

- *Archaeology – Human occupation – Climate and vegetation history – Northern Namibia*

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## **Holocene Human Occupation and Vegetation History in Northern Namibia**

*Holozäne Besiedlung und Vegetationsgeschichte im nördlichen Namibia*

With 5 Figures and 4 Photos

The interrelation of environment and human agency in the course of the Holocene period is analysed in two research areas of differing environments in northern Namibia: Kaokoland in the West and the Kavango region in the East. Detailed surveys result in the localisation of more than 160 archaeological sites which form the data base for the reconstruction of regional cultural sequences. Archaeobotanical remains are also analysed, thus allowing for conclusions regarding the environmental conditions to be drawn. Of special interest are two important Holocene innovations: the beginning of livestock herding in Kaokoland and of iron smelting in the Kavango region. Finally, the results of the two research areas are compared, so as to prove trans-regional cultural coherence.

### **1. Introduction**

The archaeological project in Northern Namibia, of which specific aspects are presented here, is part of the multidisciplinary collaborative research centre SFB 389, 'ACACIA (Arid Climate, Adaptation and Cultural Innovation in Africa)', established by the *Deutsche Forschungsgemeinschaft (DFG)* at the University of Cologne in 1995. A main research focus of the archaeological projects in Egypt, Sudan and Namibia is the question of economic change in arid environments during the Holocene. The interrelation of economic and social processes with environmental conditions is of special interest: How did segmentary societies, which characterised Northern Namibia during historical times, evolve? Are there indications for interactions between climatic change and cultural development, and are these common features in both Northern and Southern Africa?

The archaeological project in Northern Namibia investigates these questions on a regionally and chronologically restricted scale: chronologically restricted mainly to the Late Holocene (the last 3000 years), a period of major innovations, and regionally restricted to Kaokoland (*Photo 1*) and the Kavango region (*Photo 3*), two exemplary differing environments (*Fig. 1*). Firstly, a regional cultural sequence for both areas was established which allowed for a comparison of developments under dissimilar climatic conditions in a second step. Due to the different evidence of archaeological sites, research in Kaokoland is focused on the beginning of herding, in the Kavango region on early iron metallurgy.

As neither sheep nor goats, the first domesticates in southern Africa, have wild progenitors in sub-Saharan Africa, these animals must have been brought in from more northerly regions (*Epstein 1971*). The question of how these animals arrived

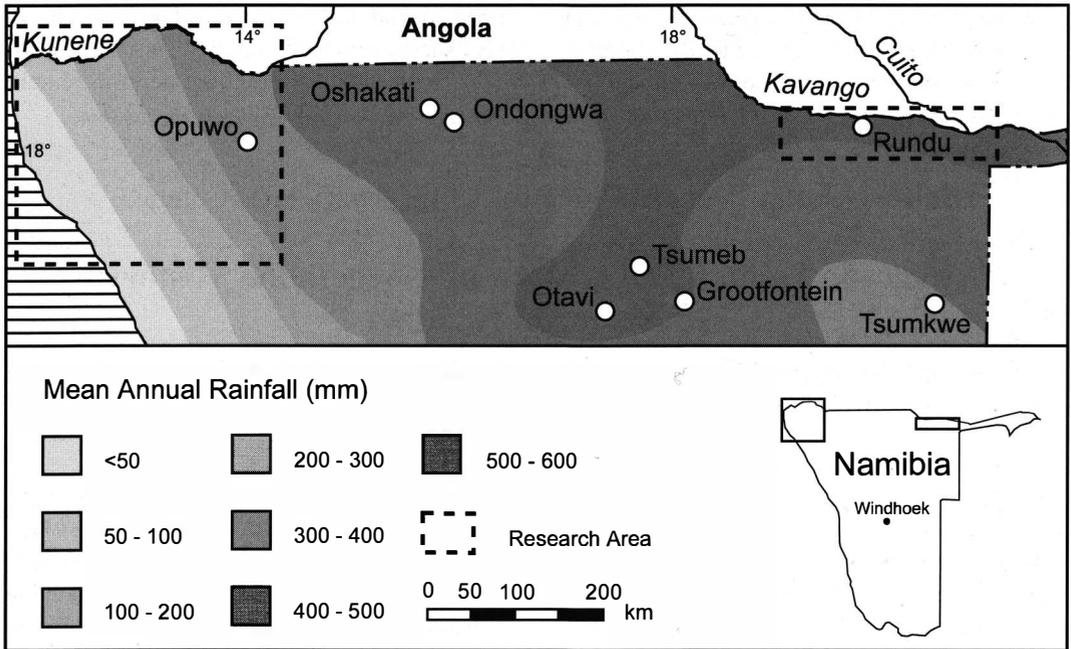


Fig. 1 Northern Namibia: Mean annual rainfall (source: van der Merwe 1983: map 10) and locations of the two research areas Kaokoland and Kavango region / Nord-Namibia: Durchschnittliche Jahresniederschläge (Quelle: van der Merwe 1983: Karte 10) und Lage der beiden Untersuchungsgebiete Kaokoland und Kavango-Region

in Namibia is still unanswered, as is the problem of how they were distributed throughout the hunter communities. The proposed routes are mainly based on linguistic or ethnohistorical evidence (e.g. Ehret 1982, Ehret 1998: 212 ff., Elphick 1977, Stow 1905), but archaeological data are still rare. Similar radiocarbon dates of around 2000 years BP for early livestock in the northern part of Namibia (Albrecht et al. 2001, Smith and Jacobson 1995) and the southern Cape (Sealy and Yates 1994, Henshilwood 1996) indicate a rapid distribution of this new subsistence mode. This, and the apparent simultaneous appearance of pottery and domesticates in a 'package', are arguments for migration being the manner of distribution.

Early iron metallurgy in southern Africa is also usually connected with the movement of people, most probably speakers of the Bantu languages

(Phillipson 1993: 188). Besides metallurgy, these people introduced other innovations to some parts of southern Africa, for example the cultivation of crops, domestic animals, settled village life and the manufacture of pottery. Surprisingly, linguistic evidence suggests that there is not a long tradition of iron metallurgy associated with the Bantu groups living in the Kavango area today. Instead, there are indications of iron working amongst non-Bantu speaking hunter-gatherers in the Kavango region (Möhlig 1998: 156).

