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The temporal framework of the Early-to-Late Bronze Age transition in Thrace and the adjacent regions

Zoï Tsirtsoni

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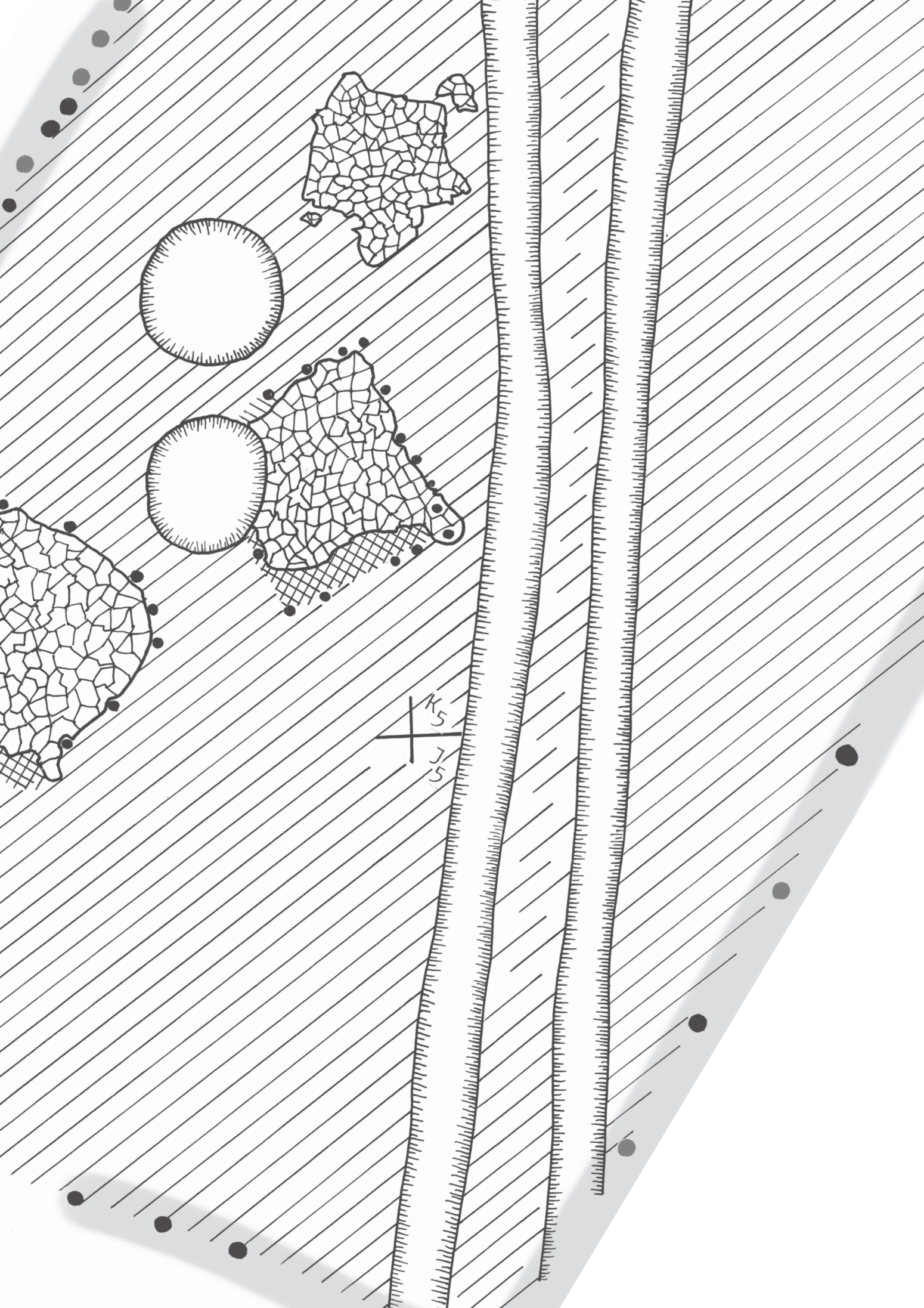
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**Galabovo in Southeast Europe and Beyond.
Cultural Interactions during
the 3rd-2nd Millennium BC**

*Proceedings of the International Conference
24-27 October 2018 in the Town of Galabovo*





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**Galabovo in Southeast Europe and Beyond.
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*Proceedings of the International Conference
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Edited by Krassimir Leshtakov, Mila Andonova

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A BRIDGE THOUGH CENTURIES WAS BUILT

The History and the Future encountered each other during the first international conference held at Galabovo. Virtually and really, a prehistoric tell shed light at the Past, teaching us how to live the Present.

Galabovo is now a bright point upon the world map, because numerous international scientists are talking and writing about it. This is a significant event not only for the scholars, but for the future generations.

Tell “Asara” prove to be a demanding challenge for a few generations of archaeologists. The discoveries of the old European Schools, the aspiration of the new assertive generation of the Balkan countries, the inclusion of scholars from three continents – they all presented the most significant achievements of decades of work within the layers of time, to reveal the magnificent prehistoric culture “Galabovo”.

I am pleased that in Thrace, nearby the Sazliya River mysteries have been unraveled and new horizons were drawn, where we are all striving to!

Nikolay Tonev,
Mayor of the Galabovo Municipality

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FROM THE EDITORS

The archeological site „Asara” or „Galabovo”, as it is known in the literature, is a prehistoric settlement mound – one of the largest in the Upper Thrace. Whether there were later settlements and whether there was a fortress on the top of the tell in the Middle Ages, we may suggest relying on indirect archaeological evidence. Only the old name Asara (meaning „fortress”) and separate archeological materials without a certain context indicate habitation during the Roman era and the Middle Ages. Modern construction activities have destroyed the upper part of the cultural layer and any reconstruction of the original silhouette will be in the realm of conjecture. Until the middle of the last century, the settlement mound was over 10 m high and dominated the surrounding terrain in the valley of the rivers Sokolitsa and Sazliyka, but nowadays the mound does not exceed 7 m. Today, the archeological site is well hidden among piles of coal, industrial buildings, and chimneys! The Bronze Age layer, however, is fairly well preserved. Thus, the conference reports, published here, were dedicated to its research. The data obtained from the rescue excavations are rich, and our ambition is to place them in the background of what we know about Southeastern Europe and the northern part of the Eastern Mediterranean.

We are grateful to all authors that contributed to the success of the international conference and submitted their reports, that we are now able to present you in this volume. The organisation of the conference event was managed by Dr Vanya Petrova, Denitsa Ilieva and Nikolina Nikolova. They were supported by volunteer Archaeology students from Sofia University who were wildly enthusiastic about the project. The cleaning of the old excavated surface and the preparation of the site for visiting of the participants in the Conference was carried out by students in the bachelor's and master's degree in Archeology at Sofia University. This initiative received invaluable logistical assistance and support from the AES Galabovo management and the Municipality of the town of Galabovo. The Conference was accompanied by an exhibition, showing the most interesting artefacts from the tell, which remained for several months in the exhibition hall of the Municipality. It was initiated by the mayor of Galabovo Mr. Nikolay Tonev and his associates. The exhibition was widely covered by the social media, which contributed to its popularisation. It attracted hundreds of visitors from the cities of Galabovo, Radnevo and Stara Zagora, stimulating the growing interest in cultural monuments in Southeastern Bulgaria, and especially in the area of the energy complex „Maritsa-East”.

Institutions different in profile as Sofia University, Radnevo Archaeological Museum, Municipality of Galabovo, National Archaeological Institute with Museum and the AES Galabovo Thermal Power Plant were actively involved in organising the exhibition and conference events. The exhibition and a large part of the presented reports were supported by the Research Fund of the Ministry of Education and Science within the project „Social Dimensions of Technology in Prehistory: Ceramic Production in Southeastern Bulgaria in VI-II millennium BC” (Contract DN 10/8 2016). This also applies in full to the preparation for printing of the volume presented here.

We shall not introduce the subject matter and the scientific value of the papers published in this volume, as we strongly believe that they speak for themselves. We consider all contributions a step forward in the investigation of the Bronze Age not only in Galabovo and Upper Thrace, but also in the neighbouring territories.

Acknowledgments

The editors of this volume would like to express their sincere gratitude for the excellent support provided by the Mayor Mr. N. Tonev and the administration of the Municipality of Galabovo in organising and hosting the exhibition and the Conference. Special thanks to the management of Sofia University “St. Kliment Ohridski” and in particular to the Assoc. Prof. Dr. Todor Popnedelev, as well as to Prof. Dr. Nadia Manolova. We are also grateful to NAIM BAS, and personally to the Director Assoc. Prof. Dr. Hristo Popov, as well as Assoc. Prof. Dr. Stefan Alexandrov; to the Ministry of Culture in the person of St. Ignatova-Terziyska and Atanas Koychev; to Archaeological Museum Radnevo with its Director Mr. Plamen Karailiev and the museum associates Dr. Tatyana Kancheva-Ruseva, Yana Valcheva, Elitsa Boneva, Margarita Bogdanova and the artist Rositsa Yorgova. We would also like to thank to the Ministry of Education and Science with its Research Fund. We highly appreciate the support from all Archaeology students and PhD students from Sofia University who helped the organisers of the exhibition and the Conference.

The Temporal Framework of the Early-to-Late Bronze Age Transition in Thrace and the Adjacent Regions

Zoï Tsirtsoni

Abstract

This paper compiles and analyzes the existent radiocarbon evidence (two hundred sixty ^{14}C dates altogether) from Bulgarian Thrace and neighbouring areas, especially Greek Eastern Macedonia and Turkish Thrace, for the period corresponding to the transition from the Early to the Late stages of the Bronze Age (late 3rd to mid-2nd millennium BC). Recent measurements from a number of flat sites in those regions – e.g. Chokoba, Bikovo, Tatul in Thrace, Agios Antonios in Thasos – fill indeed the gap that seemed to separate the end of occupation in most of the tells (e.g. Ezero, Yunatsite, Sitagroi), estimated at around 2300/2200 cal BC, from the LBA, starting around 1600/1500 cal BC in new localities. On the other hand, re-evaluation of the dates from tells (recalibration of available ^{14}C dates with the latest curves and modelling according to stratigraphy, when stratigraphy is known) might indicate that the true end of occupation took place there somehow later, and therefore the two settlement patterns (tells-flat sites) could have coexisted for some time. The reasons and modalities of this shift are not discussed in any detail, but we can observe that some of the new late-EBA/MBA sites are founded for the first time in those years (e.g. Chokoba, Bikovo), whereas others install themselves on top of previous layers (e.g. Tatul, Agios Antonios), although not necessarily in a continuous way. Small-scale movements (relocation) of sites from one spot to another can explain some of these phenomena.

Keywords: Bronze Age, Bulgarian Thrace, Turkish Thrace, Greek Eastern Macedonia, Settlement, Chronology, Radiocarbon, Bayesian modeling

Introduction – State of the research

Our knowledge about Bronze Age settlement in Thrace and adjacent areas, especially Greek Eastern Macedonia to the South, presents some particularities. Whereas the first part of the period –the Early Bronze Age, corresponding roughly to the end of the 4th and the entire 3rd millennium BC– is very well documented thanks to a series of emblematic sequences on tells (e.g. Ezero, Yunatsite, Sitagroi), rich in architectural remains and finds and abundantly dated by ^{14}C , the later part –the Middle and Late Bronze Age, corresponding roughly to the 2nd millennium BC– is very poorly known. Layers of this period are, indeed, not only absent from almost all tells in Thrace, but also from other types of sites; in Greek Eastern Macedonia LBA layers are present on some tells (e.g. Dikili Tash, Dimitra), but the MBA is practically unknown. This was at least the dominant picture until a few years ago when evidence started arriving from a number of localities in South Bulgaria –flat sites in lowlands and peak sites in the mountainous area of the Rhodopes– that bridged the ‘gap’ of the 2nd millennium (Leshtakov & Tsirtsoni 2016; Popov 2016). The new data invite us to consider the possibility of an important change in settlement

pattern towards the end of the 3rd millennium, from long-lived and highly visible settlements to more “discrete” and shorter-lived ones, eventually reflecting broader changes in the natural or socio-economic environment of the Bronze Age populations. Whether this change is smooth or abrupt, and the different kinds of sites replacing one another or coexisting, are questions of crucial importance for our understanding of the phenomenon. The first thing to do then, before undertaking any further research on the conditions under which such a change might have occurred¹, is to make sure that the temporal framework of the events is correctly assessed. This is what I attempt here with this paper. The aim is: a) to provide an up-to-date synthesis of the available radiocarbon evidence, useful to all scholars working on these areas and periods; b) proceed to a thorough re-evaluation of this evidence, through recalibration with the latest curve and modeling according to the stratigraphy of the dated samples (when a stratigraphy exists), in order to improve its resolution, or conversely pinpoint its limits.

Materials and methods

The paper focuses on settlements and other sites of activities, cemeteries excluded, in the areas of Northern (Bulgarian) and Eastern (Turkish) Thrace, Greek Eastern Macedonia (including the island of Thasos) and the mountainous area between them (**Fig. 1**); no Bronze Age sites with radiocarbon dates are known from the coastal part of Thrace. Cemeteries are left out, as irrelevant to the immediate question of changes in settlement pattern.

The dates discussed have been collected in the archaeological literature or performed in the past years under my responsibility. Dates for which only

calibrated values are known have not been included, as it is not possible to exploit them any further without having the original age (BP) measurements.

I used the modeling program *Chronomodel* (version 1.5.0), which is best adapted to the treatment of large series of data (compared to the more frequently used *OxCal*) and allows visualizing more easily the different kinds of groupings, still offering the possibility to have very detailed zooms. Unlike *OxCal*, which proposes only one entry for ordering the chronological phenomena inside a sequence (“phase”), *Chronomodel* proposes an ordering with two entries: “phases” and “events” (Lanos *et al.* 2016; Lanos & Philippe 2018). “Events” can be defined around a single date, or around several dates that are taken to be more-or-less contemporaneous (e.g. a single inhumation, house destruction, or the more-or-less simultaneous destruction of several houses, commonly described as a destruction layer or horizon): in this case, the program proposes a unique distribution of probabilities, i.e. a unique time interval in which things have most probably happened. By contrast, “Phases” are defined as long periods of time, during which several “Events” took place. Accordingly, the program proposes not one distribution of probabilities, but two: one for the start and one of the end (recalling at this point the “boundaries” found at *OxCal*). Phases represented by only one Event cannot be properly delimited with a start and an end, and their distribution coincides with that of their Event. Like in all modeling programs, the results provided for each Phase or Event do not depend only on the dates contained in this particular Phase or Event, but also on the relation with *all the other* Phases and Events in the model. It is the ordering of things that improves the resolution more than the number, or even the quality of the individual dates.

The results presented here are obtained after a calculation with 1 million iterations, and using the atmospheric data from the IntCal13 curve (Reimer *et al.* 2013). All the distributions (whether graphical or numerical) are given at a probability of 95%. This is important to know, because in many publications the rate of 68% is preferred, which gives of course results that look more precise but leave out substantial parts (1/3) of the distribution. The intervals we propose here are less precise but more secure.

The situation in Bulgarian Thrace and the Rhodopes

The analysis relies on 168 ¹⁴C dates from 18 sites (**Table 1**) Ten more dates from Tatul (7 of which falling in the period that concerns us here: see *Λευακοβ* 2018) were still unpublished at the time of the Galabovo conference and have not been included in the analysis. They are listed however in **Table 1**. In terms of context, these are all from settlements, except for one group from Dabene, where the dated features are described as ritual structures (*Hristov* 2015), and the unique date from Radnevo, which is from a stray inhumation (*Саватинов* 1995; *Leshtakov & Tsirtsoni* 2016). Settlements belong to three types: tells, flat sites (including enclosures), and peak sites.

Ezero

The Ezero sequence is by far the richest, both in number of dates (n= 51) and in number of layers represented (n= 9) (*Георгиев et al.* 1979: 512–515; *Boyadzhiev* 1995: 153–155, 185–186; *Boyardjiev* 1998: XX–XX; *Görsdorf & Bojadžiev* 1996: 137–142). The quality of contextual information gives the results a very good resolution, reflected in the very tight intervals proposed for each stage by the modeling program (**Fig. 2**). Indeed, it is not so much the quality of

individual measurement that is responsible for this excellent effect (the statistical errors are actually quite big, from 40 to 150 years BP), but their regular and rigorous constraining by the stratigraphic attribution (**Fig. 3: a–d**). In this respect, and given the coherence of the modeled results, we can legitimately suspect that the seemingly “bad dates” reflect samples which are simply not in the right position rather than any specific physical problems (*contrary to what has been suggested by Boyadzhiev* 1995: 153–154, and 1998).

In this approach, we come up with a very fine dating of the different occupation levels (represented here as “Events”), which results from an optimisation of the probability densities based on stratigraphical ordering — and not from an “archaeological wiggle-matching” built on a presumably regular rate of sediments accumulation, as proposed by *Boyadzhiev* 1995: 152–153. It seems in fact quite risky to admit that sediments accumulation in anthropogenic environments — and more particularly in complex “living organisms” like tells— would show any kind of regularity, as there are too many factors that interfere (building materials, mode of destruction, reworking, horizontal movement of living plots, etc.). It is interesting however to note that our results do not differ much from those proposed by *Boyadzhiev*. Indeed we propose the following intervals:

- Phase A1 (levels 13 to 11): start between 3114–2968 BC, end between 3054–2930 BC.
- Phase A2 (levels 10 to 9): Start: 3027–2920, End: 3008–2908 BC
- Transition A/B (levels 8 to 7): Start: 2989–2898, End: 2970–2881 BC
- Phase B1 (levels 6 to 4): Start: 2954–2787, End: 2906–2630 BC. The large “spreading” of the interval given for the end of the phase is due to the absence of any constraint at this end, and we should probably admit a true end before or around 2800 BC.

The last occupation levels excavated on the tell (levels 3 to 1) have not provided any dates. This means that the actual sequence was definitely a little longer, or maybe even much longer, if we consider the effects of erosion on the uppermost part of the tell. This point will be discussed more thoroughly below.

Ezero is one of the few sites where the quality of contexts allows overcoming partly the 4500/4400 BP (= 3300–2900 cal BC) “plateau”. This “plateau” (a chain of rapid variations in the calibration curve) has been pinpointed already in the archaeological literature as one of the obstacles to overcome in order to circumscribe better the start of the EBA period in the area (Boyadzhiev 1995: 153–155; Boyadjiev 1998: 354–355; Maniatis & Papadopoulos 2011: 153–155; Maniatis *et al.* 2014: 47; Tsirtsoni 2016c: 461). Although this point is beyond the immediate scope of this paper, which deals mainly with the later phases of the Bronze Age, it is worth underlining it for the methodological “promises” it gives towards similar phenomena in other parts of the curve.

