

An archive of 4000 years of human occupation in the al-‘Ulā Valley: a preliminary diachronic study of the pottery record

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Summary

Within the framework of the AlUla Cultural Oasis Project (UCOP) a comprehensive foot survey was carried out in the valley of al-‘Ulā (Saudi Arabia) (2019–2022). Archaeological remains were systematically recorded in cultivated areas stretching from Ḥegrā to the southern limits of the modern city. Additionally, hydrological structures in the vicinity of al-Mābiyāt were examined and recorded. Beyond identifying and dating both local and imported pottery productions, this contribution focuses on a preliminary examination of the continuities and changes in the pottery assemblage, focusing on fabrics and morphology, but excluding the period between the mid-first millennium BC and the rise of Islam, as the relevant data have not yet been processed. Concurrently, a diachronic analysis of the spatial distribution of the various wares enables a preliminary reconstruction of human occupation in the valley, spanning the Bronze and Iron Ages (second to mid-first millennium BC) on the one hand, and the seventh century AD to the present day on the other. Within a broader historical framework, this case study will potentially contribute to a better understanding of variations in the regional standing of this oasis, balancing between major stations on trade and pilgrimage routes and small towns of lesser economic importance.

Keywords: al-‘Ulā, oasis, archaeological survey, pottery, spatial analysis

Introduction

Among the early visits of Western scholars to the region of al-‘Ulā, north-west Arabia, those of Antonin Jaussen and Raphaël Savignac to Madā’in Šāliḥ in 1907, 1909, and 1910, to Khuraybah/Dadan in 1909 and 1910, and to al-‘Ulā in 1910 (Jaussen & Savignac 1909; 1914), represent the richest documentary source for reconstructing the history of human occupation in the region. Like their Western predecessors, such as Charles Doughty and Julius Euting, their focus lay primarily on ancient inscriptions and visible remains, not on archaeological excavations. Since then, several projects have sought to study the long history of the al-‘Ulā region (e.g. Parr, Harding & Dayton 1970; Nasif 1988). With the start of excavations, in the early 2000s, at the main sites (Ḥegrā, Dadan, and al-Mābiyāt/Qurḥ) and at two smaller sites (Tall al-Kathīb and Umm Daraj; Fig. 1), research has been intensified. The results obtained at these sites provided a

rough chronological framework, into which a few already known, but still unexcavated sites, could be placed: Jabal Khuraybah, Jabal Ikmah, and Khayf al-Zuhrah (Fig. 2). According to this chronological framework, the centre of gravity of the al-‘Ulā valley has shifted on several occasions. Located at Dadan in the second and first millennia BC (e.g. al-Said 2019; Alsuhaibani 2019), the importance of the site decreased in the late first millennium BC, while that of Ḥegrā increased, eventually becoming the new centre of the region (e.g. Rohmer & Charloux 2015), especially from the Nabataean period (second century BC–early second century AD) to the abandonment of the city in the fifth century AD (Nehmé & Villeneuve 2019: 72–73). In the early Islamic era, the centre of gravity of the region moved to another site already inhabited in the late pre-Islamic period: al-Mābiyāt Qurḥ (al-Aboudi 2019: 94; Al-Mu‘aiql 2011: 59–60). After the late twelfth century AD, the latter site is assumed to have been abandoned, while a new centre

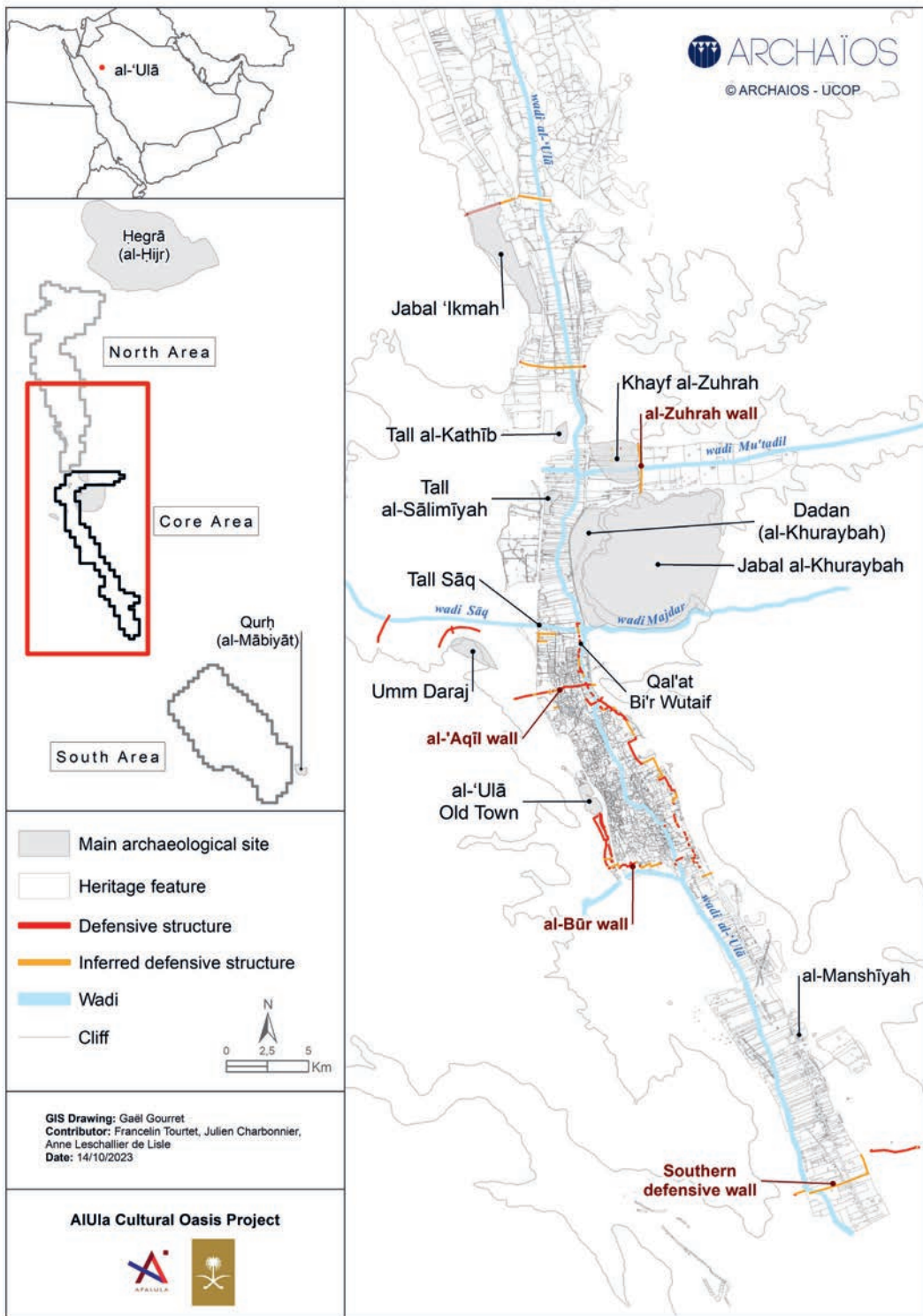


FIGURE 1. The al-ʿUlā valley: the location of the main archaeological sites and extent of the UCOP study area.

Attested chronological periods	Site	Selected references
Third to second millennium BC	Jabal al-Kharaymāt	Abu Azizeh 2010; 2011; 2015; 2019
	Khuraybah/ Dadan	Rohmer et al. 2022; al-Said et al. 2018
First millennium BC to third–second century BC	Khuraybah/ Dadan	Rohmer et al. 2022; Alsuhaibani 2019; al-Said 2019; excavation reports in <i>Atlal</i>
	Jabal Khuraybah	Nasif 1988
	Ḥeġrā	Jaussen & Savignac 1909; 1914; Nehmé 2022; excavation reports available on http://hal.science
	Umm Daraj	Abu al-Hassan 2001; 2019
	Jabal Ikmaḥ	Stiehl 1971; al-Ansary 1999
	Khayf al-Zuhrah	Bawden 1979
	Tall al-Kathīb	al-Zahrani 2007; Rohmer & Charloux 2015
	al-Manshīyah	Jaussen & Savignac 1914
Late first millennium BC to sixth century AD	Ḥeġrā	Jaussen & Savignac 1909; 1914; Nehmé 2022; excavation reports available on http://hal.science
	Khuraybah/ Dadan	Rohmer & Charloux 2015
	Jabal Khuraybah	Nasif 1988
	Tall al-Kathīb	al-Zahrani 2007; Rohmer & Charloux 2015
	Qal‘at Bi‘r Wuṭayf	Nasif 1988
8th– 13th century AD	al-Mābiyāt/ Qurḥ	al-Aboudi 2019; excavation reports in <i>Atlal</i>
19th –21st century AD	al-‘Ulā Old Town	Jaussen & Savignac 1914
	al-Manshīyah	Jaussen & Savignac 1914
	Oasis gardens	Jaussen & Savignac 1914
	Ḥeġrā	Jaussen & Savignac 1909; 1914

FIGURE 2. Chronological overview and selected bibliographical references of the main archaeological sites of the al-‘Ulā region.

emerged, al-‘Ulā Old Town (al-Aboudi 2019: 94; Nasif 2022: 144–145). This site remained an important station on the pilgrimage route (al-Muraikhi 2019: 100–102) but was abandoned in the 1980s as a new urban centre developed south of it, at its contemporary location.

