

WADI SHAW 82/52: ¹⁴C DATES FROM A PERIDYNASTIC SITE IN NORTHWEST SUDAN, SUPPORTING THE EGYPTIAN HISTORICAL CHRONOLOGY

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ABSTRACT. In the framework of the interdisciplinary project "Settlement History of the Eastern Sahara" at the Universität zu Köln, a large number of sites were excavated during the 1980s in northern Sudan, where the Laqiya-region with the Wadi Shaw and Wadi Sahal was one of the main research areas. About 150 sites have been surveyed and partly excavated. One of these sites, Wadi Shaw 82/52, yielded sherds of a Maidum bowl, which is dateable to the Egyptian IVth and Vth Dynasty. This site was dated by four radiocarbon dates. The dates are compared with the historical chronology of Egypt for the IVth and Vth Dynasty, and are shown to be in good agreement.

INTRODUCTION

From 1980–1986, the Institut für Ur- und Frühgeschichte at the Universität zu Köln conducted a research project on the settlement history of the Eastern Sahara (Besiedlungsgeschichte der Ostsahara (BOS)). Numerous sites were examined in the Eastern Sahara in Egypt and the North of Sudan to obtain information on the relationship between climate change and Neolithic cultural development (Kuper 1988). In the working area of the BOS project, the Laqiya region in the northwest of the Sudan appeared to contain many sites and good artifact preservation. The Laqiya region is characterized by several dry riverbeds, in Arabic *wadi*, of which the Wadi Shaw, Wadi Sahal and Laqiya Valley play a major role. These were formed by fluvial activity during the early Pleistocene (Gabriel 1986).

During 1982 and 1983, more than 150 archaeological sites were registered during two survey and excavation campaigns. Of these, 97 have been partly excavated or examined. Many of these sites showed several distinct artifact scatters and concentrations (Schuck 1988, 1989). Most of the excavations were but a few square meters and covered only small areas of the sites. Field work took only 2 months and 10 days. The archaeological timespan of the excavated sites covers the early Epipaleolithic resettlement and the entire Neolithic. Settlement ended during dynastic times. Wadi Shaw 82/52 lies at 20°31'N, 27°18'E in the eastern part of the Wadi near a barrier of dunes crossing the Wadi from northeast to southwest.

Wadi Shaw 82/52

Wadi Shaw 82/52 is a relatively small surface-scatter site with concentrations of stone artifacts, ceramics, bones, artifacts of ostrich eggshell and millstones. Four fireplaces were identified, of which the two larger ones yielded enough charcoal for ¹⁴C dating. The ceramics consist of, among others, red-polished blackmouthed ware, typical of the Nubian Nile-valley, belonging to the characteristic A and C Groups in Lower Nubia and the Kerma culture in Upper Nubia (Nordström 1972: 22; Bonnet 1996: 90). Simpler wares with dotted and scratched decoration-patterns of hanging triangles and rows of dots show similarities with decoration-patterns of the C Group as well as the Kerma culture. The most remarkable finds are a few sherds of an Egyptian Maidum bowl, which were widespread in the Egyptian Old Kingdom (Eggebrecht 1975). According to Kaiser's typology of the ceramic vessels of Userkaf's sanctuary at Abusir, Egypt (Kaiser 1969) and Reisner's chronology of the vessel types of the Giza necropolis (Reisner 1942) it is possible to date the Maidum bowl. The Maidum bowl from Wadi Shaw 82/52 fits to the types XIII 86 and XIII 87 of Kaiser, which are dated to the IVth and Vth Dynasty (Kaiser 1969). Therefore, Wadi Shaw 82/52 can be dated to the

IVth and Vth Dynasty as well (Table 1). Recent research on the Egyptian historical chronology (Arnold 1994; Beckerath 1970; Cherpion 1989; Stadelmann 1985; Strudwick 1985), dates the IVth Dynasty to *ca.* 2630–2450 BC and the Vth Dynasty to *ca.* 2450–2325.

TABLE 1. ^{14}C Dates from the IVth and Vth Dynasties

Sample	Date	Reference
<i>IVth Dynasty</i>		
BM-332	3990 \pm 105 BP	Barker, Burleigh and Meeks (1971)
UCLA-1389	4208 \pm 60 BP	Berger (1970)
P-275	4550 \pm 60 BP	Stuckenrath and Ralph (1965)
A-519	3960 \pm 30 BP	Haynes, Damon and Grey (1966)
A-521	4020 \pm 100 BP	Haynes, Damon and Grey (1966)
UCLA-665	3990 \pm 80 BP	Berger, Fergusson and Libby (1965)
UCLA-666	4090 \pm 80 BP	Berger, Fergusson and Libby (1965)
GrN-5657	4090 \pm 40 BP	Bakker, Vogel and Wislanski (1969)
GrN-5658	4085 \pm 90 BP	Bakker, Vogel and Wislanski (1969)
<i>Vth Dynasty</i>		
BM-82	3950 \pm 150 BP	Barker and Mackey (1961)
BM-401	3892 \pm 64 BP	Barker, Burleigh and Meeks (1971)
BM-346	3860 \pm 60 BP	Barker, Burleigh and Meeks (1971)

