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Regenfeld 96/1 - Great Sand Sea and the question of human settlement on whaleback dunes

The characteristic features of the Great Sand Sea are parallel longitudinal sand dunes running over more than 500 km from SSE to NNW. Crossing the sand ridges in a West-East direction is a difficult undertaking, as Rohlf's failure in Regenfeld in 1874 has shown (Rohlf's 1875:165-167). It has been argued that the Great Sand Sea must also have been a barrier for man and trade in prehistoric times. However since the beginning of detailed research more and more information about the presence of people in this region has been collected. In recent scientific papers it is being discussed whether the Sand Sea was also favoured by prehistoric people. Rognon argued in 1980 that dune sands store water in areas with minimum and periodical rainfall. This resource gives rise to dense and continuous vegetation (Rognon 1980). At present nomads prefer dunes for pasturing their cattle in dry seasons (Neumann 1989:110).

In 1982 the geologist Steffan collected a lot of prehistoric artefacts on dunes, without giving any information about the exact location or any further descriptions (Steffan 1982:91f.). In addition to this collection some prehistoric sites were discovered on the eastern and western margins of the Great Sand Sea. Haynes reports on various artefact scatters (Haynes 1982) from the so-called "Willmann's Camp" site (Glass Area 81/61) in the western part of Sand Sea. The artefacts are situated on the top of a so called "whaleback" dune (or Arabic "draa"). Up to now, there is no clear evidence of the origin of these dunes. A pre-Holocene age is suggested (Steffan 1982:22; Pachur 1984:64; Pachur and Röper 1984:261). On the top of the whale back dune prehistoric artefacts are covered by younger active dune sands - the (Arabic) "Seif". The *Seif* originates mostly on the lee-side of a whaleback. In the peripheral zone of the dune crest prehistoric implements sometimes become visible because the sediment-cover is not very substantial. In the eastern margins of the Great Sand Sea some similar sites on

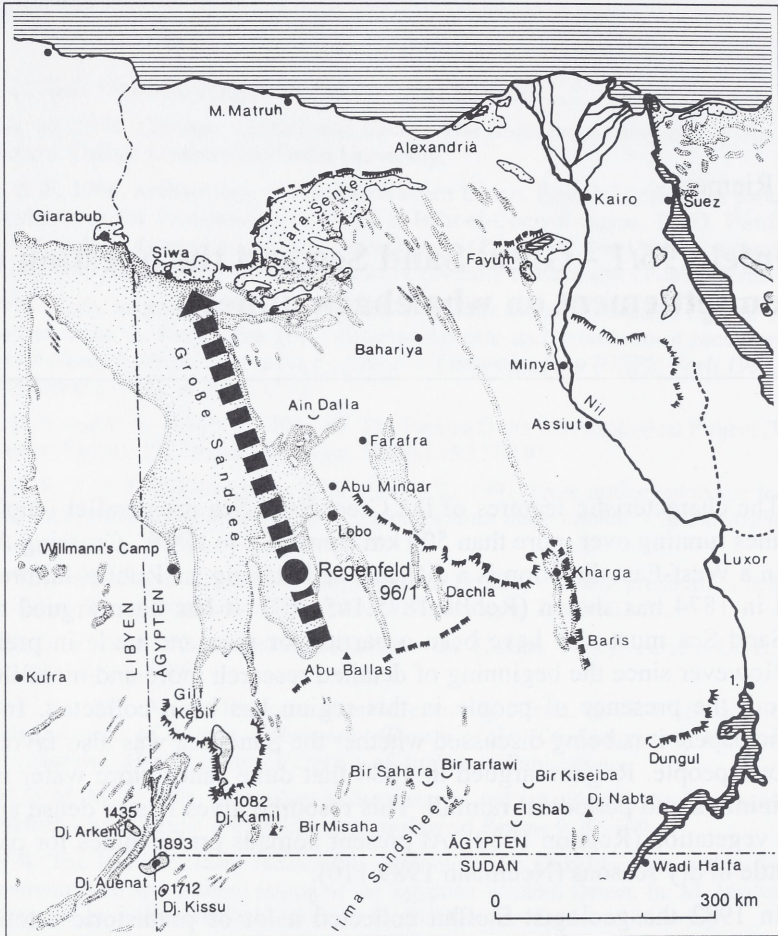


Fig. 1. Location of sites and route of the 1996 expedition.

whalebacks were discovered by the B.O.S. project, for example at Abu Minqar "Lobo" 81/55 (Klees 1989).