While a focus on major sites enables the reconstruction of the main lines of the history of the al-‘Ulā region, it excludes consideration of the development of the areas around and between the sites. Consequently, such a focus also prevents an understanding of the dynamics of

human occupation in the region in the *longue durée*. The AlUla Cultural Oasis Project (UCOP), which began in 2019, is led by Archaïos and funded and steered by the French Agency for AlUla Development (AFALULA) on behalf of the Royal Commission for AlUla (RCU). It aims primarily at a better understanding of a traditional but endangered anthropogenic landscape. This project provides an unprecedented opportunity thoroughly to investigate the development of human occupation in the al-‘Ulā valley as well as the dynamics of this agrarian space.

The study area covers all current cultivated spaces and hydraulic structures in a 35 km-long corridor along the al-ʿUlā valley, from Madāʿin Šāliḥ/Ḥeḡrā in the north to the southern suburbs of al-ʿUlā modern town in the south (North and Core Areas of study). In addition, a system of qanats initially identified by the Identification and Documentation of Immovable Heritage Assets (IDIHA) survey, supported by the RCU, in the south of the valley near the site of al-Mābiyāt, is also being investigated (South Area of study) (see Fig. 1) (Morabito et al. 2022). During the systematic foot survey, archaeological remains have been thoroughly documented, independently of their assumed age and, as far as is allowed by the constraints of this type of investigation, artefacts lying on the present-day surface were systematically collected.

Nonetheless, the investigations are still subject to several constraints. First of all, there are spatial limitations. Even though the survey area covers large parts of the valley, it was restricted to the currently cultivated areas. Areas not cultivated but situated in the bed of the valley, especially at the foot of the cliffs, were surveyed by the IDIHA survey, which has not collected any material, and are thus not considered in the present study. In the South Area, the spatial limitation is even clearer, the areas between hydraulic structures not having been surveyed, restricting the possibilities of comparing the results obtained there with those gathered in the North and Core Areas. Moreover, there are also limitations related to the state of preservation of archaeological remains. In the northern part of the Core Area, north of the al-ʿAqīl wall, where gardens have been developed since at least the early twentieth century AD (Charbonnier et al. 2022: 75–76), relative high concentrations of pottery could be collected, despite modifications to the past topography to meet more recent agricultural needs. In contrast, built remains (plot walls, earthen or stone houses, etc.), mostly dating from the twentieth century AD, are less dense in the area directly to the south-east of the modern town of al-ʿUlā. As also observed during the foot survey, recent agricultural activities seem to have obscured a significant part of the old built structures. In this area, the very low density of collected (and dated) pottery is thus primarily related to modern activities and does not necessarily reflect its occupation in the past. From this perspective, it must be emphasized that modern

and ancient human as well as natural activities can have a major influence on the distribution of remains, and therefore the present interpretation of the data is subject to later modification.

The UCOP material corpus

To date, c.53,000 items made of various materials (e.g. pottery, stone, glass, wood, textile, metal, plastic, etc.) have been collected. While the datable items range roughly from the third–second millennium BC to the present day, a large amount of the collected material cannot provide a precise date. The UCOP material studies focus on those artefacts providing chronological information, such as coins, glass artefacts, stone vessels, and pottery.

With over 43,000 fragments collected from 3248 heritage features, pottery sherds represent almost 90% of the collected material. A heritage feature is a spatial unit corresponding to an archaeological structure (building, well, wall, etc.) or to a defined area (e.g. agricultural plot, scatter area). This terminology comes from the online database shared by all al-ʿUlā survey projects and was set up by the RCU. (For a detailed discussion of the methodology of the field survey, see Charbonnier et al. 2022: 56–58.)

The quantity and condition of sherds vary significantly from one feature to another. Indeed, some features did not provide any sherds, while others delivered several hundred. In some features, complete pots have been collected, although most of them provided only fragments, which were sometimes very eroded. In order to focus on those items providing potentially chronological data, only diagnostic sherds, that is, those enabling identification of the original vessel shape and/or original decoration, have been considered. The UCOP pottery assemblage comprises 7008 diagnostic sherds (c.16% of the pottery assemblage) collected from 2075 heritage features that cover the entire oasis.

Methodology: a diachronic analysis of the pottery and its spatial distribution

Once the collected pottery was washed, basic information (total number of fragments, number of diagnostic fragments) was recorded for each collection and a batch

picture was taken. All diagnostic sherds were then extracted and labelled individually with the prospect of their detailed study, documented in a database developed to be compatible with that of the Dadan Archaeological Project,¹ which investigates comparable pottery assemblages, but from exclusively stratified contexts, and in which one of the present authors (F. Tourtet) is also involved. In order to facilitate the work, the study of the diagnostic sherds was organized in several stages. First, the diagnostic sherds were divided into four categories (pre-Islamic, Islamic, contemporary, undated) according to a preliminary estimation of their age. Second, each group was considered individually and divided into smaller, homogeneous groups, either already defined as such by other archaeological projects working in the region, or visually identifiable as a homogeneous group within the UCOP pottery corpus. Third, the sherds belonging to each homogeneous group were considered individually, systematically recording their most important characteristics (fabrics,² manufacturing techniques, surface treatments, and decorations), and establishing their morpho-typology. Fourth, representative items of each morpho-type were selected for drawing and photographic documentation. In a fifth and final stage, comparisons were sought for at a local and regional level, aiming at dating each morpho-type as precisely as possible. At the local level, the sites of Dadan, Ḥegrā (including Jabal al-Kharaymāt), and Tall al-Kathīb provided most parallels for the pre-Islamic period, that of al-Mābiyāt/Qurḥ for the early Islamic period (eighth to eleventh century AD). Beyond the published material from these sites, the present analysis also relied on the latest results of the Dadan Archaeological Project, as well as on parallels with the pottery from Taymā³ and Qurayyah, two other major sites of north-west Arabia. For periods after the eleventh century AD, no local reference yet being

available, the focus lay mainly on the imports enabling a dating by stylistic comparisons. Having dated each type as precisely as possible, the chronological periods corresponding to major identifiable changes in the studied pottery assemblages were defined. It is based on these periods that the spatial distribution of the diagnostic sherds was eventually investigated.

In this preliminary presentation of our results, however, the period spanning the mid-first millennium BC to the seventh century AD has not been considered, as the data pertaining to it has not yet been processed. Consequently, it does not represent a gap in the occupation of the valley. Similarly, diagnostic sherds still considered as undated are not further discussed here. The following discussion is based on the study of 4532 diagnostic sherds (65% of the total number of collected diagnostic sherds). As can be seen in Figure 3, the periods considered are not equally represented, suggesting variations in the density of occupation of the al-‘Ula valley throughout time.

Relating the dated sherds to the heritage feature in which they have been collected, it is possible to analyse their spatial distribution, based on heat maps displaying the quantity ranges for each period. However, the size of the heritage features is extremely variable and not readable at the scale of the whole study area. For the same quantity of sherds, a large-area heritage feature would suggest a greater concentration. Thus, to avoid reading biases, a method combining principles from statistical classification and graphic semiology has been developed, leading to a smoother and more homogeneous display of the results. A grid composed of 100 m-wide hexagons was generated to cover the study area. Should a heritage feature be contained within several hexagons, the proportion of its surface belonging to each hexagon was calculated and this value was used as a factor to redistribute the number of dated sherds from this heritage feature into these hexagons. The redistributed numbers of sherds from heritage features included in the hexagon were then added up. The total per hexagon is displayed according to a colour scale representing quantity ranges (Fig. 4).

