

Burials from the time of the Altheim culture at the site Nördlingen-Nürnberger Straße 63, Nördlinger Ries, Bavaria*Johann Friedrich Tolksdorf, Manfred Woidich, Eva Kropf, Christoph Herbig***Abstract**

The archaeological record for the Altheim culture (from approx. 38th–35th century BC) in SW Germany is highly biased. While a small number of waterlogged sites have provided material for very detailed analyses of settlement activities and economy within this environmental setting, evidence for settlement activities outside these specific topographic situations is extremely sparse. The same applies to burial features that have been identified from eight sites, which are predominantly isolated burials that have not revealed any clear modus concerning orientation, grave goods or spatial organisation. Here we present results from a site situated in the Nördlinger Ries (Bavaria) that has yielded a total of eight burials from the time period of the Altheim culture. Our results corroborate the absence of any strict orientation or a defined set of grave goods in this culture and an irregular spatial distribution.

Introduction

Sites attributed to the Altheim culture have been identified mainly on loess substrate along the Danube and its tributaries Isar and Vils as well as along the Lech and in the Nördlinger Ries area (Fig. 1A). Especially waterlogged sites, such as Pestnacker, Ergolding-Fischergasse, and Unfriedshausen, have provided settlement structures that have been analysed by dendrochronology, thereby achieving a high chronological resolution (Schönfeld 2009; Hanöfner 2017). Applying an ever increasing number of ¹⁴C-dated features from other sites and typo-chronological comparison, the Altheim culture can be positioned within the time period from the 38th to the 35th century BC (Fig. 3B). While a number dislocated human bones had already been discovered in the ditches of the eponymous enclosure during the first excavations in the early 20th century (Reinecke 1915), the amount of regular burials attributed to the Altheim culture did not exceed ten individuals from seven sites after one century of research (Eibl/Rasshofer 2015). In general, this small number has been explained by problems in recognising burials of this culture based on artefacts or construction features. The small sample size of mainly one burial per site has prevented any further investigations on the local and chronological variation of grave rituals and demography. This small set of comparable data is significantly enlarged by the results from the Nürnberger Straße site at Nördlingen that presents a group of seven burials with eight individuals, i. e. the largest group of burials from this cultural context so far.

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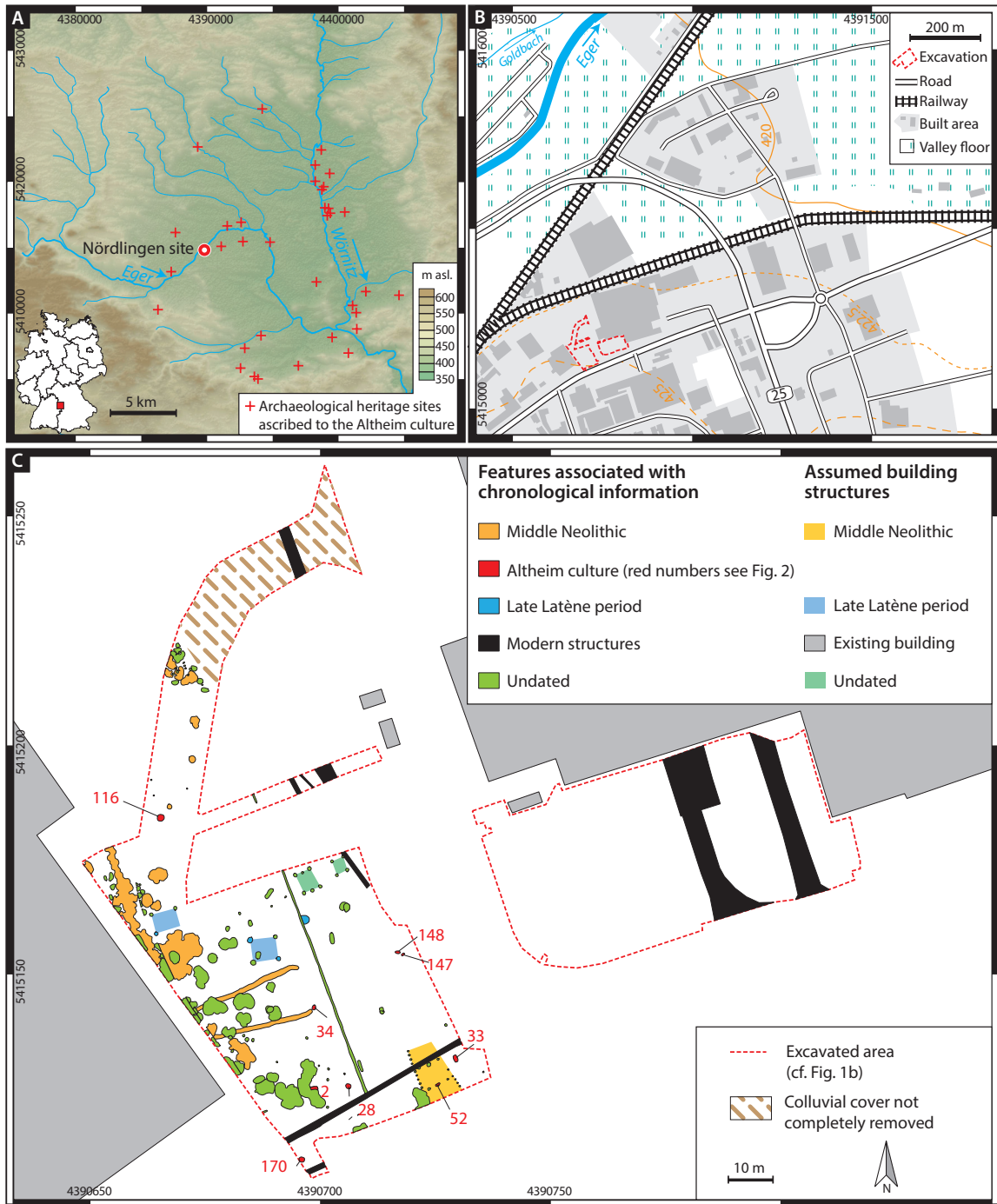