Karanovo

Only 8 ¹⁴C dates are surely or tentatively assigned to the Bronze Age part of the Karanovo sequence. We distinguish two series (modeled here as two ‘phases’: **Fig. 4**): one taken from samples that are possibly coming from mixed deposits (4 dates), and one from properly stratified samples (4 dates) taken from a control trench opened for this purpose (Nikolov & Petrova 2016)². As one would expect, the latter offers a better modeled sequence than the former, as they are better constrained by the stratigraphic (actually hypsometric) succession of the samples. According to them, phase Karanovo VII starts somewhere between 3482–3127 BC, and ends between 3373–2594 BC. This result agrees with the suggested general synchronism of phase Karanovo VII with the BA sequence of neighbouring Ezero, but no

fine parallelism can be proposed. Regrettably, there exist no dates for the upper part of the sequence, marked by the remains of an apsidal house, assigned to Sveti Kirilovo phase.

Dyadovo

The 10 ¹⁴C dates published so far, i.e. until the date of the Conference (Görsdorf & Bojadžiev 1996: 164; Nikolova & Görsdorf 2002), do not offer the possibility for fine modeling, as they lack detailed contextual information. Indeed, the two series of dates come from only two levels (5 and 10), each assigned to a different phase represented by a unique distribution (see *supra*, Methods: single-event phases). Phase I would extend in the interval 3336–2966 BC, phase II in the interval 2858–2528 BC (**see synthetic Fig. 11**). Thankfully, new data are now added in the record, which should improve considerably the picture (**Semoto, this volume**).

Razkopanitsa

Only two dates are known, from good short-lived samples (charred seeds in situ) but with large errors (± 100 years BP), taken from two distinct levels assigned to the second (lower) phase of the tell’s sequence (Görsdorf & Bojadžiev 1996: 163). The date from the upper level 4 (Bln–813) is older than the one from the lower level 3 (Bln–814), and seems non-compatible with the relative chronology of the associated material. Modeling under these conditions gives as expected very poor –not to say unusable– results: the distributions proposed for the start and the end of the phase (see **Fig. 11**) cover more than 1500 years each and overlap over a period that exceeds 1000 years (start 3710–2067, end 3360–1222 BC). But the more reliable of the two dates Bln–814 has a modeled distribution that falls in the 3rd millennium (2840–2154 BC), and most probably (90%) in the

years between 2699–2124 BC. Under these circumstances, the hypothesis of maintenance of the Bronze Age settlement until the end of the millennium, or beyond, appears plausible.³

Karasura

Deposits assigned to various stages of the Bronze Age have been excavated under some of the antique walls and the Byzantine basilica that occupies the summit of the hill. Twelve of the available ¹⁴C dates fall indeed in this timeframe (Görsdorf & Bojadžiev 1996: 167–168); they are modeled here in two groups (conventionally labeled “phases”) according to their provenance. The results confirm occupation between the 4th and the end of 3rd, or the end of 2nd millennium respectively (see **Fig. 11**), but are unusable for any further analysis.

Yunatsite

The tell’s Bronze Age sequence is represented by 30 ¹⁴C dates coming from 12 different occupation levels, most of them with errors between 50 and 70 years BP (Boyadzhiev 1995: 155–157, 186–187; Görsdorf & Bojadžiev 1996: 158; Мепнепм 2007: 234, *tabl. 1*; Boyadzhiev & Aslanis 2016). Like in the case of Ezero, the big number of measurements and dated levels offers the possibility to improve considerably the overall resolution of the results. Unfortunately, the dating of the start of the period (sub-phase IIA) is compromised by the relatively poor quality of the unique date from the earliest level (IGAN–2794 from level 16–17) (**Fig. 5a**). In fact, more than the quality of the measurement, it is its solitude and its position in the sequence that is a problem, for there is nothing to constraint it there⁴; dates with same or bigger errors are indeed completely ‘neutralized’ when found in other parts of the sequence. In addition, the date falls precisely on the 4400 BP “plateau” of the calibration curve (*supra*), thus producing a

huge calibrated interval. Removing it from the discussion is hardly better, for in this case we lose completely information about the earliest Bronze Age level and, as all the remaining dates are from the same level (level 15), we find ourselves with a single-event phase, i.e. a unique distribution of probabilities. Accordingly, when the date IGAN–2794 is included, we obtain for phase IIA a start between 3475–2773 BC and an end between 2899–2638 BC (**Fig. 5b**), when it is excluded, we obtain a unique distribution from 2901–2640 BC (but without the earliest levels 16–17) (**Fig. 5c**). Whatever the option, it seems reasonable to admit that the BA sequence did not start here before 3000 BC, as suggested also by Boyadzhiev 1995. There are practically no consequences for the chronological clustering of the next phases, which are those that interest us more in this paper. Phase IIB is given a start between 2759–2550 and an end between 2644–2477 BC, Phase IIC a start between 2624–2436 and an end between 2247–1644 BC. Once again, the lack of constraints at the end produces a “spreading” of the modeled distribution well beyond the lower limits of the individual dates assigned to this sub-phase (none goes indeed beyond 2000/1950 cal BC). Like in the case of Ezero, *Chronomodel* “corrects” some of the deviating dates with respect to their stratigraphic position and their clustering with other dates from the same levels (**Fig. 5d**).

The jump in dates observed by Boyadzhiev 1995 between levels 6 and 5, and connected with a hypothetical sharp change of atmospheric ¹⁴C around 2500/2400 BC, is seen here as well. But *Chronomodel* accommodates the possibility of a smooth evolution, proposing for level 6 a distribution between 2538–2264 BC, and for level 5 a distribution between 2352–2070 BC. The aforementioned ‘jump’ could also be an effect of the different nature of the dated samples: those of level 6 are indeed charcoals, i.e. potentially older than the true

age of the events, whereas those of level 5 are charred fruits, i.e. short-lived samples, most certainly coeval with the destruction (see discussion in Maniatis et al. 2016).

In the model proposed by Boyadzhiev 1995, based on the estimated rate of sediments' accumulation (and admitting the "anomalous" recording of ages due to the previous hypothetical sharp change of atmospheric ^{14}C), the dates of the last three dated levels (5 to 3) are maintained within the years 2450–2300 BC. This is an extrapolation, however, which is supported neither by the calibrated values of the individual ^{14}C dates nor by their stratigraphical ordering. For example, the date Bln-3658 from level 5 has a value between 2347–2034 cal BC at 92,9% probability; the date Bln-3659 from the same level a value between 2206–1945 cal BC at 93,7%; and the date Bln-3656 from level 3 a value between 2309–2027 cal BC at 93%.

The end of the sequence is much later for *Chronomodel* than the one given by Boyadzhiev: level 4 is given at 2282–1976 BC, and level 3 after 2250 BC (2247–1644 BC). Even if the lower limit of the interval suggested for the end of phase IIC (1644 cal BC) is certainly too low due to the absence of constraints, we are far from the years 2360–2330 inferred by Boyadzhiev's analysis. We would rather see an end close to 2000 BC, not including of course the last two building levels which have not been dated, neither all those that might have been wiped off by erosion.

Nova Zagora

The 11 radiocarbon dates from the tell of Nova Zagora (Görsdorf & Bojadžiev 1996: 160) are obtained from good quality samples (charred seeds, short-lived), but have big statistical errors (± 100 years BP) and are concentrated in only three levels. As a result, the final quality of the modeled sequence (Fig. 6) is not very good. The earlier phase I, represented by only one level (8), is given with a unique

distribution between 2708–2298 BC, whereas the next phase II, represented by two levels (6–5), is given with a start between 2512–2203 and an end between 2423–1986 BC. Two of the dates fall entirely in the 2nd mill. BC but are canceled by the other dates from the same levels. Actually, the overall duration of the dated sequence could be rather short, and placed at virtually any point during the second half of the 3rd millennium (i.e. not necessarily its end). Therefore, in the present state of things phase II should be more properly described as late Early Bronze Age and not as Middle Bronze Age (see also Leshtakov & Tsirtsoni 2016), although of course, it is perfectly possible that its end is situated in the 2nd millennium (there are two more levels of this phase undated). We can say nothing about the transition to the next phase III (assigned to Late Bronze Age), as the corresponding deposits are also undated.

Nebet Tepe

We dispose of 12 radiocarbon dates, which are retrieved from four distinct levels belonging to two phases: levels 11 to 10 belong to phase IV (assigned to the EBA), levels 9 and 8 to phase III ("Middle Bronze Age"). There exist no dates from levels 7 to 4, which represent the end of phase III and the next phase II (assigned to the LBA), but there exist two dates from level 3, which represents phase I, assigned to the Early Iron Age following the local terminology⁵ (Görsdorf & Bojadžiev 1996: 162). According to *Chronomodel* (Fig. 7), the start of phase IV should be placed around 2998–2597 and its end around 2693–2512 BC, whereas phase III should start at ca. 2687–2376 and end somewhere between 2689–1782 BC (if we do not consider the dates from level 3), or between 2676–1892 BC (if we add them).

Dabene

We have altogether 7 ¹⁴C dates from this site, coming actually from two different locations representing also different contexts (**Fig. 8**). Four dates are from the tell settlement, where two Bronze Age phases have been distinguished on top of a layer with mixed Chalcolithic and EBA material (Nikolova & Görsdorf 2002); the other three dates are from a group of structures which are associated to the nearby tumuli, but have not any obvious funerary character themselves and have been therefore qualified as ritual (Hristov 2015).

The dates from the settlement cover roughly the first half of the 3rd mill. BC, and are in good agreement with the relative chronology suggested by the archaeological material to the EBA 1 and 2 period. Phase IIA is given with a unique distribution at 3010–2552 BC, whereas phase IIB is given a start between 2690–2442 and an end between 2606–2295 BC. The ritual structures have no stratigraphy properly speaking and are therefore modeled as three individual “events”, grouped inside a single conventional “Phase”. The three “events” provide different distributions, spanning the years between 2700/2300 and 1900/1500 cal BC. If their complementarity is real, the duration of use of this area would go well into the MBA, beyond the (apparent) duration of the neighbouring settlement. But this is a fragile statement, for each “event” is represented by only one measurement. More dates would be needed in order to consolidate it.

Galabovo

The two available ¹⁴C dates come from the same level (4), which is the last of those assigned to the EBA (Панайотов *et al.* 1991; Leštakov 1993; Görsdorf & Bojadžiev 1996: 163). The uppermost levels 3 to 1, assigned to the MBA on the basis of the archaeological material (including

some imports from Anatolia with secure parallels in Troy VI), have not been radiocarbon dated yet. In fact, they were not dated at the time of the Conference. Radiocarbon dates in those levels are now performed in the laboratories of Lyon and Tokyo. Their results will be published elsewhere. The dates are modeled as a single-event phase, with a unique distribution between 2480–2018 BC (see **Fig. 11**). This result authorizes the hypothesis of maintenance of the settlement in the first half of the 2nd mill. BC, as indicated by the material.

Tatul

With Tatul we move beyond the Thracian lowlands and at the same time beyond the ‘tell’ pattern. The site has been qualified as a peak sanctuary, based on its impressive natural location and the presence in later times of a temple at the same spot (Leshtakov *et al.* 2016), but nothing confirms that this was the case in prehistoric times as well. The Bronze Age sequence comprises two phases, documented by 5 ¹⁴C dates (**Fig. 9**): the first one corresponds to an advanced stage of the EBA (start: 2851–2470, end: 2584–2267 BC), and the second one at the MBA (start: 2040–1679, end: 1896–1515 BC). The correctness of these dates – which might seem ‘suspect’ because of their rarity – is supported by the associated finds and also by the fact that they are produced with two different dating methods (see Leshtakov & Tsirtsoni 2016). The dates produced later from the laboratory of Glasgow (code SUERC-) provided almost identical results: (see Леуцаков 2018) and (**Table 1**) at the end of the present paper.

Cherna Gora

The site belongs to the type of enclosure, i.e. a flat area with ditches and dug structures, presumably of ritual purpose. Although not a settlement

properly speaking, it has obviously “held a crucial position in the settlement pattern of the region” (Leshtakov 2006, 428). The two available dates come from two different areas but which are thought to represent the same stage in the site’s life (*ibid.*, 420) and have therefore been modeled as two distinct events in the same phase. *Chronomodel* proposes a start at 2479–2027 and an end at 2263–1872 BC (see **Fig. 11**), which agrees with the proposed relative chronology (EBA 3–beginning MBA).

Bikovo

The site is again an enclosure, presumably of ritual purpose (Хрустова *et al.* 2009; Хрустова & Иванов 2010). According to the pottery collected in the fill of the ditch and the other pits, its overall use should date to the MBA and LBA. The six samples given for dating (animal bones) came from contexts assigned to the MBA and the results agree with this attribution (Leshtakov & Tsirtsoni 2016). The modeled distributions for the corresponding phase are 2228–1835 BC for the start and 1813–1431 BC for the end (see **Fig. 11**).

Chokoba 18

The first of the two neighbouring sites excavated in 2009–2010 near the village of Chokoba appears as a flat settlement with houses built above the ground, sometimes preserving their hearths or ovens and part of their household assemblages (Петрова & Каурапов 2010). Two ¹⁴C dates were made from samples (charcoal, seeds) taken in a pit associated in one of the houses (Leshtakov & Tsirtsoni 2016). The results are almost identical and are modeled as a single event, with a distribution from 2179 to 1973 cal BC (see **Fig. 11**).

Chokoba 18A

The second site, situated a few hundred meters away, is again flat

but comprises only shallow dug-in structures, which contained large amounts of daub fragments and pottery assigned to the MBA and LBA periods (Λευακοβ 2010, Λευακοβ 2011). In total six ¹⁴C dates were made from short-lived samples (animal bones, seeds) collected in different structures: five of them were discussed already in Leshtakov & Tsirtsoni 2016, whereas the sixth (Lyon-13680) is presented here for the first time.⁶ Since there is no stratigraphy properly speaking, they are modeled as six distinct events inside a single “phase”, whose start is placed between 2317–1868 and its end between 1495–1120 BC (**Fig. 10**). These results suggest that the site was not simply occupied during a short period at the interface between MBA and LBA, as one might think considering the paucity of material remains, but actually has known several occupation episodes spanning several centuries. We have no means though to check whether the apparent continuity of occupation is real or hides some breaks.

Another interesting point is the overlapping between the sequence of Chokoba 18A and the occupation of neighbouring Chokoba 18. Of course, it is impossible to say whether the two settlements actually coexisted, and if this were the case, what would be their relation. It might seem more ‘logical’ to assume that Chokoba 18 was settled first, but the spot was rapidly abandoned and the population moved to Chokoba 18A, where the conditions proved better. Other scenarios are possible as well: the settlers of Chokoba 18A could be different from those of Chokoba 18, the people who left from Chokoba 18 might have moved to another location, etc. Whatever the truth, it is clear that all flat sites are not necessarily short-lived, neither their duration proportional to the nature or state of their material remains. This invites us to be more careful when trying to draw

settlement patterns at a regional scale, assuming, for example, a lesser or greater mobility of populations on the basis of such (non-)evidence (see also Popov 2016).

Radnevo

The individual inhumation excavated here could be part of a necropolis or connected with a settlement from which nothing was left (Саватинюв 1995). The excavator dated it in the LBA on the basis of its possible association with some characteristic pottery of this period, but the ¹⁴C dates from two distinct parts of the skeleton (Leshtakov & Tsirtsoni 2016) agree for dating it at the end of the MBA (modeled joint distribution 1886–1646 BC; see Fig. 11). This would indicate that the inhumation was preceding the LBA installation, providing at the same time additional evidence about the area's occupation during the first half of the 2nd millennium.

Chorkvata

This is one of the rare known LBA settlements in the Central/West Rhodope Mountains and so far the sole with a radiocarbon date, made from a charcoal sample collected on the floor of a well-built rectangular building (Леуќаков 2006; Leshtakov & Tsirtsoni 2016). With a calibrated value at 1394–1216 BC, it fits well the emerging picture of a region that would be quite attractive in the 14th–13th century BC, attested by the richer evidence from Eastern Rhodopes (Popov 2016) and the Pirin/Rila area (Atanassov et al. 2012; Атанасов et al. 2015).

Before moving to the next regions, it is useful to consider briefly the general picture that is outlined now for Bulgarian Thrace and the Rhodopes (Fig. 11). A simple look is enough to see that no tell provides dates after 2000 BC, although we have good reasons to suspect that at least some of them were occupied during the first centuries of the 2nd millennium. Sites

with definite activity in the 2nd millennium are essentially flat, whether they are found in lowlands (Bikovo, Chokoba, Radnevo, Dabene) or the mountains (Tatul, Chorkvata); sites with more important sedimentation on natural hills (Nebet Tepe, Karasura) are also attested.

Many of these spots (Dabene, Nebet Tepe, Tatul, Karasura) were also occupied earlier, during the 3rd millennium BC,⁷ although continuity properly speaking is not proved. Among the newly founded sites (Bikovo, Chokoba, Radnevo), one seems to be relocated from a nearby point, suggesting that horizontal movements might have replaced to some degree the previous vertical development.

The situation in Turkish Thrace

The low mound of Kanlıgecit is so far the only site of this period in the area that has provided radiocarbon dates (Görsdorf 2002: 559; Görsdorf 2005: 468; Görsdorf 2007: 312; Özdoğan & Parzinger 2012: 276–277 and tabl. 64). We dispose in total of 15 dates assigned to four successive phases⁸; they have been modeled as distinct events inside each phase and provided the following distributions (Fig. 12):

- for the earliest phase 4, a start between 3082–2521 and an end at 2728–2509 BC;
- for phase 3, a start at 2648–2491 and an end at 2486–2314 BC;
- for phase 2, a start at 2458–2284 and an end at 2352–2074 BC;
- for phase 1 (represented by only one event), a unique distribution at 2233–1829 BC.

These results confirm the chronological parallelism of Kanlıgecit with the sequences of Nova Zagora and Galabovo, suggested already by the affinities in material culture.

Moreover, the site seems to follow the same general trend as that observed in Bulgarian Thrace, where tells end before or little after 2000 cal BC.

