# SUDAN & NUBIA

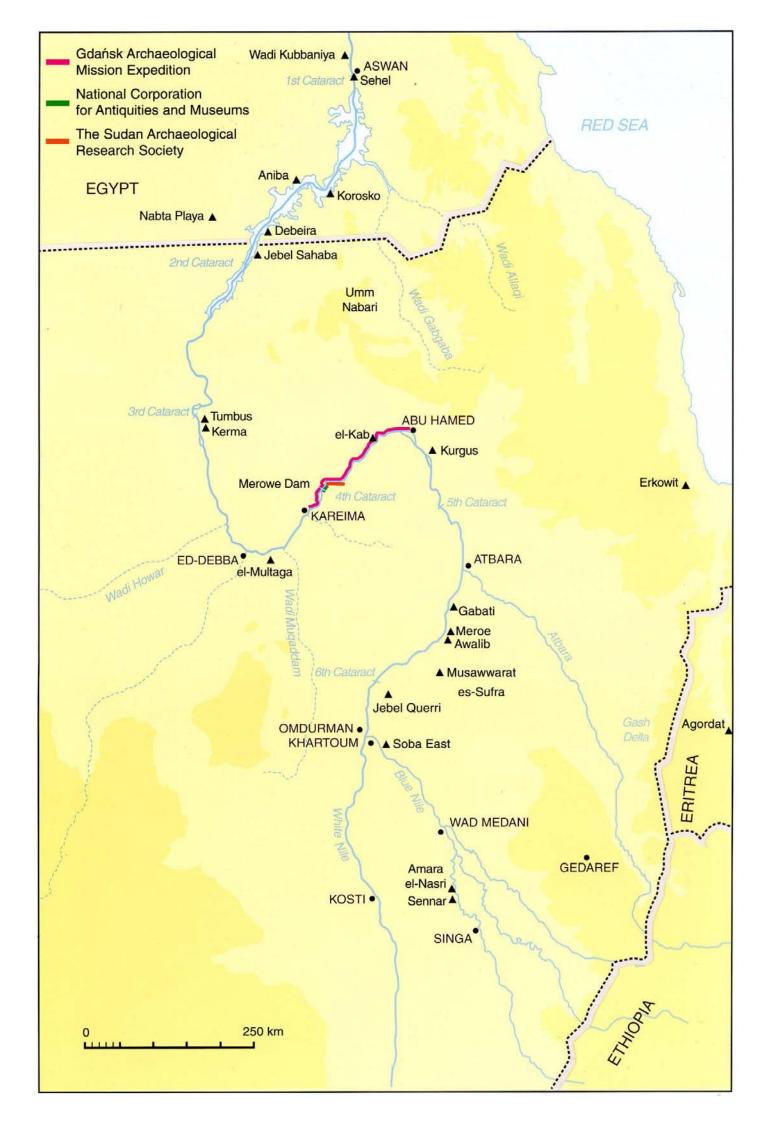
The Sudan Archaeological Research Society



Bulletin No. 7

2003





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Salah Omer Elsadig

Front Cover: Sehel Island: rock-inscriptions of Viceroys of Kush.

### Introduction

#### Vivian Davies

The Society's two major events of the year, the results of which are published here - the Kirwan Memorial Lecture delivered in October, 2002, and the colloquium on recent fieldwork held in May, 2003 – were extremely well attended. The colloquium incorporated a special session, led by Dr. Salah Mohamed Ahmed, NCAM Director of Excavations, on the Merowe Dam salvage project. The response has been encouraging. Since the colloquium, several organisations have applied for concessions, joining the existing four missions of Gdańsk, NCAM, the French Unit and SARS. Many more are still needed. Interested parties should contact Dr Salah at NCAM tel./fax. 249 11 786784 or the International Society for Nubian Studies c/o dwelsby@thebritishmuseum.ac.uk.