Fig. 1. Topography of the Nördlinger Ries and the site Nördlingen-Nürnbergger Straße 63: **A** Nördlinger Ries with location of the study site and archaeological heritage sites officially listed to contain archaeological material from the Altheim culture either as surface finds or drawn from excavation reports (BLfD); **B** Site topography of Nördlingen-Nürnbergger Straße 63; **C** Area excavated in 2018 (BLfD code M-2018-113-2) with distribution of archaeological features and their chronological attribution.

Site

The site Nördlingen-Nürnbergger Straße 63 is situated 2 km northwest of the city of Nördlingen in the Nördlinger Ries, a meteoritic impact crater within the Suebian Jura. Loess deposits in this crater provide soils of high fertility and result in a high density of pre-historic settlement sites since the Early Neolithic period, including the Altheim culture (Fig. 1A). Local site topography is characterised

by a loess-covered gentle slope to the floodplain of the River Eger to the north (Fig. 1B). Due to building activities, an area of 7 000 m² had to be excavated in 2018 and 2019 (BLfD code M-2018-113-2) and provided a total of 183 archaeological features covering the Middle and the Younger Neolithic as well as the younger Latène period (Fig. 1C).

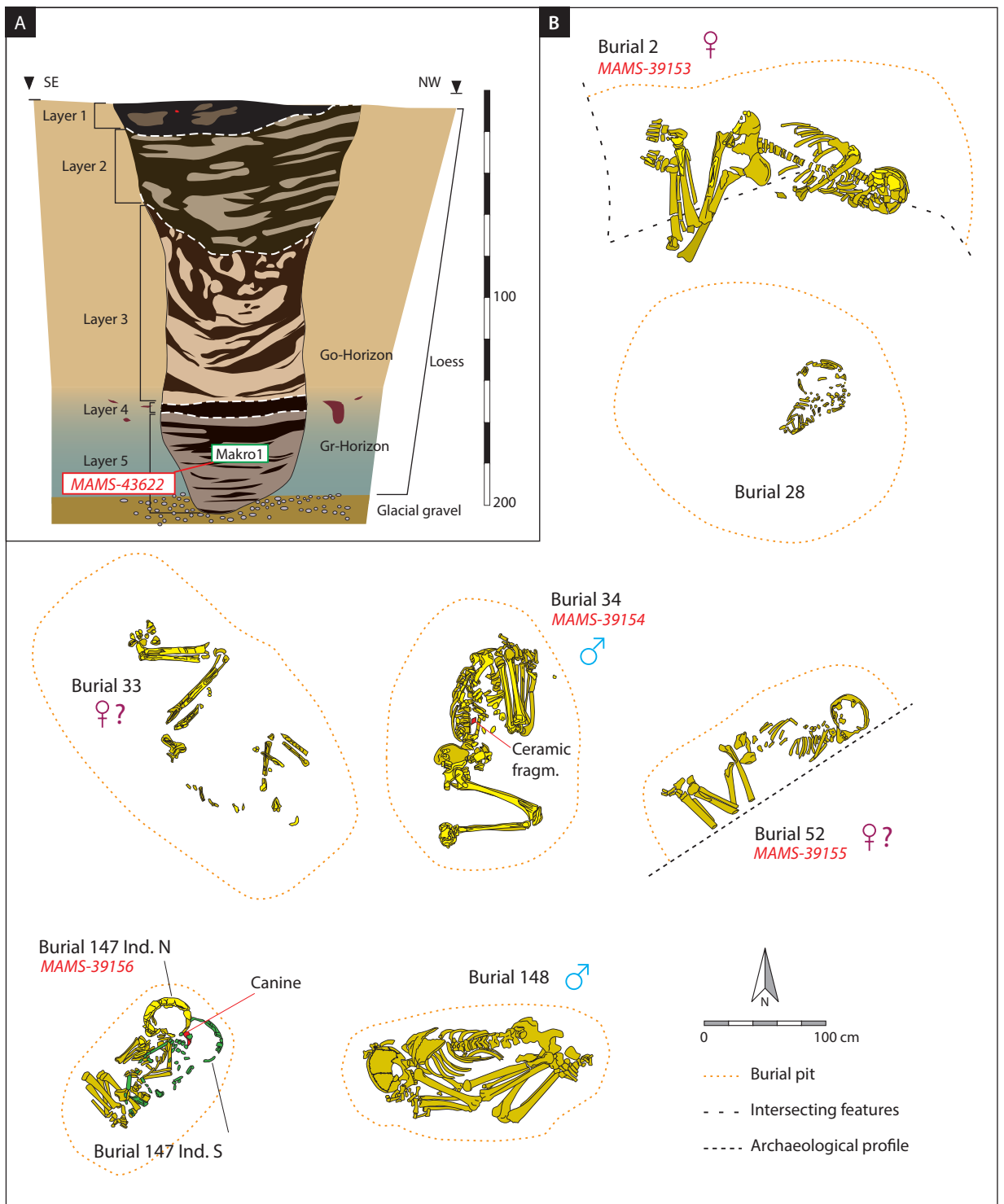
Materials and Methods

The inhumation burials were excavated and recorded on several excavation levels, allowing detailed documentation as well as an ongoing recovery of the bone material. Only feature 52 was cut by a profile as its identification as a grave was not clear from the beginning. Basic anthropological data (Table 1) were recorded both *in situ* and after the full recovery of all bone fragments, using standard literature for age and sex determination (Buikstra/Ubelaker 1994; Ortner 2003; Grupe et al. 2015). Where applicable, body height was calculated based on measurements of the femur (Breitinger 1938; Bach 1965). Bone material of four individuals (Table 2) was submitted for ¹⁴C-analyses at the CEZ Mannheim. Botanical remains were retrieved from approx. 