In 1995 the ACACIA project started at the university of Cologne, carrying out research into the relation between man and environment in arid Africa. During the first field campaign in Egypt in 1995/96, a combined expedition of geographers and archaeologists crossed the Great Sand Sea (Fig. 1). They moved from Abu Ballas in the south to Siwa oasis in the north and discovered, in March 1996, rich archaeological sites (96/1, 96/19 and 96/20) at a playa mud pan which

lies 50 km north-west of Rohlfs' Regenfeld. After a short inspection of the artefacts, an Early Holocene age was preliminarily suggested. Due to the limited amount of time available during the first visit it was necessary to return for a further exploration trip in autumn 1996.

The site is situated in the central-south of the Great Sand Sea, near 25 degrees of latitude. In this area the inter dune valleys are mostly free of sands, thus uncovering the natural surface. The artefact assemblages of the sites extends over the eastern bottom of the dune surface. The reconstruction (Fig. 2) shows the inter dune valley flanked by whalebacks. The western dune shows an active *Seif* while the eastern one is partially uncovered. Two reddish mud pans or playas which are bordered by very low escarpments are visible. The prehistoric artefacts concentrate on, or on the margins of, the western playa. Different clusters or scatters were recorded on different sediment levels (Fig. 3 and 4). The maximum difference of altitude reaches up to 7 m. Maybe the different situation of the archaeological scatters depends directly on fluctuating sea levels. However whenever the artefacts in the middle of the playa (site 96/20) were deposited it must have been very dry.

As it was pointed out before, an Epipalaeolithic date was suggested for the sites from the first and this was confirmed during our second visit. Two clusters of site 96/20 are situated in the deepest area, in the middle of the playa (Fig. 4). Flakes, chips and microblades are scattered over 15 by 10 m each. It is remarkable that there are many exhausted blade- and microblade-cores. Only a few retouched tools were found, namely backed points and elongated curved points (Fig. 5:1-4). Elongated triangles are unknown. This underlines an Early Epipalaeolithic age of Adam type. A dense ostrich eggshell scatter was found on 4 square meters together with the debitage of stone artefacts. We hope to get further information from radiocarbon analysis.

Another very interesting concentration is situated 300 m further west on the southern margin of site 96/1 (96/1-7). Its extents over 12 by 8 m, in which ostrich eggshells, flakes, microblades and cores of Libyan Desert Glass were found. Cores, microburins, hammerstones and retouched pieces indicate a workshop. Two slim trapezes are remarkable (Fig. 5:5-6). Both are backed and notched as it is well-known from the Epipalaeolithic level of the eastern Sahara site Westpans 85/52 at the Abu Ballas Escarpment from where a radiocarbon date of 8700±190 BP is submitted (Kuper 1993:214). A similar piece is also published for the Epipalaeolithic site Foum Seida in the Maghreb (Nehren 1992:303, Taf. 71, 17-18). Radiocarbon dates of ostrich eggshells from 96/1-7 are still being processed.