## An Archaeological Exploration of the Blue Nile in January-February 2000

Víctor M. Fernández

#### Background

The Spanish Archaeological Expedition to Sudan (abbreviated SAE-S) from the University of Madrid-Complutense has carried out archaeological fieldwork (both survey and excavations) in the Sudan since 1978, mainly in the areas of the Northern State and the Central Sudan. In the Northern State, archaeological excavations were undertaken at the town of Abri in the period between 1978 and 1981. Remains dated to the Meroitic and Kerma periods were uncovered at this area (Fernández 1982; 1984; 1985). In the Central Sudan, the work of the SAE-S was carried out in a large geographical area where several archaeological sites were discovered and/ or excavated in the period between 1989 and 2000. The first field season in the area was launched by the excavation of a Neolithic site situated at el-Haj Yousif, a suburban area of Khartoum (Fernández et al. 1989). In addition, intensive surface surveys were carried out along the east bank of the Blue Nile in the area between Khartoum and el-Eseilat with the main emphasis on Wadi Soba. Archaeologists Alfredo Jimeno and Mario Menéndez and I, as field-director, participated in this work (Menéndez et al. 1994; Jimeno et al. 1996). Extensive excavations were made at two Mesolithic sites in the villages of Sheikh Mustafa and el-Mahalab, and one Early Neolithic site near the village of Sheik el-Amin (Fernández et al. 1997; in press). The SAE-S terminated its archaeological work in the Wadi Soba area in 1998 and plans were made to move upstream along the same river across the Sudanese border and into the eastern part of the Ethiopian Highlands. From 2001 to 2003, three field campaigns of archaeological survey and ethnoarchaeological research in the region of Benishangul, between the Sudanese border and the Ethiopian Blue Nile were undertaken (Fernández and González-Ruibal 2001; González-Ruibal and Fernández in press).

#### The last field season in the Sudan

The SAE-S concluded its research in the Sudan after the completion of a general archaeological exploration in the area of the Blue Nile (Figure 1) between 21<sup>st</sup> January and 10<sup>th</sup> February 2000. Two weeks were spent carrying out an extensive survey of the areas east and southeast of our previous concession. This area is crossed by an intricate network of wadis (Wadi Raboub, Wadi el-Hag, Wadi el-Hasib, etc.) extending from west to east between Wadi Soba and the village of Wad Hesona in the western corner of the Butana steppe. A vehicle survey was made in this predominantly flat area along the wadi banks. Most of the prehistoric sites are

found here, in a pattern similar to that previously observed at Wadi Soba.

A third week was spent carrying out a general inspection looking for conspicuous sites along the Singa and Gedaref roads. In addition, we spent some time visiting some sites already known in the Northern Gezira area (Balfour Paul 1952). Finally, a period of two days was allocated to study archaeological remains collected during a survey done by H. G. Balfour Paul in the latter area and stored at the National Museum in Khartoum. A total of 48 sites were discovered or re-examined, and material from five more was re-analysed in the National Museum. The field team, which carried out the exploration, included the present author, Alfredo González-Ruibal and Alfonso Fraguas (post-graduate and graduate students of Madrid University), and Amal Hassan Gissmalla, inspector of the Sudan National Corporation for Antiquities and Museums (NCAM).

#### The prehistoric sites

A cluster of lithic artefacts was found alongside a small riverbed beside the asphalt road between Sennar and Singa, near the village of Er Karaba (no. 84, 13° 18' 29" N / 33° 40' 18" E; UTM E 0572759 / N 1471318) (Figure 1). The artefacts included a large side scraper made of white quartz. These tools are the only pieces interpreted as being probably of Palaeolithic date among the discovered prehistoric sites. The rest were classified as Mesolithic, Early Neolithic and Late Neolithic.

