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Finding Early Farming Communities in southern Mozambique: Using Geophysical Surveys to examine potential new open-air sites

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ABSTRACT

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Using geophysical surveys to examine potential new open-air sites

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The arrival of EFC in Mozambique is traditionally defined by the appearance of the "Bantu package", especially of the so-called Matola pottery at the beginning of the 1st millennium CE. Although many EFC sites are known in Mozambique and South Africa, little is known about their settlement structures. In the case of Mozambique, the well-known Matola, Zitundo and University Campus sites were discovered by chance. The DAA at the University Eduardo Mondlane has successfully conducted surveys in the Changalane Administrative Post for years, documenting new potential EFC and Stone Age sites. Together with the DAI and the University of Hamburg, geophysical surveys were carried out on four sites. The aim was to get an overview of the sites and to locate potential excavation areas such as waste or storage pits, furnaces or huts. Although the method is already of great importance in Europe and is used regularly, only few comparative studies from sub-Saharan Africa are known. Within this region and the described context of the continent the method is applied for the first time.

KEYWORDS

Early Farming Communities, open-air sites, Bantu packag, geophysical survey

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Introduction

1 The arrival of pottery, specifically the knowledge of pottery production, has long been seen as an integral part of a new way of life within a "Bantu package" also containing metallurgy, farming, livestock and permanent settlements. These spread from central to southern Africa on two different migration routes (Huffman 2007; Killick 2009; Madiquida 2015; Maggs 1995; Phillipson 1989; Phillipson 2008; Soper 1971; Voigt 1986). However, new research challenges this model and discusses a more or less independent process of migration and knowledge transfer for each of these innovation routes (Chirikure 2007; Killick 2009; Kohtamäki 2014).

2 The oldest known pottery in southern Mozambique was found at the Matola site in Maputo province and is traditionally seen to be related to the eastern Urewe-Stream (Huffman 2007; Phillipson 2008), especially with Nkope (3rd–6th cent. CE), Kwale (300–500 cent. CE) and Lelesu pottery (1st cent. BCE–2nd cent. CE) (Cruz e Silva 1980). According to this approach, Matola pottery dates between the 2nd–6th century CE (Maggs – Whitelaw 1991; Morais 1988; Sinclair 1991) and was equated by Huffman to his Silver Leaves facies (Huffman 2007). This is not generally accepted and only a relation between these two groups is suggested (Maggs 1980a; Whitelaw – Moon 1996). In addition, similarities to Mzonjani pottery were recorded (Maggs 1980a). New dating results were presented by Kohtamäki (Kohtamäki 2014; Kohtamäki – Badenhorst 2017), who dates Matola pottery from Changalane II, University Campus and Zitundo into the 4th–1st century BCE. These very early dates must be evaluated by further research, as they challenge the whole existing model of the arrival of Early Farming Communities (EFC) in southern Africa.

3 Early indications of iron and copper processing appear only sporadically in southern Africa in the first half of the 1st millennium CE (Chirikure 2007; Chirikure 2013; Killick 2009; Mapunda 2013). These are in particular a small number of slag and iron objects in the case of Matola (Morais 1988) as well as copper and iron beads, for example, in the Lydenburg Head site (Chirikure 2007; Evers – Voigt – Villiers 1982; Morais 1988). The small number of finds and the absence of smelting furnaces are explained by poor preservation conditions, or even dismantling of the furnaces (Morais 1988). Alternatively, it is argued that these early finds are due to a low spread of iron production at this time (Chirikure 2007; Morais 1988), a side effect of trade or a waste product of iron processing (Huffman 2007; Kohtamäki 2014). With the beginning of the 2nd half of the 1st millennium CE, evidence for iron production steadily increases (Chirikure 2007; Chirikure 2013). In Zitundo, Silver Leaves and Mavita, some evidence for production can be seen in form of few tuyére fragments (Klapwijk – Huffman 1996; Morais 1988) as well as features at University Campus, which could indicate rudimentary pit furnaces (Morais 1988; Sinclair – Nydolf – Wickman-Nydolf 1987).

4 Direct evidence for farming in southern Africa is only found occasionally, for example at Sk17 (Maggs – Whitelaw 1991) and Rhino Village (Huffman – Whitelaw – Tarduno et al. 2020), so that the beginning of farming remains uncertain. Due to the lack of archaeobotanical data, linguistic and historical data are often used for interpretation to fill this archaeological research gap (Antonites – Antonites 2014; Russell – Silva – Steele 2014). Nonetheless, farming is often reconstructed as one of the nutrition strategies in the contexts of EFC, because the sites are often found at the coasts or at river valleys with fertile soils, fresh water and grazing areas (Maggs 1980b; Mitchell 2013; Morais 1988). However, we cannot assume that farming was the only subsistence strategy, but rather a part of a conglomerate composed of hunting, wild plants, snails and bivalves gathering as well as cattle breeding (Manyanga – Pangeti 2017; Morais 1988; Phillipson 2005; Voigt 1986).

5 The early evidence for domestic sheep in southern Africa is found in LSA contexts (or pastoralists) together with pottery around 300–400 years earlier than the arrival of EFC (Phillipson 1989; Sadr 2013). Within the context of EFC, bones of domesticated cattle and ovicaprids are found in Broederstroom and Happy Rest, dating between the 4th to 6th century CE (Huffman 1990; Voigt 1986). However, the proportion of domesticated species in the assemblages is different for each site (Badenhorst 2018; Voigt 1986). Matola and University Campus show no indications for herding (Cruz e Silva 1976; Sinclair – Nydolf – Wickman-Nydolf 1987) and in Enkwazini remains of marine resources are recorded (Hall 1980; Voigt 1986). In this context, sites close to the coast in South Africa should also be mentioned, which consist of shell middens. While there is no evidence of long-term occupation, connections to the inland settlements are suggested so that marine resources could be used seasonally (Maggs 1980b).