While the heritage features indicate the area from which potsherds were collected, it must be stressed that there is no relationship between the heritage features and the collected pottery, especially when the latter was produced prior to the early twentieth century AD.

¹ The Dadan Archaeological Project (DAP) is a large-scale project on the site of Dadan. It is carried out by the French Centre for Scientific Research (CNRS) on behalf of the Royal Commission for AlUla (RCU) and of the French Agency for AlUla Development (AFALULA).

² In order to be able to compare the pottery found by various projects in the region, the fabric chart developed by the Dadan Archaeological Project for the study of the pre-Islamic pottery (see Shabo et al., forthcoming) is also used at UCOP and identifiable by the use of the sigla DDN (e.g. DDN1 = Dadan Macrofabric 1). For other periods, the fabrics of the UCOP pottery corpus were grouped according to their texture and roughly described. Even though pottery fabrics are not addressed in the present paper, they are indicated in the figures.

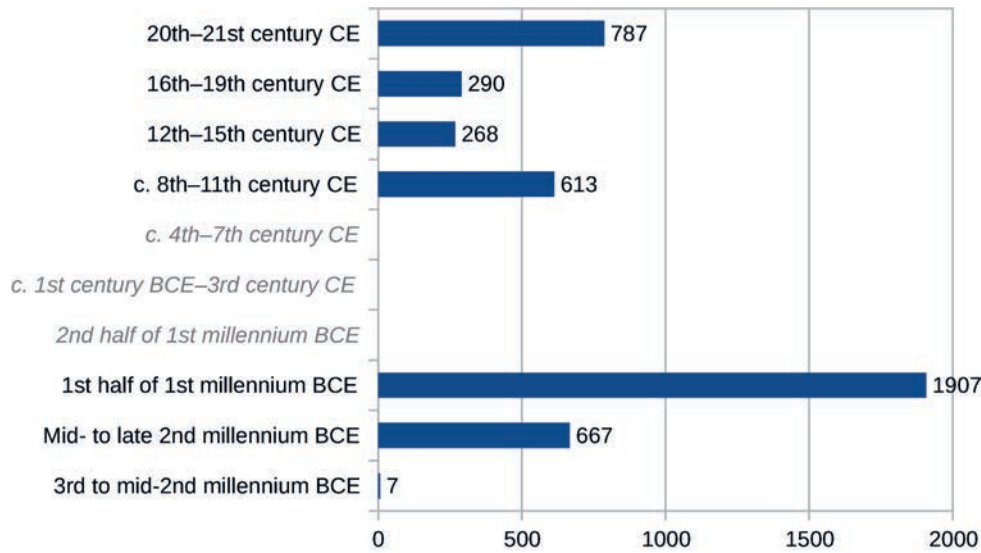


FIGURE 3. Distribution of dated diagnostic sherds per chronological period. Shaded periods, while attested in the assemblage, have not yet been processed.

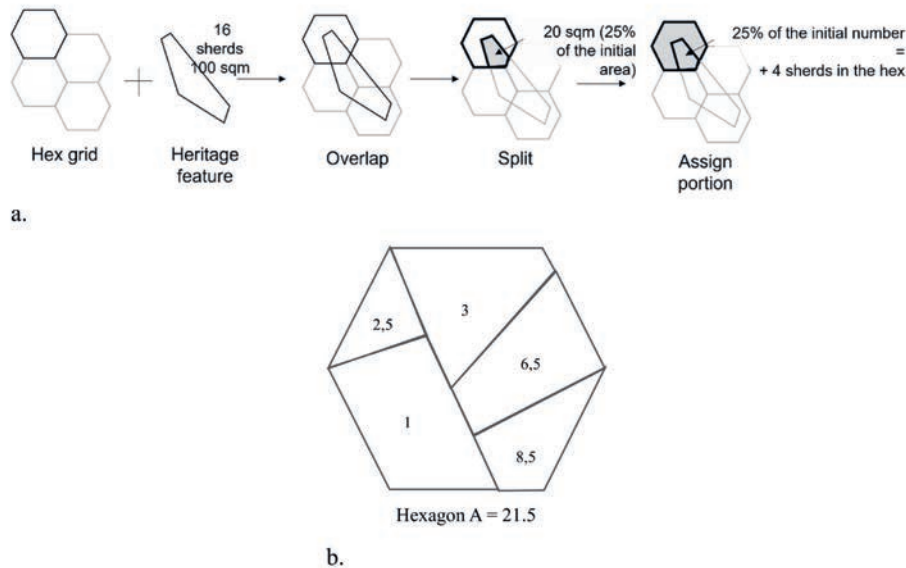


FIGURE 4. Visualization of the data processing behind the distribution maps: **a.** calculating the number of sherds from a heritage feature to be ascribed to an analytical spatial unit; **b.** computing the proportional quantities from several heritage features into a single analytical spatial unit.

Indeed, most of the material was collected from still cultivated or recently abandoned agricultural plots, in which built remains, when present, correspond mostly to earthen-built dwellings related to this recent or contemporary use of the gardens. But neither the plots nor the dwellings correspond to the landscape of the valley prior to the twentieth century AD. Similarly, the topographic names referred to in the present paper mainly correspond to the modern, not the ancient, topography of the valley. Because they represent easily

identifiable landmarks, several walls (e.g. al-ʿAqil and al-Būr walls) are regularly mentioned in this paper, independently of the period referred to and whether these walls already existed or were built centuries later.

In contrast, it is assumed that the distribution of datable archaeological pottery reflects more accurately past occupation in the valley. From this perspective, a diachronic consideration of the heat maps processed for each considered period provides new insights into the history of human occupation in the al-ʿUlā valley.

A chronology of pottery groups attested in the al-ʿUlā valley

Late third to mid-second millennium BC

Gritty Ware, dated by earlier investigations in the Jabal al-Kharaymāt (Durand 2011: 353; Abu-Azizeh 2015: 188; 2019: 39; Durand & Gerber 2015: 200) and at Taymāʾ (Tourtet, Daszkiewicz & Hausleiter 2021: 49, 51–52; Lora 2023: 89–90) to the late third–early second millennium BC, and also attested among the pottery assemblage from the earliest phases reached in Area B of Dadan (Lora, Dumas-Lattaque & Alahmari 2024: 99), is the earliest pottery identified to date in the UCOP assemblage. All six diagnostic sherds belong to bowls (Fig. 5/a–c), which do not reflect the morphological repertoire known from other sites.

Red Burnished/Barbotine Ware (RBW) is also attested at a regional scale. Its occurrence at Taymāʾ and Qurayyah allows dating to the early second millennium BC (Hausleiter & Zur 2016: 154–155; Luciani & Alsaud 2018: 175, fig. 8; 2020: 65–68; Luciani 2021: 97–98; Tourtet et al. 2021: 52–55; Lora 2023: 89–90). Attested by a single sherd in the UCOP assemblage (Fig. 5/d), its presence in the al-ʿUlā valley was already known from Dadan (al-Theeb 1437H: 281 no. 129+130, 170; al-Theeb et al. 2020: pl. 2.23a).

Mid- to late second millennium BC

By its dark red to reddish brown surface, Red Ware (corresponding to Dadan Macrofabrics DDN1 and DDN2) shares visual similarities with the earlier RBW (see above), but can be distinguished from it by its matt, unprocessed surface. Items likely ascribable to this ware have already been found at Dadan (e.g. al-Shehry 2014: 219 no. 78, 225 no. 89, 227 no. 94, 254 no. 156). Within the UCOP (667 diagnostic sherds) and Dadan (Shabo, Tourtet & Rohmer 2022: 392–396; Tourtet 2024: 538, 541–542) assemblages, both plain (Fig. 5/e–h,k–n) and decorated (Fig. 5/i–j) Red Ware vessels are attested. Painted items display exclusively simple geometric motifs (Fig. 5/i–j). Some items also display an incised, stamped, or applied decoration. Considering, on the one hand, its similarity with RBW and, on the other, its absence at Tall al-Sālimiyah,

where the pottery assemblage was mainly dated to the ninth–fifth century BC (Rohmer et al. 2022), Red Ware should probably be dated between the mid-second and the early first millennium BC, as corroborated by results from Dadan (Tourtet 2024: 536–537), where contemporary phases of occupations have been discovered both in the urban dwelling (Area C; see Lesguer et al. 2024: 150, 181–184) as well as in the area of the later main sanctuary of the site, Area B (Lora, Dumas-Lattaque & Alahmari 2024: 132).