## 2. Kaokoland

### 2.1 Situation and spatial structure

The region formerly known as Kaokoland is situated in the north-western part of Namibia and

corresponds to the Opuwo magisterial district. To the North, the region is marked by the course of the river Kunene which is also the political border to Angola. The Atlantic Ocean to the West and the stoneless plains of the Ovamboland covered with Kalahari sands to the East are natural borders. In the South there is the magisterial border to the Khorixas district. Kaokoland comprises several ecologically different regions, for example the northern Namib desert, different types of mopane savanna (*Photo 2*) and the shorelands of the Kunene river (*Viljoen 1980, Becker 2000, Becker and Jürgens 2000, 2002*).

Favourable conditions for plant growth and thus for a pastoral economy decline from East to West in accordance with decreasing precipitation rates (*Fig. 1*). Today specialised cattle pastoralism is possible, but requires elaborate pasture management (*Sander et al. 1998, Bollig 1999, Bollig and Schulte 1999*).

## 2.2 Survey strategy

Besides three small scale test pits (*Kinahan 1981, MacCalman 1972, Smith 1988*) no archaeological excavations were undertaken in Kaokoland prior to 1995. The only comprehensive work was carried out by *Jacobsohn (1988, 1995)*, who takes an ethnoarchaeological approach and concentrates on historical and recent settlement sites. The absence of an archaeological database required extensive surveys at the beginning of the project.

Because of the vastness of the mainly somewhat inaccessible region, several smaller survey areas were chosen. Each of these working areas represents a characteristic type of landscape. The analysis of sites in different landscapes permits the comparison of cultural developments under diverse environmental influences. Detailed surveys, mainly by foot, covered different landforms (eg. hill-slope, plain) and were intended to give a realistic picture of the site distribution. It was

hoped to find and excavate at least one site in every survey area with a comprehensive archaeological sequence. Ideally these deposits should cover the whole Holocene period. Unfortunately, it is extremely difficult to find well-preserved prehistoric open-air sites in the study area. The few known sites have been severely damaged due to intense erosion, and therefore the useful botanical and faunal macroremains have not been suitably preserved. In rock shelters conditions are more favourable for the preservation of these organic materials, thus making the reconstruction of both the subsistence strategy and the environmental conditions possible. Excavations have so far been undertaken in a total of 8 rock shelters, of which 5 comprised comprehensive stratigraphies (*Fig. 2*). Charcoal analysis was conducted on material originating from five rock shelters. Methods of sampling and charcoal determination are described in *Eichhorn and Jürgens (2002)* and *Eichhorn and Jürgens (forthcoming)*.

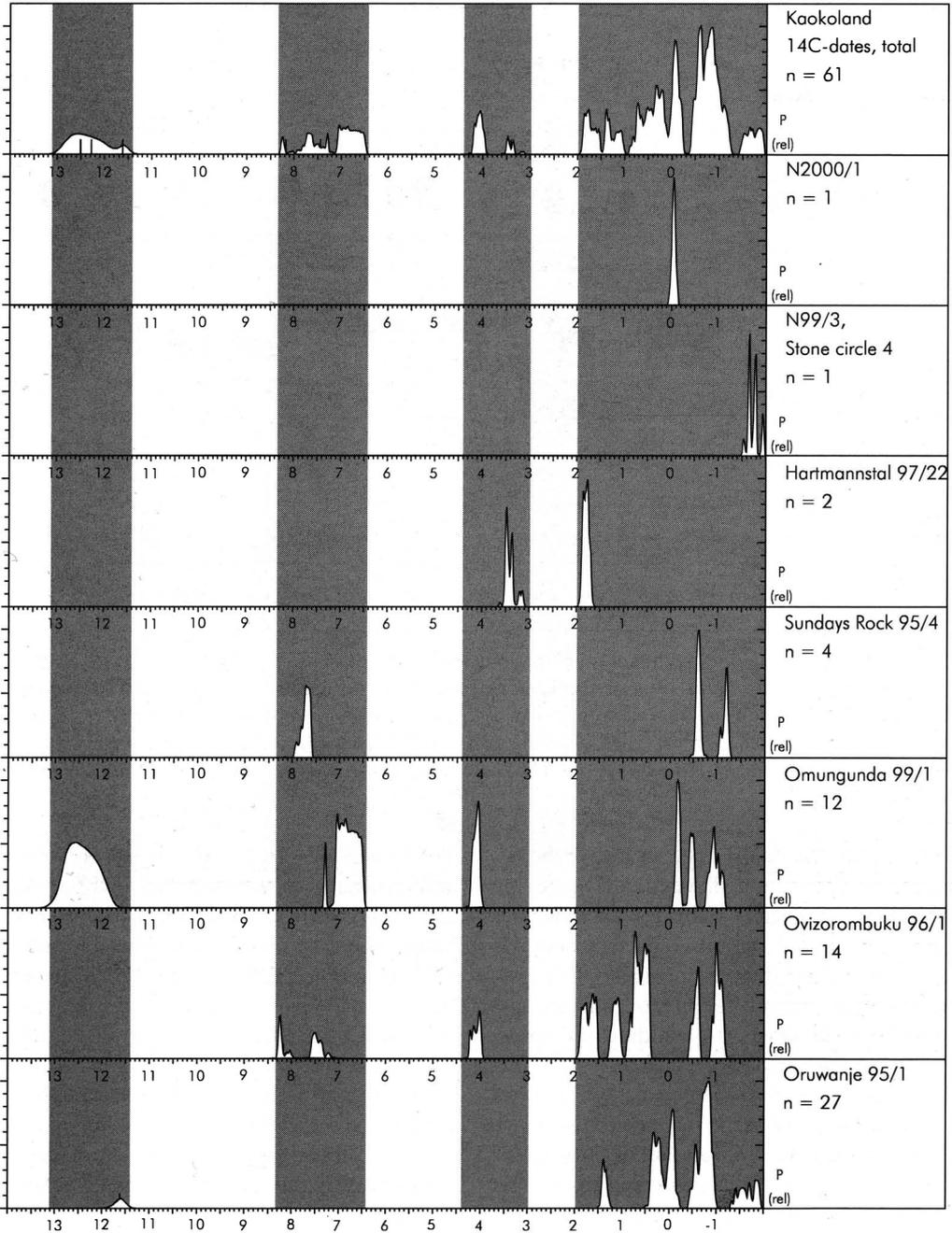
## 2.3 Holocene settlement history

Within our project the Late Holocene period is of special research interest. Nevertheless, the intense surveys have also revealed the location of numerous older prehistoric sites. Since 1995 more than 100 sites have been located (*Vogelsang 1999, 2001*), confirming that humans have occupied Kaokoland since Early Stone Age times (~1 mill.-250,000 BP). The excavated finds are especially valuable in making an initial reconstruction of the settlement history of the region, chronologically fixed so far by 62 radiocarbon dates (*Fig. 3*). In the following, only the results for the Holocene period are presented (*Fig. 4*).