The situation in Greek Eastern Macedonia

The situation in Greek Eastern Macedonia is presented here only in a synthetic manner, in order to allow comparisons with that in Northern and Eastern Thrace. The analysis is based on 77 ¹⁴C dates from 12 sites (**Table 2**), namely: Agios Antonios (Maniatis et al. 2015; Maniatis et al. 2016; Koukouli-Chryssanthaki & Papadopoulos 2016), Agios Ioannis (Maniatis & Papadopoulos 2011), Angista (Κουκούλη-Χρυσανθάκη 1980), Dikili Tash (Treuil 1992; Maniatis et al. 2016; Tsirtsoni 2016b; Darcque et al. in press), Dimitra (Γραμμένος 1997), Kastri (Koukouli-Chryssanthaki & Papadopoulos 2016; Maniatis et al. 2016), Kryoneri (Malamidou 2016), Limenaria (Μανιάτης & Φακορέλλης 2012), Pentapolis (Γραμμένος 1981; Manning 1995), Sidirokastro (Siros & Miteletsis 2016), Sitagroi (Renfrew et al. 1986), and Skala Sotiros (Κουκούλη-Χρυσανθάκη 1990). These are all settlements, belonging to four types: tells, flat sites⁹, peak sites, and caves. Some ‘peculiarities’ of the proposed model (**Fig. 13**) are explained by the lack of adequate contextual information for some of the dates, or by the absence of dates for some of the phases known archaeologically. We can mention as examples, respectively, the grouping of all dates from Skala Sotiros under a unique “phase” (although we know that the excavator has distinguished three phases), or the absence from our diagram of phases II and IV of Agios Antonios (which have not been ¹⁴C dated).

The first thing to note is that in this area too, sites with dates well after 2000 BC are much fewer in number. But unlike Northern Thrace, they belong to various types, including tells (Dikili Tash, Dimitra). On the other hand, we observe that, like in Bulgaria, almost all the settlements with occupation in

the 2nd millennium were occupied also in earlier periods, though not always in a continuous way. Discontinuity is ascertained for Dimitra and Kastri (where the previous occupation dates back to the Late Neolithic), whereas continuity is sure at Agios Antonios, and possible but not certified at Dikili Tash¹⁰.

Conclusions

The above analysis allows making a number of statements concerning the evolution of settlement between the late 4th and the late 2nd millennium BC in the area under consideration, at least as far as this is reflected in the presently available ¹⁴C dates.

Comparing the situations in the different regions, it appears that things are less binary in Greek Eastern Macedonia. Indeed, the apparent break at the end of 3rd millennium BC does not concern here only tells, as is more-or-less the case in Bulgarian and Turkish Thrace, and the opposite is not true either, i.e. not all tells are abandoned at the end of 3rd or the very beginning of the 2nd millennium BC. From a historical point of view, it would be very interesting to see also if there are any flat settlements in Bulgarian and Turkish Thrace already in the early centuries of the 3rd millennium, and if their distribution or their destiny meets those of the coeval tells.

We have to be aware though that there can be a serious discrepancy between the “apparent” and the “real” state of things. Indeed, much of the situation that we see in the archaeological and/or the radiocarbon record could be due to problems of conservation and taphonomy. We know that the upper parts of tells are systematically weathered, and even removed, by erosion or later disturbances. To take only the example of Sitagroi, for which no dates

exist after the second half of the 3rd millennium (end of phase Sitagroi Vb at 2511-2110 BC), it is clearly said (Sherratt 1986: 440) that LBA material was collected in the uppermost disturbed levels of the main area. It is impossible to know how much further in time could get us such evidence and if the sequence would be continuous, but it is something that we need to keep in mind when we try to set the time of abandonment of such settlements. On the other hand, the same factors (erosion, ploughing, later works, or conversely thick sedimentation in areas with strong alluvial dynamics) could have entirely wiped off or masked many flat sites (about this issue see also Lespez et al. 2017). It is not surprising that practically all

the known flat sites (including enclosures) have been discovered “by accident” in the frame of rescue excavations.

Two things are therefore needed in the following years if we want to improve substantially our knowledge about the Bronze Age settlement in the area:

a) more, and more systematic geoarchaeological research, both intra-site and off-site, including in areas that have been less privileged by archaeological research so far, that should help us reduce the discrepancy between the apparent and the real picture of settlements density/nature in the study area;

b) more, more precise, and better contextualized ¹⁴C dates from the sites known already and from those to come.

¹ We will not discuss therefore here at all the question of a possible local impact of the 4.2 cal BP Rapid Climate Change event. On this issue see Meller et al. 2015; Lespez et al. 2016 (with further bibliography).

² A fifth date from the control trench (Lyon-8846), although fitting the EBA timespan in terms of result, does not seem to be in the right place in terms of altitude. This is why it is not included in the count proposed by Nikolov & Petrova 2016, 136, neither in the model proposed here.

³ The following phase I is assigned to the EIA; but no ¹⁴C dates are available.

⁴ Dates from underlying Chalcolithic levels stand more than 1000 years back: see Boyadzhiev & Aslanis 2016.

⁵ In Greece, this would be assigned to the Late Bronze Age, which is taken to end towards 1100/1050 BC (see Andreou et al. 1996; Treuil et al. 2008).

⁶ I wish to thank K. Lehstakov and V. Petrova for allowing me to include it in the present discussion.

⁷ And sometimes also before, during the Chalcolithic period (e.g. Tatul, Karasura).

⁸ I have not managed to find information about the nature of all the samples. Some of them come certainly from short-lived plants (lentils, barley, cress), but the majority is not identified.

⁹ Only 'normal' settlements, no sites with ditches (enclosures) being reported here. One of the settlements (Skala Sotiros) is surrounded by a massive stone wall.

¹⁰ The works of J. Deshayes at the summit of the tell did not provide any evidence about the existence of a Middle Bronze Age layer. But this part of the stratigraphy was seen only in a very limited area. The new excavations started in 2019 should allow checking again this point.

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Figure 1. Map of the area with the sites having ¹⁴C dates in the Bronze Age period (cemeteries excluded); in bold the sites whose dates are exploited in the present study, in italics those whose raw (BP) values were not available at the time of the study.

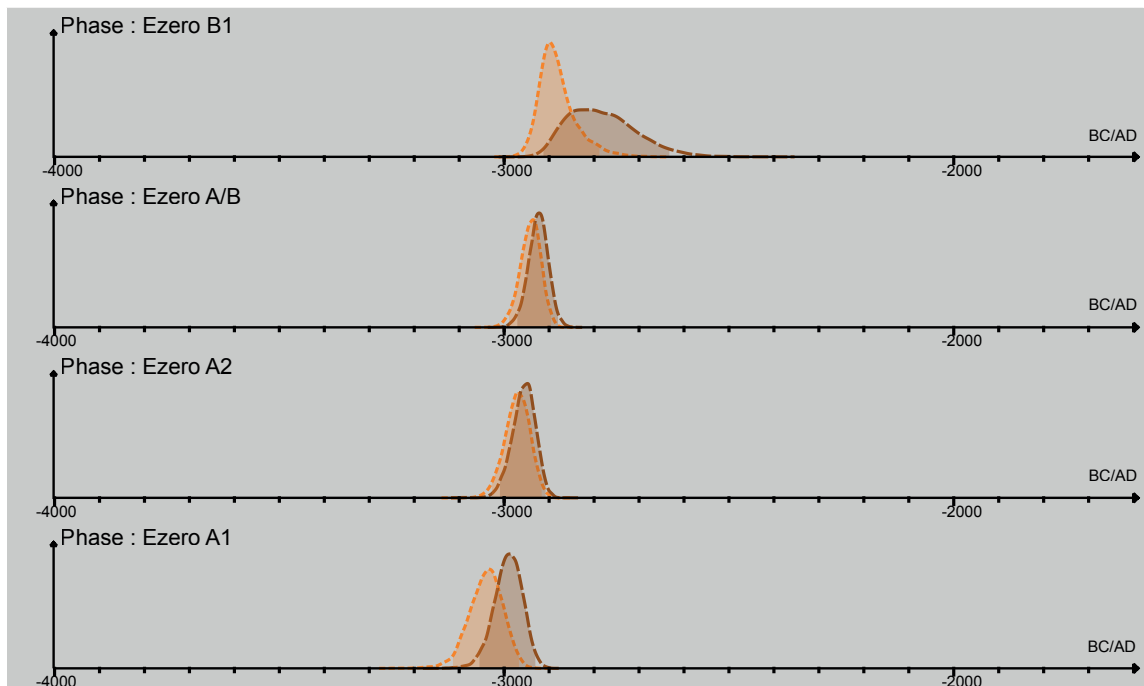


Figure 2. Diagram with the overall phasing of Tell Ezerovo (program Chronomodel v1.5.0; calibration curve IntCal13).

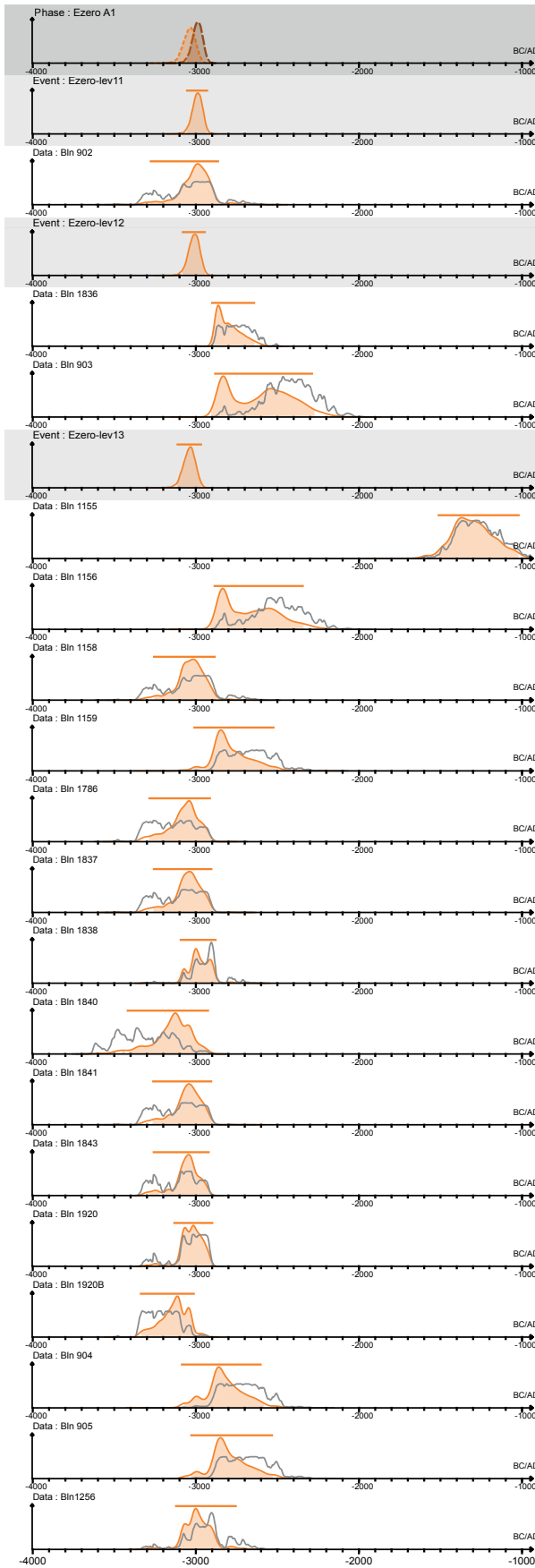


Figure 3a.

Figure 3. Modelled diagrams of the ^{14}C dates from Tell Ezero according to their stratigraphical order:
a) levels 13 to 11 (phase A1),
b) levels 10 and 9 (phase A2);
 Under each level (“Event”) are shown the individual dates with their original calibrated (unmodelled) distribution in outline, and their modelled distribution filled.

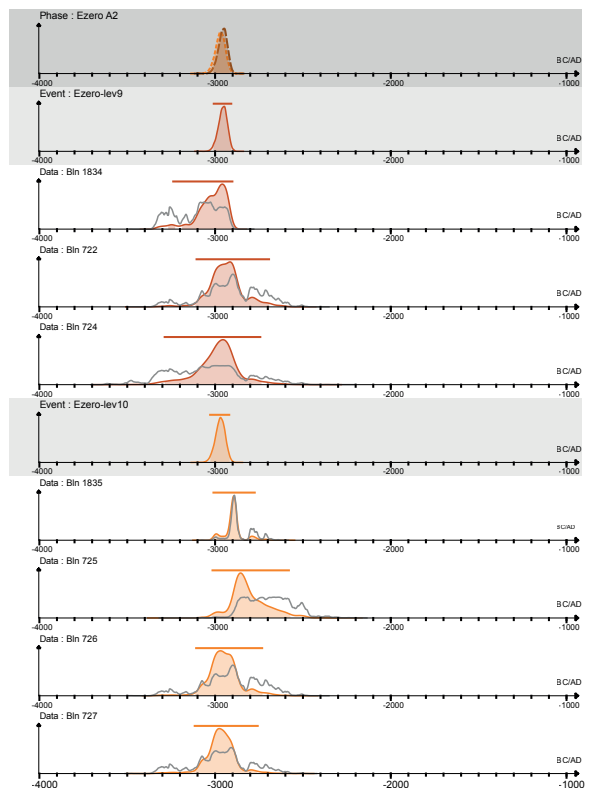


Figure 3b.

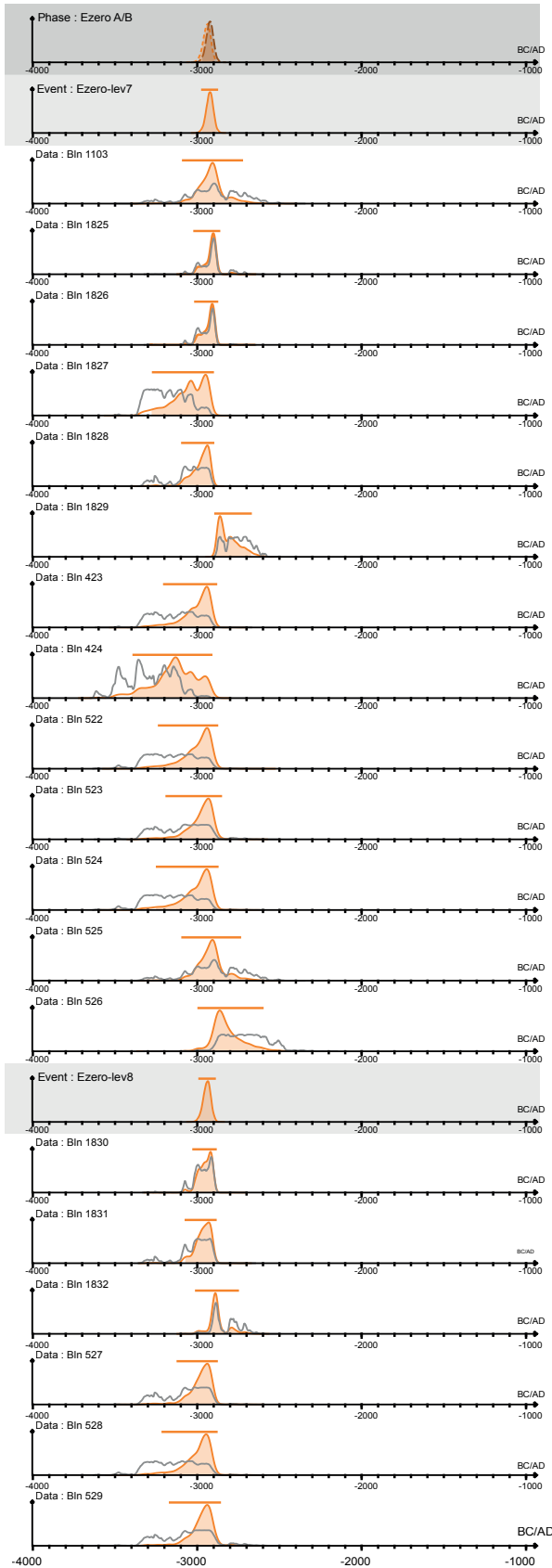


Figure 3c. Modelled diagrams of the ^{14}C dates from Tell Ezero, levels 8 and 7 (transition phase A/B);

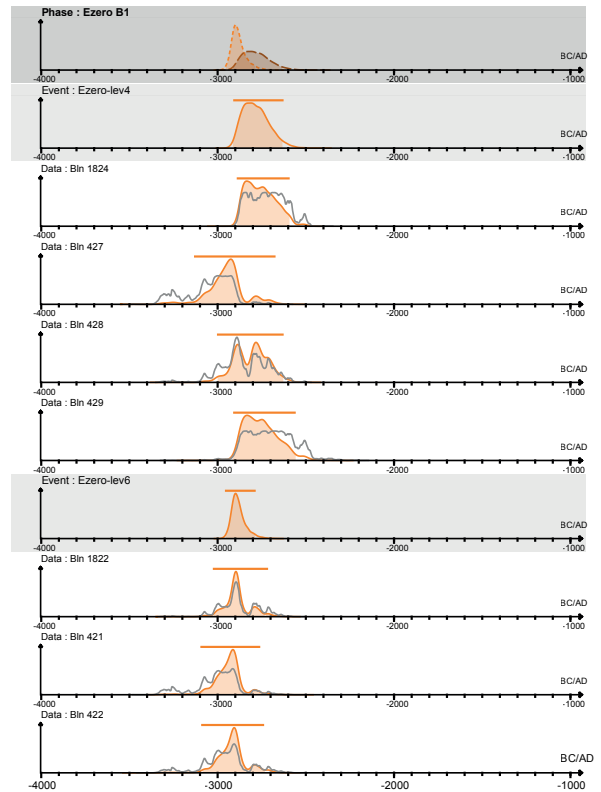


Figure 3d. Modelled diagrams of the ^{14}C dates from Tell Ezero levels 6 and 4 (phase B1).