3 litres of soil material from the lowermost infill layers of feature 170 by flotation and wet-sieving (mesh-width 1; 0.5; 0.3 mm) and determined according to literature (Cappers et al. 2012). A charred *Cerealia* seed from this sample was submitted for ¹⁴C-analysis. All ¹⁴C-ages were calibrated according to the IntCal13 database (Reimer 2013).

Results

Archaeological material allowed for the attribution of the majority of the archaeological features at the site to the Middle Neolithic and the late Latène time period (Fig. 1C). The only ceramic material attributable to the Younger Neolithic time period derives from feature 116, an oval settlement pit of 40 cm depth with a maximum diameter of 140 cm and a horizontal bottom. It includes a rim fragment with the application of a decorative band with regular impressions at its lower edge (German: *Arkadenrand*) that is a characteristic of the Altheim culture (Reinecke 1924; Driehaus 1960; Hanöfner 2017). Feature 170 was situated in the southwestern corner of the excavation area (Fig. 1C) and presented a vertical shaft of approx. 65 cm diameter that had been dug through the loess sediment about 2 m deep into the underlying gravel bed and was probably used as a well (Fig. 2A). Flotation of a soil sample from the lowermost refill layer (sample Makro 1) in this structure revealed a small number of botanical remains comprised of two charred fragments of *Cerealia* (indet.) and three uncharred seeds of dwarf elder (*Sambucus ebulus*). ¹⁴C-analysis of the charred *Cerealia* fragments yielded an age ranging from 3512–3359 calBC (2σ), thus within the Younger Neolithic.