## 2.4 Early Later Stone Age (ELSA: 12,000 - 7000 BP)

Remarkable is the extensive material from the Pleistocene/Holocene transition encountered at





**Fig. 3** Calibrated radiocarbon dates from excavations in Kaokoland. The dates suggest several periods of intense settlement activities (highlighted in grey) / *kalibrierte  $^{14}\text{C}$ -Daten der Ausgrabungsstellen im Kaokoland. Die Verteilung der Datierungen deutet auf Perioden intensiver Siedlungstätigkeit (grau unterlegt)*

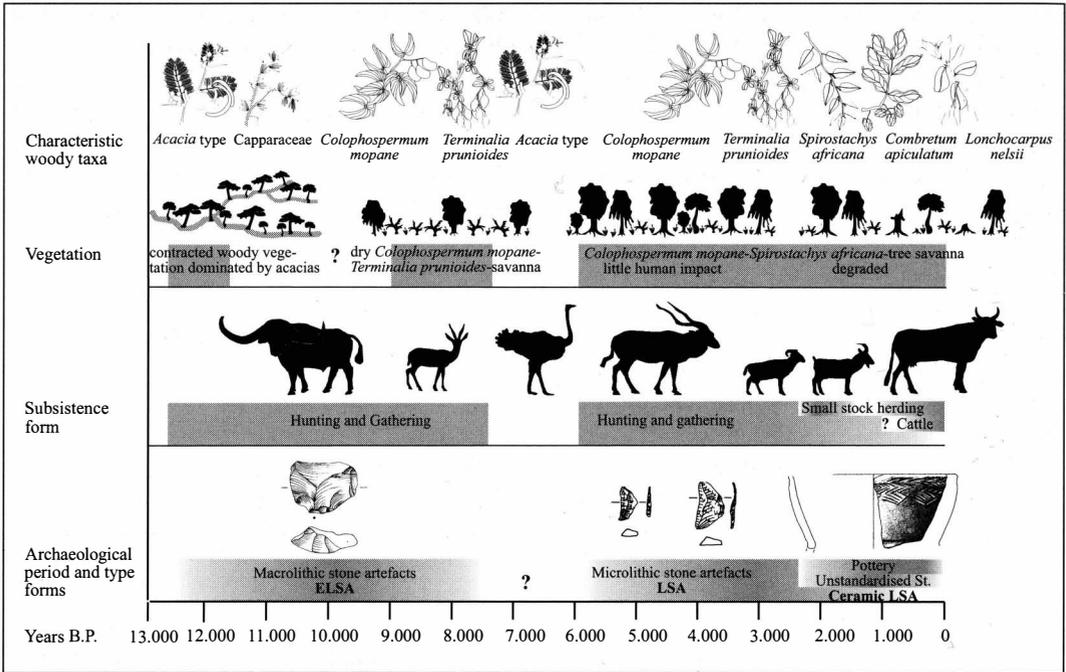


Fig. 4 Archaeological and archaeobotanical sequence in Kaokoland during the Holocene (archaeobotanical data from sites of the eastern part of the research area, essentially from analyses undertaken at Omungunda 99/1) / *Archäologische und archäobotanische Entwicklung im Kaokoland während des Holozäns (Die archäologischen Daten beruhen auf Analysen aus dem östlichen Teil des Untersuchungsgebiets, im Wesentlichen von Omungunda 99/1)*

all larger excavations. At first, because of the occurrence of typical, unmodified Middle Stone Age (MSA) stone artefacts, like blades and triangular points with faceted platform remnants, the finds were classified as MSA assemblages. Otherwise, it is a macrolithic indifferent stone artefact assemblage with nearly no standardised tools. However, first radiocarbon dates indicate a Terminal Pleistocene/Early Holocene age. Several bone artefacts point to the increased importance of this raw material. A clear classification of the finds, as well as their differentiation from MSA material, is only possible in stratigraphic sequences and with the help of radiocarbon dates. The description of surface finds is therefore problematic, and some of the sites classified as MSA might indeed be of Early Holocene date.

The inventories are of special interest because archaeological assemblages of this period are extremely rare in Namibia. Only two small assemblages could be classified as Late Pleistocene/Early Holocene by Richter (1991) in his comprehensive analysis of archaeological stratigraphies in the north-western parts of central Namibia. In this region the rock shelter sediments of this age point to an arid climatic phase that might well explain the scarcity of sites. Relatively more favourable climatic conditions might explain the comparatively intense settlement of Kaokoland. However, anthracological (charcoal) analyses conducted on material originating from the sites Omungunda N 99/1 (Photo 2) and Oruwanje N 95/1 (Eichhorn and Jürgens 2002, Eichhorn and Jürgens forthcoming) indicate that the climate of east-

ern Kaokoland around 12,000 BP was both drier and cooler than the one presently prevailing. The woody vegetation of that period, as indicated by the charcoal spectra, is characterised by the lack of typical taxa of the actual mopane savanna such as *Colophospermum mopane*, *Terminalia prunioides* and *Combretum apiculatum* and by the overall dominance of the genus *Acacia* (Fig. 4). The present southern distribution limit of *Colophospermum mopane* in southern Africa is determined by low winter temperatures (Werger and Coetzee 1978) and its absence in the Terminal Pleistocene vegetation of eastern Kaokoland indicates a northward shift of this limit due to cooler climatic conditions. This corresponds to large-scale results of marine pollen analysis (Shi and Dupont 1997, Shi et al. 1998, 2000). The dominance of *Acacia* type charcoal and the extreme scarcity of accompanying taxa point to a contracted woody vegetation under arid conditions. Precipitation rates similar to the present ones (300-400 mm) would favour the presence of a more diverse woody vegetation (O'Brien et al. 1998). No reliable anthracological data are available for the time period between 12,000 and approximately 8000 BP. At 8000 BP the presence of mopane savanna can be concluded from the anthracological results of Omungunda. But several taxa typical for the actual vegetation around this site e.g. *Combretum apiculatum*, *Spirostachys africana* and *Lonchocarpus nelsii* have not yet been found in the charcoal record. These tree species are characteristic for the vegetation of the eastern, humid part of Kaokoland (Viljoen 1980) and their absence points to relatively dry Early Holocene conditions. The interpretation of Terminal Pleistocene and Early Holocene aridity is corroborated by several sedimentological data pointing to aeolian sediment deposition under arid conditions in Namibia during this period (Eitel and Zöller 1995, Eitel and Blümel 1997, Blümel et al. 2000, Brunotte and Sander 2000) and by data indicating an Early Holocene low ground water level (Brook et al. 1996, 1999). The aeolian sediment deposition generally weakened around