Most artefacts were found in 96/1 cluster no. 1; nearly 200 retouched stone tools, bone scatters and fireplaces were recorded on the surface. Many stone

REGENFELD 96 / 1, 96/19, 96/20

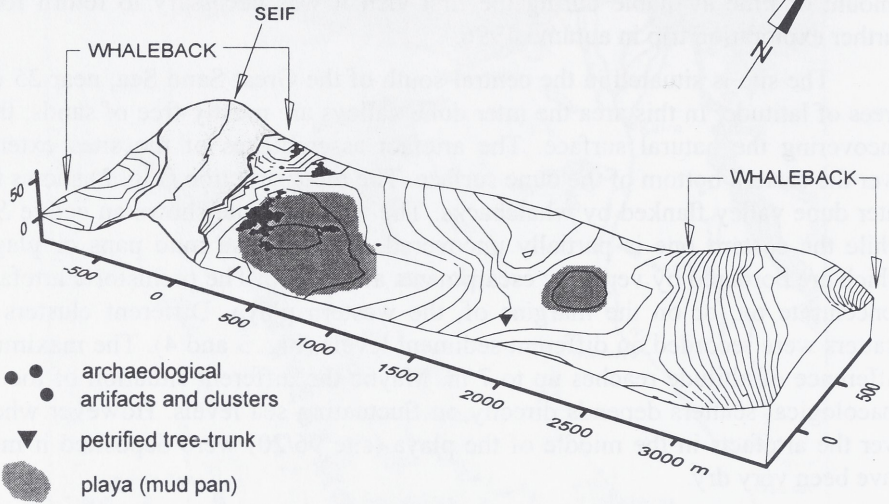


Fig. 2. Reconstruction of inter dune valley and longitudinal dunes.

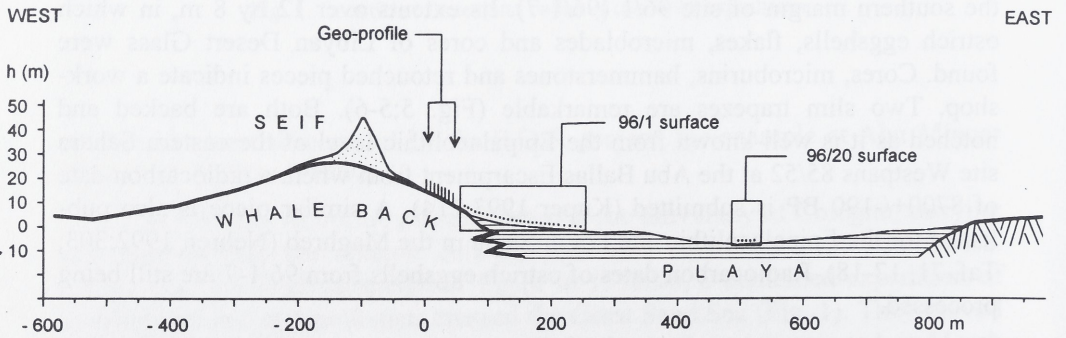


Fig. 3. Regenfeld 96/1 and 96/20: dune profile.