Nine Mesolithic sites were found in the Wadi Raboub el-Hag area. This group represents 75% of all the prehistoric sites found in this area, a figure similar to the percentage in the whole region surveyed by the SAE-S in the Wadi Soba area (79.1%) and also in the area on the main Nile investigated by the Italian Mission (81.5%) (Caneva 1988, 334). As in the Wadi Soba area, some of the sites here are distributed along a line roughly parallel to the Blue Nile and others along the wadi banks. However, these sites seem to be smaller than those in the Soba region - or are more disturbed by intensive agricultural work - most are represented only by a few sherds and some lithics and mortar fragments scattered on the surface over a small area. Not a single site of the size of Sheikh Mustafa or el-Mahalab was found during the exploration. When making a statistical comparison between the pottery decoration types in all the Mesolithic sites (Fernández et al. in press), another difference appeared. The three largest sites in the Raboub - el-Hag area had a significant amount of sherds with Dotted Wavy Line decoration (DWL, 5-10%), together with a large quantity of Wavy Line sherds (WL, 50-60%). Our previous analysis of the Wadi Soba sites had shown that DWL was only present in the sites supposedly of more recent age and which had a lesser amount of WL (Jimeno et al. 1996). Both areas apparently lack evidence for those sites characterised by a great abundance of DWL decoration. These seem to characterise the final phases



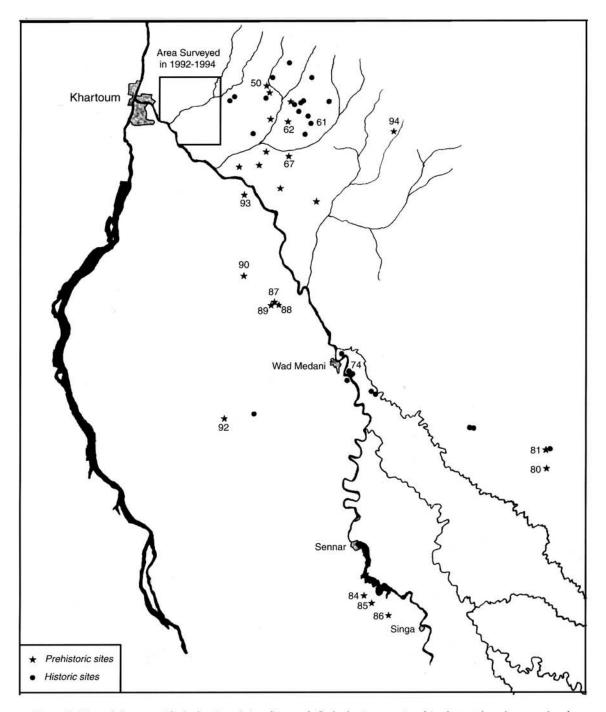


Figure 1. Map of the area with the location of sites discovered. Only the sites mentioned in the text have been numbered.

of the Mesolithic period in the northern area investigated by the Italian Mission near the main Nile (Caneva 1991, 267; cf. Caneva and Marks 1990, 21).

Two partly preserved Mesolithic sites were discovered near the road between Sennar and Singa (nos 85, 13° 16' 26" N / 33° 43' 10" E; UTM E 0577939/N 1467557, and 86, 13° 13' 30" N / 33° 48' 07" E; UTM E 0586900/N 1462180). The largest of these was situated at the village of Eneikibla on the west side of the road, being almost completely destroyed by earth quarrying activities that had resulted in some big holes and mounds. A total of 83 sherds were studied. Most were undecorated, but all have a rough surface and have the

mineral-tempered fabric typical of the Early Khartoum period. Eight sherds are decorated with rocker impressions of the packed zigzag type. Lithics included two crescents and many flakes, blades, bladelets, cores and mortars. The smaller site, near Eneikliba Station, yielded only a handful of sherds, scattered over an area recently disturbed by earth and canal works. All sherds were eroded and undecorated and had a typical Mesolithic fabric.