9000-8000 BP and, according to Blümel et al. (2000), semiarid savanna ecosystems started to spread. The resettlement of sites in eastern Kaokoland around 8000 BP and the first proof of mopane savanna by anthracological analysis is obviously correlated to this onset of climatic amelioration, even though precipitation rates were still lower than at present.

### 2.5 Later Stone Age (LSA: 7000 - 2500 BP)

In contrast to the abundance of Early Holocene macrolithic inventories, sites with LSA assemblages of the 'Wilton' type are rare in Kaokoland. Characteristic tool-types are microlithic tools, especially projectile-insets such as lunates and micro-points. Not a single LSA surface site could be located in the course of our surveys. A reason for this might be that even in the excavated stratigraphies the type forms are rare and, in addition, unusually small. The only exception is the site N2000/2 near the border to the Namib desert with numerous and highly standardised microliths. The still undated assemblage consists nearly exclusively of projectile insets and might document several short-term stays of a hunting expedition. Perhaps the hunters were far away from their usual settlement area. In any case, Kaokoland was, in contrast to the neighbouring Khorixas district (Damaraland), not a preferred settlement area during the LSA. This is also indicated by the low number of radiocarbon dates of between 7000 and 2500 BP (Fig. 3). Rock art mainly dated to this period (Richter 1991: 212) is therefore also virtually unknown in Kaokoland. Single rock engravings at the banks of the Kunene river, near the Epupa waterfalls, have already been documented by Scherz (1975: 246; Taf. 183, 3-5, Taf. 184, 1). Mainly non-representational, circular forms are depicted, as well as some hand imprints and one small animal. Similar engravings also occur in northern central Namibia and in the southern part of Angola (Ervedosa 1980: Fig. 118-123).

The only known rockpaintings in the region are to be found on the walls of site Omungunda 99/1. These also correspond to those found in the southern part of Angola (Ervedosa 1980: Fig. 125 and 128). Predominant are non-representational forms, mainly series of lines. Furthermore, there are hand imprints and simple depictions of giraffes. A group of human figures is spatially separated and seems to differ stylistically from the other depictions. While non-representational paintings are a rare exception in Namibia (less than 2%; Scherz 1986: 46), they are much more common in Angola (Gutierrez 1996: 87).

Unfortunately not much is known about the LSA stone artefact industries of the south-western part of Angola. So there is no confirmation of a common cultural complex, in north-western Namibia and south-western Angola during this period.

The charcoal encountered in rock shelters is the dispersed remains of prehistorical hearth fires, and its occurrence is therefore an indication of human activity. The sketchy archaeological record for the LSA is also reflected by incomplete anthracological data between 7500 and 3000 BP. At site N 96/1 Ovizorombuku the relative stratigraphical position of several radiocarbon dates from this period indicates that botanical macroremains from different ages have been disturbed. This inhibits a safe palaeoecological interpretation of anthracological results. From site Omungunda 99/1, where stratigraphy seems to be undisturbed, only a single mid-Holocene radiocarbon date of  $5315 \pm 30$  BP (KN-5370) is so far available. Charcoal analysis points to a woody vegetation very similar to the current one. This also implies that climatic conditions were generally comparable to those of the present day. Slightly wetter episodes, which did not significantly change the woody taxa composition, may have occurred. Drier conditions than at present can definitely be excluded due to the presence of *Spirostachys africana* and *Lonchocarpus sp.* Their current distribution does not extend much further west

indicating that they require at least 300 mm mean annual rainfall. A relatively humid mid-Holocene phase is indicated by the presence of *Terminalia prunioides* charcoal at Marienflusstal N 97/22 in the north-western, arid part of Kaokoland (UtC-8105:  $3474 \pm 41$  BP, KN-5262:  $4615 \pm 45$  BP). This tree species is absent from the modern surrounding vegetation. Several palaeoecological data indicate that the post-glacial global climatic optimum was expressed by increased humidity in south-western Africa east of the coastal desert (Buch 1996, Gingele 1996, Eitel and Blümel 1997, Brook et al. 1996, 1999, Brunotte and Sander 2000, Blümel et al. 2000, Scott et al. 1991, Shi and Dupont 1997, Shi et al. 1998). The sparse evidence for human activity in Kaokoland during that climatically favourable period is, therefore, striking. This picture may simply reflect the small number of discovered and investigated sites. Another – still highly tentative – attempt at explanation is connected with the hunter-gatherer lifestyle of the population: A relatively dense woody vegetation correlated with higher precipitation rates makes hunting more difficult, and tropical diseases like malaria may have spread southward during the period. The probably still small population may consequently have moved to drier regions, for example to Damaraland.

## 2.6 Ceramic Later Stone Age (CLSA: 2500 - 600? BP)

The number of radiocarbon dates indicates an increase of settlement activities over the last 3000 years (Fig. 3). During that period two different stone artefact industries existed in the region. On the one hand there is a continuation of the LSA tradition with a few, extraordinary small microliths (e.g. Oruwanje 95/1), on the other hand there is an indifferent unstandardised stone artefact industry with nearly no retouched tools (e.g. Ovizorombuku 96/1). Unfortunately, their precise chronological relationship is as yet not finally settled. At the moment, the evidence points to

the existence of contemporaneous remains of different populations. The earliest evidence of domesticates and pottery is dated to the same period and appears along with both stone artefact industries. Whereas the finds from some sites point to a continuance of cultural traditions with the advent of domestic animals and pottery, at other sites there seems to be a break in the cultural sequence. This implies that there are settlement sites of hunter-gatherer communities which absorbed these exotic materials into their economy with little apparent alternation. People began to use pottery, perhaps even learning to manufacture pots. However, domesticates were only a rare supplement to the food menu and were treated more like hunted wild animals. Some hunter-gatherers actually did not change their mode of subsistence until historical times. They did not need to change it. It was a good way of life in the stable environment of the semi-arid savanna and, in any case, they were not capable of changing it because their ideology, as members of an 'immediate return system' (Woodburn 1980) did not allow, among other things, herd management.