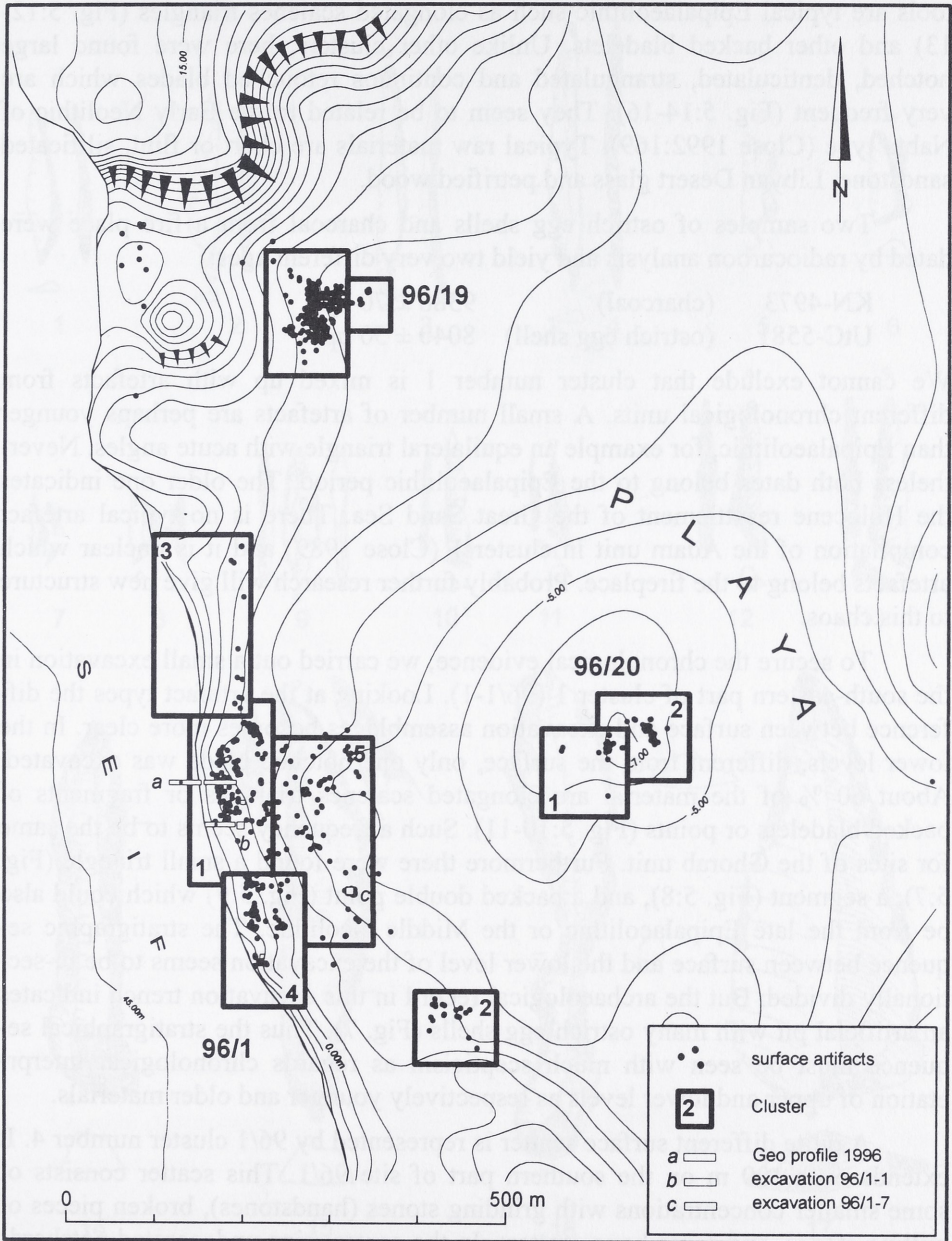


Fig. 4. Topographic map of sites 96/1, 96/19 and 96/20.

tools are typical Epipalaeolithic such as elongated scalenes triangles (Fig. 5:12-13) and other backed bladelets. Unlike other clusters, here were found large notched, denticulated, strangulated and continuous retouched blades which are very frequent (Fig. 5:14-16). They seem to be related to the Early Neolithic of Nabta type (Close 1992:169). Typical raw materials are chert or flint, silicified sandstone, Libyan Desert glass and petrified wood.

Two samples of ostrich egg shells and charcoal from a fire place were dated by radiocarbon analysis and yield two very different ages:

KN-4973	(charcoal)	9388 ± 70 bp
UtC-5581	(ostrich egg shell)	8040 ± 50 bp

We cannot exclude that cluster number 1 is mixed up with artefacts from different chronological units. A small number of artefacts are perhaps younger than Epipalaeolithic, for example an equilateral triangle with acute angles. Nevertheless both dates belong to the Epipalaeolithic period. The older one indicates the Holocene resettlement of the Great Sand Sea. There is no typical artefact compilation of the Adam unit in cluster 1 (Close 1989) and it is unclear which artefacts belong to the fireplace. Probably further research will give new structure to this chaos.