The burials are scattered in the southern part of the excavation area and do not present any clear spatial relationship, neither to each other nor to other features apart from the close distance between feature 147 and 148 (Fig. 1C). Preservation of the bone material differed highly and ranged from teeth, skull and torso fragments at feature 28 to a nearly complete skeleton as seen in feature 148 (Fig. 2B; Table 1). The differences in preservation are at least partly the result of slightly different burial depths and the subsequent varied land-use impact. This is illustrated by the divergent preservation of bone material in double burial feature 147, where the lower



burial (individual N) was much better preserved than the upper burial. ^{14}C -analyses of bone material from burial features 2, 34, 52 and 147 (individual N) yielded age spans that consistently cover the late 37th and the 36th century BC (Table 2; Fig. 3B). The burials 28, 33 and 148 could be broadly contemporaneous given their spatial association and comparable burial mode. Depositions in a crouched position on the side with arms in front of the face seem to have been the prevailing burial mode, although the degree to which the legs were tucked up diverges. The shape of the burial pits varies from an oval to a more rectangular form and seem oversized in the case of feature 28. Based on anthropological criteria, the individuals of burials 34 and 148 were determined as male, burial 2 as female

Fig. 2. Archaeological features from the site Nördlingen-Nürnberg Straße 63: A Profile of feature 170 (well) and location of the macrobotanical sample yielding a ^{14}C -age from 3512–3359 calBC; B Burials attributed to the Altheim culture.

and 33 and 52 as probable female interments. Poor preservation and the young age of the individuals hindered any sex determination for burials 28 and 147. None of the adult individuals seem to have lived beyond 30 years of age and stress markers were identified in the form of linear enamel hypoplasia on burial 28 and 52. While the

Table 1. Anthropological data from the site Nördlingen-Nürnbergger Straße 63 (BLfD code M-2018-113-2).

Grave/ individual	Preservation	Sex	Age at death	Calculated height	Deposition/ orientation	Pathologies	Associated artefacts
2	High degree of fragmentation, surface of compacta corroded, disturbed by later feature 3	Female	20–30 years	161.8 ±4.1 cm	Crouched position, lying on the left side, arms crossed in front of the body with hands in front of the face, W–E orientation, head in the E, face to S;	Dental calculus	–
28	High degree of fragmentation, only parts of cranial skeleton, teeth, very poor preserved postcranial part of skeleton	Indet.	Approx. 6 years	–	Lying on the left side, arm probably in front of body, SW–NE orientation, head in the NE, face to the SE	Linear enamel hypoplasia	–
33	High degree of fragmentation, poor preservation of epiphyses, pelvis and cranial skeleton highly decomposed	Probable female	15–30 years	–	Crouched position, lying on the right side, crossed arms in front of the body, SE–NW orientation, head in SE, face to NW	Dental calculus	–
34	Good preservation, only cranium, parts of the upper cervical spine, right leg, left tibia and feet missing	Male	14–18 years	–	Crouched position, lying on the left side, arms in front of the body, N–S orientation, head in N, face to E	Spondylosis on fifth lumbar vertebra; supracondylar process of the left humerus	Ceramic fragment
52	High degree of fragmentation, epiphyses not preserved, excavation of superimposed feature destroyed areas of knees and arms, right side of cranial skeleton as well as spine and pelvis decomposed	Probable female	15–18 years	–	Crouched position, lying on the left side, arms in front of the body, NE–SW orientation, head in the NE, face to the SE	Linear enamel hypoplasia	–
147, Individual south	Very high degree of fragmentation, preserved are only parts of the cranial skeleton with teeth, remains of arm bones, ribs, diaphyses of leg bones, pelvis	Indet.	Approx. 2 years	–	Situated close to but a little bit higher than individual to the north, crouched position, lying on the right side, NE–SW orientation, head in the NE, face to the NW, arms in front of the body	–	Canine of <i>ursus arctos</i> below head between both burials
147, Individual north	High degree of fragmentation, better and more complete preservation than individual to the south, left part of cranial skeleton missing	Indet.	Approx. 4 years	–	Situated lower than the individual to the south, crouched position, lying on the right side with torso twisted in prone position, NE–SW orientation, head in the NE, face to the NW, left arm in front of the body, right arm below torso	–	–
148	Moderate degree of fragmentation, good preservation of bone substance; damages on left pelvis and femur	Male	20–25 years	162.6 ±4.8 cm	Crouched position, lying on the right side, arms in front of the body, hands in front of the face with some fingers on the face, W–E orientation, head in the E, face to the S	–	–

Table 2. ¹⁴C-results from the site Nördlingen-Nürnberger Straße 63 (BLfD code M-2018-113-2).