The second group of sites, those with the undifferentiated stone artefact assemblages, might represent the settlements of the donor pastoral society.

The absence of any evidence of domesticates over the last 1500 years is remarkable. At the moment the database is too small to conclude that herding was only a short episode in the Late Holocene history of Kaokoland.

Anthracological results from all rock shelters in eastern and central Kaokoland indicate vegetation stability during the time period between 3000 and 500 BP. The composition of the woody vegetation at each site is very similar to that of the present day. The absence of vegetation shifts can be explained by stable environmental conditions. The same trend is generally reflected by charcoal analysis of sites in the arid western part of the research area. The presence of *Colopho-*

*spermum mopane* charcoal from around 2000 BP at site N 2000/1, now situated in the ephemeral grassland of the pro-Namib plain (Viljoen 1980, Becker 2000, Becker and Jürgens 2000, 2002), might indicate another relatively wet episode which was, however, not strong enough to be reflected in the charcoal records of eastern Kaokoland. The overall impression of stable environmental conditions (compare Gingele 1996, Blümel et al. 2000) during the Late Holocene corroborates the archaeological picture that there was no external pressure to change the subsistence strategies.

### 2.7 Iron Age (< 600 BP?)

Not much is known about the centuries immediately preceding colonial times. There is still no archaeological evidence for the beginning of the specialised cattle-pastoralism that characterises the economy of the area today. Oral traditions of the cattle keeping Himba tell of their migration from the northeast into Kaokoland around 250 years ago (Bollig 1997: 13). Numerous surface sites with stone circles might belong to this period. As a result of the absence of any datable finds, a chronological classification is impossible in most cases. A few decorated potsherds and a single iron arrowhead correspond to finds from Angola. Charcoal from a fireplace was dated to 230 years BP. Noticeable is the topographic situation of several of these stone circle settlements on top of hardly accessible hills. Defensive purposes might be the reason for the preference given to these locations, thus pointing to unsafe conditions during the times of immigration. The number of preserved charcoal pieces at these surface sites is very low, if not non-existent. Thus the phanerophyte spectrum established by charcoal analysis is most probably incomplete. Only tree and shrub species which also currently occur near the sites are detectable. This is also the fact for the surface horizon of all rock shelters where charcoal preservation is much better and

the charcoal spectra are more diverse. A fine chronological analysis of these archaeobotanical finds is unfortunately inhibited because of mixing with modern debris.

### 3. The Kavango Region

#### 3.1 Archaeological survey programme

Archaeological knowledge on the Kavango region has always been very poor (Kinahan 1986, Jacobson 1987). For a long time, B. Sandelowsky was the only archaeologist to undertake archaeological excavations in the area. At Vungu-Vungu she found an important late Iron Age settlement and her excavation at Kapako proved that iron production had been present in the area as early as 840 A.D. (Sandelowsky 1979).

By contrast, the region is well known to students of African languages. Here no less than four different language groups (of the Bantu family) are concentrated in a relatively small area. The local wealth of languages attracted long-term linguistic research which resulted in historical models. Among the complex historical models of Möhlig, one particular extinct language group deserves particular attention. Its speakers, known as the Tjaube people, subsisted on mere hunting and gathering, with no food production, but produced iron at the same time (Hartmann 1987).

This unique economic system, so far only known through scarce remnants of an ancient language, became one of the key topics of the interdisciplinary research of the ACACIA programme. The discovery of related archaeological sites has since been one of the aims of recent archaeological research in the area.

Since 1996 several archaeological surveys have been conducted along the banks of the Okavango River over a distance of about 100 km from east to west. The surveys had to be restricted to the

southern banks of the Okavango River which lie within Namibian territory.

Research was hampered by the huge alluvial deposits void of any archaeological remains which covered more than two thirds of the river zone. Therefore, the surveys had to concentrate on undercut slopes of the river with their eroded banks or on cliffs where the river had cut rare quartzite outcrops and calcareous crusts. These conditions have caused distinct clusters of mapped archaeological sites. Thus, the archaeological map (Fig. 5) may not be interpreted in terms of prehistoric settlement patterns but must be understood as a mere, still incomplete, negative of the alluvion distribution. When surveying an archaeologically almost unknown area, archaeologists first of all aim to draw up a regional chronology of cultural development. A historical scale is essential to any further archaeological research, irrelevant of its goals. Almost 70 archaeological sites have been discovered so far and the principle stages of prehistoric occupation are already visible.

#### 3.2 Pleistocene occupation

Flakes and cores of the 'Developed Oldowan' industry deliver clear proof of the earliest occupation of the area by *Homo erectus*, more than, and possibly far more than, 300,000 years ago. Acheulian handaxes, flakes and cores of the 'Victoria West' method of artefact production attest to a later stage of Early Stone Age occupation, c. 500,000 - 200,000 years ago. Small numbers of Middle Stone Age sites, elsewhere connected with archaic *Homo sapiens*, are found in the Okavango region. Blades and flakes of the characteristic 'Levallois' method of artefact production are to be found on such sites. The Pleistocene/Holocene boundary saw microlithic industries of the Messum-Menongue complex (Richter 1993) around 10,000 B.C., named after Menongue in central Angola (Ramos 1984, Ervedosa 1980) and Messum in the Namibian central Namib Desert (Rich-

