma: 99.7 %)



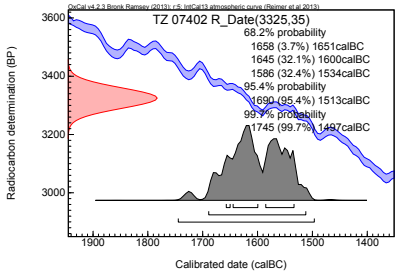
Sample TZ 009090-001
Context 2194 from Square AN 116
The sample dates to 4995 ± 35 BP (second sample)[11]:

- 3889–3886 BC (1.9 %); 3798–3710 BC (66.3 %) (= 1 Sigma: 68.2 %)
- 3941–3858 BC (22.4 %); 3816–3694 BC (71.8 %); 3679–3666 BC (1.1 %) (= 2 Sigma: 95.4 %)
- 3946–3659 BC (= 3 Sigma: 99.7 %)



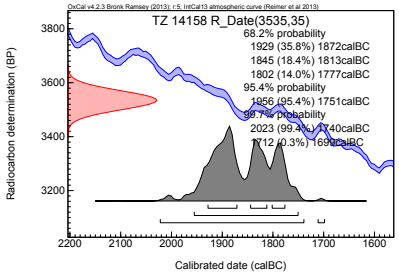
Sample TZ 007402-001
Context 5288 from Square AH 115 (fire place)
The sample dates to 3325 ± 35 BP:

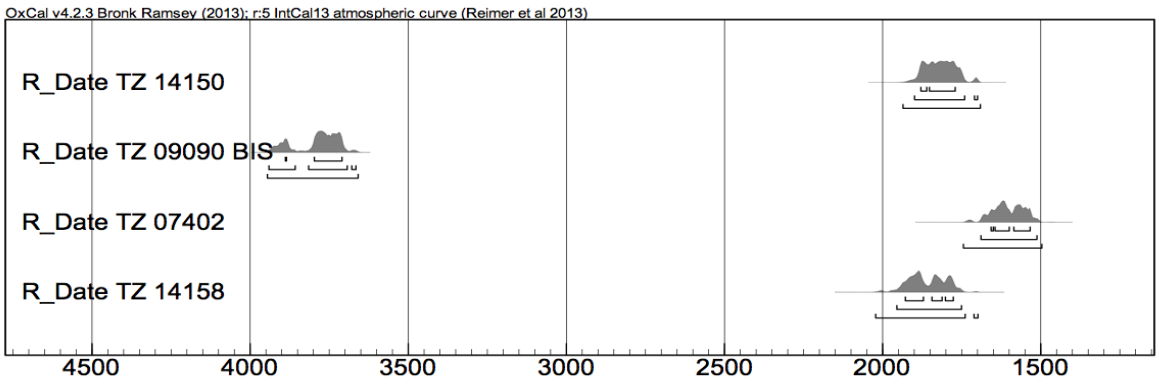
- 1658–1651 BC (3.7 %); 1645–1600 BC (32.1 %); 1586–1534 BC (32.4 %) (= 1 Sigma: 68.2 %)
- 1690–1513 BC (= 2 Sigma: 95.4 %)
- 1745–1497 BC (= 3 Sigma: 99.7 %)



Sample TZ 014158-001
Context 4586 from Square AO 118
The sample dates to 3535 ± 35 BP:

- 1929–1872 BC (35.8 %); 1845–1813 BC (18.4 %); 1802–1777 BC (14 %) (= 1 Sigma: 68.2 %)
- 1956–1751 BC (= 2 Sigma: 95.4 %)
- 2023–1740 BC (99.4 %); 1712–1699 BC (0.3 %) (= 3 Sigma: 99.7 %)





Graph. 4.3 Calibrated date (calBC): Radicarbon samples from the Constructional Stratum (Source: BAI/GPIA).

4.4.2.6. Middle Bronze Age (Strata 19–16)

On Tall Zirā'a four different layers of Middle Bronze Age occupation could be identified. Their dating range from the transition period Middle Bronze Age IIC/Late Bronze Age I in Stratum 16 to Middle Bronze Age IIB (Strata 19–17; 1950–1630 BC). All these samples from wooden remains cover a wide time span from the twentysecond

11 First sample: 13460±70 BP; 14240–13830 (68.2%); 14500–13650 (95.4 %).

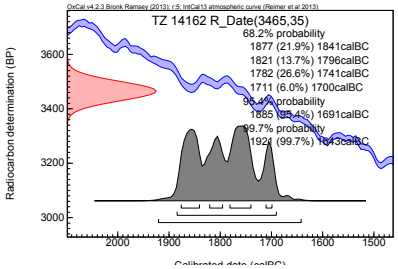
to the twentyfirst centuries BC down to the seventienth century BC. Therefore the differentiation of the Middle Bronze Age layers is not only based on radiocarbon samples but also on other evidence and on pottery.

Stratum 16 (Middle Bronze Age IIC/Late Bronze Age I)

Sample TZ 014162-001

Context 3847 from Square AM 119
The sample dates to 3465 ± 35 BP:

- 1877–1841 BC (21.9 %); 1821–1796 BC (13.7 %); 1782–1741 BC (26.6 %); 1711–1700 BC (6.0 %) (= 1 Sigma: 68.2 %)
- 1885–1691 BC (= 2 Sigma: 95.4 %)
- 1921–1643 BC (= 3 Sigma: 99.7 %)

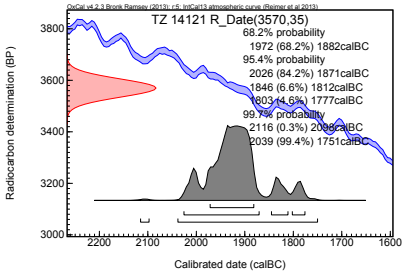


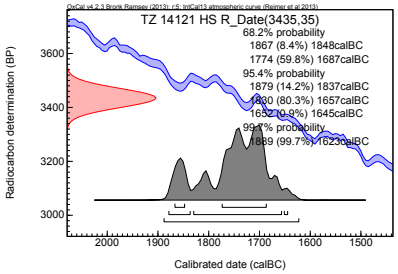
Sample TZ 014121-001

Context 3979 from Square AN 118
The first sample dates to 3570 ± 35 BP/HS (Humic acid): 3435 ± 35 BP; the second sample dates to 3550 ± 35 BP/HS (Humic acid): 3590 ± 40 BP:

First sample:

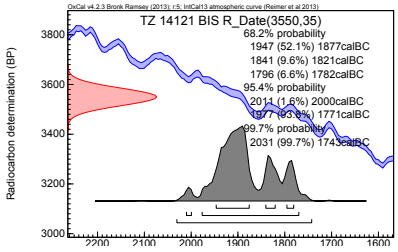
- 1972–1882 BC (= 1 Sigma: 68.2 %)/ HS: 1867–1848 BC (8.4 %); 1774–1687 BC (59.8 %) (= 1 Sigma: 68.2 %)
- 2026–1871 BC (84.2 %); 1846–1812 BC (6.6 %); 1803–1777 BC (4.6 %) (= 2 Sigma: 95.4 %)/HS: 1879–1837 BC (14.2 %); 1830–1657 BC (80.3 %); 1652–1645 BC (0.9 %) (= 2 Sigma: 95.4 %)
- 2116–2098 BC (0.3 %); 2039–1751 BC (99.4 %) (= 3 Sigma: 99.7 %)/HS: 1889–1623 BC (= 3 Sigma: 99.7 %)

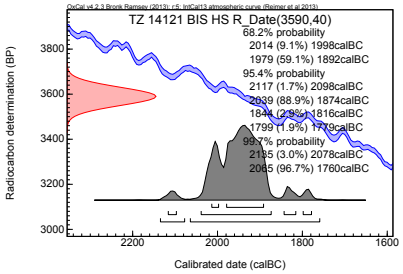




Second sample:

- 1947–1877 BC (52.1 %); 1841–1821 BC (9.6 %); 1796–1782 BC (6.6 %) (= 1 Sigma: 68.2 %)/HS: 2014–1998 BC (9.1 %); 1979–1892 BC (59.1 %) (= 1 Sigma: 68.2 %)
- 2011–2000 BC (1.6 %); 1977–1771 BC (93.8 %) (= 2 Sigma: 95.4 %)/ HS: 2117–2098 BC (1.7 %); 2039–1874 BC (88.9 %); 1844–1816 BC (2.9 %); 1799–1779 BC (1.9 %) (= 2 Sigma: 95.4 %)
- 2031–1743 BC (= 3 Sigma: 99.7 %)/HS: 2135–2079 BC (3 %); 2065–1760 BC (96.7 %) (= 3 Sigma: 99.7 %)