First half of the first millennium BC

A total of 1907 diagnostic sherds (41% of the fully documented diagnostic sherds, 58% of the dated diagnostic sherds) belong to a very common group, characterized by a pinkish to buff matrix, a smooth texture, and numerous, mainly mineral, inclusions (Shabo et al., forthcoming; Rohmer et al. 2022: 173). These common wares conceal several variations, depending on the presence or absence of painted decoration, as well as on the presence or absence of a red or blackish slip (Fig. 6/a–g).³ An ongoing detailed analysis of the common wares from the Dadan excavations, based exclusively on stratified material, should soon provide a better technological, stylistic, and chronological understanding of this group (Shabo et al., forthcoming).

While common wares were clearly associated with deposits of the late ninth to the late fifth century BC at Tall al-Sālimiyah (Rohmer et al. 2022: 172), recent results from Dadan may suggest its production had already begun in the late second millennium BC (Tourtet 2024: 536–537).

³ This group includes sherds formerly classified as ‘Khuraybah/al-Ula Painted Ware’ (e.g. Parr, Harding & Dayton 1970: 213). However, like the groups of painted vessels once classified as ‘Midianite’/‘Qurayyah Painted Ware’ (e.g. Parr, Harding & Dayton 1970: 230–240; Intilia 2016) or as ‘Tayma Painted Ware’ (e.g. Bawden & Edens 1988), recent investigations based on excavated material attested to the existence of various stylistic groups concealed behind this label, distinguished by their manufacture and by their painted decoration, and spanning the (mid-)second to mid-first millennium BC. Consequently, new labels have been established both at Tayma and Qurayyah (e.g. Luciani 2019: 141–151; Tourtet, Daszkiewicz & Hausleiter 2021: 58–64; Luciani et al. 2022), addressing individual stylistic groups restricted to a shorter period.

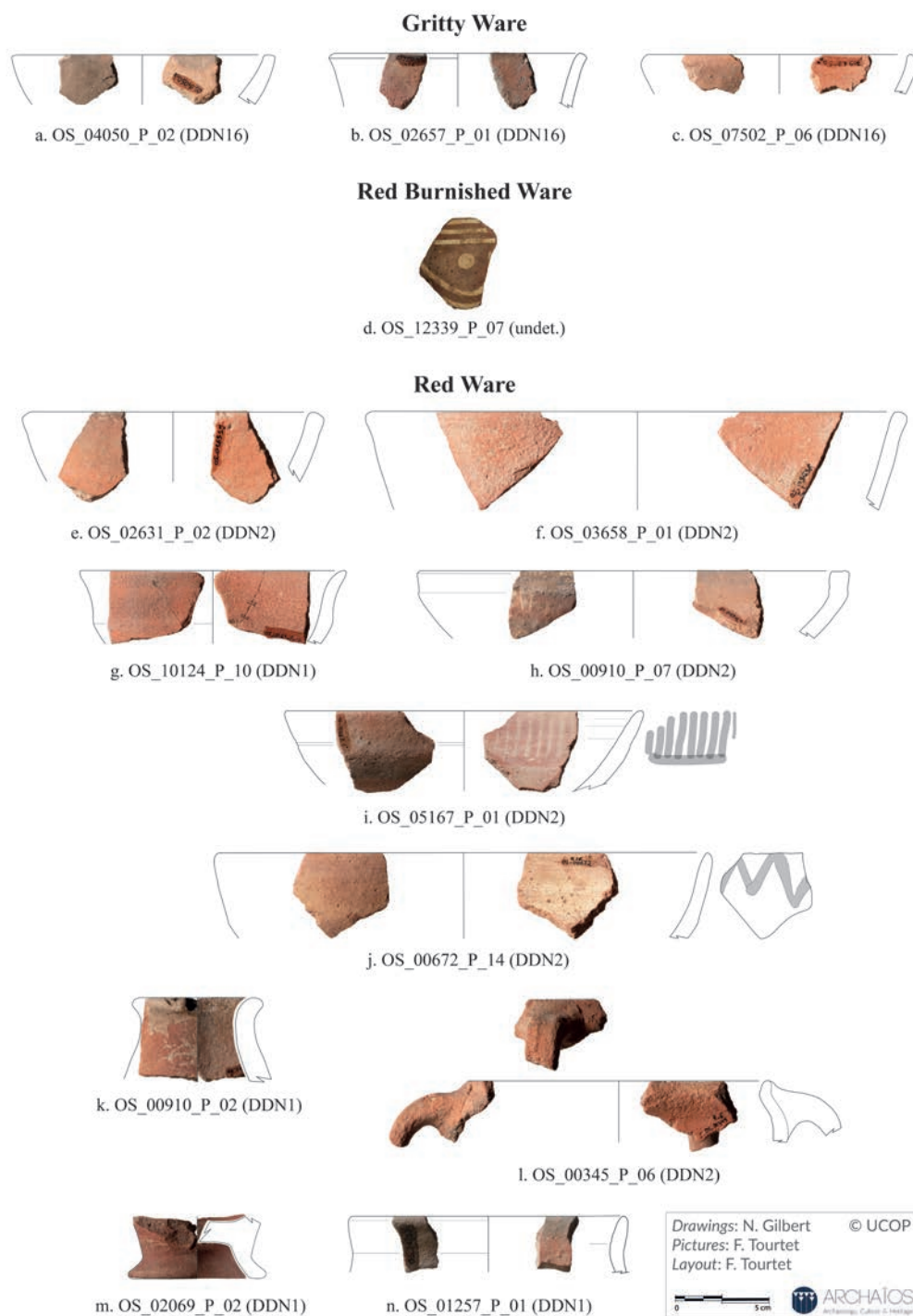


FIGURE 5. Pottery of the late third/early second millennium to the late second millennium BC (see n. 2 for a description of the fabrics).

From the mid-first millennium BC to the seventh century AD

As the data of the pottery dated between the mid-first millennium BC and the seventh century AD have not yet been fully processed, the question of their quantification, their spatial distribution, and hence the development of the occupation of the valley in these more than 1000 years will not be addressed here. However, several highly distinctive groups of this period are briefly presented.

One of them, characterized by its numerous white and tiny mineral inclusions (see Durand & Bauzou 2022: 199 fig. 9A), has been informally labelled as Snow Ware. The outer surface of the vessels is usually pink to buff, while the core and inner surface are grey, resulting from a redox firing. Most of the twenty fragments documented so far belong to pilgrim flasks (Fig. 6/i–j). Attestations of this ware and of this specific shape at Ḥegrā (Durand & Bauzou 2022: 193, 195, 196 fig. 5A–D), Umm Daraj (Durand & Bauzou 2022: 196 fig. 5E–I), Dadan (Dadan Archaeological Project; Shabo et al., forthcoming),⁴ Taymā', and Qurayyah (unpublished results from the works of the German Archaeological Institute, Oriental Department, at both sites; A. Hausleiter, pers. com., March 2024) suggest a non-local production, dated to the second half of the first millennium BC (Durand & Bauzou 2022: 193–200). Similar pilgrim flasks and fabric(s?) from the southern Levant and dated mainly between the fourth and second centuries BC might corroborate this dating and identify their region of production.⁵

'Attic(-izing) Black Glazed Ware' (Fig. 6/k), likely imported from the Aegean, is also probably characteristic of the sixth to third century BC.⁶ Attested at Dadan (al-Said & al-Ghazzi 2013: 120–124; al-Theeb 2013: 173; al-Theeb et al. 2019: pl. 1.17bc; al-Zaibi et al. 2020: pl. 2.5f–h; Dadan Archaeological Project, Shabo et

al., forthcoming), Tall al-Kathīb (al-Zahrani 2007: 165–166), and Ḥegrā (Durand & Gerber 2014: 162–163, fig. 9A), the UCOP assemblage comprises four items.

Regional parallels, especially from Ḥegrā (e.g. Gerber & Durand 2009: 282–284; Durand & Gerber 2014; 2022; Charloux et al. 2018: 51, 54) and Taymā' (e.g. Tourtet 2022: 115 and fig. 4.25a) enabled the identification of Nabataean fine ware (Fig. 6/q–r) and of Nabataean common ware (Fig. 6/s) fragments in the UCOP assemblage.