With regard to the sites in the central Gezira, we were able to visit and examine only three localities out of a total of seven discovered by H. G. Balfour Paul in the 1940's (Balfour Paul 1952, map 1). The sites examined are situated

at the localities of Qoz Kabbaro (with two sites), Qoz Bakheit and Wad Sheneina. Balfour Paul suggested that these sites belonged to a culture which he called "Goz culture". He derived the name from the terrain where these sites were found; ancient stabilised sand dunes scattered across the Gezira plain. This culture "appears to combine some of the features of Arkell's Wavy Line culture from Early Khartoum with those of about the middle period of Jebel Moya" (Balfour Paul 1952, 202). However, the four sites that we visited, even if sometimes yielding some sherds from different periods (not an uncommon feature of Sudanese sites), belonged in their main components to the Mesolithic (Qoz Kabbaro-1, no. 87, 14° 41' 55" N / 33° 12' 37" E; UTM E 0522317 / N 1624440 and Wad Sheneina, no. 90, 14° 50' 50" N / 33° 04' 03" E; UTME 0522317 / N 1624440) or else the Late Neolithic period (Qoz Kabbaro-2, no. 88, 14° 41' 36" N / 33° 12' 26" E; UTM E 0522317 / N 1624440 and Qoz Bakheit, no. 89, 14° 41' 53" N / 33° 13' 05" E; UTM E 0523482 / N 1624963).

The pottery samples collected from Qoz Kabbaro-1 and Wad Sheneina included WL, DWL, rocker impression and alternately pivoting stamp decoration techniques. Wad Sheneina, a very conspicuous *kôm* elevated over the surrounding Gezira plain, yielded a greater proportion of DWL (26 sherds, 27.4%) than of WL decoration (11 sherds, 11.6%), in addition to some sherds of Late Neolithic type. Travelling west through the central Gezira in the Qoz area south of the town of Manaqil, we discovered another Mesolithic site (no. 92, 14° 06' 50" N / 32° 58' 41" E; UTM E 1560347 / N 0497641). This site was badly disturbed and it yielded very few eroded sherds and lithics.

Only two Early Neolithic (Shaheinab) sites were recorded during the field survey. One is situated near the village of Bir el-Lahamda in the Wadi el-Hag area (no. 62, 15° 33' 43" N / 33° 16' 56" E; UTM E 0530270/N 1720525). It is a large site (approx. 500 x 300m) on a predominantly flat area, similar to other big settlements from the same period, such as Kadero, Geili or Sheikh el-Amin. On our way back from Wad Medani to Khartoum, we paid a short visit to another Shaheinab site - to check information previously reported to NCAM - in the village of el-Bashagra Garb near the west bank of the Blue Nile (no. 93, 15° 12' 29" N / 33° 04' 23" E; UTM E 0507855/N 1681362). This is a smaller settlement site consisting of only a small kôm, situated amongst the village houses. Both sites yielded sherds with typical Shaheinab decoration (rocker impression, alternately pivoting stamp, some fine incision) and also (especially in el-Bashagra) other sherds with decoration more typical of a Later Neolithic phase, namely simple zoned impression, thick incision, scraped surfaces or thickened decorated rims.

An unexpected outcome of this exploration was the discovery of several large sites of Late Neolithic date. Two of them are situated on the east bank of the Blue Nile, one near the village of Raboub in Wadi Raboub (no. 50, 15° 43' 09" N / 33° 10' 43" E; UTM E 0519143/N 1737906), and the other

beside the village of Wad el-Amin (no. 67, 15° 21' 52" N / 33° 15' 27" E; UTM E 0527643/N 1698673) almost at the mouth of Wadi Hasib. Both are quite far from the Nile, at 50km and 25km respectively.

The Raboub site appears to be one of the largest sites known in the Central Sudan, with its surface remains scattered over an area of c. 700 x 600m (c. 42 ha). Two small testpits were dug in two of its eight small mounds, which were separated by erosion gullies. An oyster shell from the second pit yielded a date of 4670 ± 50 bp (Ua-19741 Uppsala laboratory, using AMS). Almost all the archaeological material was found in the top deposits (100-200mm). The deeper sediments yielded very few remains. A similar pattern was interpreted in sites of the Eastern Sudan as the result of the location of middens changing every year in a seasonally reoccupied locality, thus forming a narrow "sheet midden", typical of nomadic populations (Sadr 1991, 22-3). In contrast, a typical Early Neolithic site such as Sheikh el-Amin, dated at 5555  $\pm$  60 bp (T-10950, Trondheim laboratory) and 4590 ± 45 bp (Ua-20415, Uppsala laboratory using AMS), has quite high mounds separated by deeper gullies (Fernández et al. in press). These mounds have archaeological deposits that reach a depth of 1-1.3m - while the gullies are almost devoid of them - thus being probably the fixed midden areas of a more sedentary population (Sadr 1991, fig. 2.5). The site of Wad el-Amin was smaller and mostly flat; the surface remains extending over an area of about 70 x 110m.