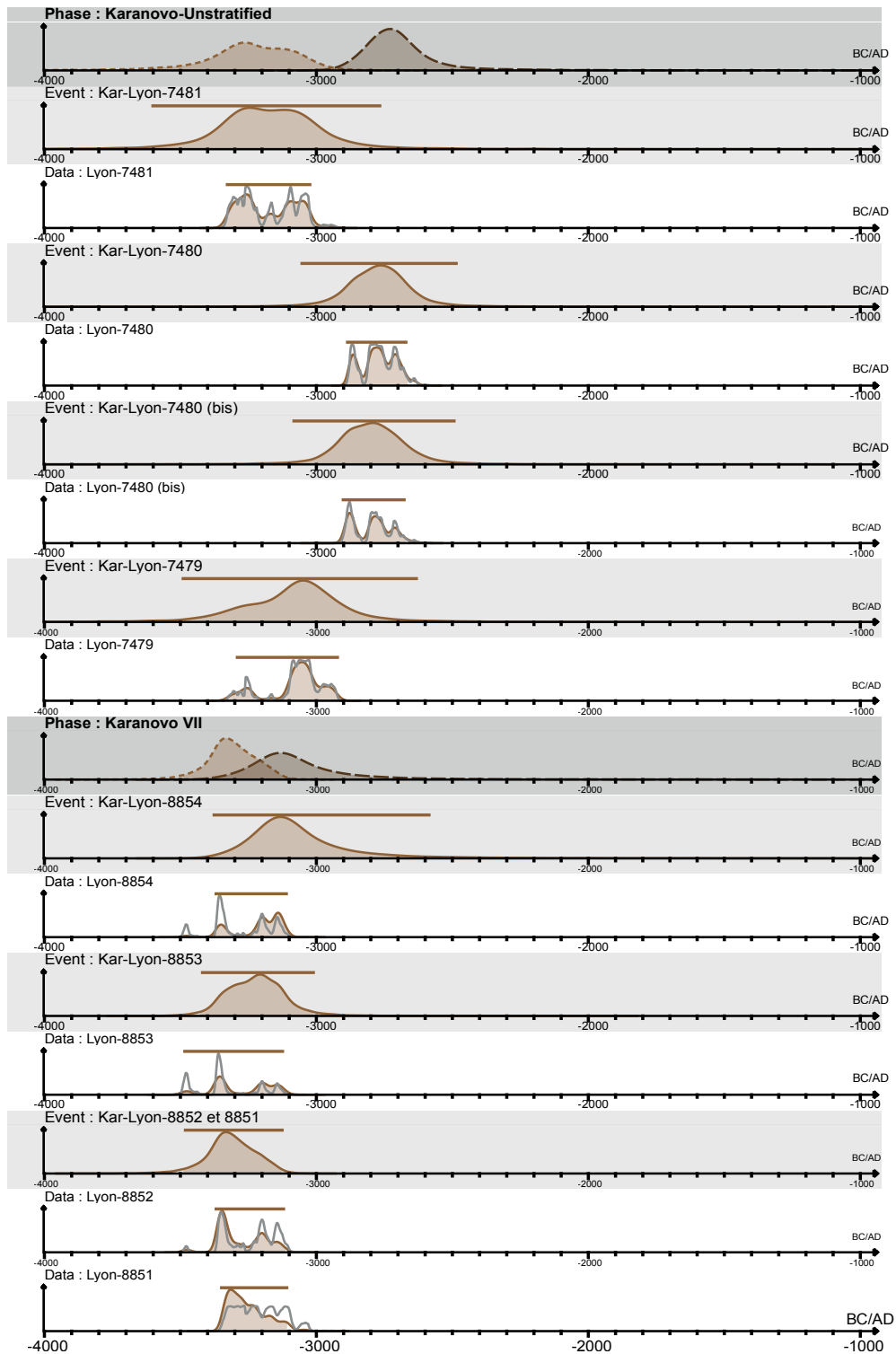


Figure 4. Modelled diagram of the ^{14}C dates from Karanovo assigned to the Bronze Age. Dates assigned to the 'phase' "Karanovo unstratified" are from possibly mixed contexts, those assigned to phase Karanovo VII are from a control trench opened in 2012. For graphic conventions see caption of **Fig. 3**.

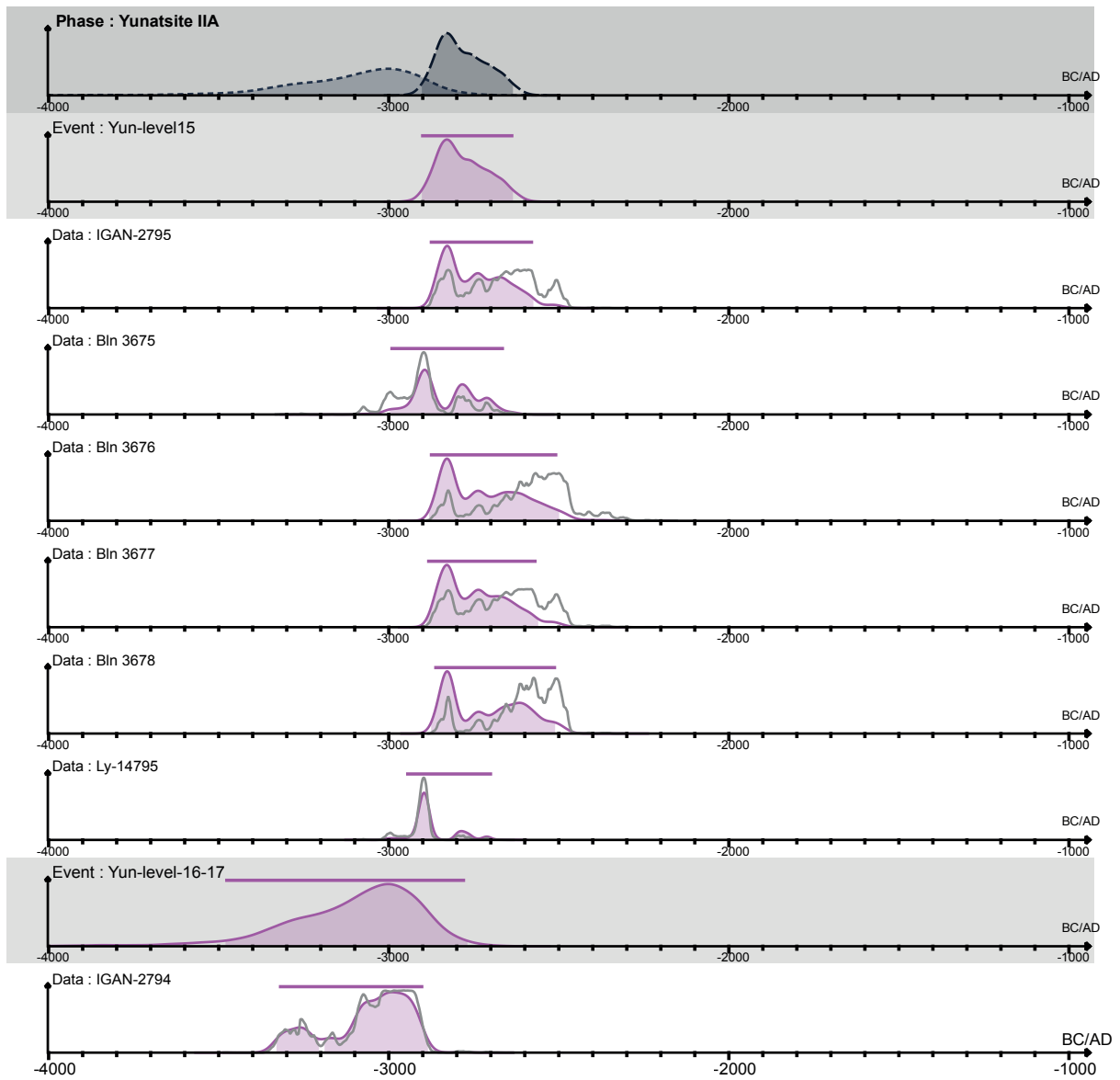


Figure 5. Bronze Age sequence of Tell Yunatsite:
a) Modelled diagram of the beginning of the sequence

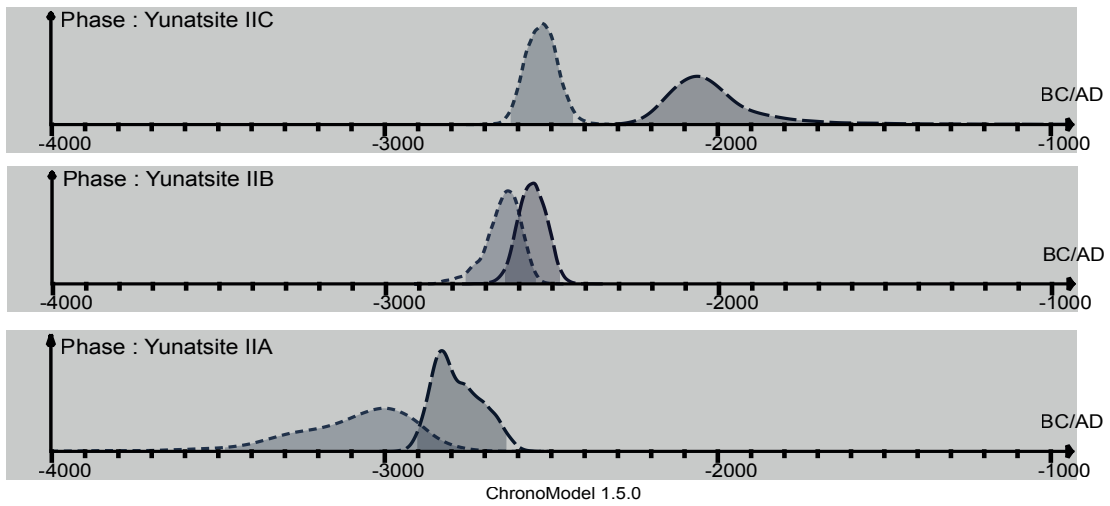


Figure 5b. Overall phasing with the date IGAN-2174;

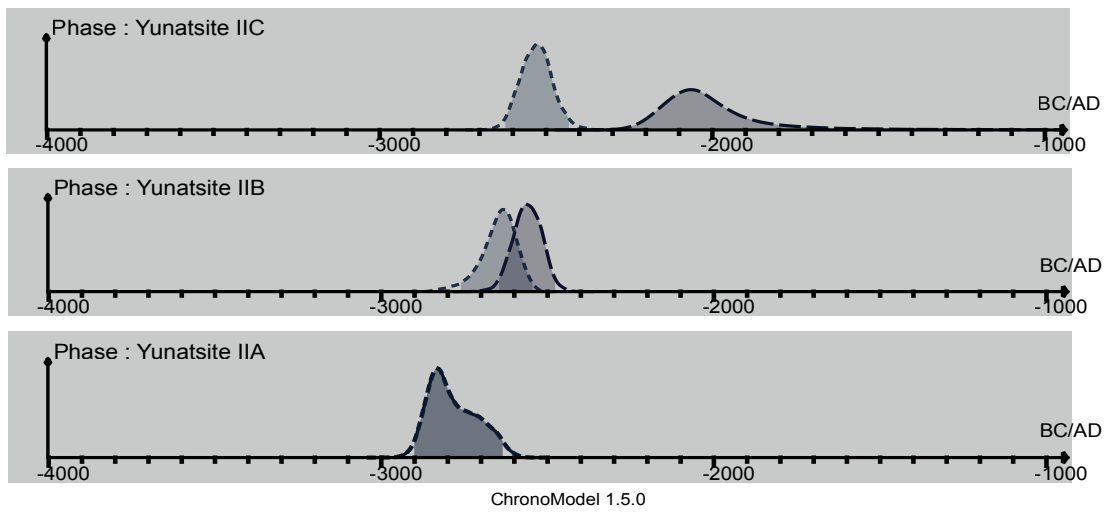


Figure 5c. Overall phasing without IGAN-2174;

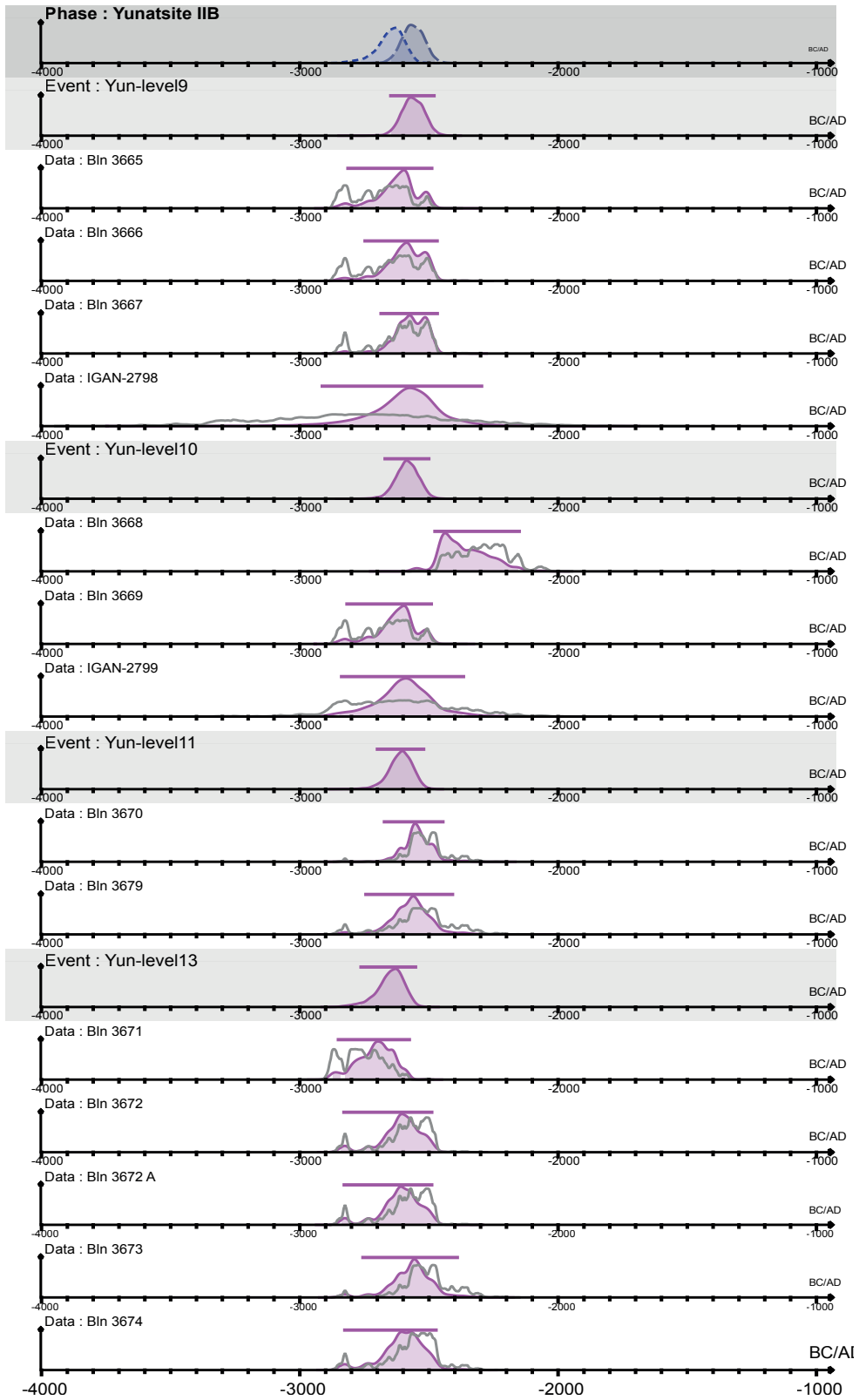


Figure 5d. Yunatsite, Modelled diagram of the levels assigned to phase IIB

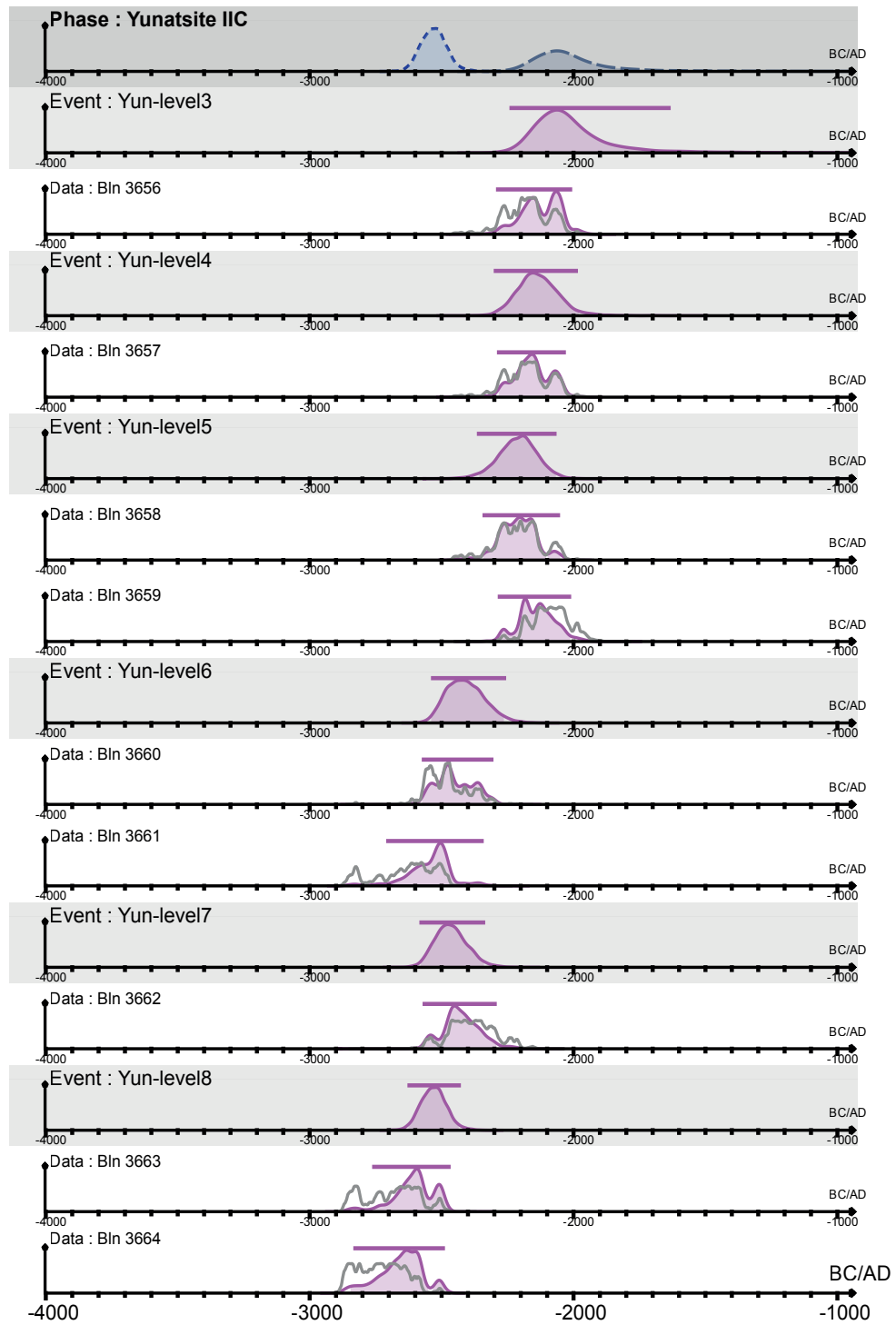


Figure 5d (contin.). Yunatsite, modelled diagram of the levels assigned to phase IIC (levels 8 to 3).