METHODS

To compare the ^{14}C dates obtained for Wadi Shaw 82/52 with the archaeological-historical expected age as judged by the occurrence of the IVth/Vth Dynasty Maidum bowl, Table 2 shows the following four dates, measured by conventional CO_2 β -decay at the ^{14}C -Labor Universität Köln.

TABLE 2. Wadi Shaw 82/52 Charcoal Samples from Fireplaces

Sample no.	Provenience	$\delta^{13}\text{C}$ value	Date
KN-3087. C-130	Structure 1	–22.03	4030 \pm 50 BP (2530 \pm 62 cal BC)
KN-4331. C-1551	Structure 2	–21.3	4170 \pm 60 BP (2768 \pm 100 cal BC)
KN-4332. C-1552	Structure 2	–25.0	4000 \pm 42 BP (2514 \pm 51 cal BC)
KN-4333. C-1554	Structure 2	–23.71	3940 \pm 140 BP (2397 \pm 204 cal BC)

As the calibrated probability distribution (Fig. 1) shows, the calibrated ages of all four samples are essentially identical and date the site reproducibly to *ca.* 2500 cal BC (50%-interquartile range: 2450–2660 cal BC). This result matches well with the archaeological age estimate. Gaussian Monte Carlo wiggle-matching (Jöris and Weninger 1998), run with an assumed spread of “old” charcoal ages of ± 30 tree rings and dynamic Gaussian cal-data errors of ± 10 ^{14}C yr BP, gives the result 2548