To secure the chronological evidence, we carried out a small excavation in the south-eastern part of cluster 1 (96/1-1). Looking at the artefact types the difference between surface and excavation assemblages becomes more clear. In the lower levels, different from the surface, only one notched blade was excavated. About 60 % of the material are elongated scalenes triangles or fragments of backed bladelets or points (Fig. 5:10-11). Such a frequency seems to be the same for sites of the Ghorab unit. Furthermore there were found a small triangle (Fig. 5:7), a segment (Fig. 5:8), and a backed double point (Fig. 5:9) which could also be from the late Epipalaeolithic or the Middle Neolithic. The stratigraphic sequence between surface and the lower level of the excavation seems to be bi-sectionally divided. But the archaeological record in this excavation trench indicates an artificial pit with many ostrich egg shells (Fig. 7). Thus the stratigraphical sequence must be seen with much scepticism as regards chronological interpretation of upper and lower levels as respectively younger and older materials.

A quite different surface scatter is represented by 96/1 cluster number 4. It extends over 100 m on the southern part of site 96/1. This scatter consists of some smaller concentrations with grinding stones (handstones), broken pieces of milling stones, and some bone scatters. In the centre, nine undecorated potsherds were found, including two rimsherds of different vessels (Fig. 6). All sherds seem to be of identical ware and manufacture and tempered with large chert and quartz pieces.