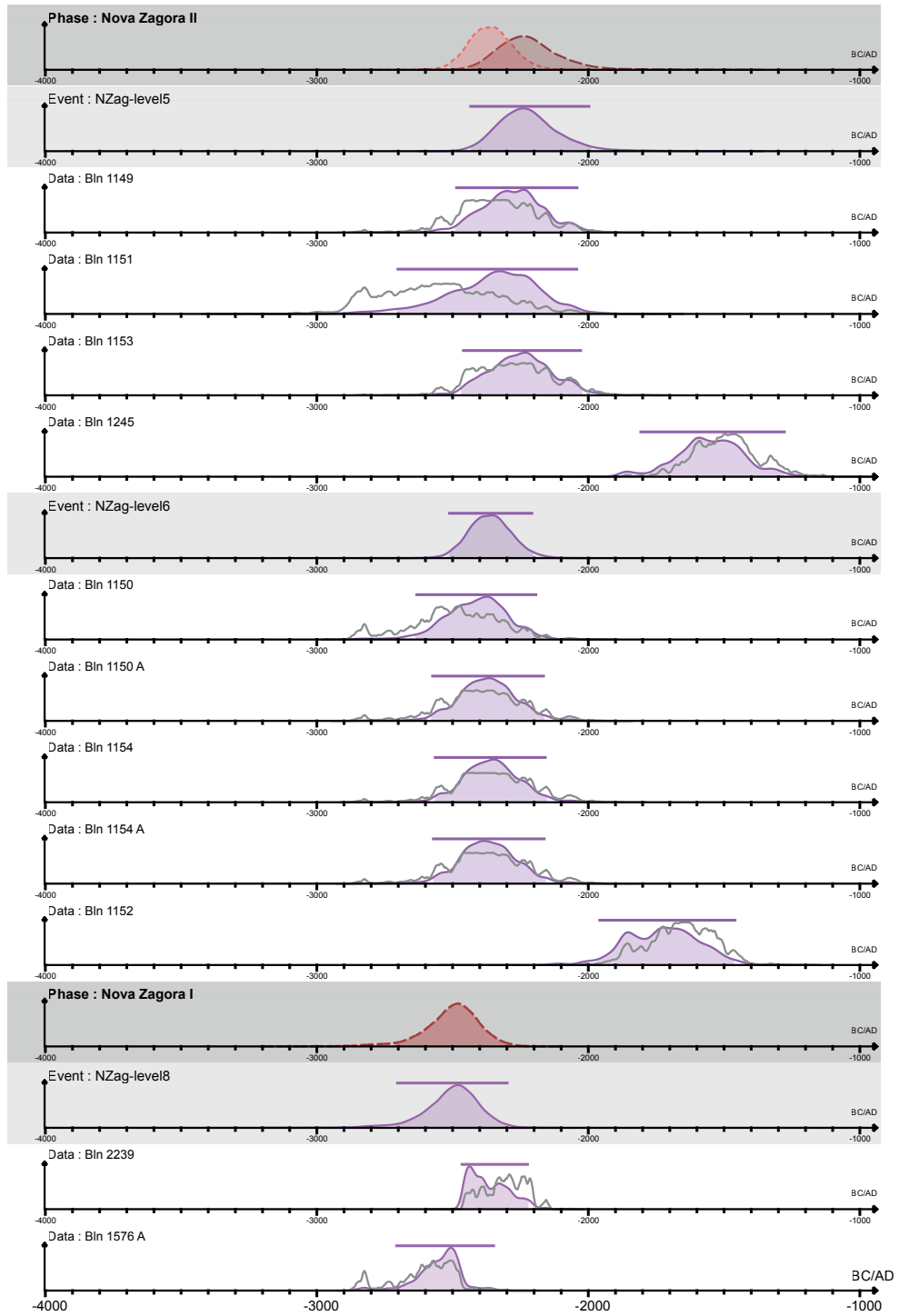


Figure 6. Modelled diagram of the ^{14}C dates from Nova Zagora.

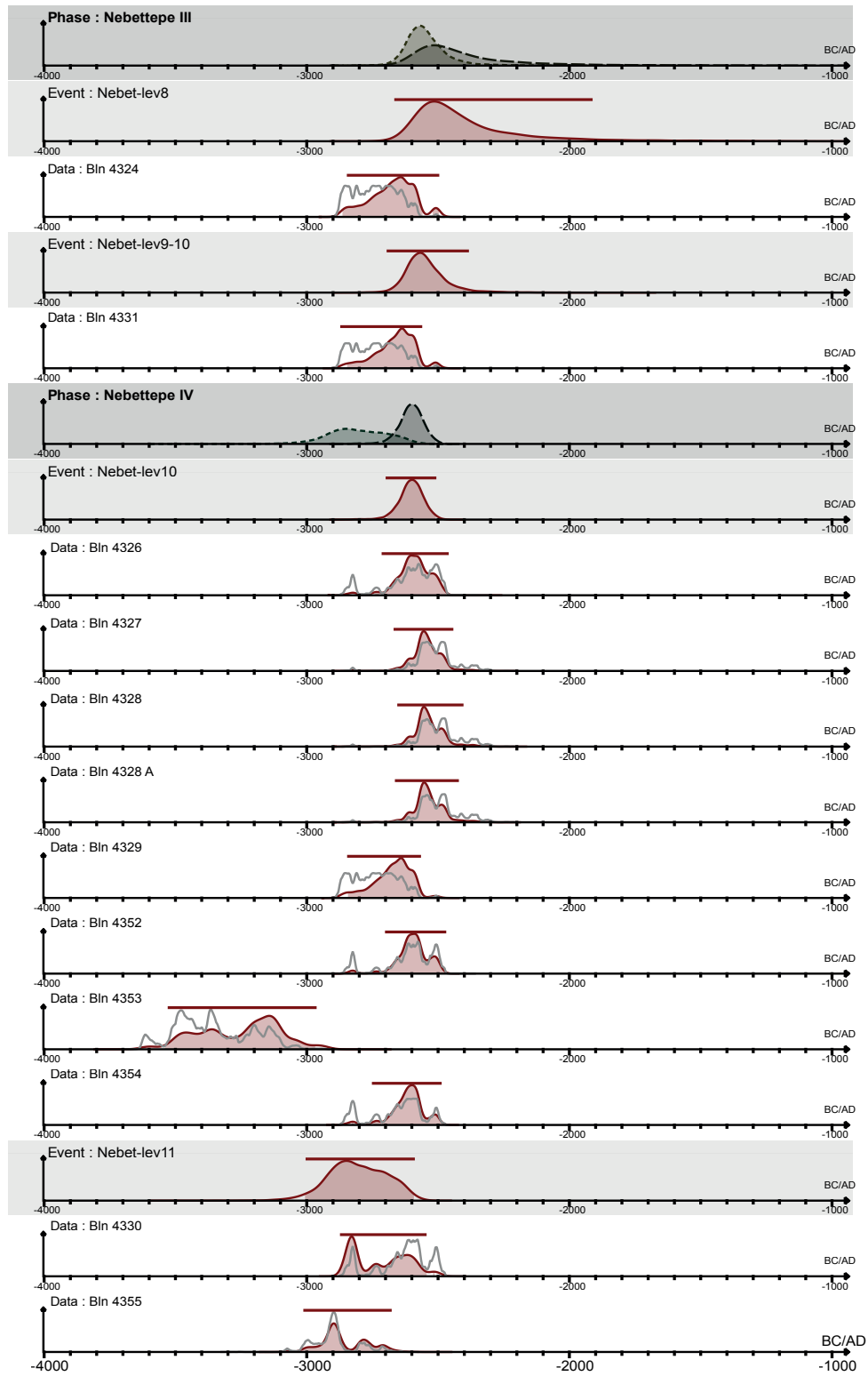


Figure 7. Modelled diagram of the ¹⁴C dates from Nebet Tepe, phases IV and III (the option shown here for the end of phase III does not take into consideration the dates from level 3, assigned to the EIA).

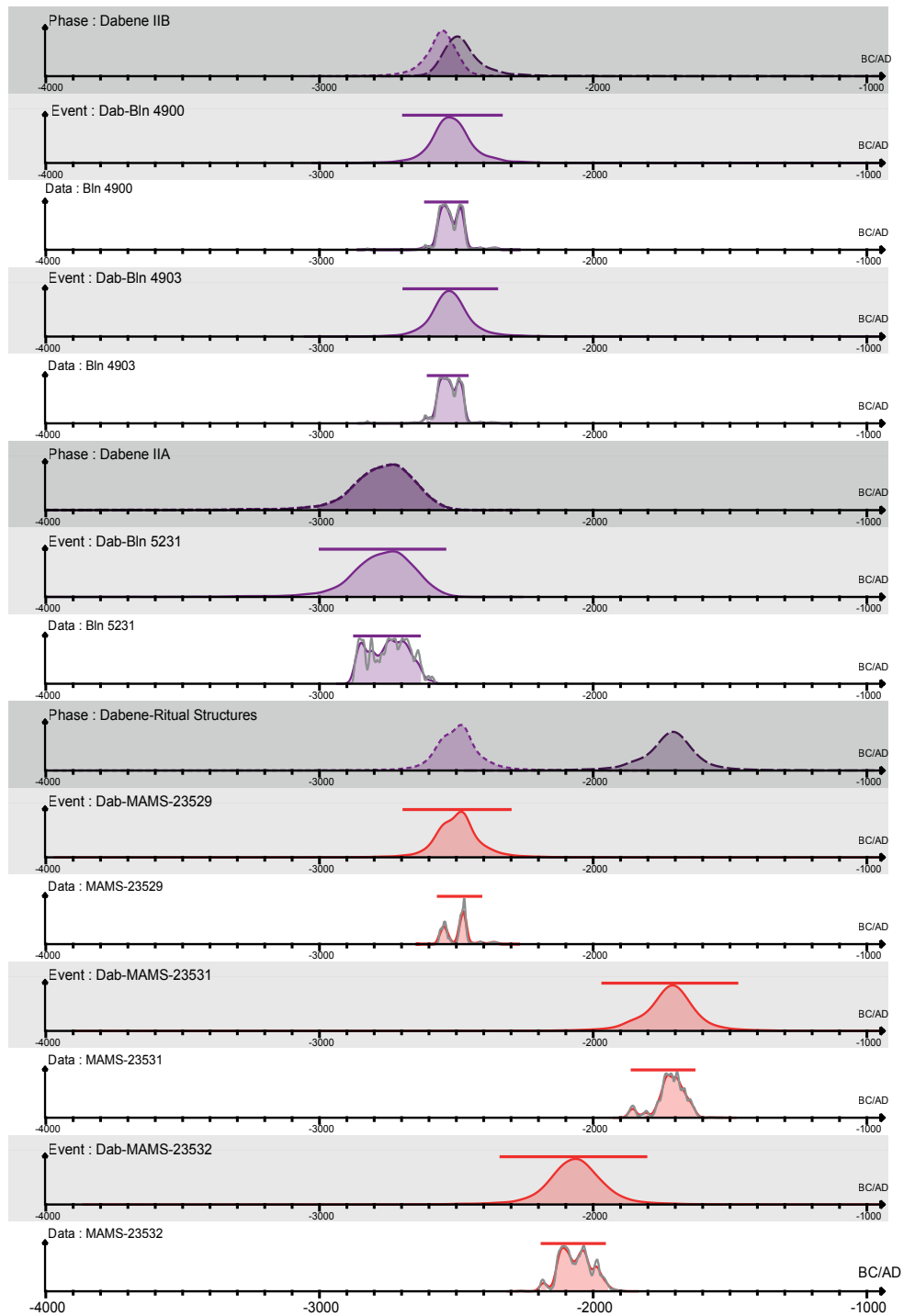


Figure 8. Modelled diagram of the ^{14}C dates from Dabene.

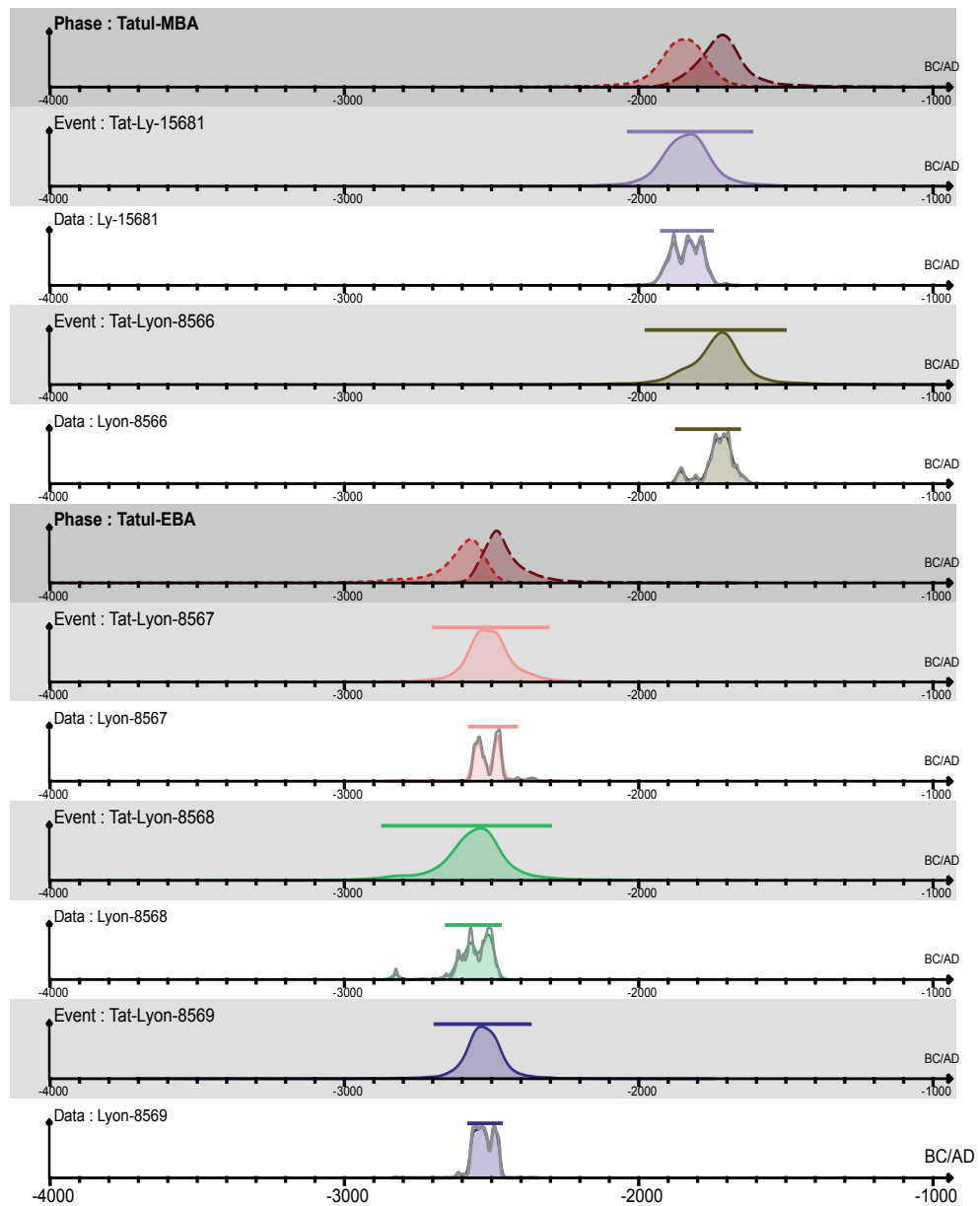


Figure 9. Modelled diagram of the ^{14}C dates from the Bronze Age levels at Tatul.

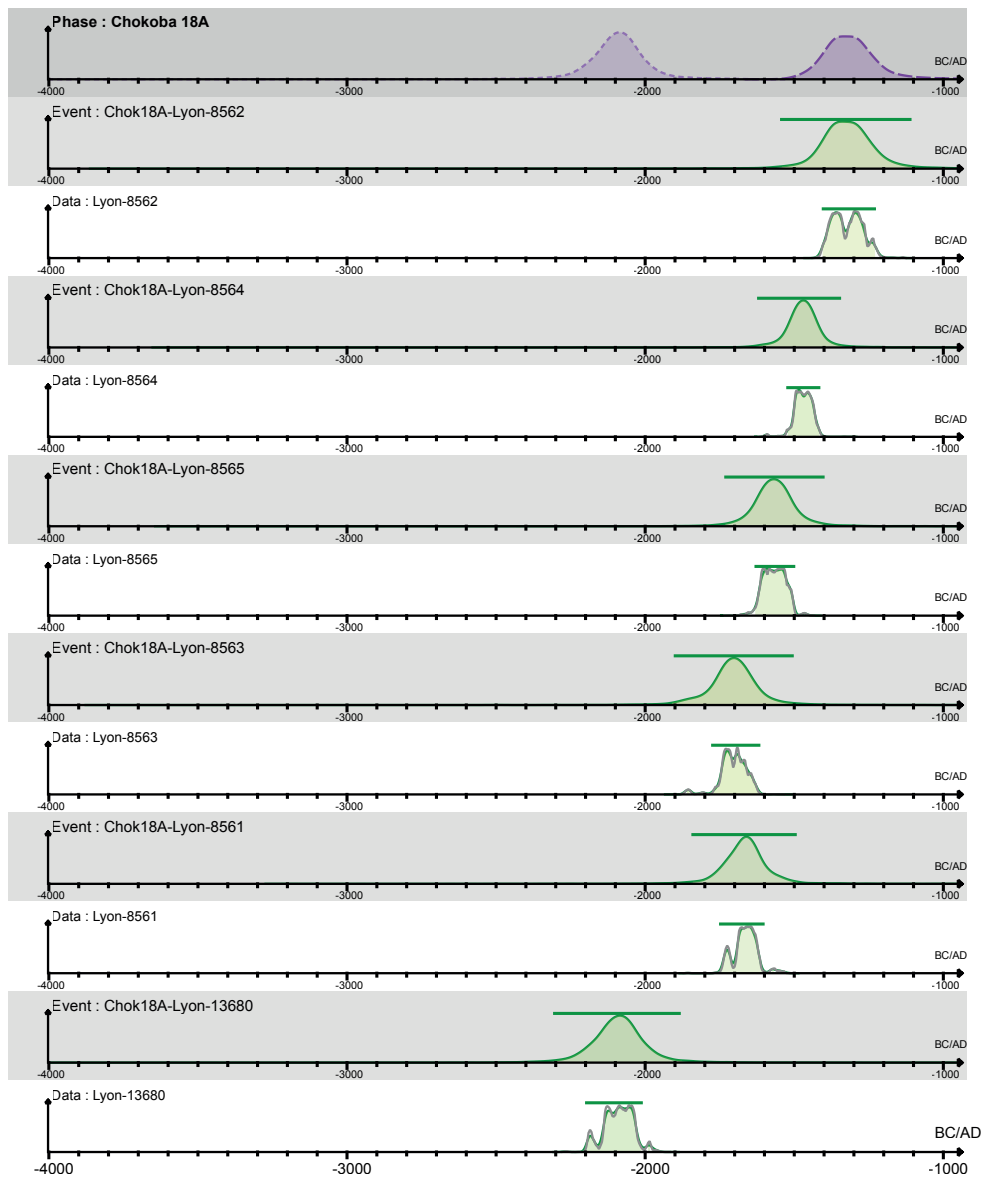


Figure 10. Modelled diagram of the ^{14}C dates from Chokoba 18A.