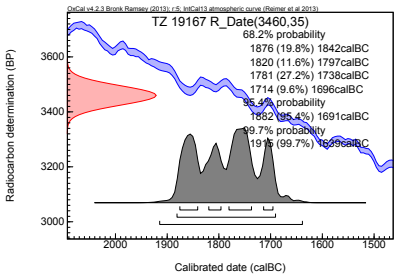




Sample TZ 019167-001

Context 6311 from Square AT 122
The sample dates to 3460 ± 35 BP:

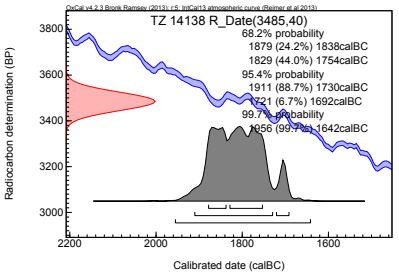
- 1876–1842 BC (19.8 %); 1820–1797 BC (11.6 %); 1781–1738 BC (27.2 %); 1714–1696 BC (9.6 %) (= 1 Sigma: 68.2 %)
- 1882–1691 BC (= 2 Sigma: 95.4 %)
- 1915–1639 BC (= 3 Sigma: 99.7 %)



Sample TZ 014138-001

Context 4398 from Square AN 119
The sample dates to 3485 ± 40 BP:

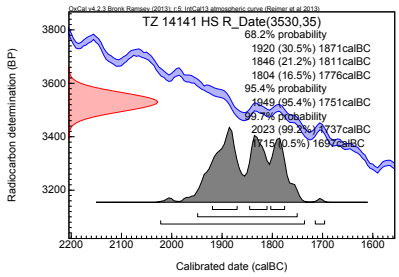
- 1879–1838 BC (24.2 %); 1829–1754 BC (44 %) (= 1 Sigma: 68.2 %)
- 1911–1730 BC (88.7 %); 1721–1692 BC (6.7 %) (= 2 Sigma: 95.4 %)
- 1956–1642 BC (= 3 Sigma: 99.7 %)

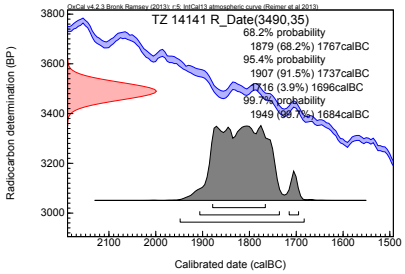


Sample TZ 014141-001

Context 4364 from Square AN 119
The sample dates to 3490 ± 35 BP/HS (Humic Acid) 3530 ± 35 BP:

- 1879–1767 BC (= 1 Sigma: 68.2 %)/ HS: 1920–1871 BC (30.7 %); 1846–1811 BC (21.1 %); 1804–1776 BC (16.5 %) (= 1 Sigma: 68.2 %)
- 1907–1737 BC (91.5 %); 1716–1696 BC (3.9 %) (= 2 Sigma: 95.4 %)/HS: 1949–1751 BC (95.4 %) (= 2 Sigma: 95.4 %)
- 1949–1684 BC (99.7 %) (= 3 Sigma: 99.7 %)/ HS: 2023–1737 BC (99.2 %); 1715–1697 BC (0.5 %) (= 3 Sigma: 99.7 %)



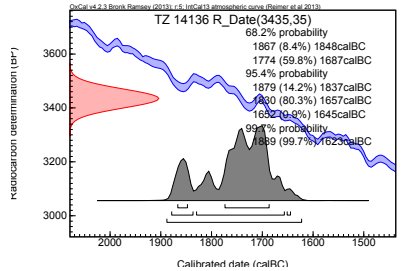


Stratum 17 (Middle Bronze Age IIB)

Sample TZ 014136-001

Context 4480 from Square AN 119
The sample dates to 3435 ± 35 BP:

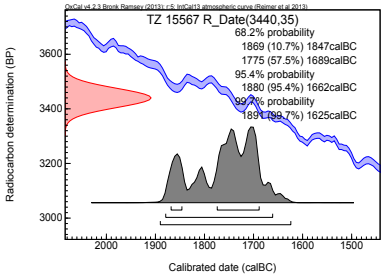
- 1867–1848 BC (8.6 %); 1774–1687 BC (59.8 %) (= 1 Sigma: 68.2 %)
- 1879–1837 BC (14.2 %); 1830–1657 (80.3 %) 1652–1645 BC (0.9 %) (= 2 Sigma: 95.4 %)
- 1889–1623 BC (= 3 Sigma: 99.7 %)

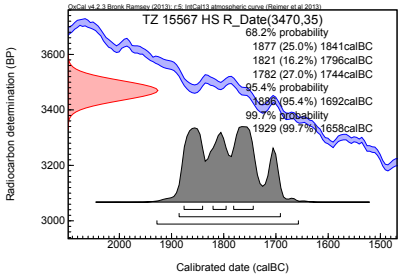


Sample TZ 015567-001

Context 4727 from Square AN 118
The sample dates to 3440 ± 35 BP/HS (Humic Acid) 3470 ± 35 BP:

- 1869–1847 BC (10.7 %); 1775–1689 BC (57.5 %) (= 1 Sigma: 68.2 %)/HS: 1877–1841 BC (25 %); 1821–1796 BC (16.2 %); 1782–1744 BC (27 %) (= 1 Sigma: 68.2 %)
- 1880–1662 BC (= 2 Sigma: 95.4 %)/HS: 1886–1692 BC (95.4 %) (= 2 Sigma: 95.4 %)
- 1891–1625 BC (= 3 Sigma: 99.7 %)/HS: 1929–1658 BC (= 3 Sigma: 99.7 %)

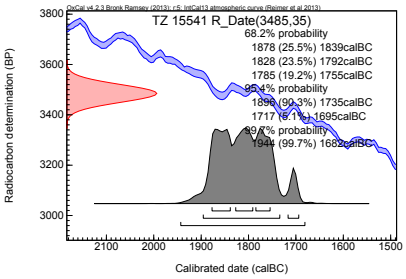




Sample TZ 015541-001

Context 4727 from Square AN 118
The sample dates to 3485 ± 35 BP:

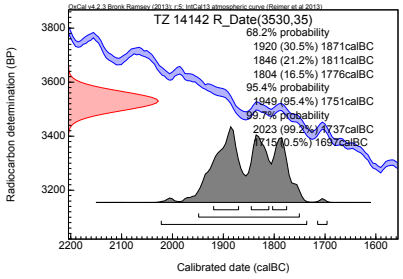
- 1878–1839 BC (25.5 %); 1828–1792 BC (23.5 %); 1785–1755 BC (19.2 %) (= 1 Sigma: 68.2 %)
- 1896–1735 BC (90.3 %); 1717–1695 (5.1 %) (= 2 Sigma: 95.4 %)
- 1944–1682 BC (= 3 Sigma: 99.7 %)

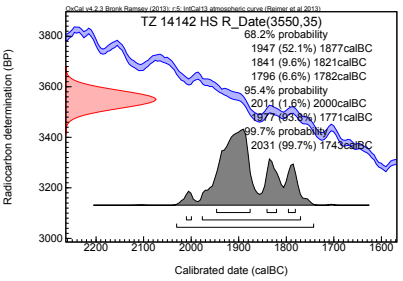


Sample TZ 014142-001

Context 4107 from Square AO 119
The sample dates to 3530 ± 35 BP/HS (Humic Acid) 3,550 ± 35 BP:

- 1920–1871 BC (30.5 %); 1846–1811 BC (21.2 %); 1804–1776 (16.5 %) (= 1 Sigma; 68.2 %)/HS: 1947–1877 BC (52.1 %); 1841–1821 BC (9.6 %); 1796–1782 BC (6.6 %) (= 1 Sigma: 68.2 %)
- 1949–1751 BC (= 2 Sigma: 95.4 %)/HS: 2011–2000 BC (1.6 %); 1977–1771 BC (93.8 %) (= 2 Sigma: 95.4 %)
- 2023–1737 BC (99.2 %); 1715–1697 BC (0.5 %) (= 3 Sigma: 99.7 %)/HS: 2031–1743 BC (= 3 Sigma: 99.7 %)