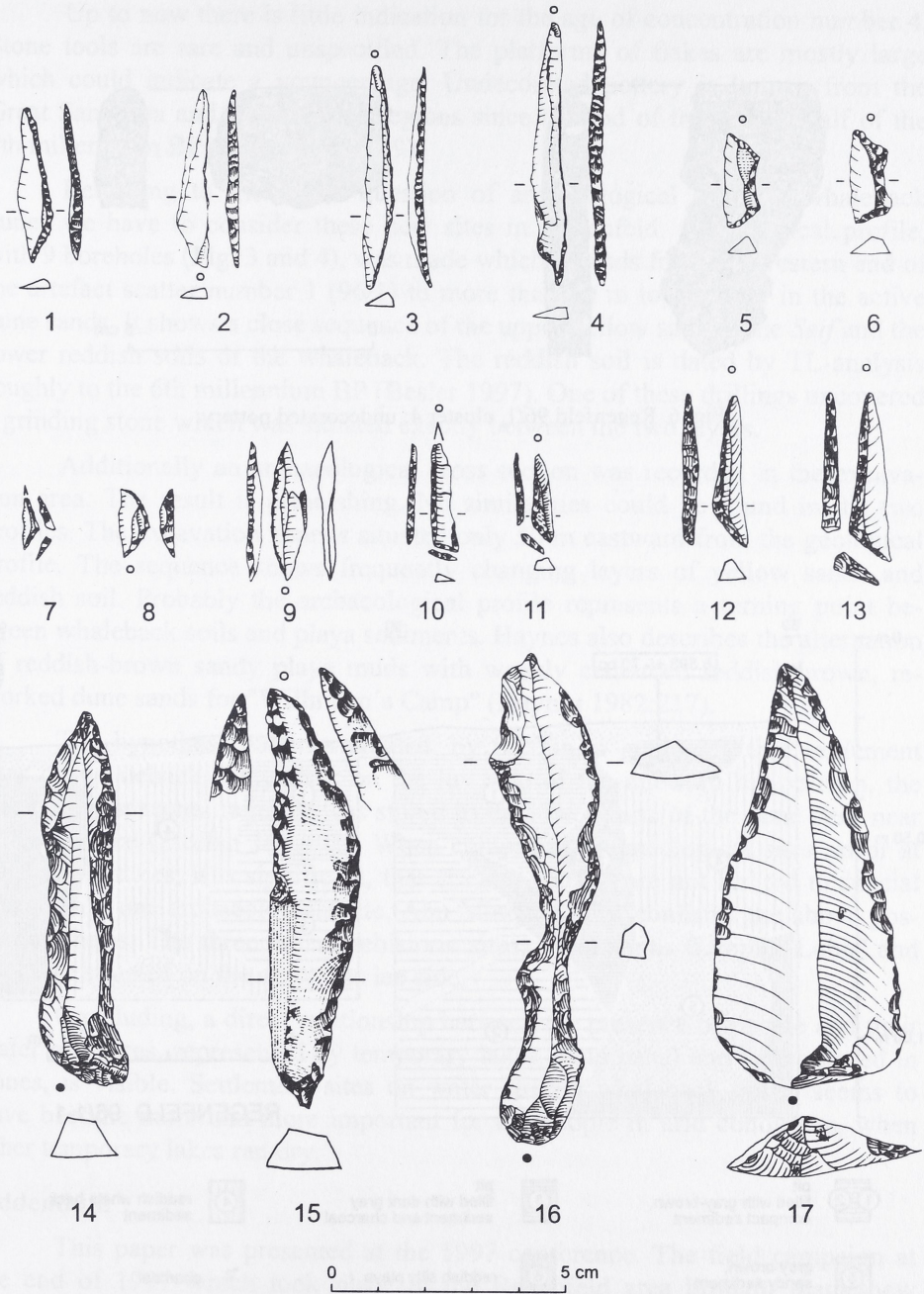


Fig. 5. Epipalaeolithic artefacts from Regenfeld sites:
 1-4: 96/20; 5-6: 96/1-7; 7-11: 96/1-1; 12-17: 96/1 cluster 1 (surface).

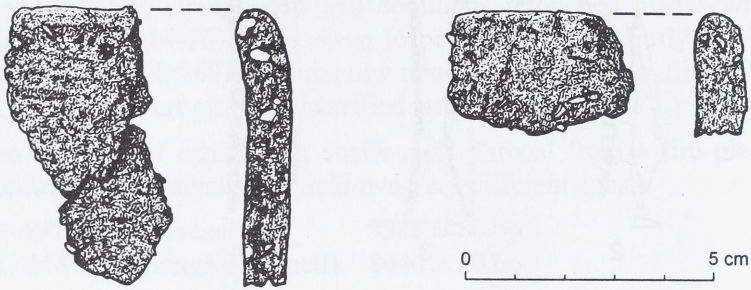


Fig. 6. Regenfeld 96/1, cluster 4: undecorated pottery.