6 However, the elements of EFC everyday life the projcet is focusing on are the settlements, and detectable features within these settlements, apart from the accumulation of pottery and metal finds. Although mobility was obviously an important component of the EFC, activities such as farming as well as pottery and iron production definitely require a certain degree of sedentarism.

7 The well-known sites in Mozambique are mainly located in the north and south. Only a few sites are known from the central areas, which can be explained by long research gaps in this area. Furthermore, the best-known sites in southern Mozambique are rock shelters with a long occupation period, like the Daimane shelters I–III or open-air sites, which were found during road or construction works like Matola, Zitundo or University Campus.

8 In KwaZulu-Natal many sites are located parallel to the coastline between coastal dunes and grassland (Maggs 1984). From the 6th century onward or even

before, an increase of EFC sites along rivers are discussed in southern Africa, these are documented particularly in Limpopo, Transvaal Lowveld and the Tugela Valley (Mitchell 2013; Voigt 1986). Quite a few sites in South Africa were discovered by erosion, which revealed archaeological structures (Whitelaw 1993), suggesting that many of the early open-air settlements were covered by massive colluvia. In contrast to the undoubted importance of these settlements, relatively little is known about their structure, size or components such as buildings, furnaces, storage facilities, burial grounds and the infrastructure between them (Greenfield – van Schalkwyk 2003).

9 In addition to the previously mentioned furnaces and kilns, which, however, are only partially present or preserved at the beginning of the 1st millennium, storage pits and middens as well as huts and granaries are seen as main features at the EFC settlements, with pits generally being the most common features. (Huffman 1993; Huffman 2007; Maggs 1995; Mitchell 2013; Whitelaw 1995). Huts and houses are reconstructed with a pole framework and an overlaying plaster of clay and dung (*daga*) (Mitchell 2013).

10 The organization of the settlements was connected to the Central Cattle Pattern (CCP), based on comparisons with ethnographic studies (Huffman 1986; Huffman 1993; Mitchell 2013). The applicability of ethnographic analogy to settlements from the 1st millennium is controversial (Hall 1986; Maggs 1980a; Maggs 1995; Mitchell 2013).

11 In general, settlement structures except pits are rarely documented, especially for the earliest dated EFC sites. Some later examples are Nanda with pits, burials and *daga* features (Whitelaw 1993), KwaGandaganda with pits, middens, and *daga* features as well as potential house floors (Whitelaw 1994) and Broederstroom with pits, phytolith concentrations (interpreted as cattle kraals) and hut floors (Huffman 1993). In Mozambique, potential *daga* features are found at Hola Hola and Mavita, which are interpreted as potential house foundations (Morais 1988).

12 In any case, potential EFC sites are characterized by a certain variety of finds and features depending on the region rather than by standards. Furthermore, the appearance of attributes of the supposed "Bantu package", like livestock in hunter-gatherer contexts, shows the two-thousand-year-old co-existence of LSA and EFC in southern Africa. Close cooperation or a joint examination of the find assemblages together with researchers from the LSA is therefore very important (Forssman 2015; Sadr 2008; Sadr 2015; Voigt 1986). As a result, a variety of terminologies and terms are used in the research literature to describes the changes mentioned during the 1st millennium CE like Early Iron Age (Chirikure 2014; Huffman 2007), Neolithic (Sadr 2003), Early Farming Communities (Ekblom – Notelid – Sillén 2015; Madiquida 2015; Sinclair – Nydolf – Wickman-Nydolf 1987; Sinclair – Morais – Adamowicz et al. 1993), pottery-dominant sites (Kohtamäki 2014) etc.

13 In this article, the project uses the term Early Farming Communities. Even if this term is also often accompanied by a set of associations, e.g. on material culture and resource use regarding the Bantu package (Kohtamäki 2014), in this context it is used for a rough chronological classification into the 1st millennium CE and not for a defined assemblage. For the geophysical survey the project therefore expected accumulations of ceramic and metal finds, huts and furnaces, although not everything has to be represented at each site. At this point, it should therefore be mentioned that the study is a first documentation of new potential EFC sites and that the temporal classification is based on the surface finds, especially pottery decoration and should be seen as a preliminary assumption.