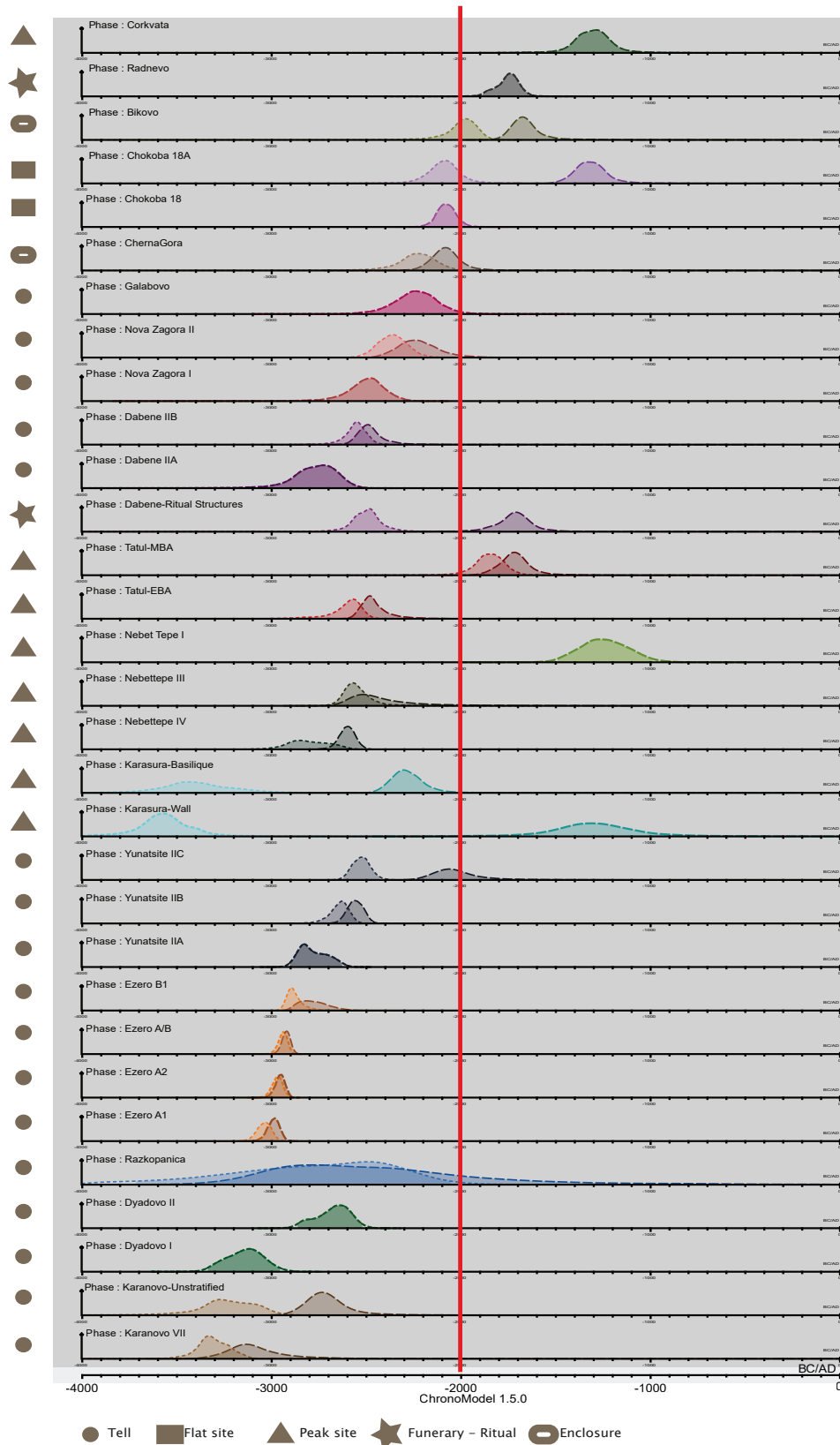


Figure 11. Synthetic diagram with the evolution of settlement in South Bulgaria according to the ¹⁴C dates.

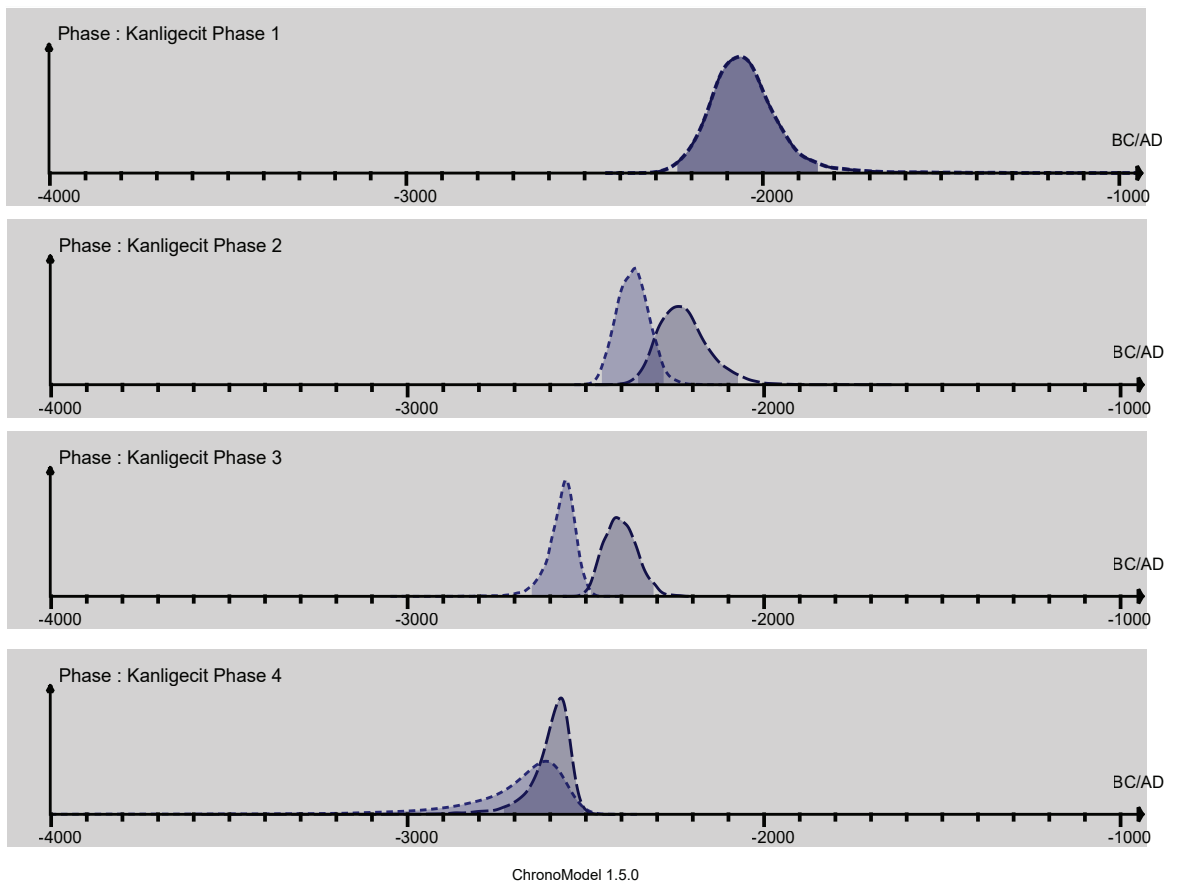


Figure 12. Diagram with the overall phasing of Kanligecit.

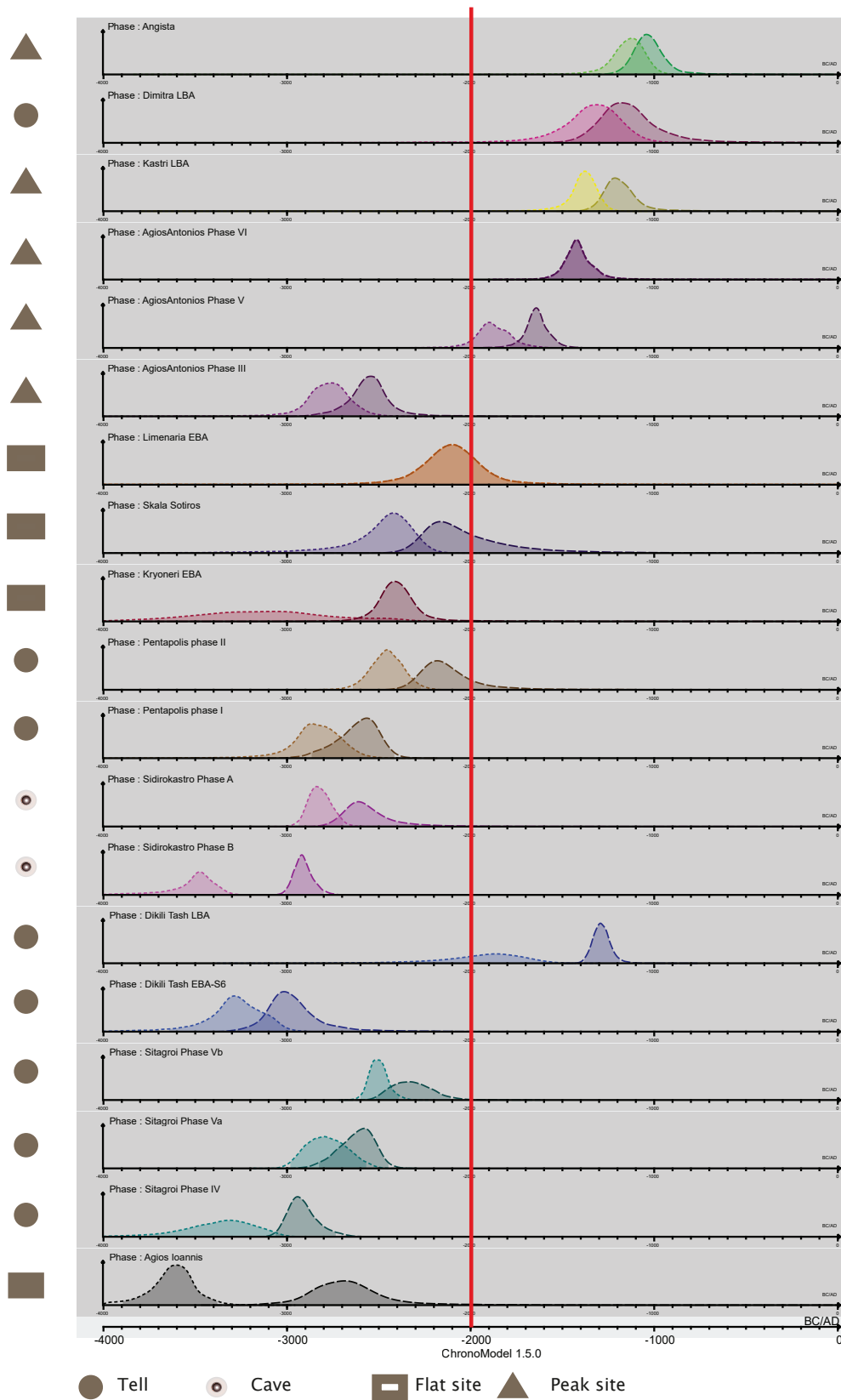


Figure 13. Synthetic diagram with the evolution of settlement in Greek Eastern Macedonia according to the ¹⁴C dates.

Table 1. Available ¹⁴C dates from Bronze Age sites in Bulgarian Thrace and the Rhodopes. Abbreviations used for the dating methods: AMS = Accelerated Mass Spectrometry, GPC = Gas Proportional Counting, LS = Liquid Scintillation. All the dates are calibrated at 2s (95,4% probability) with the curve IntCal.13 (Reimer et al. 2013).

| Site | Lab code | Type of sample | Provenance | Method | BP date | ±BP | Date cal. BC (95,4%) |
|-------------|-----------------------|----------------|--|--------|---------|-----|----------------------|
| Bikovo | Lyon-8571/ SacA-26544 | animal bone | Ditch, sector 19 N, central part; stratum 1; depth 0.52m | AMS | 3605 | 30 | 2031-1889 |
| Bikovo | Ly-15755 | animal bone | Ditch, sector 19 E, south part; stratum 4; depth 1.44-1.64m | LS | 3530 | 30 | 1939-1767 |
| Bikovo | Ly-15756 | animal bone | Ditch, sector 19 M, central part; stratum 2; depth 0.98m | LS | 3520 | 35 | 1939-1748 |
| Bikovo | Lyon-8570/ SacA-26543 | animal bone | Ditch, sector 19 D; depth 1.20-1.27m | AMS | 3505 | 30 | 1909-1745 |
| Bikovo | Ly-15754 | animal bone | Ditch, sector 19 C, central part; stratum 4; depth -1.41-1.64m | LS | 3475 | 30 | 1885-1693 |
| Bikovo | Ly-15757 | animal bone | Ditch, sector 19 G, stratum 2; depth 1.33m | LS | 3390 | 30 | 1748-1618 |
| Cherna Gora | Bln-5368 | charcoal | Sector 2A; depth -3-3.20m | GPC | 3790 | 37 | 2397-2050 |
| Cherna Gora | Bln-5346 | charcoal | Sector 3, Trench 3A1 | GPC | 3701 | 27 | 2197-1984 |
| Chokoba 18A | Lyon-13680/ Sac 48686 | charred seeds | sq. H10-H10, pit 1, depth -4.90-5m; Triticum monococcum | AMS | 3700 | 30 | 2199-1981 |
| Chokoba 18A | Lyon-8563/ SacA-26536 | animal bone | Sq. A41, depth -2.15m, accumulation of pottery | AMS | 3405 | 30 | 1753-1627 |
| Chokoba 18A | Lyon-8561/ SacA-26534 | animal bone | Sq. A40, pit 1, N1/2; depth -2.45-3.25m | AMS | 3370 | 30 | 1739-1609 |
| Chokoba 18A | Lyon-8565/ SacA-26538 | animal teeth | sq. C41, pit 3, depth -2.20-2.40 m | AMS | 3290 | 30 | 1629-1498 |
| Chokoba 18A | Lyon-8564/ SacA-26537 | animal bone | Sq. A42, depth -1.70 m, subterranean structure | AMS | 3200 | 30 | 1518-1419 |
| Chokoba 18A | Lyon-8562/ SacA-26535 | animal bone | Sq. B40, pit 2, N1/2; depth -2.33-2.45m | AMS | 3055 | 30 | 1408-1260 |
| Chokoba 18 | Lyon-8559/ SacA-26532 | charred seeds | Sq. K18, depth -1.90 m, subterranean structure | AMS | 3695 | 30 | 2194-1980 |
| Chokoba 18 | Lyon-8560/ SacA-26533 | charcoal | Sq. K18, depth -1.85-1.90 m, control trench, subterranean structure | AMS | 3680 | 30 | 2186-1976 |
| Chorkvata | Ly-15664 | charcoal | Under accumulation of stones, pottery concentration and charred material | LS | 3040 | 30 | 1401-1213 |
| Dabene | MAMS-23529 | charcoal | Ritual structure 5 | AMS | 3963 | 23 | 2569-2353 |
| Dabene | MAMS-23532 | animal bone | Ritual structure 16 | AMS | 3676 | 37 | 2194-1948 |
| Dabene | MAMS-23531 | animal bone | Ritual structure 14 | AMS | 3414 | 35 | 1873-1621 |
| Dabene | Bln-5231 | charcoal | H18-4, hearth floor associated to a burnt level with pottery; depth -1.39m | GPC | 4145 | 29 | 2880-2590 |
| Dabene | Bln-4903 | charcoal | K12; depth -1.39m | GPC | 4003 | 36 | 2630-2450 |
| Dabene | Bln-4900 | seeds | F16; depth -1.39m | GPC | 3993 | 36 | 2620-2400 |
| Dyadovo | Gak-20464 | charcoal | Level 10 | GPC | 4510 | 60 | 3486-3017 |
| Dyadovo | Gak-20465 | charcoal | Level 10, floor A | GPC | 4510 | 60 | 3321-2874 |
| Dyadovo | Gak-20466 | charcoal | Level 10, floor B | GPC | 4510 | 60 | 3365-2942 |
| Dyadovo | Gak-20467 | charcoal | Level 10, pithos 1 | GPC | 4510 | 60 | 3624-2914 |
| Dyadovo | Bln-3867 | charcoal | Sq. D, level 5; depth -1.89m | GPC | 4410 | 50 | 3331-2909 |
| Dyadovo | Bln-3871 | charcoal | Sq. 26, level 5; depth -1.89m | GPC | 4220 | 50 | 2915-2634 |
| Dyadovo | Bln-3870 | charcoal | Level 5; depth -1.89m | GPC | 4110 | 50 | 2875-2500 |
| Dyadovo | Bln-3866 | charcoal | Sq. D, level 5 | GPC | 4105 | 50 | 2875-2497 |
| Dyadovo | Bln-3868 | seeds | Sq. Q19, level 5; depth -2.06m | GPC | 4010 | 50 | 2840-2348 |
| Dyadovo | Bln-3869 | seeds | Sq. Q19, level 5; depth -2.04m | GPC | 3960 | 60 | 2829-2235 |
| Ezero | Bln-1841 | charcoal | Sq. D11/D12, level 13; depth -3.45m | GPC | 4420 | 80 | 3341-2907 |
| Ezero | Bln-1156 | charcoal | Sq. D11/D12, level 13; depth -3.35m | GPC | 3980 | 100 | 2866-2204 |
| Ezero | Bln-1920B | charcoal | Sq. D11, level 13; depth -3.35m | GPC | 4500 | 50 | 3362-3027 |
| Ezero | Bln-1920 | charcoal | Sq. D11, level 13; depth -3.35m | GPC | 4390 | 50 | 3325-2901 |
| Ezero | Bln-1843 | charcoal | Sq. D11, level 13; depth -3.35m | GPC | 4430 | 50 | 3335-2919 |
| Ezero | Bln-1159 | charcoal | Sq. D11, level 13; depth -3.35m | GPC | 4099 | 100 | 2907-2351 |
| Ezero | Bln-1786 | charcoal | Sq. D8, level 13; depth -3.35m | GPC | 4450 | 80 | 3351-2920 |
| Ezero | Bln-1158 | charcoal | Sq. D8, level 13; depth -3.35m | GPC | 4363 | 100 | 3357-2705 |