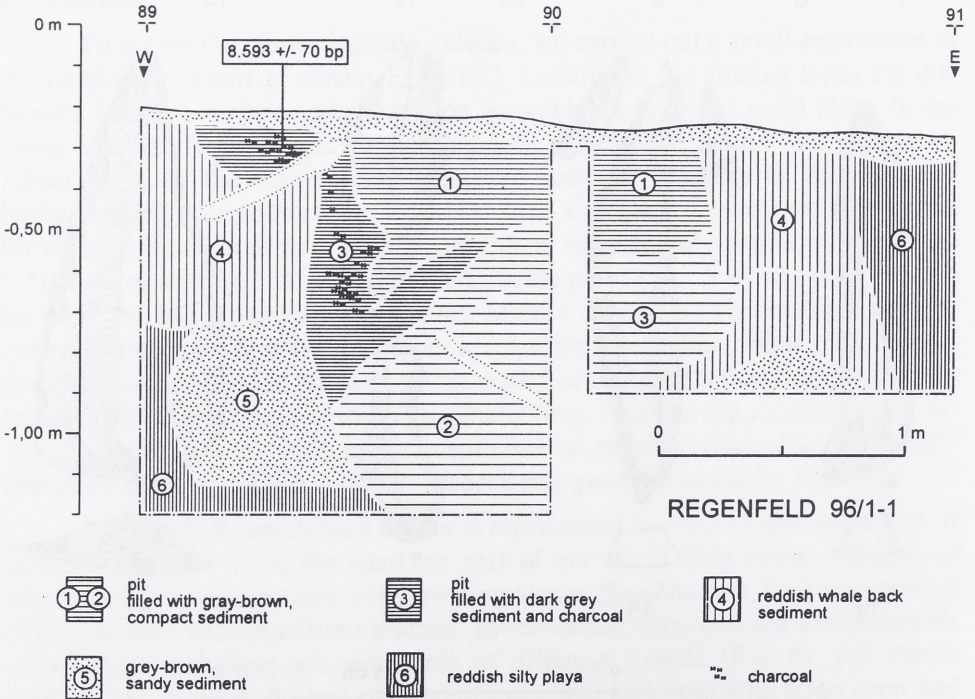


Fig. 7: Regenfeld 96/1-1, profile.

Up to now there is little indication for the age of concentration number 4. Stone tools are rare and unspecified. The platforms of flakes are mostly large which could indicate a younger age. Undecorated pottery is known from the Great Sand Sea and neighboured regions since the end of the second half of the 8th millennium BP (Kuper 1995:129).

Returning to the initial question of archaeological sites on whaleback dunes we have to consider these new sites in Regenfeld. A geological profile, with 9 boreholes (Fig. 3 and 4), was made which extends from the western end of the artefact scatter number 1 (96/1) to more than 50 m to the west in the active dune sands. It shows a close sequence of the upper yellow sand of the *Seif* and the lower reddish soils of the whaleback. The reddish soil is dated by TL-analysis roughly to the 6th millennium BP (Besler 1997). One of these drillings uncovered a grinding stone which was situated exactly between the two layers.

Additionally an archaeological cross section was recorded in the excavation area. The result is astonishing. No similarities could be found in the two profiles. The excavation zone is situated only 50 m eastward from the geological profile. The sequence shows frequently changing layers of yellow sands and reddish soil. Probably the archaeological profile represents a turning point between whaleback soils and playa sediments. Haynes also describes the alternation of reddish-brown sandy playa muds with weakly cemented reddish-brown, re-worked dune sands for "Willmann's Camp" (Haynes 1982:217).

The hypothesis was formulated, by Steffan, a geologist, that settlement sites on whalebacks only exist on the luv side of the dune. In his opinion, the water from seasonal rainfalls was stored in the lower parts of the dune very near to the surface (Steffan 1982:91). When comparing archaeological sites on or at whaleback dunes, it is significant, that artefact scatters are not limited to special areas. Only one archaeological site, Abu Minqar 83/17, confirms the above postulated thesis. The three other prehistoric sites, "Willmanns Camp", "Lobo" and 96/1, are situated on the other, the lee side.

Concluding, a direct relationship between the presence of people and their water resources, represented by temporary lakes (mud pans) and water stored in dunes, is visible. Settlement sites on water storing whaleback dunes seems to have become more and more important for the people in arid conditions, when other temporary lakes ran dry.

Addendum

This paper was presented at the 1997 conference. The field campaign at the end of 1997 which took place in the Regenfeld area brought many new aspects to light: finds and features from new excavation trenches were uncovered. Up to now 11 radiocarbon dates are available for 96/1, 96/19 and 96/20 which

represent human activities from 9300 to 6900 BP. Two dates nearly 9000 BP from site 96/20 confirm the above proposed Epipalaeolithic age:

UtC-7192	9040±60 BP
UtC-7191	8990±60 BP

The Libyan Desert Glass scatter of 96/1-7 is now dated to an age of:

UtC-6534	8690±50 BP
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This date corresponds to the above cited site Westpans 85/52. Charcoal from the excavation 96/1-1 was dated to:

KN-5053	8593±70 BP
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The younger events are mostly connected with typical artefacts from the Middle Neolithic.

The undecorated pottery in 96/1 cluster 4 (probably connected to UtC-7190: 7186±49 BP) and stone artefacts with facial retouch from site 96/19 (date in preparation) are the highlights. Furthermore the botanical and zoological remains are analysed and give an impression of the environment. Wild fauna was found in the butchering places of the Epipalaeolithic as well as in the younger features. No indication of domesticated plants or animals are given.

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