LabNo.	Material and archaeological context	¹⁴ C [BP]	¹⁴ C (INTCAL13; 1σ) [cal BC]	¹⁴ C (INTCAL13; 2σ) [cal BC]	Collagen [%]	C content and C:N ratio [%]/ratio	δ ¹³ C [‰ PDB]
MAMS-39153	Burial feature 2; bone material	4764 ± 28	3634–3624 3603–3553 3541–3524	3640–3516 3398–3384	1.6	31.8/2.8	-21.0
MAMS-39154	Burial feature 34; bone material	4787 ± 28	3637–3629 3582–3533	3643–3619 3610–3522	4.6	29.8/2.9	-20.7
MAMS-39155	Burial feature 52; bone material	4813 ± 28	3645–3631 3578–3574 3566–3536	3653–3626 3597–3526	3.3	44.1/2.9	-20.4
MAMS-39156	Burial feature 147, individual north; bone material	4784 ± 31	3637–3629 3586–3531	3643–3520	5.0	44.8/2.9	-21.5
MAMS-43622	Charred grain (<i>Cerealia</i> indet.) from bottom of feature 170 (well)	4637 ± 25	3497–3456 3377–3366	3512–3425 3384–3359	–	–	-18.6

fragment of the bottom of a ceramic vessel in burial 34 could be a relocated piece from the Middle Neolithic settlement, a brown bear (*Ursus arctos*) canine placed between the heads of the double child burial 147 appears to be the only unequivocal grave good.

Discussion

Relation of burials to contemporaneous settlement activities

The presence of a well and especially of the identified charred *Cerealia* within this structure is strong evidence for settlement activities from 3512–3359 calBC. This ¹⁴C-age fits into the time period from the 38th–34th century BC when the Altheim culture flourished (Bauer 2009; Bauer 2011; Hanöfner 2017) (Fig. 3B), although any strict attribution to a specific archaeological culture is prevented by the absence of diagnostic artefacts. It is slightly younger than the ¹⁴C-ages obtained for the burials and could either indicate a longer time period of continuous settlement at this site or a later phase without any relation to the burials.

While the *Cerealia* remains are direct evidence for food processing activities and very likely local agriculture, the presence of uncharred remains of *Sambucus ebulus* is also remarkable and corresponds to a comparatively high number of remains identified at Ergolding-Fischergasse (Küster 1989). While a pharmaceutical use of this herbaceous perennial (König 1993) cannot be substantiated from the context, this species may have been established as a ruderal plant on previously cleared areas that might be expected around a settlement site or on pasture land (Meshinev et al. 2009, 251). However, pit 116 is the only other feature that can be ascribed to the Altheim culture as an archaeologically defined entity based on the ceramic material.

Although a considerable number of sites in the Nördlinger Ries region have yielded artefacts of the Altheim culture, only two sites have provided features related to buildings. At the Reimlinger Berg site, four postholes form an incomplete house outline with dimensions of at least 6.6 × 7 m and another incomplete house layout with three posthole-features associated with daub fragments that possibly bear white paint was observed in the quarry at Maihingen Klosterberg (Driehaus 1960; Limmer 2010). In the supra-regional context, only the sites of Vilsburg (Richter/Wild 2018), Köfering

(Eibl/Rasshofer 2015) and the sites at Unfriedshausen/Pestenacker have provided evidence for constructions with posts. Beside some possible sunken house constructions (Neumair 2004; Limmer 2010; Eibl/Rasshofer 2015), the extreme scarcity of housing features has been discussed either as a consequence of taphonomic circumstances or the state of research. While settlement activities are evident at the Nördlingen site, houses were not identified and it cannot be concluded whether they existed outside the excavation area or if they are invisible in the archaeological record due to taphonomic processes. It is therefore impossible to estimate if the burials were located at the periphery of a settlement or if their spatial distribution might relate to building structures that are invisible in the archaeological record.