The largest group of this period, probably a local production, is characterized by its coarse, sandy fabric and its reddish-orange colour. As more precise sub-groups have not yet been defined, it is referred to as 'sandy wares' (Fig. 6/l–p). So far, and based on the date of similar technological developments at Taymā' (Maritan et al. 2017), on the absence of sandy wares from the records at Tall al-Sālimīyah, and on the latest results from Dadan, the start of their production should be dated around the mid-first millennium BC. However, as attested at Taymā' (2017), sandy fabrics are not characteristic of a single period but were produced at least until the mid-first millennium AD, if not even later. Ongoing comparative analyses of the morphological types ascribed to these wares should enable a more precise dating.

Eighth–twelfth century AD

Between the eighth and the twelfth century AD, Cream Ware (387 sherds) and 'unglazed moulded wares' (23 sherds) belong to the most frequent and characteristic groups in the valley. Cream Ware, also known as White Earthenware or Buff Ware, is a heterogeneous group, including fabrics of different quality but of the same calcareous nature. The vessels are wheel-thrown, plain or decorated on their outer surface with incised geometric patterns (Fig. 7/a–g). Well attested at Qurḥ (e.g. al-Mu'aiqil 2011: pl. 3.10a; al-Omair 2006: pl. 10.7, 10.8a), probably one of its centres of production (M. Ahmad, pers. com., May 2023), it is also known from numerous sites in Iraq, Iran, Egypt, and southern Arabia, while its production continued in later periods (Ciuk & Keall 1996: 42, pl. 95/12; Kennet 2004: 57; Mason & Keall 1990: 175; Whitcomb & Johnson 1979: pl. 38:b,c; Walmsley 2001: 304–313; El Khouri & Omoush 2015: 17–

⁴ Based on published pictures from earlier works at Dadan, the following sherds are likely to belong to Snow Ware: al-Shehry 2014: 149 no. 64, 177 no. 119, 256 no. 161.

⁵ See: www.levantineceramics.org/vessels/22537-amazia-7112-l-1613-b-16032-5; www.levantineceramics.org/vessels/22539-amazia-7112-l-1612-b-16033-4; www.levantineceramics.org/vessels/25195-cod-area-g-l-780-b-4409-2; www.levantineceramics.org/vessels/22334-gezer-g21-2017-l-91004-b-93019-1. Accessed on 22/09/2023. For a detailed discussion of the parallels, see also Shabo et al., forthcoming.

⁶ On the main period of export for Attic(-izing) Black Glazed Ware, see www.levantineceramics.org/wares/533-attic-black-glaze.



FIGURE 6. Pottery of the late second millennium BC to the early first millennium AD (see n. 2 for a description of the fabrics).

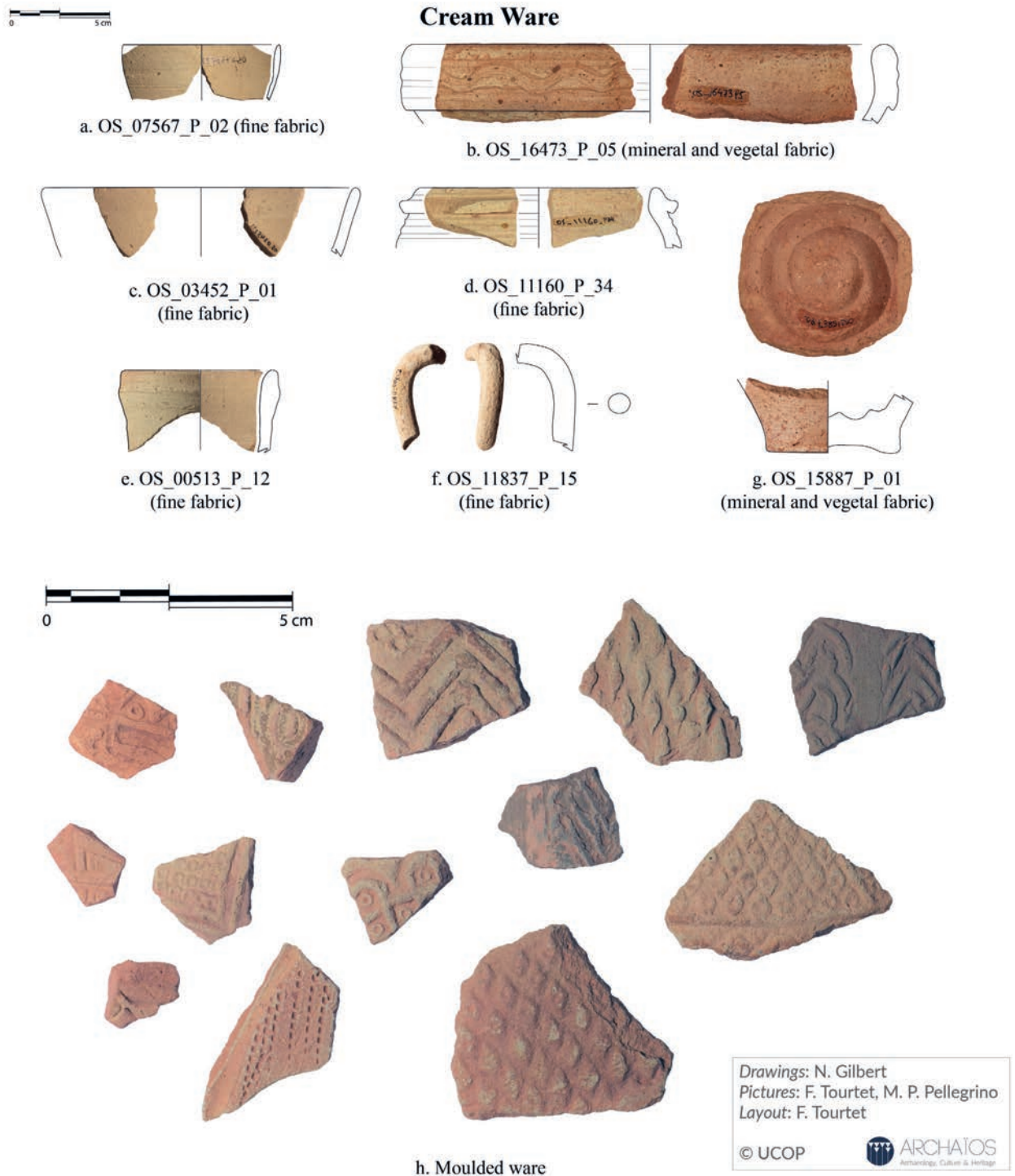


FIGURE 7. Pottery of the eighth to twelfth century AD (see n. 2 for a description of the fabrics).

18, fig. 7). Unglazed moulded wares, with moulded relief decoration (Fig. 7/h), are found on many sites throughout the Islamic world. In Mesopotamia, Iran, Central Asia, and on the Arabian Peninsula, different varieties were produced in large numbers at least from the ninth to thirteenth century AD (Gonella 2006; Mulder 2001: 24; 2014: 143–192; Henderson et al. 2005:139–141; Watson O 2004: 120; Carter 2005: 175, fig. 4.6; Walmsley 2001: 309). The shape repertoire remained restricted and comprised mainly jugs, while the decorative motifs seem to develop over the centuries, from very simple geometric patterns to complex animal and vegetal motifs, even calligraphic decorations, in the twelfth and thirteenth centuries AD. Apart from these two categories of common wares, at least four different groups of glazed ware can be added to this period: the opaque white glazed ware (Wilkinson 1973: chapter 6; Whitcomb 1978: pl. 77.30–31; Kennet 2004: pl. 174; Carter 2005: 184, fig. 4.9; Rougeulle 2005: 226), the colour-splashed glazed ware (Wilkinson 1973: 54–89; Watson O 2004: section F; Priestman & Kennet 2023: 200, 228), the monochrome green lead-glazed ware (Wilkinson 1973), and the lead-glazed relief ware (Watson W 1975).