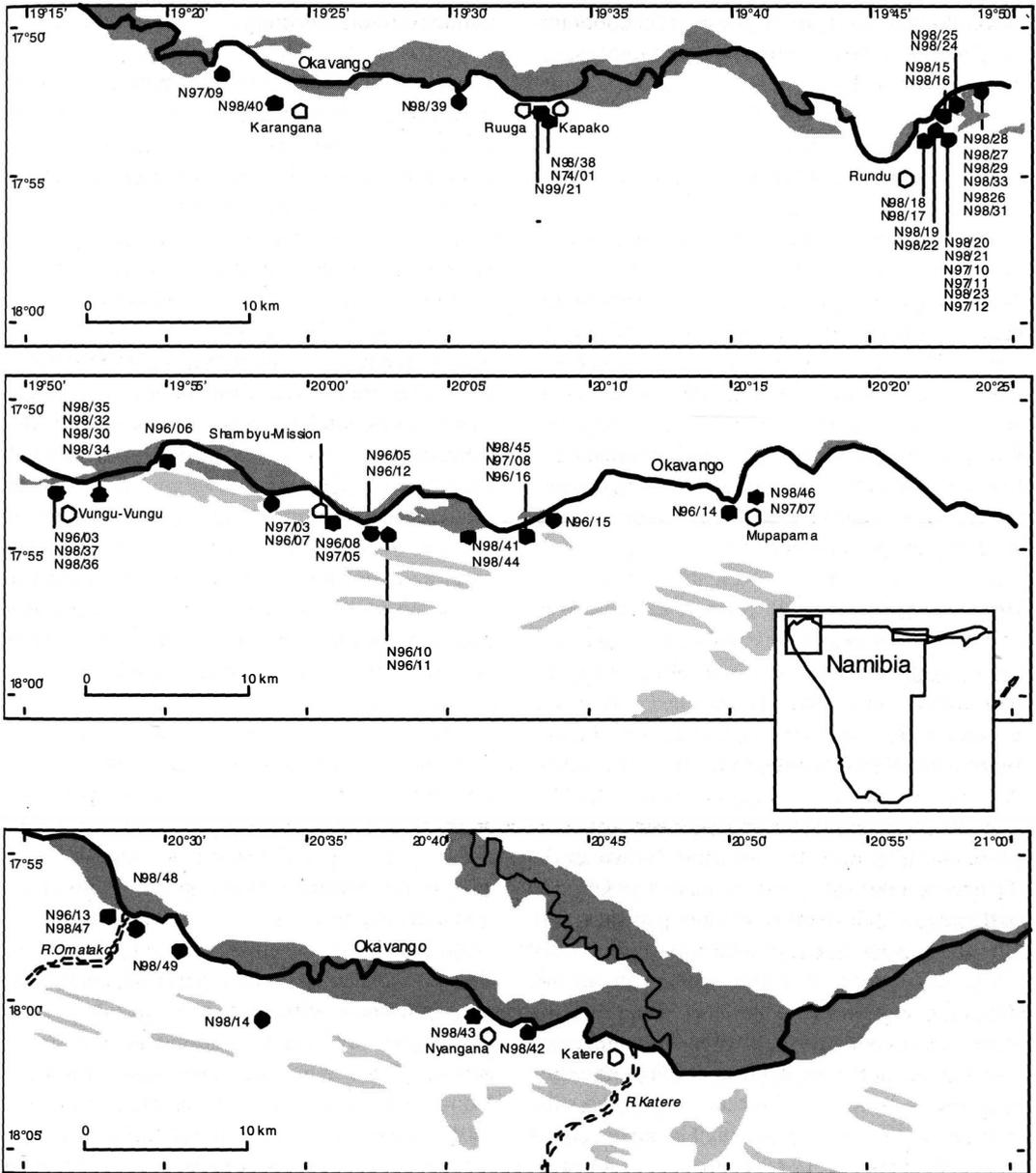


Fig. 5 Kavango research area and location of archaeological sites (dark grey: alluvial deposits; light grey: sand dunes). Distinct clusters of archaeological sites are the result of the prevailing depositional factors / *Untersuchungsgebiet in der Kavango-Region und Lage der archäologischen Fundstellen (dunkelgrau: alluviale Ablagerungen; hellgrau: Dünen). Die Ablagerungsbedingungen bestimmen die Verteilung der Fundstellen*

ter 1991) where microliths occur along with bifacially worked leaf-shaped points. Microliths are small stone tools of geometric shape used as inserts in arrowshafts and knife handles. Microlithic industries are attributed to the Later Stone Age, the Messum-Menongue complex being an early stage of that Stone Age period. The fact that some very old prehistoric sites are still surprisingly well preserved argues for the relative geomorphological equilibrium of some of the Okavango river banks throughout the whole Pleistocene period.

### 3.3 Holocene occupation

By contrast, and most surprisingly, evidence for early and mid-Holocene occupation of the area has remained very poor. Later Stone Age microlithic industries are well known from the neighbouring regions on the southern African subcontinent. Moreover, a private collection of the late Rev. *Hartmann* of Shambuyu mission near Rundu comprises several thousand such microliths, information on their origin however lacking. Current surveys have localised only a few undisturbed Later Stone Age sites, all without organic preservation.

Regionally, the Later Stone Age can be divided into an earlier preceramic stage and a later ceramic stage. The Ceramic Later Stone Age (CLSA) is relatively well represented by a group of sites west of Rundu. These sites yielded microlithic tools along with pottery, sometimes with charcoal and bones. The existence of a CLSA is exceptional for southern Africa because most of the pottery occurred only with the Iron Age and is thought therefore to have been introduced into the subcontinent by farmers of the Bantu language group (*Hall* 1987). Still, the last decades of research have seen an increasing number of CLSA occurrences, mainly in the south-western part of the subcontinent, in the Cape Province, Central Namibia and Northern Namibia. Bones of domestic sheep connected with some of these finds suggest the presence of an early herding economy 2000 years

ago, long before the first Bantu farmers reached southern Africa. The presence, in the same assemblages, of so many microlithic projectile points argues for hunting being another important economic component of the CLSA.

Most of the archaeological sites can be attributed to the Iron Age which covers the last millennium. Whilst the classification and dating of Iron Age sites are still under intensive analysis, two major economic systems can already be recognized:

The first system is characterised by large areas of iron ore exploitation. Here, close to the riverbanks near Nyangana, thousands of pits were dug into ferricrete layers, a few inches under the present surface. Heaps of debris and used quartzite hammerstones are visible on the surface. As any traces of connected iron production or settlement are absent, these exploitation areas must be regarded as parts of a complex economic system. Large amounts of iron ore were collected and presumably transported, on the Okavango River, to the centres of iron production yet to be found. Iron ingots and artefacts were produced for trade, not only for domestic use. This system might well have been part of the trade networks of the 'Great Zimbabwe' period. Calendric data are not available so far, but it is clear that the first system preceded the second one described below.