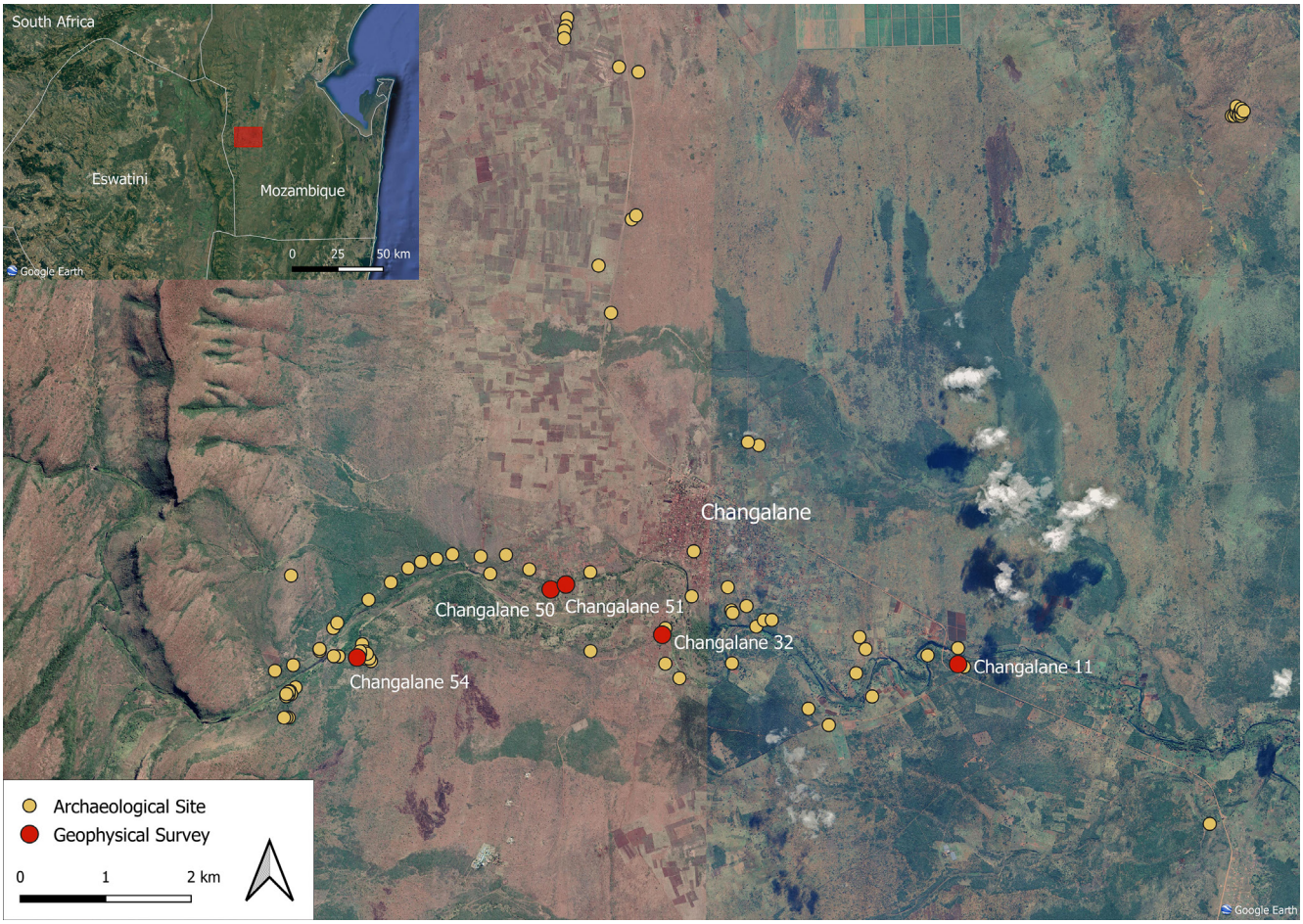


Fig. 1: Map of all documented (yellow) and studied (red) sites along the Changalane river. This is an extensive and in parts difficult to access area, in which of course not all sites have been documented yet. Therefore, the sites known so far are oriented to the course of the river, the roads and paths.

Project History

14 A unique opportunity came up with a new research project, focusing on the Changalane Administrative Post (which is part of the Namaacha District, Maputo province in southern Mozambique) to combine it with research activities of the DAI at the University Eduardo Mondlane. Since 2018 the Eduardo Mondlane University has been conducting regular surveys, led by Décio Muianga, to locate new sites on both banks of the Changalane River (Fig. 1). These have yielded a large number of potential Stone Age and EFC Sites, the latter indicated by pottery finds. The new project called "*Bantu arrival in Southern Africa. Ceramic analysis as a source of information for dating, diversity, technology transfer and nutrition*" was started in 2019 and has been funded by the DFG since 2021 (Project number 444787411). An initial geophysical prospecting survey was planned by Jörg Linstädter and the German Archaeological Institute, together with the Friedrich Schiller University Jena in 2018 (Welte 2018).

15 In August 2022, the Institute of Classical Archaeology of the Hamburg University, in cooperation with the DAI (department KAAK) and the University Eduard Mondlane of Maputo, carried out a multi-day prospecting campaign at several of the newly documented sites in Changalane District as part of these research activities. The aim of the geomagnetic mapping was to examine the newly discovered open-air sites, focusing on the potential EFC settlements with pottery and to localize possible excavation areas. Since this was a time-limited pilot project, four sites were selected from previous surveys, which seemed promising due to the ceramics found and allowed a relatively unproblematic access with extensive equipment. The identification of new open-air sites is challenging due to the lack of visible structures and therefore focuses on concentrations of finds like pottery and lithics. The implementation of geophysical prospecting surveys makes it possible to first collect information about the open-air

sites discovered and then prioritize the sites for further research and to localize specific promising excavation areas.

16 Although geophysical prospecting has been used in archaeology for decades, only a few pilot studies exist in sub-Saharan Africa for South Africa (Vermeulen – Arnott 1980), Nigeria (Magnavita – Schleifer 2004; Tite 1966), Tanzania (Fitton – Contreras – Gidna et al. 2022), Zimbabwe (Gaffney – Hughes – Gater 2005) and Kenya (Wynne-Jones 2012) as well as unpublished studies in Gambia, Mali, eastern and southern Africa (Greenfield 1999; Magnavita – Schleifer 2004; Anderson 2019). All authors emphasize the importance of geophysical prospecting, not only in locating promising excavation areas but also in understanding the site and broad-scale contextualizing of the excavation trenches (Fitton – Contreras – Gidna et al. 2022; Magnavita – Schleifer 2004; Wynne-Jones 2012). Despite these successful pilot studies, geophysical prospecting is only used occasionally, so that the required number of comparative studies for a profound interpretation is still lacking. Geophysical surveys are established as a standard method for new and known sites from different archaeological contexts and regions (Becker 1996; Fassbinder 2010; Fassbinder – Gorka 2011; Melichar – Neubauer 2010; Neubauer – Melichar – Seren et al. 2008).

17 Although the first pilot projects in southern Africa in the context of Early Farming Communities have already been carried out by Greenfield and Sinclair, the results remain unpublished (Greenfield 1999; Magnavita – Schleifer 2004). To demonstrate the importance of geophysical prospecting for the identification and evaluation of EFC sites, this paper presents the first results for EFC sites in southern Africa, although the verification through an excavation campaign is pending.