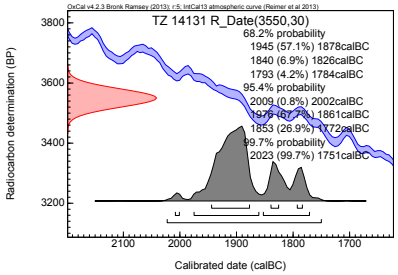


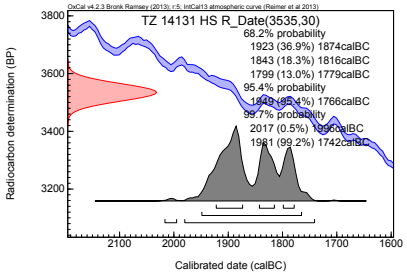


Sample TZ 014131-001

Context 4256 from Square AO 119
The sample dates to 3550 ± 30 BP/HS (Humic Acid) 3535 ± 30 BP:

- 1945–1878 BC (57.1 %); 1840–1826 BC (6.9 %); 1793–1784 (4.2 %) (= 1 Sigma: 68.2 %)/HS: 1923–1874 BC (36.9 %); 1843–1816 BC (18.3 %); 1799–1779 BC (13 %) (= 1 Sigma: 68.2 %)
- 2009–2002 BC (0.8 %); 1976–1861 BC (67.7 %); 1853–1772 BC (26.9 %) (= 2 Sigma: 95.4 %)/HS: 1949–1766 BC (= 2 Sigma: 95.4 %)
- 2023–1751 BC (= 3 Sigma: 99.7 %)/HS: 2017–1996 BC (0.5 %); 1981–1742 BC (99.2 %) (= 3 Sigma: 99.7 %)





Sample TZ 014128-001

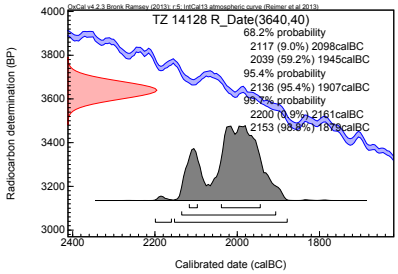
Context 3987 from Square AN 118
The first sample dates to 3,640 ± 40 BP/the second sample dates to 3685 ± 35 BP/
HS (Humic Acid) first sample: 3555 ± 40 BP/HS second sample: 3685 ± 35 BP:

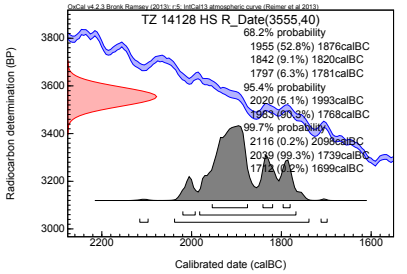
First sample:

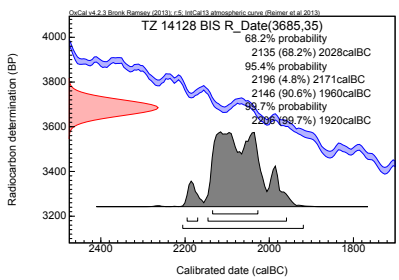
- 2117–2098 BC (9 %); 2039–1945 BC (59.2 %) (= 1 Sigma: 68.2 %)/HS: 1955–1876 BC (52.8 %); 1842–1,820 BC (9.1 %); 1797–1781 BC (6.3 %) (= 1 Sigma: 68.2 %)
- 2136–1907 BC (= 2 Sigma: 95.4 %)/HS: 2020–1993 BC (5.1 %); 1983–1768 BC (90.3 %) (= 3 Sigma: 95.4 %)
- 2200–2136 BC (0.9 %); 2153–1879 BC (98.8 %) (= 3 Sigma: 99.7 %)/HS: 2116–2098 BC (0.2 %); 2039–1739 BC (99.3 %); 1712–1699 (0.2 %) (= 3 Sigma: 99.7 %)

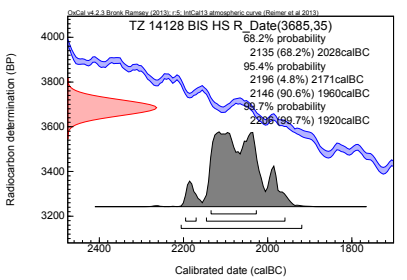
Second sample:

- 2135–2028 BC (= 1 Sigma: 68.2 %)/HS: 2135–2018 BC (= 1 Sigma: 68.2 %)
- 2196–2171 BC (4.8 %); 2146–1960 BC (90.6 %) (= 2 Sigma: 95.4 %)/HS: 2196–2171 BC (4.8 %); 2146–1960 BC (90.6 %) (= 2 Sigma: 95.4 %)
- 2206–1920 BC (= 3 Sigma: 99.7 %)/HS: 2206–1920 BC (= 3 Sigma: 99.7 %)







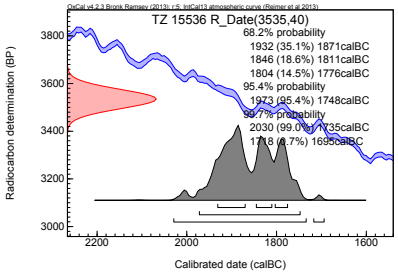


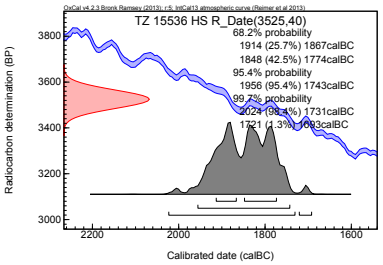
Stratum 18 (Younger Stratum from Middle Bronze Age IIA)

Sample TZ 015536-001

Context 4958 from Square AN 118
The sample dates to 3535 ± 40 BP/HS (Humic Acid) 3,525 ± 40 BP:

- 1932–1871 BC (35.1 %); 1846–1811 BC (18.6 %); 1804–1776 BC (14.5 %) (= 1 Sigma: 68.2 %)/HS: 1914–1867 BC (25.7 %); 1848–1774 BC (42.5 %) (= 1 Sigma: 68.2 %)
- 1973–1748 BC (= 2 Sigma: 95.4 %)/HS: 1956–1743 BC (= 2 Sigma: 95.4 %)
- 2030–1735 BC (99 %) 1718–1695 BC (0.7 %) (= 3 Sigma: 99.7%)/HS: 2024–1731 BC (98.4 %); 1721–1693 BC (1.3 %) (= 3 Sigma: 99.7 %)

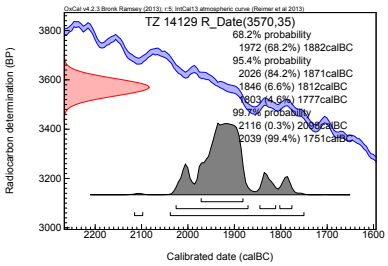




Sample TZ 014129-001

Context 4303 from Square AO 119
The sample dates to 3570 ± 35 BP:

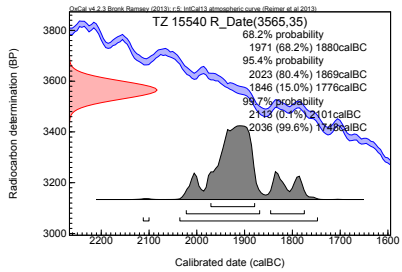
- 1972–1882 BC (= 1 Sigma: 68.2 %)
- 2026–1871 BC (84.2 %); 1846–1812 BC (6.6 %); 1803–1777 BC (4.6 %) (= 2 Sigma: 95.4 %)
- 2116–2098 BC (0.3 %); 2039–1751 BC (99.4 %) (= 3 Sigma: 99.7 %)

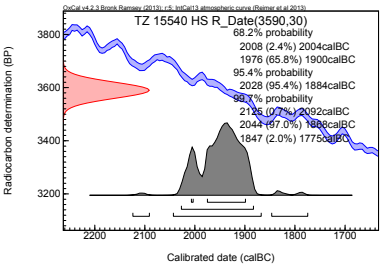


Sample TZ 015540-001

Context 4888 from Square AN 119
The sample dates to 3565 ± 35 BP/HS (Humic Acid) 3590 ± 30 BP:

- 1971–1880 BC (= 1 Sigma: 68.2 %)/HS: 2008–2004 BC (2.4 %); 1976–1900 BC (65.8 %) (= 1 Sigma: 68.2 %)
- 2023–1869 BC (80.4 %); 1846–1776 BC (15 %) (= 2 Sigma: 95.4 %)/HS: 2028–1884 BC (= 2 Sigma: 95.4 %)
- 2113–2101 BC (0.1 %); 2036–1748 BC (99.6 %) (= 3 Sigma: 99.7%)/HS: 2125–2092 BC (0.7 %); 2044–1868 BC (97 %); 1847–1775 BC (2 %) (= 3 Sigma: 99.7 %)



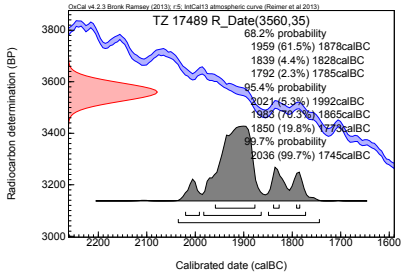


Stratum 19 (Older Stratum from Middle Bronze Age IIA)

Sample TZ 017489-001

Context 5685 from Square AL 118
The sample dates to 3560 ± 35 BP:

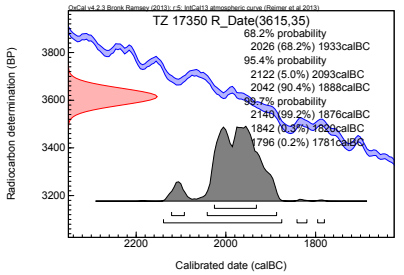
- 1959–1878 BC (61.5 %); 1839–1828 BC (4.4 %); 1792–1785 BC (2.3 %); (= 1 Sigma: 68.2 %)
- 2021–1992 BC (5.3 %); 1983–1865 BC (70.3 %); 1850–1773 BC (19.8 %) (= 2 Sigma: 95.4 %)
- 2036–1745 BC (= 3 Sigma: 99.7 %)

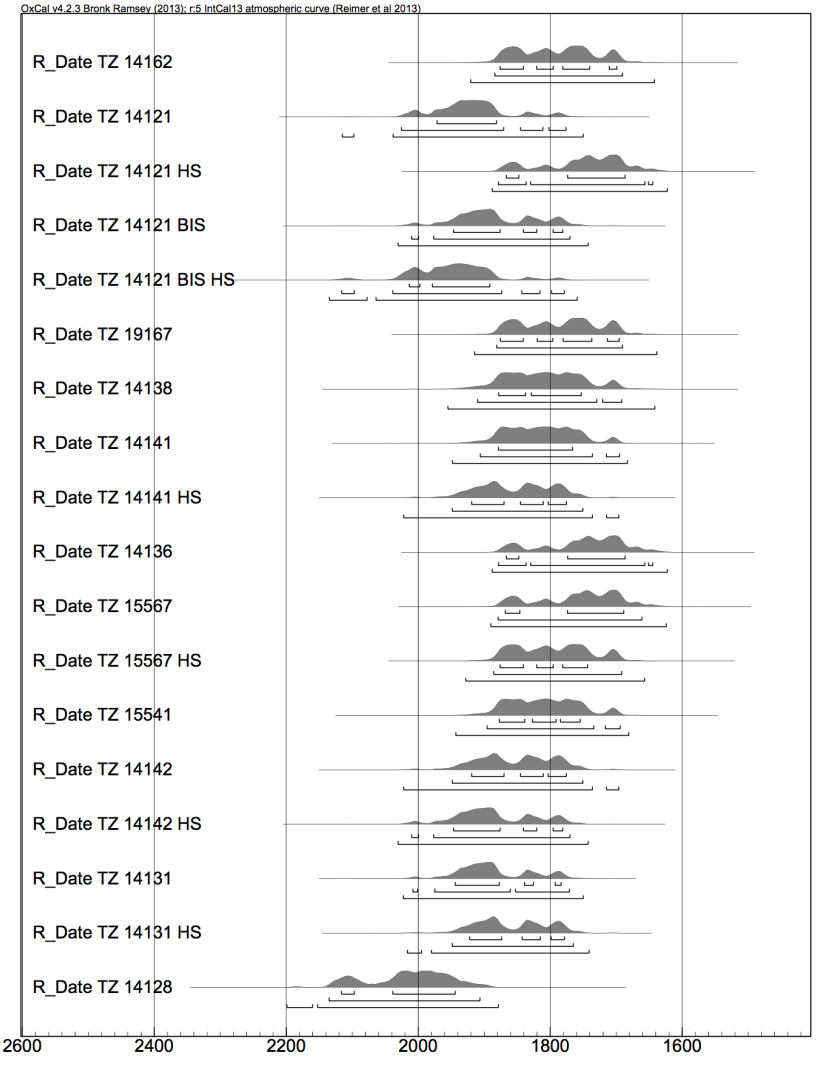


Sample TZ 017350-001

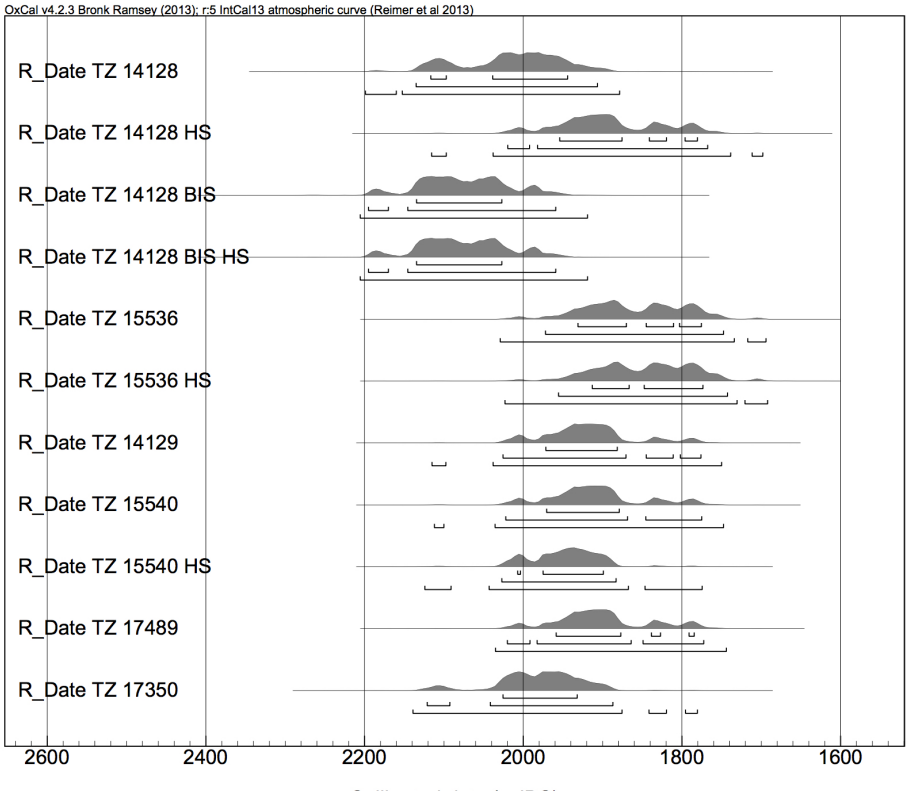
Context 5658 from Square AM 118
The sample dates to 3615 ± 35 BP:

- 2026–1933 BC (= 1 Sigma: 68.2 %)
- 2122–2093 BC (5 %); 2042–1888 BC (90.4 %) (= 2 Sigma: 95.4 %)
- 2140–1876 BC (99.2 %); 1842–1820 BC (0.3 %); 1796–1781 (0.2 %) (= 3 Sigma: 99.7 %)





Graph. 4.4 Calibrated date (calBC): Radicarbon samples from the Middle Bronze Age (Source: BAI/GPIA).



Graph. 4.5 Calibrated date (calBC): Radicarbon samples from the Middle Bronze Age (Source: BAI/GPIA).