Twelfth–fifteenth century AD

The assumed abandonment of Qurḥ in the twelfth century AD (Nasif 1988: 112) also marks, for the time being, the end of archaeological knowledge of the local pottery production. For the twelfth–fifteenth century AD, imported glazed pottery became the main identifiable material remains. This part of the UCOP assemblage includes, among others, Raqqa Turquoise Ware (65 sherds) (Grube 1976; Tonghini & Grube 1989; Folsach 2001; Henderson et al. 2005; Milwright 2005; Jenkins 2006) (Fig. 8/a), Manganese Glazed Ware (16 sherds) (al-Ghabban 2011: 470, fig. 200 b–d; Monchamp 2020: 67; Fang 2023: 945), Alkaline Blue Glazed Ware (33 sherds) (Kennet 2004; McPhillips 2012), Black and Blue Painted Under Transparent Glaze (also known as Fritware or Stone paste) (10 sherds) (Jenkins 1984; Vezzoli 2013: 134, pls 8–10), Blue and White Ware (13 sherds) (Scanlon 1984: 116, 118, pls 5–6; Vezzoli 2013: 136, pls 12–15), etc. Some of these glazed wares have been produced over longer periods and the overall poor state of preservation of most of these fragments — many of

which are non-diagnostic — prevents the establishment of detailed morphological or stylistic comparisons, thus hampering the precise dating of the imported vessels.

Sixteenth–nineteenth century AD

For the sixteenth to nineteenth century AD, nine different groups of porcelains and porcelain imitations were identified. Seven of them, regrouping 255 sherds (78% of the sherds of this period) are genuine Chinese porcelains, characterized by a vitrified, glassy paste and a slight blue to pale grey tint. One of those, Chinese Batavia brown porcelain, was produced in the eighteenth century AD. It was named after the city of Batavia (modern Jakarta), at that time the Dutch East India Company trading centre in Southeast Asia, through which it was traded (Howard 1976; 1994; 2003; Howards & Ayers 1978; Davids & Jellinek 2011: 243). Among the other groups of genuine Chinese porcelain, six sherds were identified as celadon (Chuimei 1994; Yang 2018; Fang 2023) and thirty-three sherds as late Ming dynasty blue and white Chinese porcelains (Kelun 2004; Fang 2011; Gerritsen 2020). The two remaining, non-Chinese groups, to which thirty-five sherds were ascribed, correspond to two variations of the Anatolian Kütahya Ware (Kütahya polychrome hand-painted pottery — Fig. 8/b; and Kütahya blue and white pottery — Fig. 8/c). The Kütahya productions can be dated from the late seventeenth to early nineteenth century AD (Carswell 1972; Demirsar 1997; Dinu 2009; Crowe 2011; 2018; Batariuc & Dinu 2018: 133–137).

Twentieth–twenty-first century AD

Four main groups of pottery can be clearly ascribed to the twentieth and twenty-first centuries AD: porcelain coffee cups (478 sherds), industrial porcelains (171 sherds), porcelain imitation/plastic (5 sherds), and common storage jars (133 sherds). A small number of closed and open vessels made of the same fabric as the storage jars complete this class. The porcelain coffee cups represent the majority of this assemblage (Fig. 8/d). They are decorated with various designs, mostly floral patterns in different colours, imitating Chinese teacups. Most do not include a factory mark, making their identification difficult. It is known

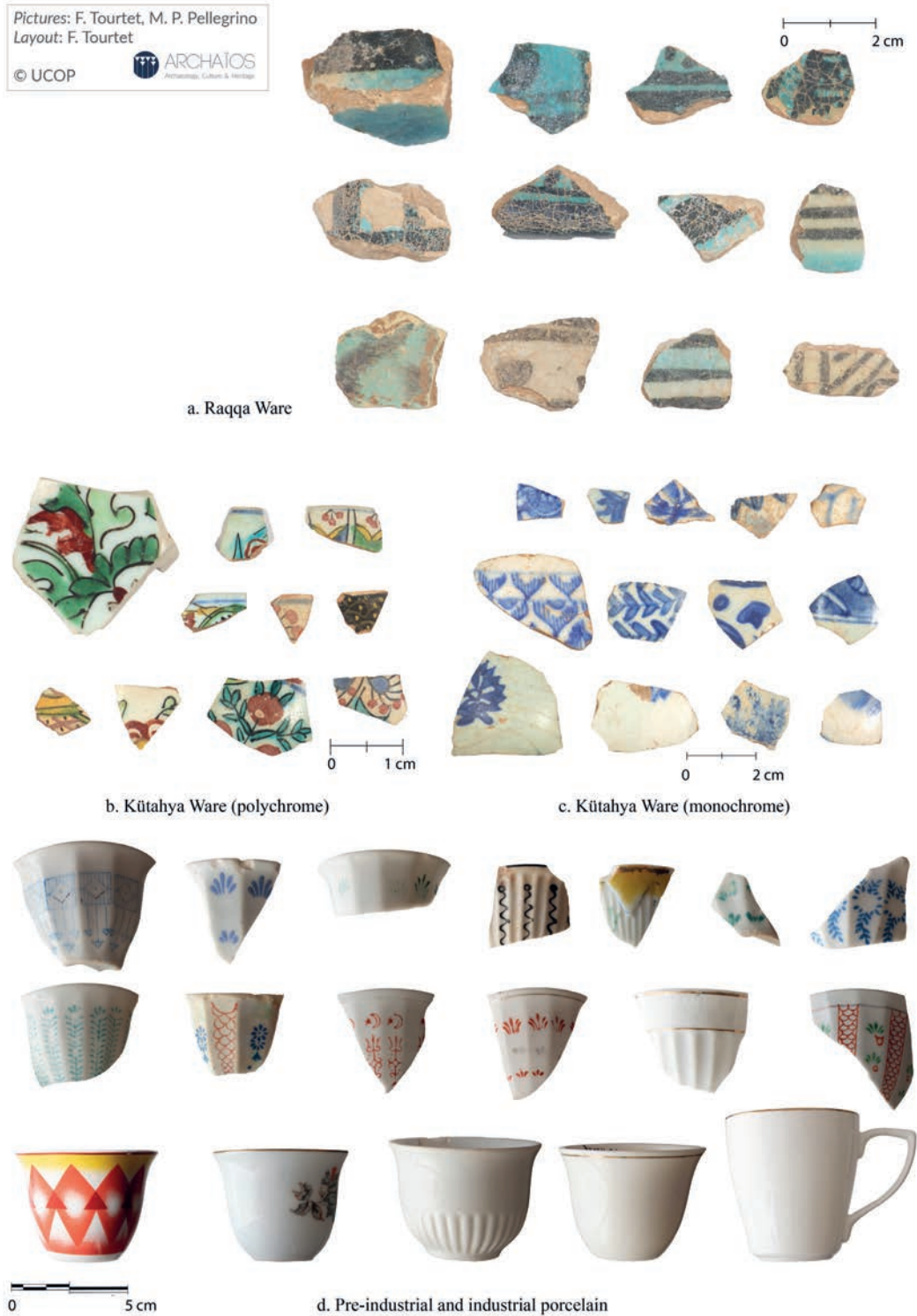


FIGURE 8. Pottery of the sixteenth to nineteenth century AD (see n. 2 for a description of the fabrics).

from historical sources and archival material that various European factories, especially in Germany and Austria-Hungary, produced large amounts of porcelain coffee cups for export to the Ottoman Empire (Otte & Priestman 2022). However, hand-painted coffee cups were also made in Japan from the late nineteenth century to the early twentieth century AD (Carter 2019: 250).

Discussion

In spite of several limitations, such as the still ongoing analysis or the absence of knowledge of local pottery productions after the twelfth century AD, the results obtained by pottery analysis already provide unprecedented insights into the development of human occupation in the al-ʿUlā valley since the late third millennium BC. The present discussion is primarily based on the interpretation of the spatial distribution of the dated diagnostic sherds (Figs 9–10), regrouped in chronological periods. The latter have been defined according to relatively clear changes in the pottery assemblage and do not refer to political history. Moreover, these periods are defined as rough chronological ranges and if, for the sake of simplicity, they do not overlap, changes like those mentioned above did not usually take place at once but were gradual. Even though only the cultivated areas were investigated, not the entire valley, the documented area is representative enough to identify at least general trends.

Spatial distribution of the dated pottery

While found only in small numbers, pottery sherds of the third and early second millennium BC were identified in a single area, at the confluence of Wādī al-ʿUlā, Wādī Majdar, and Wādī Sāq (Fig. 9/a). Spatially, this result fits well with the identification of third-millennium BC deposits at Tell Sāq (Hausleiter et al. 2021: 126–129). A single exception was found in al-Manshiyah, again at a confluence of Wādī al-ʿUlā and a smaller wadi. The recent discovery of built structures dated to this same period at Dadan (Lora, Dumas-Lattaque & Alahmari 2024: 99) suggests, however, that the distribution of the surface material does not entirely reflect the occupation of the valley at the end of the third–beginning of the second millennium BC.