Surveys in Changalane District

18 Field surveys took place between 2018 and 2022 in the area of the Changalane Administrative Post (Namaacha District, Maputo province). Archaeological and historic studies in the region were discussed to remedy this neglect and the relative damage it inflicts on our renderings of the past and its people. It was proposed to begin this work by conducting widespread, non-invasive and non-destructive surveys in the region to supplement the work of Kjel Knutsson and Kim Danmark (2007 – Uppsala University) and later by Marjaana Kohtamäki and Peter Sillen (2010–2014, Uppsala University) with new data recorded using modern techniques.

19 In 2007 Kjel Knutsson and Kim Danmark documented 15 sites during preliminary surveys, most with stone tools, along the Changalane River on the road that leads to the Daimane rock shelter (Knutsson – Darmark 2007). The occurrence of archaeological sites in this area of the Changalane Administrative Post is very high from the descriptions of previous surveys. Afterwards, between 2010 and 2014, Marjaana Kohtamäki and Peter Sillén continued with the surveys in the area and registered 42 new sites (lithic tools and ceramics were the major findings). Their surveys also included the area of Zitundo Administrative Post in the Matutuíne District in the eastern section of the Maputo province. This is not included in this section of the survey's description (Kohtamäki 2014; Kohtamäki – Badenhorst 2017; Sillén 2011).

20 Before physically surveying the area, a desktop survey was carried out using Google Earth Pro software as well as cartographic and geological maps. Selected areas were identified and chosen for the geophysical survey. During the surveys, sites were identified, especially in farm fields where small-scale farmers predominantly cultivate maize, vegetables, and cassava. The arable fields allowed better visibility of the ground surface. The Changalane riverbed (where ceramics were documented in past surveys) and scatters of lithic knapped artefacts spread all over the landscape were also evident.

21 The seasons of field surveys were carried out between June and September 2018, 2019, 2021 and 2022 during the dry season in Mozambique. The dry season was selected for the survey because the vegetation in this period is defoliated and reduced, and the ground visibility is much higher compared to the rainy season during November to March). The surveys were preceded by meetings with the local community. During these occasions, which were always attended by local guides who were part of the research team, we also asked for information on old material, sites, and information from the local administrative authorities of Changalane Administrative Post and the traditional leadership of this section of southwestern Maputo province. The consultation process included local farmers and elders with knowledge of scatters of artefacts in the landscape (especially lithics and ceramics). Some of the above had participated in previous archaeological expeditions.

22 We prepared fieldwalking using Google Earth Pro and satellite images of the Changalane Administrative Post. Cleared areas for small-scale farming were prioritized. In the Changalane landscape archaeological sites were defined by two types, rock shelters or caves and open-air sites. The limits of these are more difficult to determine due to the concentration of artefacts, which can be the result of both natural erosion and human deposition.

23 Concentrations of objects within an archaeological context can be described as sites. This differs from archaeological occurrence or background scatter, where sites are defined as "a spatially discrete area containing remains reflecting anthropogenic occupation or use at one or more times in the past and in which the artefact distribution is conditioned largely by cultural factors" (Clark – Isaac – Kleindienst 1966). Archaeological occurrence is described by Orton (2016) as "an area of exposed artefacts of generally moderate density with ill-defined spatial limits and in which the artefact distribution is most likely conditioned primarily by natural factors" and background scatter is defined as "widespread isolated artefacts whose distribution results from either primary or secondary causes" (Orton 2016). Nevertheless, through a consideration of the anthropogenic and natural landscape context of archaeological sites and occurrences as defined above, it is possible to differentiate scenarios in which prehistoric cultural landscapes (PCL) are evident.

24 The Changalane area in the Lower Lebombo range can be considered a PCL, therefore the knowledge and experience of the archaeologists are crucial in correctly identifying and assessing the significance of archaeological features identified during surveys. The sites were defined by the presence of past anthropogenic artefacts or features spread in a delimited space. When objects were no longer visible it was considered to be the limits of the site. This allowed us to differentiate between separate archaeological sites which are normally distanced about 50 m from each other.

25 A total of 54 sites were registered in the database of this research project, these were combined with the sites from previous research described above. The combined survey data in the area are 99 registered archaeological sites. This number will certainly increase with future surveys in the PCL of Changalane.

26 During all survey campaigns from 2018 to 2021 the research team had the support of three local guides appointed by the traditional chief of Changalane Administrative Post, Régulo Ernesto Mazia. Groups of bachelor students of archaeology and heritage management at the University Eduardo Mondlane added value to the surveys and later to the excavations at the Daimane rock shelter where they were able to put theoretical skills into practice. The field seasons in Changalane provided the students with an opportunity to practice different methods of identification, documentation and monitoring of archaeological sites.

27 In 2018, 2019 and 2022 researchers from the German Archaeological Institute (Commission for Non-European Countries in Bonn, Germany) and Hamburg University

Fig. 2: Nikola Babucic (University Hamburg) and Bob Forrester (ENTC) preparing the 5-channel Fluxgate Gradiometer for the measurement. In the background, the team from the Universidade Eduardo Mondlane, led by Decio Muianga, who was responsible for the drone recordings, among other things.

(Germany) participated in the surveys. New methods of geomagnetic survey were employed opening more possibilities for planning the future excavation of open-air sites and detailed analysis of the EFC in the prehistoric period. These will be discussed in the following sections of this article.

Methods

28 As already mentioned, the selected method is based on expected findings like hut foundations with *daga* (Anderson 2019), waste pits, ceramic, and metal concentrations as well as furnaces and kiln systems. In effect, the method will be evaluated by the degree to which excavation corroborates predicted locations for kilns, waste pits, huts and other anthropogenic remains. The applicability of the method, under the given geological and topographical conditions, was first tested by the Friedrich Schiller (University Jena) in 2018 using a Fluxgate Gradiometer Bartington Grad601-2 with two sensors and a DJI Phantom Pro Advanced 4 drone (Welte 2018).