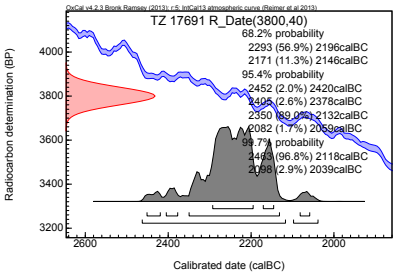
4.4.2.7. Transitional Period from Early Bronze Age IV to Middle Bronze Age I (Strata 21 and 20)

Remarkably, Tall Zirā'a has two transitional strata from Early Bronze Age IV to Middle Bronze Age I: Strata 21 and 20. Analysis of the wooden remains indicate dates of this period (TZ 017691-001; TZ 017693-001; TZ 018647-001) or Early Bronze Age (TZ 018648-001).

Stratum 20 (Younger Stratum from Early Bronze Age IV/Middle Bronze Age I)

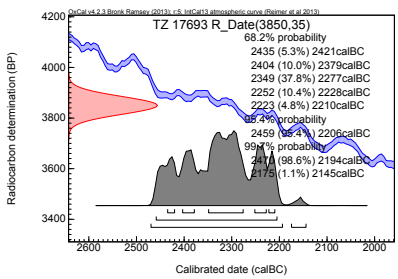
Sample TZ 017691-001
Context 5735 from Square AN 118
The sample dates to 3800 ± 40 BP:

- 2293–2196 BC (56.9 %); 2171–2146 BC (11.3 %) (= 1 Sigma: 68.2 %)
- 2452–2420 BC (2 %); 2405–2378 BC (2.6 %); 2350–2132 BC (89 %); 2082–2059 BC (1.7 %) (= 2 Sigma: 95.4 %)
- 2463–2118 BC (96.8 %); 2098–2039 BC (2.9 %) (= 3 Sigma: 99.7 %)

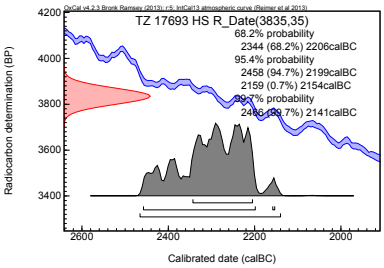


Sample TZ 017693-001
Context 5736 from Square AN 118
The sample dates to 3850 ± 35 BP/HS (Humic Acid) 3,835 ± 35 BP:

- 2435–2421 BC (5.3 %); 2404–2379 BC (10 %); 2349–2277 BC (37.8 %); 2252–2228 BC (10.4 %); 2223–2210 BC (4.8 %)



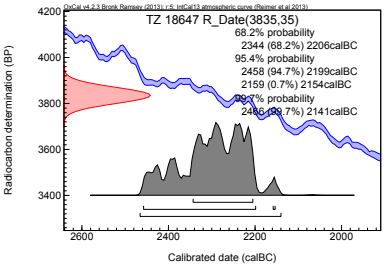
(= 1 Sigma: 68.2 %)/HS: 2344–2206 BC (= 1 Sigma: 68.2 %)
- 2459–2206 BC (= 2 Sigma: 95.4%)/ HS: 2458–2199 BC (94.7 %); 2159–2154 BC (0.7 %) (= 2 Sigma: 95.4 %)
- 2470–2194 BC (98.6 %); 2175–2145 BC (1.1 %) (= 3 Sigma: 99.7 %)/HS: 2466–2141 BC (= 3 Sigma: 99.7 %)



Stratum 21 (older Stratum from Early Bronze Age IV/Middle Bronze Age I)

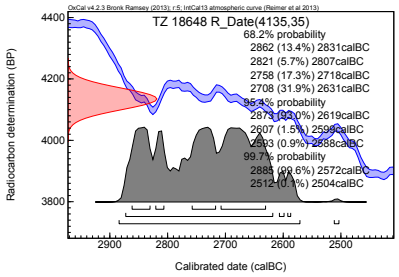
Sample TZ 018647-001
Context 5964 from Square AM 118
The sample dates to 3835 ± 35 BP:

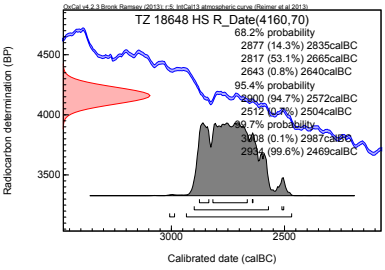
- 2344–2206 BC (= 1 Sigma: 68.2 %)
- 2458–2199 BC (94.7 %); 2159–2154 BC (0.7 %) (= 2 Sigma: 95.4 %)
- 2466–2141 BC (= 3 Sigma: 99.7 %)

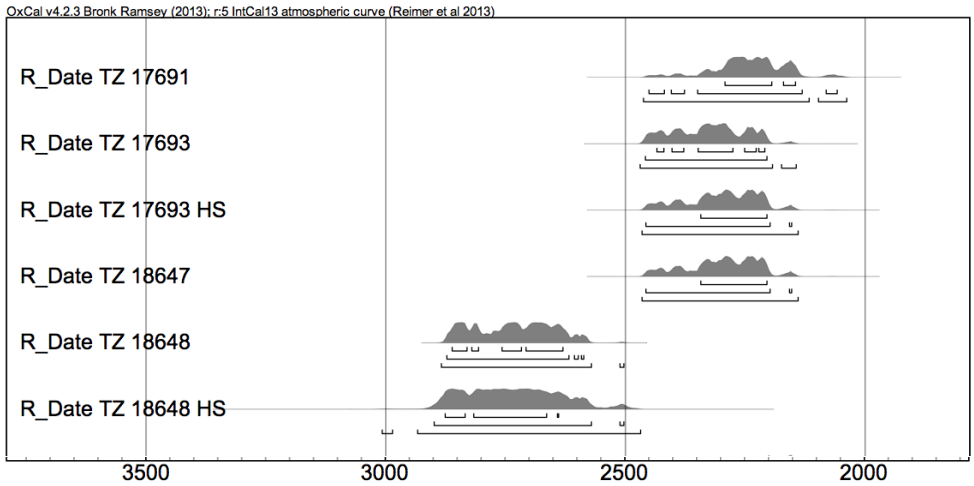


Sample TZ 018648-001
Context 5978 from Square AN 118
The sample dates to 4135 ± 35 BP/HS (Humic Acid) 4,160 ± 70 BP:

- 2862–2831 BC (13.4 %); 2821–2807 BC (5.7 %); 2758–2718 BC (17.3 %); 2708–2631 BC (31.9 %); (= 1 Sigma: 68.2 %)/ HS: 2877–2835 BC (14.3 %); 2817–2665 BC (53.1 %); 2643–2640 BC (0.8 %) (= 1 Sigma: 68.2 %)
- 2873–2619 BC (93 %); 2607–2599 BC (1.5 %); 2593–2588 (0.9 %) (= 2 Sigma: 95.4 %)/HS: 2900–2572 BC (94.7 %); 2512–2504 BC (0.7 %) (= 2 Sigma: 95.4 %)
- 2885–2572 BC (99.6 %); 2512–2504 BC (0.1 %) (= 3 Sigma: 99.7 %)/HS: 3008–2987 BC (0.1 %); 2934–2469 BC (99.6 %) (= 3 Sigma: 99.7 %)







Graph 4.6 Calibrated date (calBC): Rādiōčarbon sāmplēs frōm the transitional period from Early to Middle Bronze Age (Source: BAI/GPIA)

4.4.2.8. Early Bronze Age II and III (Strata 24–22)

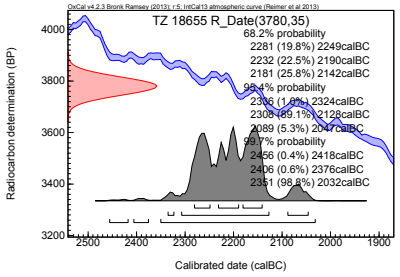
Only a small part of the Early Bronze Age settlements on Tall Zirā'a has been excavated yet. The contexts of the three strata (Strata 24–22) point to Early Bronze Age II and III.

Also earlier layers do exist, but for security reasons they could not be excavated.