| | | | | | | | |
|----------|-----------------------------|------------------|---|-----|------|-----|-----------|
| Ezero | Bln-1840 | charcoal | Sq. C6, level 13; depth -3.35m | GPC | 4590 | 100 | 3633-3023 |
| Ezero | Bln-1256 | charcoal | Sq. C6, level 13; depth -3.35m | GPC | 4300 | 80 | 3322-2635 |
| Ezero | Bln-1155 | charcoal | Sq. C6, level 13; depth -3.35m | GPC | 3040 | 100 | 1503-1007 |
| Ezero | Bln-1837 | charcoal | Sq. E7/E6, level 13; depth -3.20m | GPC | 4415 | 80 | 3340-2905 |
| Ezero | Bln-904 | charcoal | Sq. E7/E6, level 13; depth -3.20m | GPC | 4143 | 100 | 2922-2467 |
| Ezero | Bln-1838 | charcoal / seeds | Sq. E5, level 13; depth -3.20m | GPC | 4305 | 60 | 3262-2701 |
| Ezero | Bln-905 | charcoal / seeds | Sq. E5, level 13; depth -3.20m | GPC | 4113 | 100 | 2915-2410 |
| Ezero | Bln-1836 | charcoal | Sq. B1, level 12; depth -3.05m | GPC | 4160 | 55 | 2888-2581 |
| Ezero | Bln-903 | charcoal | Sq. B1, level 12; depth -3.05m | GPC | 3935 | 100 | 2855-2139 |
| Ezero | Bln-902 | charcoal | Sq. A7, level 11; depth -2.70m | GPC | 4360 | 100 | 3357-2702 |
| Ezero | Bln-1835 | seeds | Sq. C11, level 10; depth -2.45m | GPC | 4260 | 45 | 3012-2696 |
| Ezero | Bln-727 | seeds | Sq. C11, level 10; depth -2.45m | GPC | 4315 | 100 | 3337-2635 |
| Ezero | Bln-726 | seeds | Sq. C9, level 10; depth -2.45m | GPC | 4285 | 100 | 3328-2581 |
| Ezero | Bln-725 | seeds | Sq. A9, level 10; depth -2.45m | GPC | 4120 | 100 | 2917-2461 |
| Ezero | Bln-1834 | charcoal / seeds | Sq. E11, level 9; depth -2.20m | GPC | 4420 | 60 | 3336-2911 |
| Ezero | Bln-722 | seeds | Sq. E11, level 9; depth -2.20m | GPC | 4285 | 100 | 3328-2581 |
| Ezero | Bln-724 | charcoal | Sq. C10, level 9; depth -2.02m | GPC | 4365 | 150 | 3497-2581 |
| Ezero | Bln-527 | seeds | Sq. A6, level 8; depth -1.80m | GPC | 4390 | 80 | 3338-2891 |
| Ezero | Bln-1830 | charcoal / seeds | Sq. A6, level 8; depth -1.80m | GPC | 4335 | 45 | 3090-2886 |
| Ezero | Bln-1831 | charcoal | Sq. A6, level 8; depth -1.80m | GPC | 4360 | 60 | 3324-2883 |
| Ezero | Bln-528 | charcoal | Sq. A6, level 8; depth -1.80m | GPC | 4445 | 100 | 3483-2894 |
| Ezero | Bln-1832 | charcoal | Sq. B7, level 8; depth -1.80m | GPC | 4245 | 50 | 3009-2636 |
| Ezero | Bln-529 | charcoal | Sq. B7, level 8; depth -1.80m | GPC | 4375 | 100 | 3361-2761 |
| Ezero | Bln-1828 | charcoal | Sq. B3, level 7; depth -1.75m | GPC | 4400 | 50 | 3328-2906 |
| Ezero | Bln-525 | charcoal | Sq. B3, level 7; depth -1.75m | GPC | 4280 | 100 | 3326-2580 |
| Ezero | Bln-1103 | charcoal | Sq. D1, level 7; depth -1.65m | GPC | 4280 | 100 | 3326-2580 |
| Ezero | Bln-1826 | charcoal | Sq. D1, level 7; depth -1.65m | GPC | 4310 | 45 | 3086-2876 |
| Ezero | Bln-1827 | charcoal | Sq. E4, level 7; depth -1.65m | GPC | 4475 | 60 | 3358-2936 |
| Ezero | Bln-524 | seeds | Sq. E4, level 7; depth -1.65m | GPC | 4460 | 100 | 3489-2900 |
| Ezero | Bln-523 | charcoal | Sq. D1, level 7; depth -1.65m | GPC | 4400 | 100 | 3366-2876 |
| Ezero | Bln-1829 | charcoal | Sq. D10, level 7; depth -1.60m | GPC | 4165 | 40 | 2886-2624 |
| Ezero | Bln-526 | charcoal | Sq. D10, level 7; depth -1.60m | GPC | 4135 | 100 | 2919-2467 |
| Ezero | Bln-522 | charcoal | Sq. D5, level 7; depth -1.55m | GPC | 4455 | 100 | 3487-2898 |
| Ezero | Bln-1825 | charcoal | Sq. D5, level 7; depth -1.55m | GPC | 4290 | 50 | 3085-2705 |
| Ezero | Bln-423 | charcoal | Sq. E5, level 7; depth -1.35m | GPC | 4440 | 80 | 3347-3918 |
| Ezero | Bln-424 | charcoal | Sq. C4, level 7; depth -1.35m | GPC | 4575 | 80 | 3625-3026 |
| Ezero | Bln-422 | charcoal | Sq. A7, level 6; depth -1.30m | GPC | 4310 | 80 | 3328-2671 |
| Ezero | Bln-1822 | charcoal | Sq. A7, level 6; depth -1.30m | GPC | 4275 | 65 | 3090-2639 |
| Ezero | Bln-421 | seeds | Sq. D8, level 6; depth -1.30m | GPC | 4335 | 80 | 3336-2702 |
| Ezero | Bln-427 | charcoal | Sq. D10, level 4; depth -0.85m | GPC | 4365 | 80 | 3339-2877 |
| Ezero | Bln-428 | charcoal | Sq. D10, level 4; depth -0.80m | GPC | 4260 | 80 | 3092-2620 |
| Ezero | Bln-1824 | seeds | Sq. C10, level 4; depth -0.70m | GPC | 4135 | 65 | 2888-2500 |
| Ezero | Bln-429 | seeds | Sq. C10, level 4; depth -0.70m | GPC | 4130 | 100 | 2916-2466 |
| Galabovo | Bln-4101 | charcoal | Building level 4, sq. N6, house 1; depth -0.85m | GPC | 3890 | 80 | 2575-2139 |
| Galabovo | Bln-4102 | charcoal | Building level 4, sq. O6; depth -0.80m | GPC | 3745 | 50 | 2332-1980 |
| Karanovo | Lyon-7481/ SacA-21369 | animal bone | Central sector, K15/II-III, u.s. 27 | AMS | 4455 | 30 | 3332-3020 |
| Karanovo | Lyon-7480/ SacA-21368 | animal bone | Central sector, L15/II, u.s. 24 | AMS | 4180 | 30 | 2885-2638 |
| Karanovo | Lyon-7480 (bis)/ SacA-24566 | animal bone | Central sector, L15/II, u.s. 24 | AMS | 4215 | 40 | 2907-2671 |
| Karanovo | Lyon-7479/ SacA-21367 | animal bone | Central sector, K15/IV, u.s. 20 | AMS | 4425 | 30 | 3310-2926 |
| Karanovo | Lyon-8851/ SacA-27819 | animal bone | Central sector, K16/III, 217.70-217.60 masl | AMS | 4490 | 35 | 3351-3027 |
| Karanovo | Lyon-8852/ SacA- | animal bone | Central sector, K16/III; 217.70-217.60 masl | AMS | 4555 | 35 | 3488-3103 |

| | | | | | | | | |
|--------------|-----------------------|------------------------|---|-----|------|-----|-----------|--|
| | 27820 | | | | | | | |
| Karanovo | Lyon-8853/ SacA-27821 | animal bone | Central sector, K16/III; 217.75-217.70 masl | AMS | 4585 | 35 | 3500-3111 | |
| Karanovo | Lyon-8854/ SacA-27822 | animal bone | Central sector, K16/III; 217.80-217.75 masl | AMS | 4570 | 35 | 3496-3104 | |
| Karasura | Bln-3429 | charcoal | Rampart layer II, North trench; depth -3m | GPC | 4790 | 60 | 3692-3376 | |
| Karasura | Bln-3447 | charcoal | Under the basilica, sq. S10/O30; depth -3.30m | GPC | 4620 | 60 | 3629-3106 | |
| Karasura | Bln-3773 | charcoal | Rampart layer III, North trench; depth -3.25m | GPC | 4250 | 150 | 3339-2478 | |
| Karasura | Bln-3427 | charcoal | Rampart layer IV, North trench; depth -4m | GPC | 4050 | 70 | 2876-2459 | |
| Karasura | Bln-3420 | charcoal | Under the basilica, sq. S10/O30; depth 3.50m | GPC | 3960 | 50 | 2577-2298 | |
| Karasura | Bln-4227 | seeds | Sq. S 85/1, area of Basilica; depth -1.15m | GPC | 3940 | 50 | 2573-2291 | |
| Karasura | Bln-3423 | seeds | North trench, Sq. S10 /O30, depth -3.30m | GPC | 3870 | 50 | 2472-2202 | |
| Karasura | Bln-3505 | seeds | North trench, Sq. S10 /O30, depth -3.30m | GPC | 3860 | 50 | 2471-2153 | |
| Karasura | Bln-4216 | seeds | Sq. S 85/1, area of Basilica; depth -1.15m | GPC | 3810 | 60 | 2464-2050 | |
| Karasura | Bln-3428 | charcoal | Rampart layer V (base), North trench; depth -4m | GPC | 3800 | 60 | 2461-2043 | |
| Karasura | Bln-3426 | charcoal | Rampart section, North sector; depth 7.50-7.70m | GPC | 3690 | 50 | 2271-1937 | |
| Karasura | Bln-4067 | charcoal | North Tower, depth -5.16-5.40m | GPC | 3070 | 100 | 1528-1020 | |
| Nebet tepe | Bln-4330 | charcoal | Sq. Z2-3, level 11; depth -2.60m | GPC | 4070 | 40 | 2859-2486 | |
| Nebet tepe | Bln-4355 | charcoal | Sq. E 5, level 11; depth -2.20m | GPC | 4280 | 55 | 3086-2679 | |
| Nebet tepe | Bln-4329 | charcoal | Sq. L6, level 10; depth -4.20m | GPC | 4145 | 45 | 2879-2581 | |
| Nebet tepe | Bln-4353 | charcoal | Sq. L5, level 10; depth -3.80-3.90m | GPC | 4610 | 80 | 3631-3095 | |
| Nebet tepe | Bln-4354 | charcoal | Sq. K7, level 10; depth -3.70m | GPC | 4080 | 40 | 2863-2489 | |
| Nebet tepe | Bln-4327 | charcoal | Sq. K5, level 10; depth -3.20m | GPC | 3990 | 50 | 2833-2342 | |
| Nebet tepe | Bln-4352 | charcoal | Sq. L5, level 10; depth -3m | GPC | 4060 | 40 | 2852-2476 | |
| Nebet tepe | Bln-4328 | charcoal | Sq. K5, level 10; depth -2m | GPC | 3980 | 50 | 2828-2308 | |
| Nebet tepe | Bln-4328 A | charcoal | Sq. K5, level 10; depth -2m | GPC | 3980 | 50 | 2828-2308 | |
| Nebet tepe | Bln-4326 | charcoal | Sq. J4, level 10; depth -1.53m | GPC | 4050 | 50 | 2859-2469 | |
| Nebet tepe | Bln-4331 | charcoal | Sq. R5, level 9-10; depth -3.10m | GPC | 4140 | 45 | 2877-2581 | |
| Nebet tepe | Bln-4324 | charcoal | Sq. K4, level 8; depth -2.90m | GPC | 4145 | 45 | 2879-2581 | |
| Nebet tepe | Bln-4322 | charcoal | Sq. A3, level 3; depth -6.15m | GPC | 3135 | 50 | 1508-1272 | |
| Nebet tepe | Bln-4323 | charcoal | Sq. A3, level 3; depth -5.60m | GPC | 2890 | 50 | 1259-927 | |
| Nova Zagora | Bln-1576 A | charcoal | Sq. G6, level 8; depth -2.80m | GPC | 4041 | 60 | 2866-2461 | |
| Nova Zagora | Bln-2239 | charcoal | Sq. H7, level 8; depth -2.80m | GPC | 3840 | 40 | 2461-2155 | |
| Nova Zagora | Bln-1150 | seeds | Sq. Y12, level 6; depth -2.20m | GPC | 3972 | 100 | 2866-2201 | |
| Nova Zagora | Bln-1150 A | seeds | Sq. Y12, level 6; depth -2.20m | GPC | 3913 | 100 | 2839-2046 | |
| Nova Zagora | Bln-1152 | seeds | Sq. Z9, level 6; depth -2.10m | GPC | 3358 | 100 | 1892-1435 | |
| Nova Zagora | Bln-1154 | seeds | Sq. Z9, level 6; depth -2.10m | GPC | 3886 | 100 | 2829-2036 | |
| Nova Zagora | Bln-1154 A | seeds | Sq. Z9, level 6; depth -2.10m | GPC | 3900 | 100 | 2834-2041 | |
| Nova Zagora | Bln-1149 | seeds | Sq. K13, level 5; depth -1.90m | GPC | 3872 | 100 | 2619-2033 | |
| Nova Zagora | Bln-1151 | seeds | Sq. K13, level 5; depth -1.90m | GPC | 4020 | 150 | 2917-2135 | |
| Nova Zagora | Bln-1153 | seeds | Sq. Z9, level 5; depth -1.90m | GPC | 3826 | 100 | 2568-1980 | |
| Nova Zagora | Bln-1245 | seeds | Sq. K13, level 5; depth -1.90m | GPC | 3217 | 100 | 1741-1265 | |
| Radnevo | Lyon-8572/ SacA-26545 | human bone (femur) | Grave 1, depth -0.30m | AMS | 3460 | 35 | 1883-1688 | |
| Radnevo | Lyon-8573/ SacA-26546 | human bone (skull fr.) | Grave 1, depth -0.30m | AMS | 3430 | 30 | 1870-1681 | |
| Razkopanitsa | Bln-813 | seeds | Level 4, inside a storage vessel on a house floor; depth -2.30m | GPC | 4350 | 100 | 3355-2697 | |
| Razkopanitsa | Bln-814 | seeds | Level 3, house 2; depth -3m | GPC | 3886 | 100 | 2829-2036 | |
| Tatul | Lyon-8568/ SacA-26541 | charcoal | Sq. F4, hearth 20, base level, 392.00 masl | AMS | 4040 | 30 | 2655-2475 | |