29 A 5-channel fluxgate gradiometer system (Magneto®-MXPDA from Sensys) with a sensitivity of +/- 0.1 nT, a probe spacing of 0.25 m and a point spacing of 0.05 m was used for geomagnetic prospecting in 2022. The areas were surveyed and staked out using a Leica GS10/GS25 DGPS (Fig. 2).

30 The orthophotos for the individual areas were created by Décio Muianga using a DJI Phantom 4 drone on-site during the active survey period.

Results

31 In 2018, 1500 m^2 were mapped by Julian Welte from the Friedrich Schiller University Jena at Changalane 54, an abandoned farmland near the Changalane river. The results (Fig. 3) show 18 detected magnetic anomalies, of which two round anomalies, number 9 and 12, were interpreted as possible huts or kilns (Welte 2018).

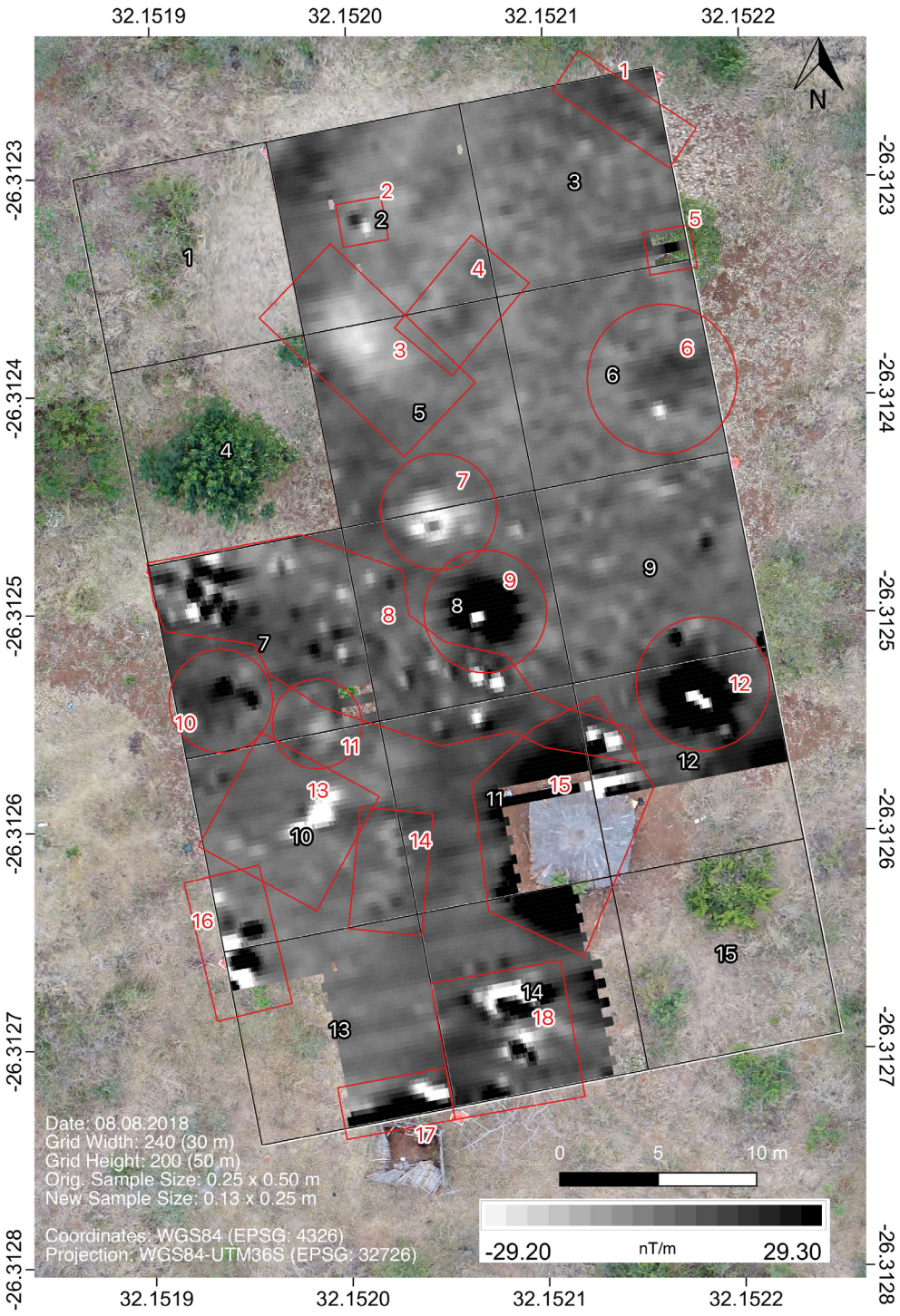


Fig. 3: Magnetic map of Changalne 54. The site was the first to be measured, in 2018. The numerous anomalies are marked and numbered. For more details see also Welte 2018.

32 In 2022, approximately 5000 m² of the four sites Changalane 11, 32, 50 and 51 were mapped (Fig. 1, red dots). The results show anomalies, which can be interpreted as possible pit houses, simple pits and furnaces due to their magnetic signature and comparison with the surrounding areas. The interpretations have to be verified by excavations, which are planned for 2024. In the following sections, the results will briefly be outlined per site.