Stratum 22 (Early Bronze Age III)

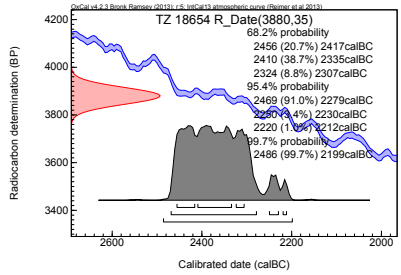
Sample TZ 018655-001
Context 6045 from Square AN 118
The sample dates to 3780 ± 35 BP:

- 2281–2249 BC (19.8 %); 2232–2190 BC (22.5 %); 2181–2142 BC (25.8 %) (= 1 Sigma: 68.2%)
- 2336–2324 BC (1 %); 2308–2128 BC (89.1 %); 2089–2047 BC (5.3 %) (= 2 Sigma: 95.4 %)
- 2456–2418 BC (0.4 %); 2406–2376 BC (0.6 %); 2351–2032 BC (98.8 %) (= 3 Sigma: 99.7 %)



Sample TZ 018654-001
Context 6045 from Square AN 118)
The sample dates to 3,880 ± 35 BP:

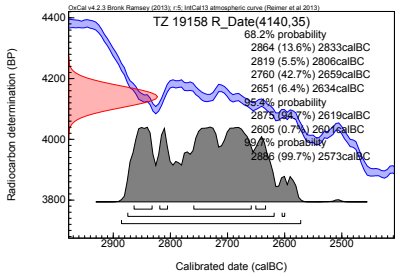
- 2456–2417 BC (20.7 %); 2410–2335 BC (38.7 %); 2324–2307 BC (8.8 %) (= 1 Sigma: 68.2 %)
- 2469–2279 BC (91 %); 2250–2230 BC (3.4 %); 2220–2212 BC (1 %) (= 2 Sigma: 95.4 %)
- 2486–2199 BC (= 3 Sigma: 99.7 %)



Stratum 23 (Early Bronze Age II/III)

Sample TZ 019158-001
Context 6462 from Square AM 118
The sample dates to 4140 ± 35 BP:

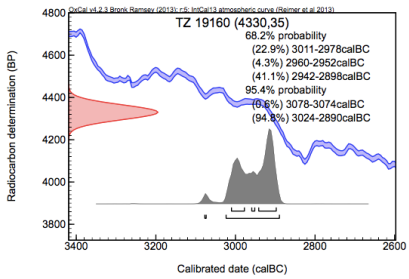
- 2864–2833 BC (13.6 %); 2819–2806 BC (5.5 %); 2760–2659 BC (42.7 %) 2651–2634 BC (6.4 %) (= 1 Sigma: 68.2%)
- 2875–2619 BC (94.7 %); 2605–2601 BC (0.7 %) (= 2 Sigma: 95.4 %)
- 2886–2573 BC (= 3 Sigma: 99.7 %)



Stratum 24 (Early Bronze Age II)

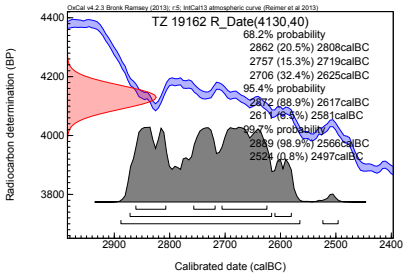
Sample TZ 019160-001
Context 6497 from Square AN 118
The sample dates to 4330 ± 35 BP:

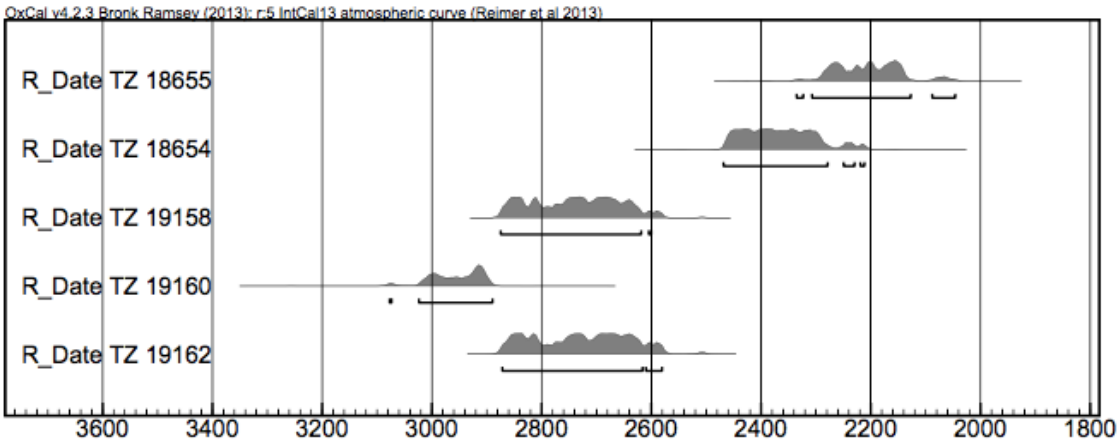
- 3011–2978 BC (22.9 %); 2960–2952 BC (4.3 %); 2942–2898 BC (41.1 %) (= 1 Sigma: 68.2 %)
- 3078–3074 BC (0.6 %); 3024–2890 BC (94.8 %) (= 2 Sigma: 95.4 %)
- 3091–2881 BC (= 3 Sigma: 99.7 %)



Sample TZ 019162-001
Context 6424 from Square AN 118
The sample dates to 4130 ± 40 BP:

- 2862–2808 BC (20.5 %); 2757–2719 BC (15.3 %); 2706–2625 BC (32.4 %) (= 1 Sigma: 68.2 %)
- 2872–2617 BC (88.9 %); 2611–2581 BC (6.5 %) (= 2 Sigma: 95.4 %)
- 2889–2566 BC (98.9 %); 2524–2497 BC (0.8 %) (= 3 Sigma: 99.7 %)





Graph 4.7 Calibrated date (calBC): Radiocarbon samples from the Early Bronze Age (Source: BAI/GPIA).

Inv.–No.	Context	Square	Year	3σ (99.7 %)	2σ (95.4 %)	1σ (68.2 %)	Uncalibrated	Stra–tum	Dating
Area II									
110069	11110	AW 128	2006	39 BC–230 AD	5–173 AD (93.1 %) 193–210 (2.3 %)	57–127 AD	1915 ± 35 BP	6	Early Roman
Area I									
014165	3940	AR 121	2009	1445–1642 AD	1449–1529 AD (51.5 %) 1545–1634 AD (43.9 %)	1458–1521 AD (46.5 %) 1591–1620 (21.7 %)	365 ± 30 BP	1	Ottoman
015551	5201	AQ 123	2013	347–319 (0.6 %) 207–5 BC (99.1 %)	195–42 BC (95.4 %)	163–128 BC (26.5 %) 121–88 BC (25.6 %) 77–56 BC (16 %)	2090 ± 30 BP	7 c	Early Roman
Iron Age II									
002493	820	AO 118	2004	1118–836 BC	1073–1066 BC (0.5 %) 1057–893 BC (92.8 %) 875–850 BC (2.1 %)	1007–922 BC	2815 ± 35 BP	10	Iron Age II C
014126	4418	AP 121	2009	1088–837 BC	1046–894 BC (94.2 %) 866–855 BC (1.2 %)	996–921 BC	2805 ± 30 BP	10	Iron Age II C
015539	4674	AP 121	2010	1376–1353 BC (0.4 %) 1302–1003 BC (99.3 %)	1264–1044 BC	1223–1112 BC	2950 ± 35 BP	10	Iron Age II C
007275	1138	AL 118	2005	1190 –1179 BC (0.1 %) 1157–1147 (0.1 %) 1129–841 BC (99.5 %)	1108–1099 BC (1.3 %) 1090–904 BC (94.1 %)	1021–926 BC	2830 ± 35 BP	11	Iron Age II A/B
007253	1267	AP 119	2005	1280–1010 BC	1258–1247 BC (1.5 %) 1233–1049 BC (93.9 %)	1213–1115 BC	2945 ± 30 BP	11	Iron Age II A/B
008557	1996	AM 119	2006	1225–919 BC	1207–1141 BC (1.5 %) 1135–976 BC (93.9 %)	1120–1012 BC	2890 ± 35 BP	12	Iron Age II A/B
002149	555	AN 117	2004	1260–1242 BC (0.3 %) 1236–929 BC (99.4 %)	1214–1001 BC	1155–1148 BC (3.2 %) 1128–1021 BC (65 %)	2905 ± 35 BP	12	Iron Age II A/B
002391	599	AN 117	2004	1282–976 BC	1226–1014 BC	1196–1140 BC (32.1 %) 1134–1074 BC (32.3 %) 1065–1057 BC (3.8 %)	2930 ± 35 BP	12	Iron Age II A/B
008668	2850	AH 116	2006	1261–970 BC (99 %) 961–934 BC (0.7 %)	1214–1006 BC	1190–1179 BC (4.7 %) 1160–1145 BC (6.9 %) 1130–1031 BC (3.8 %)	2910 ± 35 BP	12	Iron Age II A/B
Iron Age I									
007688 first examination	1413	AO 118	2005	1433–907 BC	1395–993 BC (95 %) 987–980 BC (0.4 %)	1265–1055 BC	2960 ± 70 BP	13	Iron Age I
007688 second examination				1372–1358 BC (0.3 %) 1297–1018 BC (99.4 %)	1263–1056 BC	1219–1125 BC	2960 ± 30 BP	13	Iron Age I
008858	2115	AN 119	2006	1372–1359 BC (0.1 %) 1297–996 (99.6 %)	1258–1246 BC (1.8 %) 1234–1027 (93.6 %)	1214–1108 BC (63.1 %) 1100–1088 BC (5.1 %)	2940 ± 35 BP	13	Iron Age I
007257	1298	AH 115	2005	1495–1476 BC (0.4 %) 1459–1258 (99.1 %) 1246–1233 (0.2 %)	1434–1286 BC	1419–1380 BC (35.3 %) 1343–1306 BC (32.9 %)	3105 ± 30 BP	13	Iron Age I