| | | | | | | | |
|-----------|--------------------------|------------------|--|-----|------|-----|-----------|
| Tatul | SUERC-63780/ GU-39074 | charcoal | Sq. F4, hearth 20, base level, 392.00 masl | AMS | 4034 | 34 | 2621-2477 |
| Tatul | SUERC-63777/ GU-39070 | charcoal | Sq. F4, hearth 20, ceramic stand, 392.00 masl | AMS | 4063 | 26 | 2672-2250 |
| Tatul | SUERC-63778/ GU-39072 | charcoal | Hearth 14, Western part; 392.00 masl | AMS | 4049 | 29 | 2637-2478 |
| Tatul | Lyon-8569/ SacA-26542 | charcoal | Sq. D6, control trench, NW part, near hearth 39, 392.25 masl | AMS | 4005 | 30 | 2577-2468 |
| Tatul | SUERC-63741/ GU-39069 | charcoal | Sq. E5, destruction layer | AMS | 4099 | 31 | 2710-2569 |
| Tatul | SUERC-63787/ GU-39078 | animal bone | Sq. E5, layer around hearth 42; alt. 392 masl | AMS | 3941 | 33 | 2498-2337 |
| Tatul | Lyon-8567/ SacA-26540 | charcoal | Sq. E5, hearth 27, 392.77 masl | AMS | 3975 | 30 | 2575-2355 |
| Tatul | SUERC-63781/ GU-39075 | charcoal | Hearth 19, between two layers of clay; alt. 392 masl | AMS | 3517 | 29 | 1923-1752 |
| Tatul | SUERC-40110/ GU-25554 | antler | Sq. D5 | AMS | 2925 | 30 | 1216-1019 |
| Tatul | Lyon-8566/ SacA-26539 | charcoal | Sq. E5/D5, Hearth 4, under the second floor, 393.33 masl | AMS | 3425 | 30 | 1872-1638 |
| Tatul | Ly-15681 | charcoal | Sq. C5, hearth 1, E. part, under the floor, 393.68 masl | LS | 3520 | 30 | 1924-1753 |
| Yunatsite | IGAN-2794 | charcoal | Central section, level 16-17; depth -5m | GPC | 4380 | 70 | 3333-2889 |
| Yunatsite | IGAN-2795 | charcoal | Central section, level 15-17; depth -5m | GPC | 4090 | 60 | 2872-2490 |
| Yunatsite | Bln-3675 | seeds | Level 15, house 31; depth -4.66m | GPC | 4280 | 60 | 3089-2675 |
| Yunatsite | Bln-3676 | seeds | Level 15, house 31; depth -4.66m | GPC | 4030 | 70 | 2869-2348 |
| Yunatsite | Ly-14795 | seeds | Sq. K7-8, level 15, house 34; depth -4m | GPC | 4280 | 40 | 3018-2762 |
| Yunatsite | Bln-3677 | seeds | Level 15, house 34; depth -4.64m | GPC | 4080 | 70 | 2872-2476 |
| Yunatsite | Bln-3678 | seeds | Level 15, house 34; depth -4.64m | GPC | 4050 | 50 | 2859-2469 |
| Yunatsite | Bln-3671 | seeds | Level 13, house 22, inside a storage vessel; depth -4.30m | GPC | 4180 | 50 | 2896-2621 |
| Yunatsite | Bln-3672 | charcoal | Level 13, house 22, inside a storage vessel; depth -4.30m | GPC | 4040 | 50 | 2857-2467 |
| Yunatsite | Bln-3672 A | charcoal | Level 13, house 22, inside a storage vessel; depth -4.30m | GPC | 4040 | 50 | 2857-2467 |
| Yunatsite | Bln-3673 | seeds | Sq. E9, level 13, house 20; depth -4.45m | GPC | 3990 | 60 | 2837-2298 |
| Yunatsite | Bln-3674 | seeds | Sq. E9, level 13, house 20; depth -4.45m | GPC | 4020 | 60 | 2860-2348 |
| Yunatsite | Bln-3670 | seeds | Sq. C7/C8, level 11, house 11, inside a storage jar ; depth -3.70m. | GPC | 3990 | 50 | 2833-2342 |
| Yunatsite | Bln-3679 | seeds | Sq. C7/C8, level 11, house 11, inside a storage jar; depth -3.70m. | GPC | 4000 | 70 | 2858-2297 |
| Yunatsite | Bln-3668 | seeds | Sq. C8, level 10, house 10; depth -3.35m | GPC | 3830 | 60 | 2470-2064 |
| Yunatsite | Bln-3669 | seeds | Sq. U8, level 10; depth -3.35m | GPC | 4090 | 50 | 2872-2491 |
| Yunatsite | IGAN-2799 | charcoal | Central section, level 9-10; depth -3.30- 3.60m | GPC | 4070 | 150 | 3013-2154 |
| Yunatsite | Bln-3665 | charcoal | Sq. P7, level 9; depth -3.10m | GPC | 4100 | 50 | 2873-2496 |
| Yunatsite | Bln-3666 | seeds | Sq. P7, level 9; depth -3.10m | GPC | 4070 | 60 | 2867-2473 |
| Yunatsite | Bln-3667 | charcoal | Sq. L9, level 9, beam; depth -3.10m | GPC | 4050 | 50 | 2859-2469 |
| Yunatsite | IGAN-2798 | charcoal | Central section, level 8-9; depth -3.30m | GPC | 4180 | 250 | 3507-2046 |
| Yunatsite | Bln-3663 | seeds | Sq. O8/M6, level 8, inside a storage jar; depth -2.80m | GPC | 4100 | 50 | 2873-2496 |
| Yunatsite | Bln-3664 | seeds | Sq. O8/M6, level 8, inside a storage jar; depth -2.80m | GPC | 4140 | 50 | 2878-2581 |
| Yunatsite | Bln-3662 | charred fruit(s) | Sq. O9, level 7, inside a storage jar; depth - 2.60m | GPC | 3910 | 60 | 2568-2206 |
| Yunatsite | Bln-3660 | charcoal | Sq. Z9/K6, level 6; depth -2.35m | GPC | 3970 | 50 | 2620-2299 |
| Yunatsite | Bln-3661 | charcoal | Sq. Z9/K6, level 6; depth -2.35m | GPC | 4060 | 60 | 2866-2469 |
| Yunatsite | Bln-3658 | charred fruit(s) | Sq. O6/O8, level 5, inside a storage jar; depth -1.95m | GPC | 3780 | 50 | 2433-2035 |
| Yunatsite | Bln-3659 | charred fruit(s) | Sq. O8/O9, level 5, inside a storage jar; depth -1.95m | GPC | 3700 | 50 | 2274-1946 |
| Yunatsite | Bln-3657 | charred fruit(s) | Sq. Z9, level 4; depth -1.70m | GPC | 3760 | 50 | 2345-2025 |
| Yunatsite | Bln-3656 | charred fruit(s) | Sq. K6, level 3; depth -1.45m | GPC | 3760 | 50 | 2345-2025 |

Table 2. Available ^{14}C dates from Bronze Age sites in Greek Eastern Macedonia. Abbreviations used for the dating methods: AMS = Accelerated Mass Spectrometry, GPC = Gas Proportional Counting, LS = Liquid Scintillation. All the dates are calibrated at 2s (95,4% probability) with the curve IntCal.13 (Reimer et al. 2013).

| Site | Lab Code | Type of sample | Provenance | Method | BP date | ±BP | Date cal. BC (95,4%) |
|-----------------------|-----------------------|--------------------------|---|--------|---------|-----|----------------------|
| Aghios Antonios Potos | DEM-2169 | animal bone | Trench ΓΘ-ΓΔ, layer 8/7, unit 41-44; alt. 29.30-28.96m | GPC | 4169 | 30 | 2880-2632 |
| Aghios Antonios Potos | DEM-2133 | animal bone | Trench ΓΘ, layer 8, unit 45; alt. 29.03-28.93m | GPC | 4043 | 30 | 2833-2475 |
| Aghios Antonios Potos | DEM-2240 | animal bone | Trench ΑΥ, ΒΕ/4-5 and ΒΔ/3-5 layer 2/4, unit 35/39; alt. 30.33-30.17m | GPC | 3545 | 30 | 1964-1770 |
| Aghios Antonios Potos | DEM-2333/ OxA-22621 | charcoal | Trench ΒΠ, sq. ΒΓ/0-4, layer 10, unit 96; alt. 27.93m | AMS | 3348 | 25 | 1735-1530 |
| Aghios Antonios Potos | DEM-2241 | animal bone | Trench ΑΗ, sq. ΑΒ/2-5, layer 3, unit 28, building ΙΧ; alt. 31.24-31.12m | GPC | 3145 | 30 | 1496-1322 |
| Aghios Ioannis | DEM-848 | charcoal | I, Trench ΒΒ, sq. Β-Ε/0-3, layer 3 unit 30; depth 1.84m | GPC | 4816 | 51 | 3705-3380 |
| Aghios Ioannis | DEM-849 | charcoal | I, Trench ΒΒ, sq. Β-Ε/2-3, layer 9, unit 36; depth 1.80m | GPC | 4598 | 117 | 3640-2940 |
| Aghios Ioannis | DEM-1072 | charcoal | I, Trench ΒΠ, sq. Β-Ε/0-1, layer 4, unit 10; depth 1,28-1,16m | GPC | 4563 | 68 | 3520-3025 |
| Aghios Ioannis | DEM-932 | animal bone | I, Trench ΒΒ, sq. Β-Ε/0-4, layer 12, unit 42; depth 1,82-1,62m | GPC | 4530 | 43 | 3365-3095 |
| Aghios Ioannis | DEM-933 | animal bone | I, Trench ΒΒ, sq. Α-Ε/3-5, layer 11, unit 38; depth 1,78-1,58m | GPC | 4513 | 54 | 3370-3025 |
| Aghios Ioannis | DEM-931 | animal bone | I, Trench ΒΒ, sq. Β-Ε/2-5, layer 3, unit 8; depth 1,82-1,70m | GPC | 4113 | 54 | 2880-2495 |
| Angista | Bln-2103 | charred organic material | North Trench, layer 5, pithos 1, Γ-Δ/1-2 | GPC | 2900 | 45 | 1217-939 |
| Angista | Bln-2104 | charcoal | North Trench, layer 5, pithos 3, Γ-Δ/2-3 | GPC | 2890 | 65 | 1258-909 |
| Angista | Bln-2134 | charred organic material | North Trench, layer 5, pithos 1, Γ-Δ/1-2 | GPC | 2890 | 45 | 1210-935 |
| Dikili Tash | DEM-2347 | charred fruits | Sector 6, level 6-2, unit 6526; pit 6-094; alt. 63,74-63,30m | GPC | 4453 | 30 | 3337-3013 |
| Dikili Tash | Lyon-6012/ SacA-15581 | charred fruits | Sector 6, level 6-2, unit 6010; pit 6-003; alt. 64,21m | AMS | 4445 | 30 | 3328-3015 |
| Dikili Tash | DEM-552 | seeds | Sector 6, level 6-2, pit 6-142; alt. 63,42-63,25m | GPC | 4419 | 28 | 3300-2920 |
| Dikili Tash | Ly-1602 | charcoal | Sector Α2, sq. Τ 24, layer 12; alt. 65,78-66m | LS | 3700 | 230 | 2854-1529 |
| Dikili Tash | Ly-1063 | charcoal | Sector Α2, sq. Q 25, layer 2/3; alt. 67,61-67,74m | LS | 3430 | 120 | 2035-1451 |
| Dikili Tash | DEM-2033 | charred fruits | Sector 7, level 7-10, unit 7128; alt. 67,87-67,97m | GPC | 3242 | 30 | 1610-1440 |
| Dikili Tash | Lyon-6017/ SacA-15586 | charcoal | Sector 7, level 7-9, unit 7092; alt. 68,05-68,10m | AMS | 3100 | 30 | 1430-1310 |
| Dikili Tash | DEM-2032 | charcoal | Sector 7, level 7-6, unit 7124; alt. 68,68m | GPC | 3078 | 50 | 1455-1135 |
| Dikili Tash | Lyon-6016/ SacA-15585 | charcoal | Sector 7, level 7-8, unit 7159; alt. 68,26-68,42m | AMS | 3075 | 30 | 1414-1266 |
| Dikili Tash | Lyon-6019/ SacA-18607 | charcoal | Sector 7, level 7-6, unit 7150; alt. 68,68m | AMS | 3065 | 35 | 1414-1250 |
| Dikili Tash | Lyon-6015/ SacA-15584 | seeds | Sector 7, level 7-11, unit 7169; alt. 67,93m | AMS | 3020 | 30 | 1384-1133 |
| Dikili Tash | Ly-1306 | charcoal | Sq. Q 25/26, layer 2; alt. 67,61-67,74m | LS | 2890 | 370 | 2119-201 |
| Dimitra | Bln-2479 | charcoal | Trench Ι, unit 28/8; "burnt house"; depth 3.75m | GPC | 3020 | 100 | 1496-997 |
| Dimitra | Bln-2478 | sediment with charcoal | Trench Ι, unit 41/16; "burnt house"; depth 3.54m | GPC | 3000 | 50 | 1399-1057 |
| Kastri Theologos | Lyon-7913/ SacA-23516 | animal bone | Sector T12, sq. Ο-Α/23-24; depth 2.13m | AMS | 3090 | 30 | 1425-1300 |
| Kastri Theologos | Lyon-7916/ SacA-23519 | animal bone | Sector T1, sq. Ο-Δ/2-3 | AMS | 3045 | 30 | 1402-1216 |
| Kastri Theologos | Lyon-7912/ SacA-23515 | animal bone | Sector T12, sq. Α-Β/22-23; depth 1.96m | AMS | 2985 | 30 | 1311-1125 |
| Kryoneri | DEM-790 | charcoal | Sector Ι3-Ι4-Ιδ | GPC | 4461 | 181 | 3640-2670 |

Table 2.

| | | | | | | | |
|---------------------------|--------------------------|-------------------|---|-----|------|-----|-----------|
| Kryoneri | Lyon-6029/ SacA-15598 | charcoal | Sector III, depth 0.30-0.40m | AMS | 3925 | 30 | 2429-2151 |
| Limenaria | DEM-770 | charcoal | Plot Markoulis, sq. O-C/0-3, unit 4; depth 0.70m | GPC | 3707 | 64 | 2290-1920 |
| Limenaria | DEM-771 | charcoal | Plot Markoulis, sq. C-O/1-4, unit 11; depth 0.71m | GPC | 3026 | 189 | 1680-810 |
| Pentapolis | Bln-2392 | charcoal | Unit 24B, depth 2.90m | GPC | 4235 | 50 | 2925-2634 |
| Pentapolis | Bln-2393 | charcoal | Unit 18N, depth 2.60m | GPC | 4025 | 50 | 2856-2460 |
| Pentapolis | Bln-2395 | charcoal | Unit 7N, depth 1.40m | GPC | 3955 | 55 | 2620-2287 |
| Pentapolis | Bln-2454 | charcoal | Unit 11N, depth 1.75m | GPC | 3850 | 50 | 2468-2151 |
| Pentapolis | Bln-2394 | charcoal | Unit 11N, depth 1.75m | GPC | 3820 | 55 | 2466-2064 |
| Pentapolis | Bln-2396 | charcoal | Unit 4N, depth 1.10m | GPC | 3805 | 50 | 2459-2060 |
| Sidirokaastro-Katarraktes | Lyon-6004/ SacA-15573 | burnt animal bone | Trench E4, layer 3, building B4; alt. 96,85 m | AMS | 4635 | 30 | 3509-3358 |
| Sidirokaastro-Katarraktes | DEM-1933 | charcoal | Trench I7, layer 3, building B3; alt. 96,89-96,66 m | GPC | 4530 | 30 | 3370-3100 |
| Sidirokaastro-Katarraktes | DEM-1520 | charcoal | Trench IA8, layer 4a; alt. 96,74 m | GPC | 4471 | 25 | 3340-3020 |
| Sidirokaastro-Katarraktes | Lyon-6003/ SacA-15572 | charcoal | Trench IH7, layer 6; alt. 96,76-96,74 m | AMS | 4465 | 35 | 3341-3020 |
| Sidirokaastro-Katarraktes | DEM-1519 | charcoal | Trench IZ 20, layer 3; alt. 96,64 m | GPC | 4459 | 25 | 3340-3020 |
| Sidirokaastro-Katarraktes | DEM-1931 | charcoal | Trench E4, layer 2c, building B4; alt. 96,72 m | GPC | 4459 | 30 | 3340-3020 |
| Sidirokaastro-Katarraktes | DEM-1521 | charcoal | Trench IA7, layer 3; alt. 96,85 m | GPC | 4447 | 25 | 3330-2920 |
| Sidirokaastro-Katarraktes | DEM-1932 | charcoal | Trench I7, layer 3, building B3 | GPC | 4442 | 30 | 3330-2930 |
| Sidirokaastro-Katarraktes | DEM-1930 | charcoal | Trench O9, layer 3, building B2; alt. 96,84 m | GPC | 4402 | 30 | 3265-2915 |
| Sidirokaastro-Katarraktes | DEM-1909 | charcoal | Trench O7, layer 3, building B3; alt. 96,58 m | GPC | 4388 | 30 | 3095-2915 |
| Sidirokaastro-Katarraktes | DEM-1908 | charcoal | Trench IZ 19, layer 3, building B1; alt. 96,55 m | GPC | 4374 | 30 | 3090-2910 |
| Sidirokaastro-Katarraktes | Lyon-7022/ SacA-19573 | burnt animal bone | Trench E4, layer 3, building B4; alt. 96,85 m | AMS | 4355 | 35 | 3084-2900 |
| Sidirokaastro-Katarraktes | Lyon-8908/ SacA-26441 | charred fruits | Trench O2, layer 3, building A2 | AMS | 4200 | 35 | 2893-2674 |
| Sidirokaastro-Katarraktes | DEM-1910 | charcoal | Trench I8, layer 2a, building A1; alt. 97,04 m | GPC | 4166 | 30 | 2880-2630 |
| Sidirokaastro-Katarraktes | Lyon-6001/ SacA-15570 | charred fruits | Trench O2, layer 3, building A2 | AMS | 4105 | 30 | 2860-2573 |
| Sidirokaastro-Katarraktes | Lyon-6001bis/ SacA-24079 | charred fruits | Trench O2, layer 3, building A2 | AMS | 4105 | 30 | 2860-2573 |
| Sitagroi | Bln 879 | charcoal | ZA 31, floor 14 | GPC | 4550 | 100 | 3622-2930 |
| Sitagroi | Bln 880 | charcoal | ZB 112 | GPC | 4510 | 100 | 3510-2915 |
| Sitagroi | Bln 878 | charcoal | ROc 59 | GPC | 4395 | 100 | 3367-2872 |
| Sitagroi | Bln 773 | seeds | ZA 29 | GPC | 4390 | 100 | 3365-2780 |
| Sitagroi | Bln 1102 | charcoal | ZB 112 | GPC | 4380 | 80 | 3338-2886 |
| Sitagroi | BM 650a | charcoal | ZB 112 | GPC | 4363 | 56 | 3322-2886 |
| Sitagroi | BM 651 | seeds | ZB 108 | GPC | 4332 | 79 | 3335-2701 |
| Sitagroi | Bln 782 | charcoal | ZA 16, depth 2.00-2.50m | GPC | 4310 | 100 | 3336-2632 |
| Sitagroi | Bln 877 | charcoal | PO 158, Burnt House | GPC | 4170 | 100 | 3010-2473 |
| Sitagroi | Bln 781 | seeds | QO 8, Bin Complex | GPC | 4085 | 150 | 3022-2202 |
| Sitagroi | LJ-2715 | charcoal | PN/C 81, Long House | GPC | 4005 | 40 | 2832-2459 |
| Sitagroi | LJ-2714 | charcoal | PN/C 81, Long House | GPC | 3971 | 40 | 2579-2345 |
| Sitagroi | Bln 876 | charcoal | PO 23, Long House | GPC | 3965 | 100 | 2865-2152 |
| Sitagroi | Bln 780 | charcoal | PO 9, Bin Complex | GPC | 3870 | 100 | 2618-2033 |
| Sitagroi | BM 652 | charcoal | PO 162, Burnt House | GPC | 3803 | 59 | 2461-2046 |
| Sitagroi | BM 653 | seeds | QO 8, Bin Complex | GPC | 3790 | 78 | 2467-2026 |
| Skala Sotiros | DEM 103-84 | charcoal | I-IIA-30K, 1987 excavation | GPC | 3867 | 63 | 2561-2142 |
| Skala Sotiros | DEM 106-87 | charcoal | IV-47K, 1988 excavation | GPC | 3845 | 37 | 2462-2148 |
| Skala Sotiros | DEM 105-86 | charcoal | I-II37K, 1988 excavation | GPC | 3802 | 39 | 2454-2138 |
| Skala Sotiros | DEM 104-85 | charcoal | I-IIA/88- 1K | GPC | 3752 | 154 | 2590-1750 |