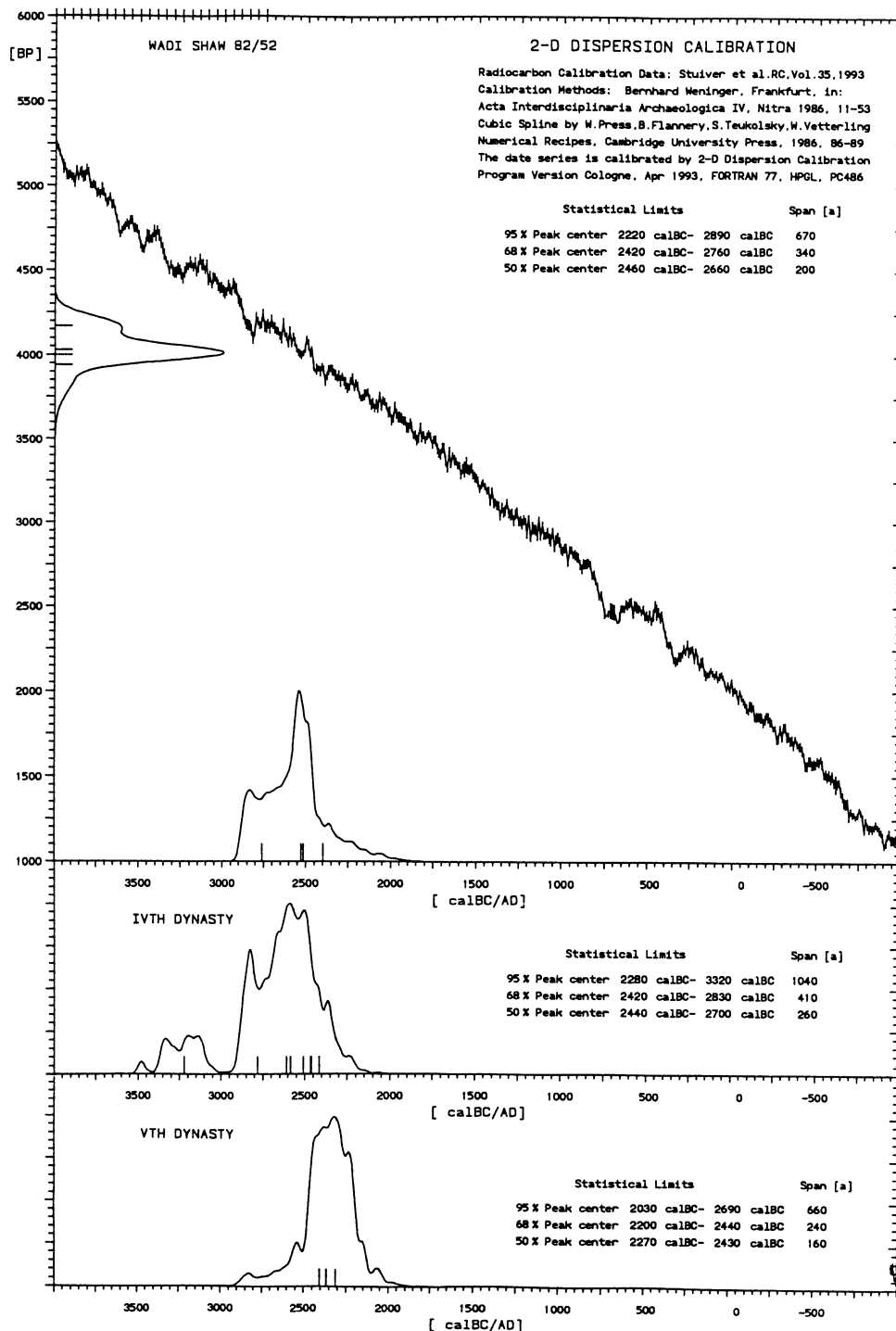


Fig. 1. ^{14}C histogram and calibrated probability distribution of Wadi Shaw 82/52 dates (Table 2) showing peak reading ca. 2500 cal BC. In good approximation, calibrated distributions of individual dates are Gauss-shaped. Individual ^{14}C ages and corresponding calibrated median ages are marked by dashes on the ^{14}C calendric time scale. Decadal calibration data: Stuiver and Reimer (1993). Also, comparison of calibrated ^{14}C data from Wadi Shaw 82/52 and Egyptian Dynasties IV and V (Table 1).

± 57 cal BC (Fig. 2). For archaeological reasons, *e.g.*, the results of the refitting of stone artifacts and nomadic subsistence, I assume, with these parameters, that the site was occupied only once for a short period, *i.e.* a maximum of a few months. The age readings apparent at *ca.* 2800 cal BC can be ruled out as statistically insignificant, also due to the fact that the site did not show artifacts of earlier or later dynasties. The samples appear to derive from the major wiggle at 2500 cal BC.