Late Bronze Age									
015568	4792	AL 118	2010	1282–976 BC	1226–1014 BC	1196–1140 BC (32.1 %) 1134–1074 BC (32.3 %) 1065–1057 BC (3.8 %)	2930 ± 35 BP	14	Late Bronze Age II
015568 HS				1378–1347 BC (0.5 %) 1304–927 BC (99.2 %)	1262–1005 BC	1207–1056 BC	2930 ± 45 BP	14	Late Bronze Age II
007269	1172	AI 115	2005	1496–1471 BC (0.7 %) 1465–1259 BC (99.0 %)	1437–1288 BC	1425–1381 BC (39 %) 1342–1307 BC (29.2 %)	3110 ± 30 BP	14	Late Bronze Age II
014477	3701	AF 116	2010	1415–1108 BC (99.5 %) 1100–1081 BC (0.2 %)	1392–1337 BC (17.1 %) 1323–1156 BC (74.1 %) 1147–1128 BC (4.2 %)	1374–1356 BC (8 %) 1302–1210 BC (60.2 %)	3015 ± 35 BP	14	Late Bronze Age II
015531	4793	AL 188	2010	1372–1359 BC (0.1 %) 1297–996 BC (99.6 %)	1258–1246 BC (1.8 %) 1234–1027 BC (93.6 %)	1214–1108 BC (63.1 %) 1100–1088 BC (5.1 %)	2940 ± 35 BP	14	Late Bronze Age II
Constructional Stratum									
014150	4025	AO 118	2009	1936–1692 BC	1900–1741 BC (94 %) 1710–1701 BC (1.4 %)	1880–1861 BC (12.5 %) 1853–1771 BC (55.7 %)	3495 ± 30 BP	15	Constructional
009090 first examination	2194	AN 116	2006	unreliable result			13.460 ± 70 BP	15	Constructional
009090 second examination				3946–3659 BC	3941–3858 BC (22.4 %) 3816–3694 BC (71.8 %) 3679–3666 BC (1.1 %)	3889–3886 BC (1.9 %) 3798–3710 BC (66.3 %)	4995 ± 35 BP	15	Constructional
007402	5288	AH 115	2005	1745–1497 BC	1690–1513	1658–1651 BC (3.7 %) 1645–1600 BC (32.1 %) 1586–1534 BC (32.4 %)	3325 ± 35 BP	15	Constructional
014158	4586	AO 118	2009	2023–1740 BC (99.4 %) 1712–1699 BC (0.3 %)	1956–1751 BC	1929–1872 BC (35.8 %) 1845–1813 BC (18.4 %) 1802–1777 BC (14 %)	3535 ± 35 BP	15	Constructional
Middle Bronze Age II									
014162	3847	AM 119	2009	1921-1643 BC	1885-1691 BC	1877–1841 BC (21.9 %) 1821–1796 BC (13.7 %) 1782–1741 BC (26.6 %) 1711–-1700 BC (6.0 %)	3465 ± 35 BP	16	Middle Bronze Age IIC/Late Bronze Age I
014121 first examination	3979	AN 118	2009	2116–2098 BC (0.3 %) 2039–1751 BC (99.4 %)	2026–1871 BC (84.2 %) 1846–1812 BC (6.6 %) 1803–1777 BC (4.6 %)	1972–1882 BC	3570 ± 35 BP	16	Middle Bronze Age IIC/Late Bronze Age I
014121 HS first examination				1889–1623 BC	1879–1837 BC (14.2 %) 1830–1657 BC (80.3 %) 1652–1645 BC (0.9 %)	1867–1848 BC (8.4 %) 1774–1687 BC (59.8 %)	3435 ± 35 BP	16	Middle Bronze Age IIC/Late Bronze Age I
014121 second examination				2031–1743 BC	2011–2000 BC (1.6 %) 1977–1771 (93.8 %)	1947–1877 BC (52.1 %) 1841–1821 BC (9.6 %) 1796–1782 BC (6.6 %)	3550 ± 35 BP	16	Middle Bronze Age IIC/Late Bronze Age I
014121 HS second examination				2135–2079 BC (3 %) 2065–1760 BC (96.7 %)	2117–2098 BC (1.7 %) 2039–1874 BC (88.9 %) 1844–1816 BC (2.9 %) 1799–1779 BC (1.9 %)	2014–1998 BC (9.1 %) 1979–1892 BC (59.1 %)	3590 ± 40 BP	16	Middle Bronze Age IIC/Late Bronze Age I
019167	6311	AT 122	2013	1915–1639 BC	1882–1691 BC (95.4 %)	1876–1842 BC (19.8 %) 1820–1797 BC (11.6 %) 1781–1738 BC (27.2 %) 1714–1696 BC (9.6 %)	3460 ± 35 BP	16	Middle Bronze Age IIC/Late Bronze Age I