33 Changalane 32 (Fig. 4) is characterized by dense vegetation and the Changalane river is situated to the north and east of the research area. The soil was relatively firm and reddish, indicating a high concentration of iron oxide. A termite mound was discovered next to the research area, eastwards towards the riverbed and it has been overgrown by a tree. Overall, there are isolated pieces of broken glass and medium-sized stones, some

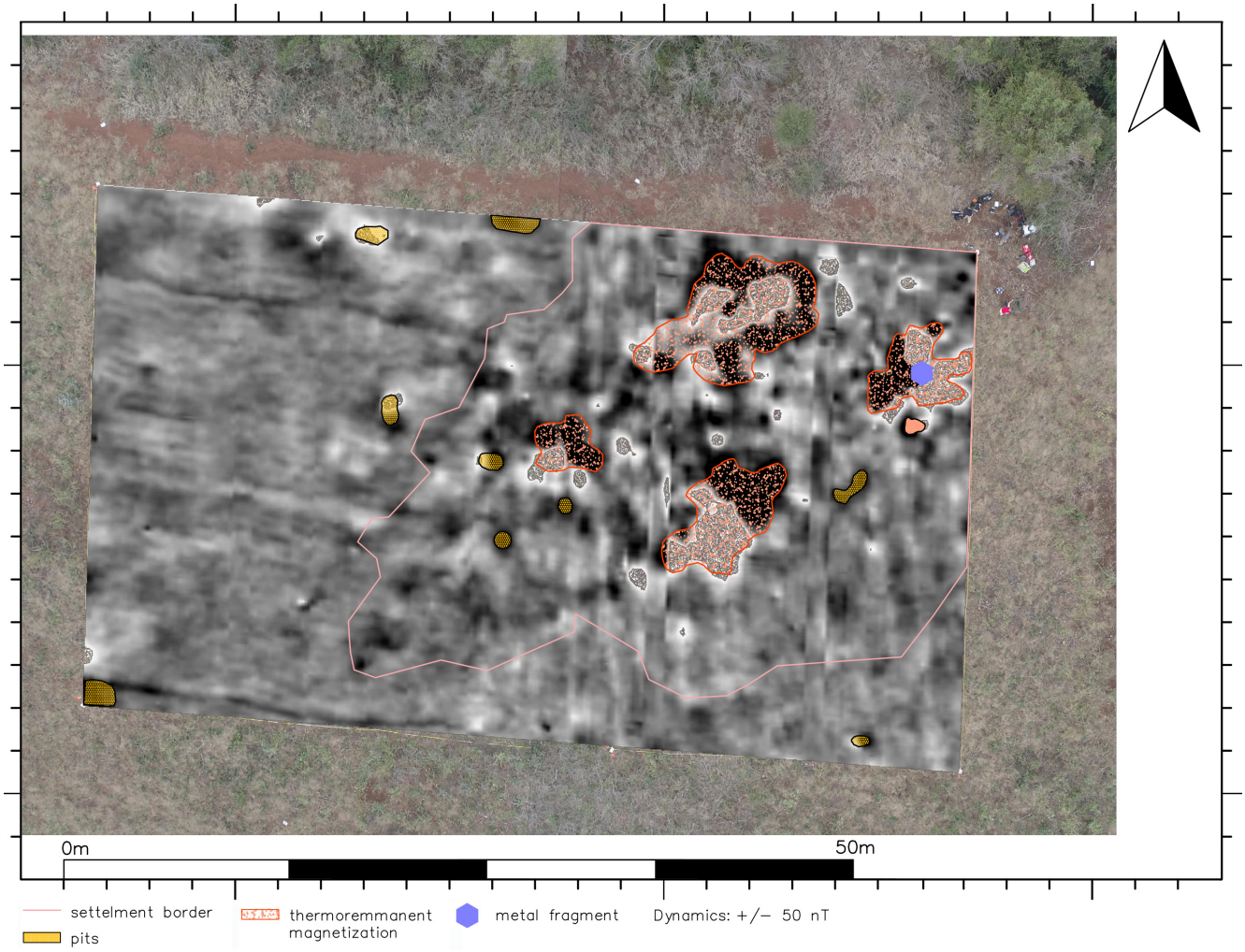


Fig. 4: Magnetic map of Changalane 32 (ROSITA). Very well distinguishable are the part of the area where archaeological features are preserved (east) and the predominantly undisturbed area (west). Prospections: Babucic – Linstädter – Stempfle.

of which have burn marks. The area is still used for agriculture today but was fallow at the time of our work.

34 The high vegetation of bushes, maquis and grasses had to be removed before the mapping. The magnetic map shows a significant concentration of finds to the northeast of the area, near the termite mound and a higher concentration of pottery finds. Four anomalies clearly stand out, which extend over several square meters and can be interpreted as thermoremanent findings due to their magnetic signature. Metal fragments are very likely in the easternmost anomaly. Around these four anomalies are a few smaller positively poled pit finds. Overall, the findings described in the context of the surrounding field and the “anomaly-free” zone in the west are seen as larger anthropogenic interferences. The described features are possible remains of burnt clay and thus are potentially pit houses.

35 Changalane 11 is located on the field of an operating farm. The area of interest borders with one of the farm buildings to the east and was uncultivated at the time of mapping. The field was covered with numerous modern plastic and metal scraps, especially in the eastern half. In the northwest corner there were accumulations of medium to large sized volcanic rocks, some with traces of direct heat exposure. Furthermore, pottery was scattered throughout the field.