The second system is characterised by small exploitation sites. Here, iron ore was collected superficially and iron production took place in nearby stoves within small settlement sites. At Vungu-Vungu 2 (*Photo 4*) the excavation of a settlement yielded abundant archaeological material. Pottery, stone artefacts, ostrich eggshell ornaments, glass beads, charcoal and bone have been found along with the remnants of iron production such as tuyeres, slag and fragments of the stoves. Charcoal and bone samples yielded radiocarbon dates from the last three centuries. Charcoal analysis proved specialised wood

procurement, concentrating on the *Acacia* species. Animal bones were, most surprisingly and in some accordance with the 'Tjaube' linguistic model mentioned above, exclusively from wild animals. While hunting is now attested as an important economic component for Vungu-Vungu 2, evidence is still ambiguous about the interpretation of the system as a whole. Was Vungu-Vungu 2 a settlement of iron working hunter-gatherers such as the reconstructed Tjaube group? Was it an ephemeral hunting stand and an iron production site of Bantu farmers living elsewhere such as is contested for the Gciriku group? Further investigations are necessary to clarify these questions.

#### 4. Discussion

Despite the preliminary character of the cultural sequences in both regions, an initial inter-regional comparison is already possible and the following results become apparent:

##### 4.1 *Zones of disjunctive traditions*

For most of the time during the Holocene the two research areas belong to different cultural units. Early Holocene inventories from Kaokoland are characterised by macrolithic artefacts, whereas the Kavango region is part of the 'Messum-Menongue complex', mainly known from central Angola, characterised by microliths and facially retouched points.

During the Mid-Holocene, Kaokoland belongs to the nearly deserted periphery of the central Namibian LSA complex, whereas a quite dense population of a different LSA facies has to be assumed for the Kavango region.

There is a continuation of the LSA stone artefact tradition in Kaokoland after the first appearance of livestock and pottery around 2000 years ago.

In the Kavango region there also seems to be no break in cultural development from LSA to Ceramic-LSA inventories, although there are different vessel forms and decorations, similar to central Angolan pottery. At least two thirds of all Kavango sites can be dated to the last centuries. The pottery of these inventories is related to finds from southern Zambia. In contrast, only a few sites in Kaokoland can be dated to this period with certainty. Here, the scarce evidence points now to connections with central Angola.

During the whole Holocene there was never a single zone of common cultural traditions crossing the climatic regions and connecting the research areas in the west and east. Kaokoland has always been connected to southern or northern regions, and the Kavango region always to the north or northeast. The absence of any west-east connections whatsoever is quite surprising and is not yet understandable.

##### 4.2 *Innovation and continuity*

The evidence for early livestock from around 2000 years ago in Kaokoland is synchronous to the beginning of herding in the Cape region in Southern Africa. Further analysis might clarify the question of how these animals arrived in Namibia and how they were distributed through hunter-gatherer communities. The evidence so far seems to indicate that herding people immigrated into Kaokoland and then shared the territory for some time with local hunter-gatherer groups. This contact situation by no means resulted in a general change of the way of life and subsistence of the hunter-gatherers but only in a semi-adoption. It even seems possible that domestic animals disappeared again from the region after this period of early herding. The specialised cattle-pastoralism that characterises the economy of the area today seems to be connected with the trickling in of Himba family groups from the northeast over the last 300 years.

In the Kavango region evidence of domesticated animals is not only missing for the Ceramic-LSA period but also up to recent times. Even at Late Iron Age sites only the bones of game could be found. Remarkable is the site Vungu-Vungu 98/32 with indications for a hunter-gatherer-fisher subsistence combined with evidence for iron smelting, thus pointing to a continuous hunting tradition up to Late Iron Age times. Further excavations have to verify this impression and might elucidate the presumed connection of this site with the ethnohistoric 'Tjaube', a hunter group with knowledge of iron smelting that immigrated from the east into the Kavango region.

#### 4.3 Settlement continuity and settlement intensity

The chronological classification of the archaeological material and the radiocarbon dates indicate periods of changing settlement intensity in Kaokoland during the Holocene. The periods of rise or fall in population differ from the fluctuations in neighbouring Damaraland. Further analysis of the extensive botanical and faunal remains might clarify the extent to which local climatic changes influenced these variations. In addition, fieldwork will be intensified in the southern part of Kaokoland, the frontier zone between the two regions that has so far been neglected.

Results in the Kavango region are still far from providing even a sketchy picture of the settlement history. The pottery seriation seems to indicate a continuous tradition over the last 2000 years, but radiocarbon dates for these assemblages are still rare. Furthermore, the preservation of botanical and faunal remains is poor, and the massive fluvial and limnal sediments might be the only database for the reconstruction of the palaeo-environment.

Despite these restrictions, the current results lead one to assume that cultural concepts in

dealing with an arid environment in our research areas are different from concepts in the Sahara (*Keding and Vogelsang 2001*). In northern Africa cultural connections and migrations are mainly orientated in a north-south direction, along the climatic gradient. In contrast, cultural relations in northern Namibia seem to be orthogonal to the west-east gradients. So, different climatic regions are incorporated in one single cultural system in the Sahara region, whereas regional specialists, restricted to special ecological zones, characterise the occupation in northern Namibia during the Holocene. The contrasting nature of these two systems promises specific information content which consequently demands further analyses. The analysis and description of different economic variations of the hunter-gatherer subsistence will occupy a central position in future research. This makes it then necessary to include examples from neighbouring regions.

Another focus will be to fill the hiatus in the settlement history of the last 500 years. An intensification of interdisciplinary joint inquiry and analysis of ethno-historical and archaeological data, especially in Kaokoland, might elucidate these so far dark centuries.