The burials

Leaving aside a number of disarticulated bones in the ditches of the enclosure at Altheim (Richter et al. 2016; Saile et al. 2017a; 2017b), burials attributed to the Altheim culture have so far only been identified in Eastern Bavaria along the Danube and the Isar (Fig. 3A). Individual inhumation graves have been published from the sites of Altdorf (Koch 2013), Ergolding-Fischergrasse (Aitchinson 1989), Mintraching (Engelhardt 2011), and Niedertraubling and Sengkofen (Eibl/Rasshofer 2015). Following successive excavation activities in a large area at Stephansposching, two isolated inhumations and one double cremation burial have been documented and were initially ascribed to the Münchshöfen culture (Schmotz 1995), but are now attributed to the Altheim culture (Eibl/Rasshofer 2015; Hanöfner 2017), although the cremation burial may have close cultural ties to the Baden culture based on typochronological analysis of the associated cup. The burials at Altessing has yielded ^{14}C -ages that may justify an alternative attribution to the preceding Münchshöfen or Michelsberg culture (Hanöfner 2017). Another grave with ^{14}C -results related to the Altheim culture from a site at Irl has been listed by Eibl/Rasshofer (2015) but has not been published in detail so far.

Based on the ^{14}C -results, the burials from Nördlingen could chronologically be placed between the burials from Altdorf and Mintraching (Fig. 3B) and are comparable to the time span obtained for Niedertraubling. However, a direct cultural attribution of the burials at Nördlingen to the Altheim culture is hindered by associated diagnostic artefacts and is only based on their contemporaneous position. Apart from the double burial 147, which indicates that both individuals were buried more or less at the same time, no further stratigraphical or spatial information is present that could indicate how long this area was used as a burial ground. The younger ^{14}C -age obtained from the well could either suggest that settlement activities continued into the 35th century or belong to a later settlement phase that was unrelated to the older burials. Remarkable is the great variety in the orientation of the burials in the data compiled by Eibl/Rasshofer (2015). Four burials from Nördlingen have a north-east-south-west orientation with the head in the north-east and thereby contribute strongly to the overall dataset in this segment (Fig. 3C). A clear and superregional tendency about a prevailing orientation is missing, which is further underlined by the variety among the Nördlingen burials. Orientation with the head in the south-west has not been observed so far but may be due to the small number of known burials. The side of the body on which the individuals have been bedded occurred apparently without any preferences concerning the left or right side of the body and no correlation between side and