36 A total of more than 2000 m² was geomagnetically mapped (Fig. 5). The magnetic map, here shown in a dynamic range of +/- 50 nT, clearly reflects local conditions. The eastern half near the farm building is characterized by massive disturbances indicated by dipoles, which are difficult to isolate into individual findings. The disturbances are caused by the previously mentioned modern detritus scatted near the surface masking potential archaeological contexts. In contrast, a clearly differentiated picture can be seen

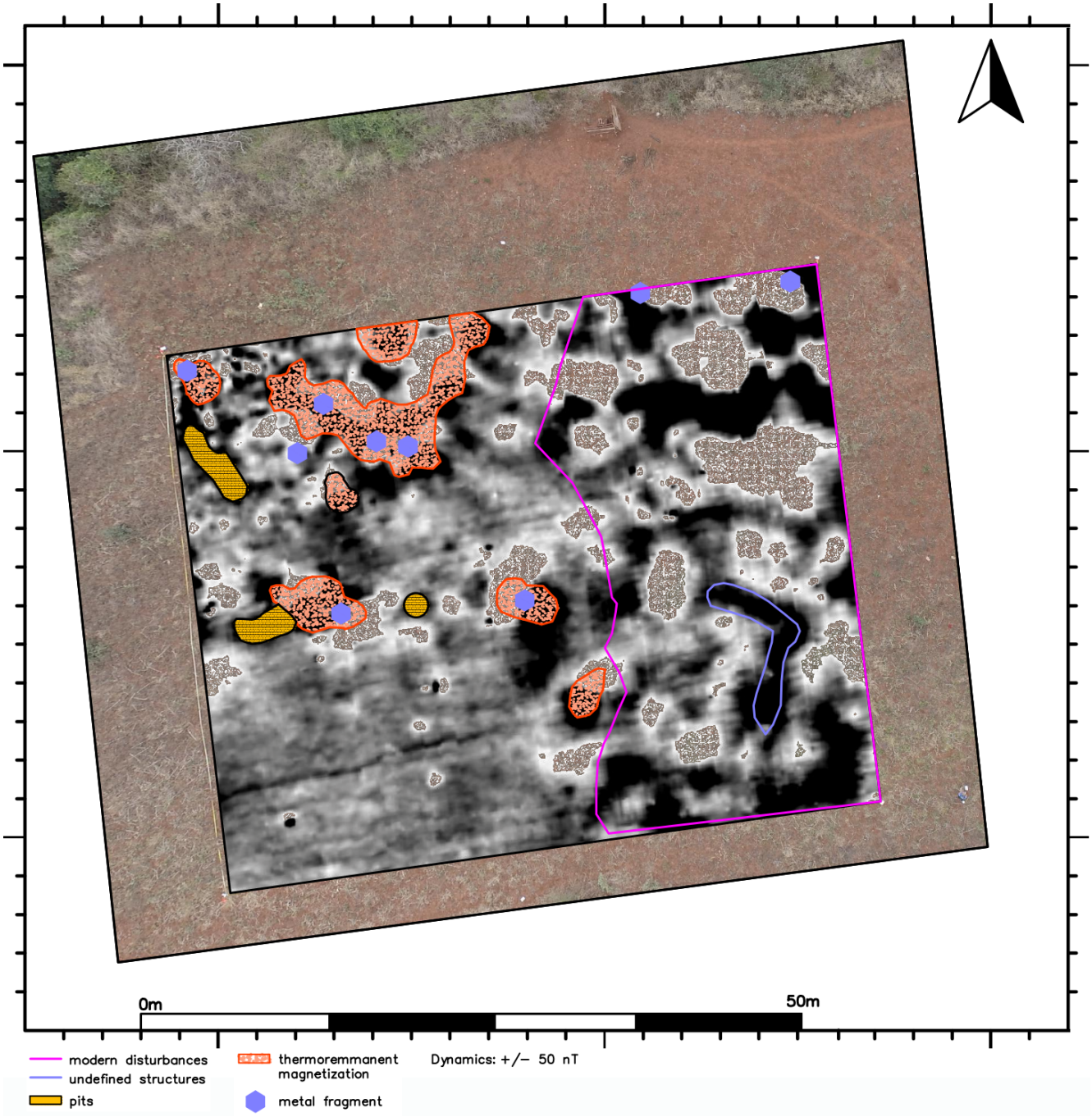
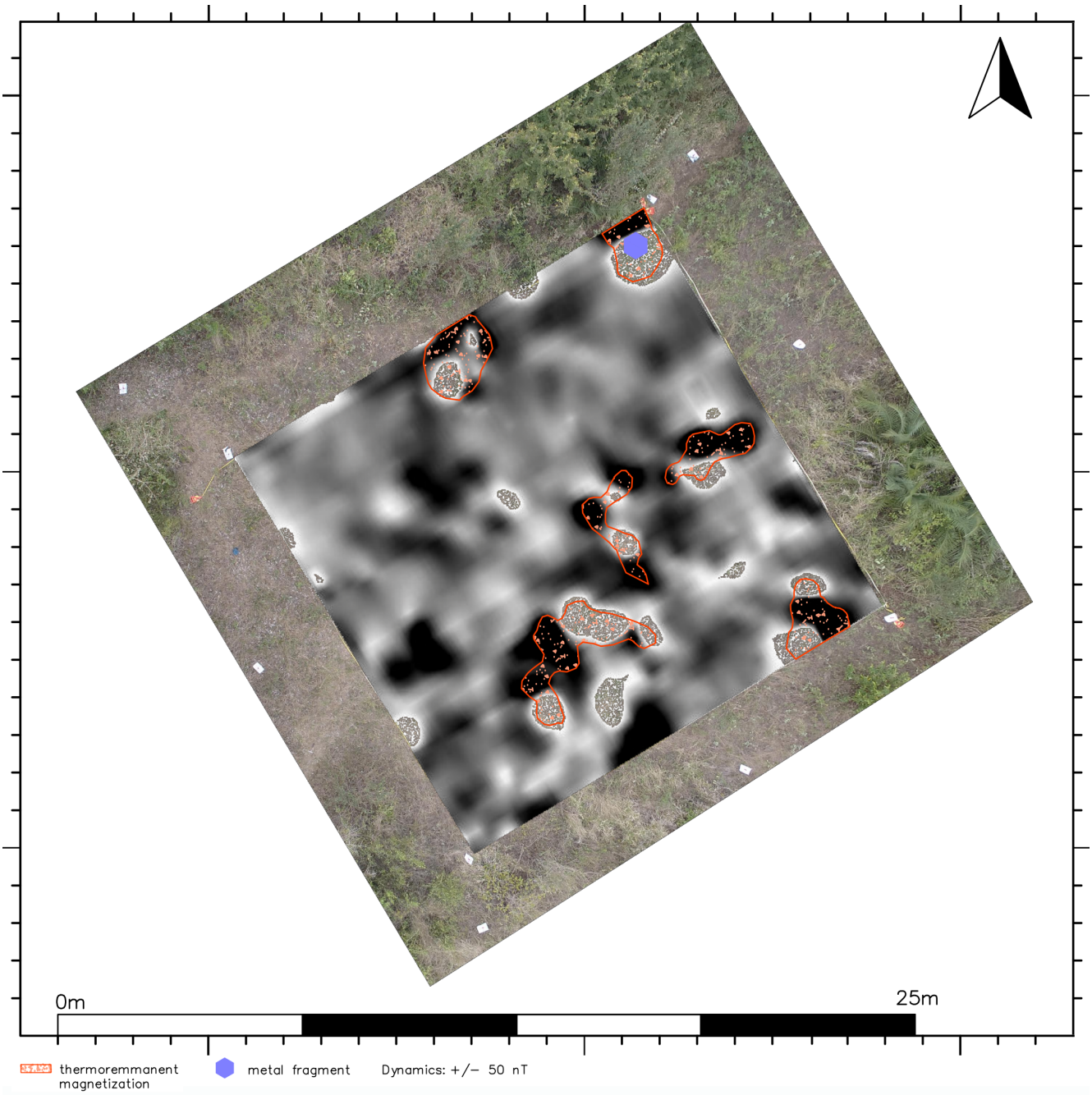