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*Photo 1* Marienfluss Valley during the dry season / *Marienfluß-Tal während der Trockenzeit*



*Photo 2* Rock shelter Omungunda 99/1 is situated in a typical tree-savanna landscape / *Das Abri Omungunda 99/1 befindet sich im Bereich der Baumsavanne*

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#### *Summary: Holocene Human Occupation and Vegetation History in Northern Namibia*

As part of the collaborative research centre 'SFB 389/ACACIA' at the University of Cologne, the archaeological research project in Namibia is investigating settlement history and palaeo-environments in the northern part of the country during the Holocene. Two geographical areas with exemplary differing environments, Kaokoland and the Kavango region, were chosen for the study. One particular

focus of enquiry is the question of economic change, especially the interrelation of economic and social processes with environmental conditions. In Kaokoland five archaeological sequences, covering the whole Holocene, have been discovered. Remarkable is the extensive material from the Late Pleistocene/Early Holocene period, found at all larger excavations. Mid-Holocene sites are extremely rare and the occupation of the area is intensified only in the late Holocene, a period of important innovations. At around 2000 BP small stock herding and pottery appear for the first time in the area. There is not a single rock shelter site in the Kavango region, however, numerous open-air sites have been recorded. Here, the particular focus of enquiry is the investigation of original pottery and iron smelting traditions, independent of pastoral connections. In this context, the discovery of an early pottery facies and the excavation of a settlement site with the combination of iron smelting and hunting activities are of particular interest. It would appear that the two research areas belonged to different cultural units for most of the Holocene period and that the occupation of northern Namibia is characterised by regional specialists, restricted to particular ecological zones. The anthracological analyses indicate relatively stable environmental conditions in Kaokoland during the late Holocene, with minor but detectable fluctuations of humidity.

#### *Zusammenfassung: Holozäne Besiedlung und Vegetationsgeschichte im nördlichen Namibia*

Das archäologische Forschungsprojekt in Namibia im Rahmen des Sonderforschungsbereichs 389 an der Universität zu Köln beschäftigt sich mit der holozänen Umwelt- und Besiedlungsgeschichte im Norden des Landes. Hierzu wurden zwei Arbeitsregionen mit exemplarisch unterschiedlichen ökologischen Bedingungen ausgewählt, das Kaokoland und die Kavango-Region. Eine zentrale Fragestellung in beiden Arbeitsgebieten ist die Untersuchung wirtschaftlichen Wandels während des Spätholozäns, insbesondere die Wechselbeziehungen zwischen ökonomischen und gesellschaftlichen Prozessen und den Umweltverhältnissen. Im Kaokoland liegen inzwischen 4 Schichtenfolgen aus Abri vor, die das gesamte Holozän umfassen. Bemerkenswert ist die

anscheinend intensive Besiedlung der Region während des Übergangs vom Pleistozän zum Holozän, die an fast allen Grabungsstellen nachgewiesen werden konnte. Eine verstärkte Nutzung des Gebietes beginnt dann erst wieder im Spätholozän, einer Phase kultureller Neuerungen. So sind der Beginn der Viehhaltung und der Keramikproduktion vor mindestens 2000 Jahren in der Region belegt. In der Kavango-Region fehlen Abri-Fundstellen vollständig, jedoch konnte eine große Zahl von Freilandfundplätzen aufgenommen werden. Ein Forschungsschwerpunkt ist die Untersuchung eigenständiger Elemente einer Keramik- und Metallurgie-Tradition, deren Wurzeln nicht in pastoralen Zusammenhängen zu suchen sind. Von besonderer Bedeutung sind hierbei die Entdeckung einer frühen Keramikfazies sowie die Ausgrabung eines Siedlungsplatzes, der durch die Kombination von Jagd und Eisenverarbeitung gekennzeichnet zu sein scheint. Es zeigt sich, daß die beiden Arbeitsregionen Kaokoland und Kavango während des größten Teils des Holozäns sehr unterschiedlichen kulturellen Systemen angehörten. Anscheinend ist die Siedlungsstrategie charakterisiert durch regionale Spezialisten, deren Aktionsradius strikt auf bestimmte Ökotope beschränkt ist. Die anthrakologischen Untersuchungen im Kaokoland konnten bisher für das Spätholozän relativ konstante Umweltbedingungen mit geringen, aber deutlichen Feuchteschwankungen belegen.

*Résumé: Occupation humaine à l'Holocène et l'histoire de la végétation en Namibie du nord*

Dans le cadre du projet de recherches pluridisciplinaires SFB 389 – ACACIA – de l'Université de Cologne, le projet archéologique en Namibie vise l'histoire du peuplement et du paléo-environnement dans la partie septentrionale du pays pendant l'Holocène. Deux régions appartenant à des écosystèmes très différents furent choisies comme zone de recherche: le Kaokoland et la région du Kavango. Les études sont centrées sur la question d'un changement économique au cours de l'Holocène tardif et notamment sur les relations entre les processus économiques et sociaux ainsi que le cadre naturel. Au Kaokoland, cinq séquences stratigraphiques sont

maintenant connues qui couvrent tout l'Holocène. Des vestiges archéologiques appartenant à la transition entre le Pleistocène et l'Holocène furent découverts dans presque tous les sites fouillés et indiquent donc une occupation humaine dense à cette époque. En revanche, les sites de l'Holocène moyen sont très rares. L'occupation humaine de la région ne s'intensifie qu'au cours de l'Holocène tardif, période d'importantes innovations. L'élevage du petit bétail ainsi que la fabrication de céramique apparaissent pour la première fois dans la région il y a environ 2000 ans. Dans la région du Kavango, il n'existe pas d'abris sous roche, en revanche plusieurs sites de plein-air sont connus. Le but principal des recherches est l'étude des éléments d'une tradition de production de céramique et de métallurgie autochtones, qui ne proviennent pas d'un contexte pastoral. Dans ce cadre, la découverte d'un faciès céramique très ancien et la fouille d'un site d'habitat, caractérisé par la combinaison économique d'une production de fer et des activités de chasse, sont du plus grand intérêt. Il est évident que les deux zones de recherches correspondent à deux systèmes culturels différents, pour la plupart Holocène. L'occupation de l'espace semble caractérisée par des spécialités régionales, dont les activités correspondaient à des écosystèmes bien définis. Les analyses anthracologiques montrent des conditions climatiques relativement stables dans le Kaokoland au cours de l'Holocène tardif, avec des oscillations humides minimales mais assez prononcées.

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*Photo 3 Kavango river near Rundu / Der Kavango bei Rundu*



*Photo 4 Excavation of site N96/3, situated on the bank of the Kavango river  
Ausgrabung der im Uferbereich des Kavango gelegenen Fundstelle N96/3*