014138	4398	AN 119	2009	1956–1642 BC	1911–1730 BC (88.7 %) 1721–1692 BC (6.7 %)	1879–1838 BC (24.2 %) 1829–1754 BC (44 %)	3485 ± 40 BP	16	Middle Bronze Age IIC/Late Bronze Age I
014141	4364	AN 119	2009	1949–1684 BC	1907–1737 BC (91.5 %) 1716–1696 (3.9 %)	1879–1767 BC	3490 ± 35 BP	16	Middle Bronze Age IIC/ Late Bronze Age I
014141 HS				2023–1737 BC (99.2 %) 1715–1697 BC (0.5 %)	1949–1751 BC	1920–1871 BC (30.7 %) 1846–1811 BC (21.1 %) 1804–1776 BC (16.5 %)	3530 ± 35 BP	16	Middle Bronze Age IIC/Late Bronze Age I
014136	4480	AN 119	2009	1889–1623 BC	1879–1837 BC (14.2 %) 1830–1657 BC (80.3 %) 1652–1645 BC (0.9 %)	1867–1848 BC (8.6 %) 1774–1687 BC (59.8 %)	3435 ± 35 BP	17	Middle Bronze Age IIB
015567	4727	AN 118	2009	1891–1625 BC	1880–1662 BC	1869–1847 BC (10.7 %) 1775–1689 BC (57.5 %)	3440 ± 35 BP	17	Middle Bronze Age IIB
015567 HS				1929–1658 BC	1886–1692 BC	1877–1841 BC (25 %) 1821–1796 BC (16.2 %) 1782–1744 BC (27 %)	3470 ± 35 BP	17	Middle Bronze Age IIB
015541	4727	AN 118	2010	1944–1682 BC	1896–1735 BC (90.3 %) 1717–1695 BC (5.1 %)	1878–1839 BC (25.5 %) 1828–1792 BC (23.5 %) 1785–1755 BC (19.2 %)	3485 ± 35 BP	17	Middle Bronze Age IIB
014142	4107	AO 119	2009	2023–1737 BC (99.2 %) 1715–1697 BC (0.5 %)	1949–1751 BC	1920–1871 BC (30.5 %) 1846–1811 BC (21.2 %) 1804–1776 BC (16.5 %)	3530 ± 35 BP	17	Middle Bronze Age IIB
014142 HS				2031–1743 BC	2011–2000 BC (1.6 %) 1977–1771 BC (93.8 %)	1947–1877 BC (52.1 %) 1841–1821 BC (9.6 %) 1796–1782 BC (6.6 %)	3550 ± 35 BP	17	Middle Bronze Age IIB
014131	4256	AO 119	2009	2023–1751 BC	2009–2002 BC (0.8 %) 1976–1861 BC (67.7 %) 1853–1772 BC (26.9 %)	1945–1878 BC (57.1 %) 1840–1826 BC (6.9 %) 1793–1784 (4.2 %)	3550 ± 30 BP	17	Middle Bronze Age IIB
014131 HS				2017-1996 BC (0.5 %) 1981-1742 BC (99.2 %)	1949–1766 BC	1923–1874 BC (36.9 %) 1843–1816 BC (18.3 %) 1799–1779 BC (13 %)	3535 ± 30 BP	17	Middle Bronze Age IIB
014128 first examination	3987	AN 118	2009	2200–2136 BC (0.9 %) 2153–1879 BC (98.8 %)	2136–1907 BC	2117–2098 BC (9 %) 2039–1945 BC (59.2 %)	3640 ± 40 BP	17	Middle Bronze Age IIB
014128 HS first examination				2116–2098 BC (0.2 %) 2039–1739 BC (99.3 %) 1712–1699 BC (0.2 %)	2020–1993 BC (5.1 %) 1983–1768 BC (90.3 %)	1955–1876 BC (52.8 %) 1842–1820 BC (9.1 %) 1797–1781 BC (6.3 %)	3555 ± 40 BP	17	Middle Bronze Age IIB
014128 second examination				2206–1920 BC	2196–2171 BC (4.8 %) 2146–1960 BC (90.6 %)	2135–2028 BC	3685 ± 35 BP	17	Middle Bronze Age IIB
014128 HS second examination				2206–1920 BC	2196–2171 BC (4.8 %) 2146–1960 BC (90.6 %)	2135–2018 BC	3685 ± 35 BP	17	Middle Bronze Age IIB
015536	4958	AN 118	2010	2030–1735 BC (99 %) 1718–1695 BC (0.7 %)	1973–1748 BC	1932–1871 BC (35.1 %) 1846–1811 BC (18.6 %) 1804–1776 BC (14.5 %)	3535 ± 40 BP	18	Middle Bronze Age IIA
015536 HS				2024–1731 BC (98.4 %) 1721–1693 BC (1.3 %)	1956–1743 BC	1914–1867 BC (25.7 %) 1848–1774 BC (42.5 %)	3525 ± 40 BP	18	Middle Bronze Age IIA
014129	4303	AO 119	2009	2116–2098 BC (0.3 %) 2039–1751 BC (99.4 %)	2026–1871 BC (84.2 %) 1846–1812 BC (6.6 %) 1803–1777 BC (4.6 %)	1972–1882 BC	3570 ± 35 BP	18	Middle Bronze Age IIA

015540	4888	AN 119	2010	2113–2101 BC (0.1 %) 2036–1748 BC (99.6 %)	2023–1869 BC (80.4 %) 1846–1776 BC (15 %)	1971–1880 BC	3565 ± 35 BP	18	Middle Bronze Age IIA
015540 HS				2125–2092 BC (0.7 %) 2044–1868 (97 %) 1847–1775 BC (2 %)	2028–1884 BC	2008–2004 BC (2.4 %) 1976–1900 BC (65.8 %)	3590 ± 30 BP	18	Middle Bronze Age IIA
017489	5686	AL 118	2013	2036–1745 BC	2021–1992 BC (5.3 %) 1983–1865 BC (70.3 %) 1850–1773 BC (19.8 %)	1959–1878 BC (61.5 %) 1839–1828 BC (4.4 %) 1792–1785 BC (2.3 %)	3560 ± 35 BP	19	Middle Bronze Age IIA
017350	5658	AM 118	2013	2140–1876 BC (99.2 %) 1842–1820 BC (0.3 %) 1796–1781 BC (0.2 %)	2122–2093 BC (5 %) 2042–1888 BC (90.4 %)	2026–1933 BC (68.2 %)	3615 ± 35 BP	19	Middle Bronze Age IIA
Transitional Period (Early Bronze Age IV/Middle Bronze Age I)									
017691	5735	AN 118	2013	2463–2118 BC (96.8 %) 2098–2039 BC (2.9 %)	2452–2420 BC (2 %) 2405–2378 BC (2.6 %) 2350–2132 BC (89 %) 2082–2059 BC (1.7 %)	2293–2196 BC (56.9 %) 2171–2146 BC (11.3 %)	3800 ± 40 BP	20	Early Bronze Age IV/Middle Bronze Age I
017693	5736	AN 118	2013	2470–2194 BC (98.6 %) 2175–2145 BC (1.1 %)	2459–2206 BC	2435–2421 BC (5.3 %) 2404–2379 BC (10 %) 2349–2277 BC (37.8 %) 2252–2228 BC (10.4 %) 2223–2210 BC (4.8 %)	3850 ± 35 BP	20	Early Bronze Age IV/ Middle Bronze Age I
017693 HS				2466–2141 BC	2458–2199 BC (94.7 %) 2159–2154 BC (0.7 %)	2344–2206 BC	3835 ± 35 BP	20	Early Bronze Age IV/ Middle Bronze Age I
018647	5964	AM 118	2013	2466–2141 BC	2458–2199 BC (94.7 %) 2159–2154 BC (0.7 %)	2344–2206 BC	3835 ± 35 BP	21	Early Bronze Age IV/ Middle Bronze Age I
018648	5978	AN 118	2011	2885–2572 BC (99.6 %) 2512–2504 BC (0.1 %)	2873–2619 BC (93 %) 2607–2599 BC (1.5 %) 2593–2588 BC (0.9 %)	2862–2831 BC (13.4 %) 2821–2807 BC (5.7 %) 2758–2718 BC (17.3 %) 2708–2631 BC (31.9 %)	4135 ± 35 BP	21	Early Bronze Age IV/ Middle Bronze Age I
018648 HS				3008–2987 BC (0.1 %) 2934–2469 BC (99.6 %)	2900–2572 BC (94.7 %) 2512–2504 BC (0.7 %)	2877–2835 BC (14.3 %) 2817–2665 BC (53.1 %) 2643–2640 BC (0.8 %)	4160 ± 70 BP	21	Early Bronze Age IV/ Middle Bronze Age I
Early Bronze Age									
018655	6045	AN 118	2013	2456–2418 BC (0.4 %) 2406–2376 BC (0.6 %) 2351–2032 BC (98.8 %)	2336–2324 BC (1 %) 2308–2128 BC (89.1 %) 2089–2047 BC (5.3 %)	2281–2249 BC (19.8 %) 2232–2190 BC (22.5 %) 2181–2142 BC (25.8 %)	3780 ± 35 BP	22	Early Bronze Age III
018654	6045	AN 118	2013	2486–2199 BC	2469–2279 BC (91 %) 2250–2230 BC (3.4 %) 2220–2212 BC (1 %)	2456–2417 BC (20.7 %) 2410–2335 BC (38.7 %) 2324–2307 BC (8.8 %)	3880 ± 35 BP	22	Early Bronze Age III
019158	6462	AM 118	2013	2886–2573 BC	2875–2619 BC (94.7 %) 2605–2601 BC (0.7 %)	2864–2833 BC (13.6 %) 2819–2806 BC (5.5 %) 2760–2659 BC (42.7 %) 2651–2634 BC (6.4 %)	4140 ± 35 BP	23	Early Bronze Age II/III
019160	6497	AN 118	2013	3091–2881 BC	3078–3074 BC (0.6 %) 3024–2890 BC (94.8 %)	3011–2978 BC (22.9 %) 2960–2952 BC (4.3 %) 2942–2898 BC (41.1 %)	4330 ± 35 BP	24	Early Bronze Age II
019162	6424	AN 118	2013	2889–2566 BC (98.9 %) 2524–2497 BC (0.8 %)	2872–2617 BC (88.9 %) 2611–2581 BC (6.5 %)	2862–2808 BC (20.5 %) 2757–2719 BC (15.3 %) 2706–2625 BC (32.4 %)	4130 ± 40 BP	24	Early Bronze Age II

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