The distribution of Red Ware (Fig. 9/b) suggests an increasing density of occupation in the later part of the second millennium BC. The highest concentrations were found between the al-ʿAqīl and al-Būr walls. Around Dadan, especially north of Wādī Sāq and Wādī Majdar, the concentration appears to decrease, even though the site of Dadan was already in existence (Lesguer et al. 2024: 181–184; Lora, Dumas-Lattaque & Alahmari 2024: 99–101) and Red Ware (macrofabrics DDN1 and DDN2) was identified there (Shabo, Tourtet & Rohmer 2022; Tourtet 2024: 527–537). While human activities (construction works, agriculture) in the area since at least the early twentieth century (Jaussen & Savignac 1914: pl. VIII; Bawden 1979: 63, 65; Charbonnier et al. 2022: 75–76)⁷ may be responsible for the small number of late second-millennium BC sherds around Dadan, it cannot be excluded that activities in this area did not imply the use of large quantities of pottery vessels. Between Wādī Muʿtadil and Ḥegrā, isolated, low concentrations of Red Ware suggest a restricted use of this area (e.g. small dwellings, resting places, etc.). The presence of an isolated (and low) concentration at Jabal Ikmah is noticeable, suggesting that this site might already have had some importance in the late second millennium BC. While the situation between the al-Būr wall and the southern defensive wall is unclear due to modern human activities (see Introduction), the absence of Red Ware along the qanats around Qurḥ suggests that the UCOP South Area of study was not densely populated, if at all.

Common wares dated to the late second to mid-first millennium BC (Fig. 9/c) cover approximately the same area as Red Ware but display higher densities. Surprisingly, the main concentrations are not located around Dadan, but around the al-ʿAqīl wall and in front of the Old Town. With density < 1 per spatial unit, it is unclear whether the areas located between Ḥegrā and the wall crossing the valley to the north of Tall al-Kathīb, as well as to the south of the al-Būr wall, were mainly empty, or whether agricultural and urban developments in these zones largely removed traces of earlier occupation.

⁷ '[...] a substantial part of the surface of Kheif El-Zahrah and its vicinity has been affected by ground-clearing activity, undertaken as a preliminary to further projected agricultural development' (Bawden 1979: 65).

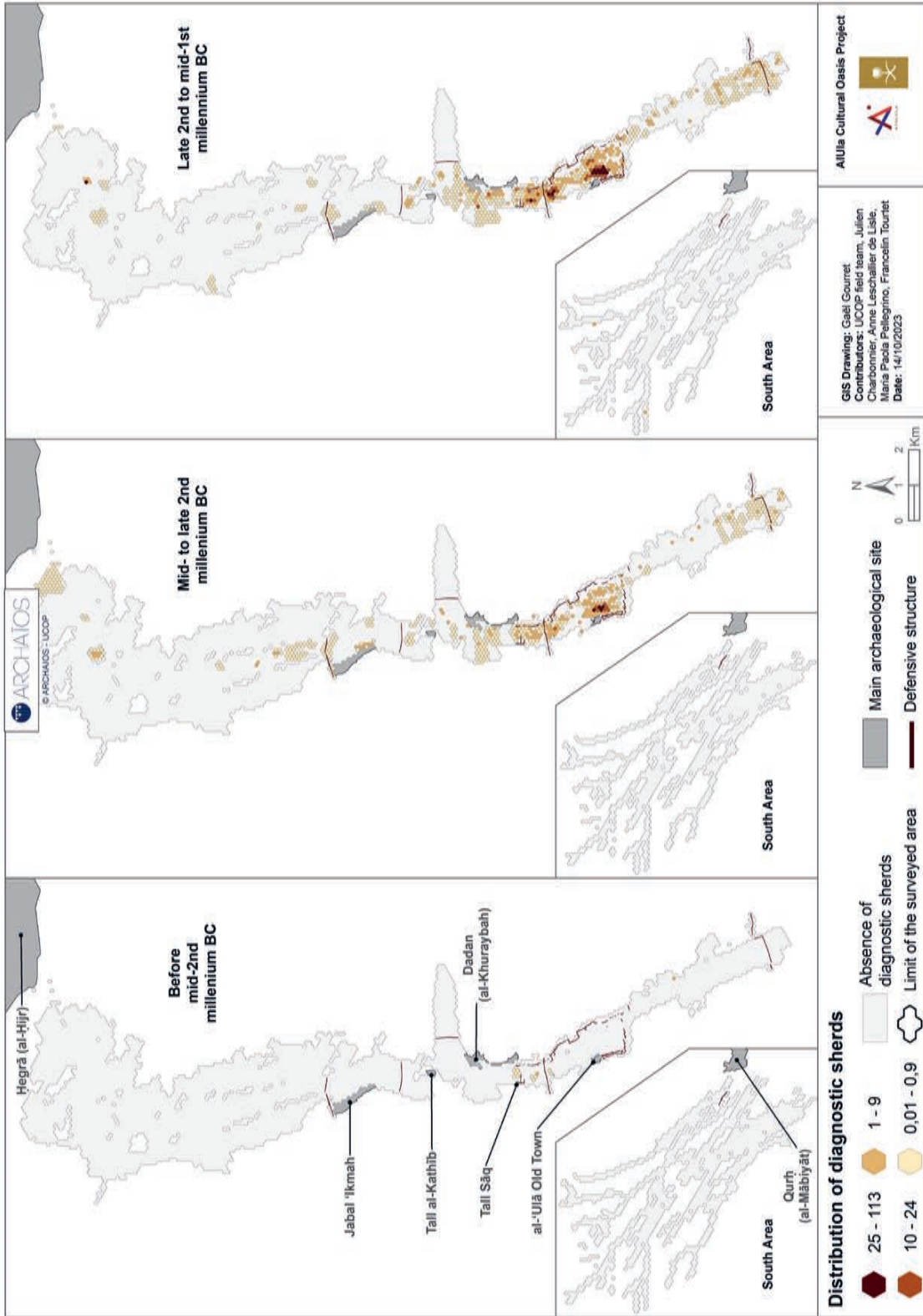


FIGURE 9. Distribution maps; from the late third/early second millennium BC to the mid-first millennium BC.