Fig. 5: Magnetic map of Changalane 11. Three areas can be distinguished very well on this plan: in the east a zone of the nearby farm including numerous recent metal objects, the northwest in which the archaeological features can be seen and the mainly undisturbed southwest. Prospections: Babucic – Linstädter – Stempfle.

for the western part of the area. The southwest section is almost anomaly-free with only a few minor dipoles and a possible modern drainage feature. The northwest corner, towards the river, is characterized by pits, thermoremanent anomalies and isolated larger metal fragments within the thermoremanent anomalies. It is significant that the thermoremanent features are visible in roundish individual features with diameters of 3–5 m and in one case form a single, semi-circular agglomeration. The signatures of the features in the context of the fired stones near the surface, and the pottery found, also support the idea of settlement traces. The shape and magnetization could be an indication of possible kiln remains.

37 Changalane 50 and 51 show little to no results and are mentioned here for comparison. The two areas are located to the west of the village of Changalane and were more difficult to access than the other due to the lack of roads and dense vegetation. For Changalane 50 only a small area could be cleaned of vegetation and then mapped because the area is surrounded by dense bushland. On the area itself there were accumulations of medium-sized stones, some of which looked like the remains of recent



campfires. These spots also appear as thermoremanent anomalies in the magnetic map, and thus show a comparative example of fireplaces (Fig. 6). Changalane 51 was situated on a fallow field, which had to be partially cleaned of bushes by the team. On the 700 m² mapped, only small, isolated pits and one distinctive round anomaly to the southwest corner can be localized (Fig. 7). In summary, both sites show only isolated minor anomalies, of which only those on Site 51 could represent possible archaeological features, however, they do not reflect a larger archaeological context.

Fig. 6: Magnetic map of Changalane 50 (CARVOEIRO). The anomalies are essentially undiagnostic and their origins can probably only be clarified with the help of an excavation. Prospections: Babucic – Linstädter – Stempfle.

Discussion

38 Based on the results, a clear prioritisation of the sites can be made. Few anomalies at Changalane 50 were detected, which can partly be assigned to visible, recent campfires. At the neighbouring site Changalane 51 only two anomalies are visible, one round anomaly in the southwest of the research area and one small, isolated pit. Few

Fig. 7: Magnetic map of Changalane 51 (CHRISTINA). As in the case of Changalane 50, the anomalies here are undiagnostic. Large parts of the measured area showed no evidence. Prospections: Babucic – Linstädter – Stempfle.

anomalies of both sites could reflect archaeological features, but a larger archaeological context can be excluded.

39 A completely different picture emerges for the other two sites. In Changalane 32, an "anomaly-free" zone and an area with anthropogenic interference can be clearly distinguished. Four thermoremanent features within this anthropogenic zone, some several square meters in size, can be interpreted as potential pit houses with burnt clay or *daga*. In Changalane 11 three zones can be distinguished. The research area, which borders directly on the modern farm buildings, is littered with anomalies so that individual features are not recognizable and can be interpreted as modern detritus near the surface. An almost "anomaly-free" zone can be defined. This borders an anthropogenic area to the north with rounded features having diameters of 3–5m and a single, semi-circular agglomeration. Although there are few comparable studies, settlement structures surrounded by anomaly-free zones can be assumed for both sites. Nevertheless, an evaluation of the survey results through excavations must be carried out.

40 As already shown, the applicability and the great advantages of geophysical surveys, like the localization and prioritization of excavation areas, as well as the possibility of getting the broad-scale context of sites has already been emphasized by

a few pilot projects in sub-Saharan Africa (see above). Here the project specifically refer to EFC sites in Mozambique. Although some time is required for the mapping, comprehensive information on new aas well as known sites can be systematically collected. This allows excavation campaigns to be planned and prioritized in a targeted manner. With the establishment of the methodology in sub-Saharan Africa, and a large number of comparative studies and databases, it will be possible to make reliable interpretations of anomalies without excavation. However, since these are not yet available in sufficient numbers, the promising anomalies of Changalane 11, 32 (and possibly 54) will be examined in an excavation campaign in 2024 and presented at a later stage.

41 We would like to conclude with the importance of geophysical surveys. This method could play a decisive role in open questions regarding the EFC in southern Africa, in particular on settlement structures as well as on the localization and evaluation of new and known large open-air sites.

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