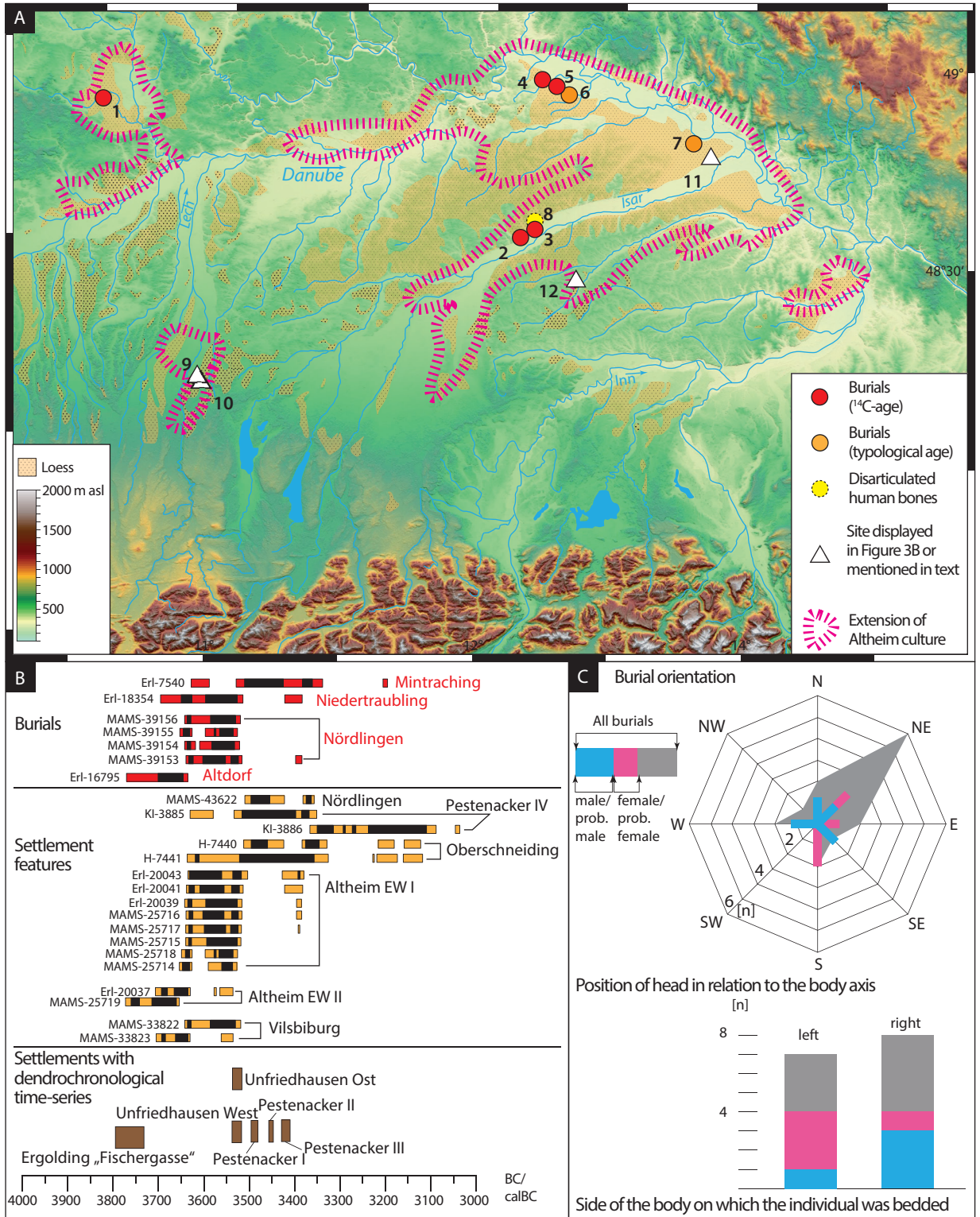


Fig. 3. Spatial and chronological distribution of the Altheim culture: **A** Burials and key sites (1 Nördlingen [this study]; 2 Altdorf; 3 Ergolding; 4 Niedertraublingen; 5 Mintraching; 6 Sengkofen; 7 Stephansposching; 8 Altheim; 9 Pestenacker sites; 10 Unfriedhausen; 11 Oberschneiding; 12 Vilsbiburg); **B** ¹⁴C-results from Nördlingen within the chronological framework of ¹⁴C-ages and dendrochronological sequences; **C** Burial orientation (data compiled by Eibl/Raschofer [2015] with results from this study).

the sex of the individuals can be identified (Fig. 3C). A general scarcity of grave goods during the time period is corroborated by the burials from Nördlingen. A possible classification of a ceramic fragment in burial 34 as either relocated material or as an intentional deposition remains unresolved, just like a comparable fragment of a vessel

bottom that had been observed near the burial at Niedertraubling (Eibl/Rasshofer 2015). An irrefutably intentional deposition is the canine of the brown bear in the child double burial 147. The presence of bone material from this species has also been observed in other sites of the Altheim culture, such as the enclosure of Altheim (Saile et al. 2017b), or the settlements at Pestenacker and Unfriedshausen (van den Driesch 2001).

Conclusion: Altheim burials – a blind spot?

The results from the site Nördlingen-Nürnberg Straße 63 corroborate the idea that burials from the time period of the Altheim culture may be a blind spot due to methodological problems. An attribution of burial features to the Altheim culture cannot be substantiated by any uniformity in burial mode, and grave goods seem to be very scarce and often not diagnostic. Therefore, their cultural attribution is nearly exclusively due the spatio-temporal interpretation of ^{14}C -analyses, something that is not regularly performed on isolated burials in the course of development-led archaeology. Moreover, an attribution based exclusively on ^{14}C -ages and not archaeological material is problematic, especially when associated features are missing that could provide archaeological material attributable to an archaeological culture. We therefore suspect that there could be a considerable number of burials from the Altheim period in the reports that are either still unidentified or wrongly ascribed to other prehistoric time periods. Future research into the burial customs of this time period should therefore be based on a broad ^{14}C -sampling approach. At the scale of individual sites, new approaches, for example, aDNA analyses could help to identify lifetime relationships between spatially disconnected, individual burials and help to estimate the social structure and the time-span of these burial grounds.

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