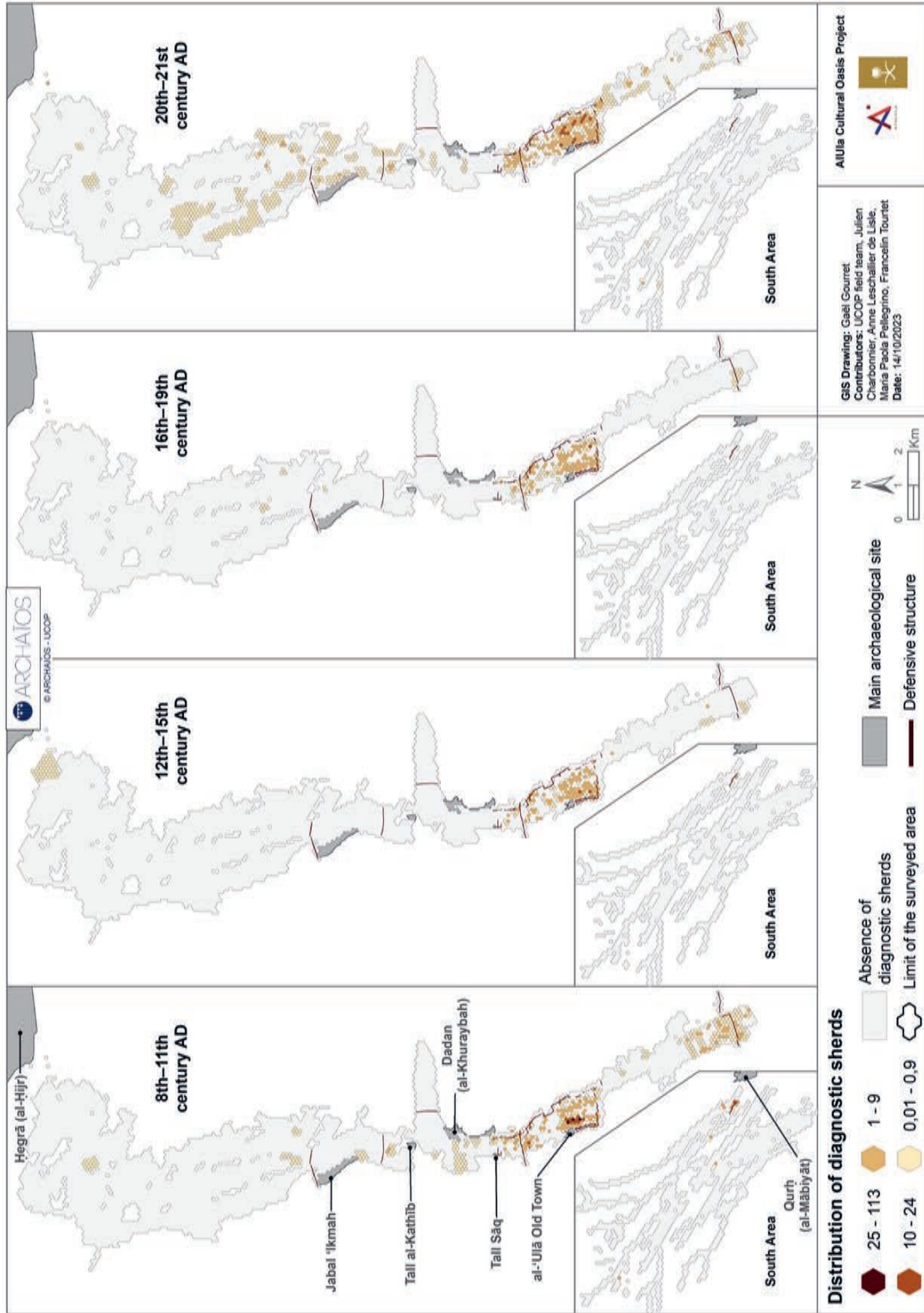


FIGURE 10. Distribution maps: from the eighth to the twenty-first century AD.

For the period between the mid-first millennium BC and the seventh century AD, there is no hiatus in the record, but as the data has not yet been processed, no distribution map has been included.

The distribution of early Islamic pottery (Fig. 10/a) reveals the first and only noticeable presence of pottery in the South Area and is probably related to the contemporaneous development of Qurḥ, the new centre of the region at that time. A further concentration of early Islamic sherds between the al-ʿAqīl wall and the southern defensive wall suggests a contemporaneous occupation of both Qurḥ and the area later referred to as the ‘historical oasis’.⁸

Fragments of imported vessels enable us to distinguish the twelfth- to fifteenth-century from the sixteenth- to nineteenth-century AD occupation. When it comes to their spatial distribution, however, no major difference is visible between these two periods (Fig. 10/b–c). To the north of the al-ʿAqīl wall and to the south of the al-Būr wall, only a diffuse presence of sherds dating between the twelfth and nineteenth centuries AD (density < 1 per unit) can be observed, suggesting, in comparison to the early Islamic period, a contraction of the settled area to the core of the historical oasis. However, local common wares of the twelfth to nineteenth century AD remaining largely unknown, the question remains open whether contemporary dwellings of any size may have existed in those areas. It is only possible to state that imported vessels are attested almost exclusively in the historical oasis – the new political and economic centre of the region.

The distribution of pottery dated to the contemporary period (Fig. 10/d), since the early nineteenth century AD, mirrors the urban and agricultural development of the region. Indeed, contemporary pottery is distributed over most parts of the cultivated surveyed zones. Once again, the highest concentrations are located around the Old Town, between the al-ʿAqīl and the al-Būr walls (the historical oasis). The low density of contemporary material in the area around Dadan, between Wādī Muʿtadil and Wādī Majdar, and also further to the north, is probably related primarily to the development of cultivation since the early twentieth century AD (see

above). Similarly, the apparent low-density area to the south-east of the modern city centre of al-ʿUlā is not representative, archaeological remains in this area having been profoundly affected by the agricultural and urban development in the valley since the early twentieth century AD (Charbonnier et al. 2022: 60).

A new archaeological hotspot?

Considering the available quantitative data, the zone located between Wādī Majdar to the north, and the al-Būr wall to the south, stands out. It is in this area that, since the late second millennium BC, the highest concentrations of pottery sherds were collected. Assuming that the distribution of the surface-collected sherds mirrors the extent of earlier occupations, such concentrations of ancient pottery suggest that this area has been densely occupied since the Bronze Age. Until the present study, the only known pre-Islamic remains located south of Dadan were limited to Nabataean remains observed at Qalʿat Biʿr Wuṭayf (see Fig. 1; see also Nasif 1988: 26). In other respects, this area was considered as not having been developed before the twelfth–thirteenth century AD (al-Aboudi 2019). Consequently, and in spite of their partly preliminary nature, the results of the present study suggest the existence of a new archaeological hotspot in the al-ʿUlā valley. Moreover, the dated pottery attesting the contemporaneity of this hotspot with the well-known sites of Dadan, Ḥegrā, and Qurḥ, invites a discussion about its relation to those sites.

Whether there is an archaeological site lying below the gardens of the historical oasis must nonetheless remain an open question for the present. On the one hand, most of the buildings in this area predating the last decades of the twentieth century AD were built with adobe. It is possible that the loam for the adobe was collected within the boundaries of the settlement of Dadan (including its now fenced urban area, as well as its agricultural hinterland, whose extent remains unknown), and that pottery fragments from previous periods were included in this loam. In this case, the distribution of the sherds would not be related to an ancient occupation, but to the density of adobe produced for the garden walls. Moreover, this interpretation fits with the use of the ruins of Dadan as a quarry for

⁸ The locality formed by al-ʿUlā Old Town and associated gardens and fields, from their foundation in the middle Islamic period to the early twentieth century (Charbonnier et al. 2022).

building the Old Town (e.g. Jaussen & Savignac 1914: 43; Nasif 1988: 26). On the other hand, it is similarly likely that earlier occupation deposits lie below the Old Town and/or the visible remains of the gardens but have been obliterated by the latter.

Conclusions

This paper presents the preliminary results of the analysis of the pottery collected by the UCOP survey in the cultivated areas of the al-ʿUlā valley, providing new insights into the history of its human occupation. The various wares identified within the UCOP corpus have been defined and dated based on comparisons with pottery excavated in the al-ʿUlā region or at further major archaeological sites in neighbouring regions (e.g. Arabian Peninsula, Mesopotamia, Levant, Central Asia, etc.). From a chronological point of view, the UCOP pottery assemblage spans the late third–early second millennium BC to the present day, without any hiatus of occupation. The development of human occupation between the mid-first millennium BC and the seventh century AD has, however, been excluded from the present paper as the data still needs to be processed.

In order to connect the quantitative data with the collection location of the dated sherds, maps were created, displaying, for each considered period, the concentration areas of the diagnostic sherds in question. These maps enabled the identification of general trends in the development of human occupation in the valley since the late third–early second millennium BC, with the exception of the mid-first millennium BC to the very beginning of the Islamic era, which is not addressed here. It could thus be suggested that there was no dense human occupation prior to the second half of the second millennium BC. In contrast, the location of the highest concentration of pre-Islamic pottery might suggest the existence of a site in the area of the historical oasis, in the core of the al-ʿUlā valley, possibly as early as the late second millennium BC. Consequently, the area would not have been first settled after the abandonment of the city of Qurḥ around the twelfth century AD, but much earlier. Unsurprisingly, in the South Area in the neighbourhood of Qurḥ, most of the collected pottery dates — as does the city itself — mainly between the eighth and twelfth

centuries AD. In the following periods (twelfth–fifteenth and sixteenth–nineteenth centuries AD), the distribution based on the documentation of imported pottery suggests a lower density of human occupation than in the early Islamic period. In contrast, a dramatic increase was witnessed from the early twentieth century AD.

These conclusions are still preliminary. Indeed, the terrain has witnessed considerable modifications (notably, reuse of older materials for construction) over the centuries, as well as recent alterations linked to agriculture and the extension and modernization of cultivated lands (terracing, etc.). The consequences of these modifications on the preservation and distribution of archaeological remains are not yet fully known. Furthermore, it must be stressed that the local pottery assemblage of the twelfth to nineteenth century AD remains largely unknown, no archaeological excavation having investigated this period in the region. Future targeted investigations may provide further evidence improving our understanding of human occupation in the al-ʿUlā valley.

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