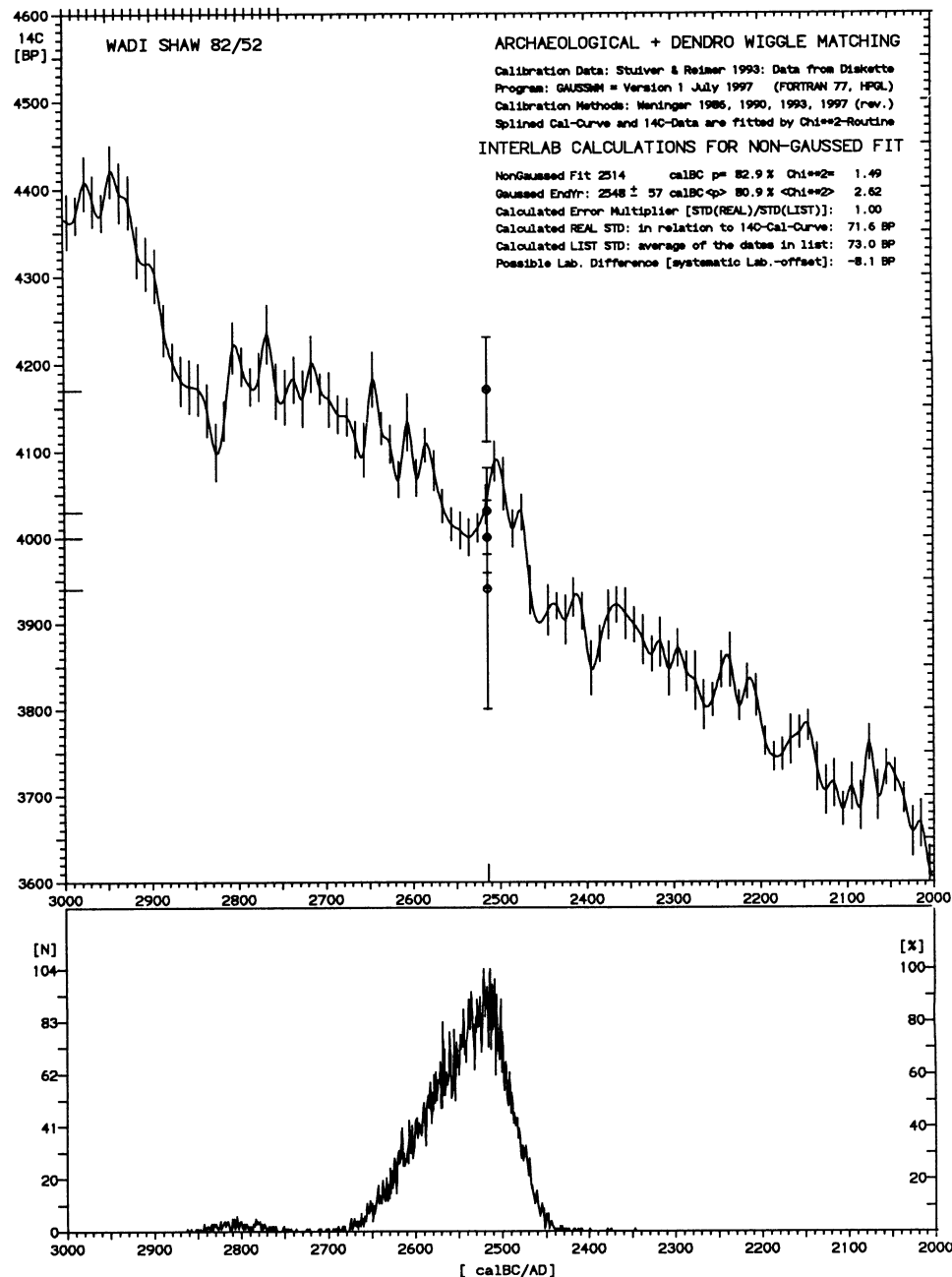


Fig. 2. Age distribution of Wadi Shaw 82/52 dates (see Table 2) based on Gaussian Monte Carlo wiggle matching, assuming ± 10 ¹⁴C BP (dynamic) calibration data error. Median is 2250 \pm 59 cal BC (68% limits), but the age distribution is slightly bimodal (95% limits: 2462–2652 cal BC).

RESULTS AND DISCUSSION

The good agreement between the archaeological and ^{14}C data can be used for a comparison between the ^{14}C data of the site Wadi Shaw 82/52 and the data for the Egyptian IVth and Vth dynasty. The database of archaeologically securely dated samples taken from the literature (Weninger 1992) from these dynasties is quite small. Nine dates were selected for the IVth Dynasty and three dates for the Vth Dynasty.

While the Wadi Shaw data center on the IVth Dynasty, they also show significant overlap with the Vth Dynasty (Fig. 1). A further comparison using the interquartile ranges (50%) to define the cultural floruit of each data set, as proposed by Ottaway (1973), shows significant overlap with the IVth Dynasty only (Fig. 3). However, due to the many sources of error that cannot be excluded (*e.g.*, old wood, interlaboratory differences), it seems preferable to constrain the age range, *e.g.*, by using 68% confidence limits.

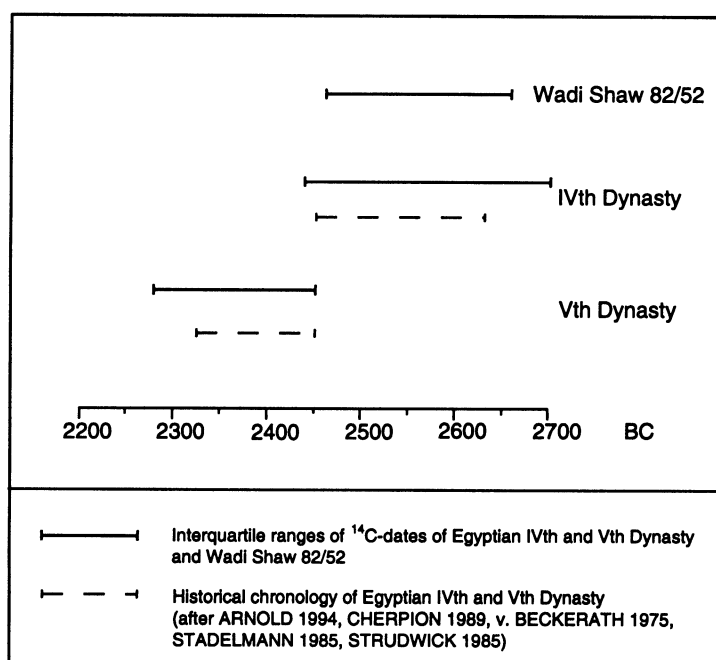


Fig. 3. Comparison of Wadi Shaw 82/52 ^{14}C data with Egyptian historical chronology and ^{14}C data of Dynasties IV and V. Decadal calibration data: Stuiver and Reimer (1993). Statistical limits based on interquartile (50%) ranges (Ottaway 1973).

CONCLUSION

The ^{14}C dates from Wadi Shaw confirm the age expectation (IVth–Vth Dynasty) for the Maidum bowl, obviously imported by the nomadic settlers. The ^{14}C ages, when compared to corresponding IVth to Vth Dynasty ^{14}C data, are found to be in agreement, and also support the historical Egyptian chronology within error limits as outlined above.

ACKNOWLEDGMENTS

The field research in the Sudan was funded by the Deutsche Forschungsgemeinschaft.

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