Two Late Neolithic sites were re-analysed in the Qoz areas of the central Gezira. One of the sites is Qoz Kabbaro-2 (no. 88), some 600m from the Mesolithic site of Qoz Kabbaro-1 previously mentioned. The site is small and had been badly disturbed by the construction of the asphalt road that crosses the Gezira from el-Hasaheisa to Naima and by recent quarrying activity in the area. The second site (no. 89) is also very close, near a place called Qoz Bakheit (where a small camp has been built for Northern immigrants), and is larger in size (around 200 x 200m). Finally, in the Mesolithic site of Wad Sheneina, previously described, some ten sherds found on the surface are of Late Neolithic date. Although we were not able to find any remains of the cemetery excavated by Balfour Paul near Qoz Kabbaro (Balfour Paul 1952, 203-4), we examined some of the complete vessels that were recovered from the graves of the cemetery and are now in the Khartoum National Museum. Most of them are undecorated but a few bear simple impressions and have a scraped surface, also suggesting a Late Neolithic date.

All of these Late Neolithic sites share the following characteristics:-

- 1) They have fewer lithic flakes and tools than the Early Neolithic sites.
- 2) They have frequent remains of small perforated stone disks, sometimes made in squared or oval shapes.
- 3) They frequently yield sherds decorated using new techniques, especially simple impression and surface scraping,



together with the earlier ones typical of the esh-Shaheinab period, such as those with rocker impressions and alternately pivoting stamps, and new vessel types with thickened rims decorated with impressed or incised patterns (Plates 1 and 2).



Plate 1. Selection of pottery sherds decorated with simple impression technique from Late Neolithic sites discovered during the survey and exploration.

Our general observation is that during Late Neolithic times one system or technique of decoration, i.e., rocker impression, was being gradually replaced by a different one, i.e., simple impression (Plate 3). Both were made using a toothed comb, but used a different method of impressing the soft clay of the vessel (Caneva 1988, 79-114). The first was used from the beginning of the Mesolithic period in all the Saharan areas, and it consisted of a zigzag alternating turn of the comb after each impression that resulted in an almost totally decorated vessel surface. The second was made with simple, independent applications of the comb, which was lifted completely after each one, resulting in a zoned decoration that



Plate 2. Selection of pottery sherds with thick decorated rims (upper row), incised and scraped decoration (lower row).

left a great part of the surface undecorated. A similar pattern of technical change was observed in two sites excavated by the Italian Mission north of Khartoum, el-Kenger East and el-Kenger West, where the younger site yielded a higher frequency of sherds with simple impression, than the older one (Caneva and Gautier 1994). When the pottery decoration frequencies from the sites in our survey are compared, using statistical methods such as multidimensional scaling (Kendall 1971), a seriational order is obtained (Colour plate XLVI). This order is presumably chronological, suggesting a gradual decrease of rocker impression and gradual increase of simple impression during the Neolithic in Central Sudan (Plate 3). Later the abundant decoration of hand-made vessels of the Meroitic period was mostly made by simple comb impressions very often combined with incision (Fernández 1984, 59; 1985, 372-412).

A similar but more radical shift seems to have occurred earlier in the Eastern Sudan, marking the transition between the Saroba and the Kassala phases (Fattovich et al. 1984). That area could be suggested as a probable origin for this technological change, irrespective of possible linguistic or ethnic implications (Haaland 1987, 229-30). The much longer duration of the rocker impression technique in Southern Sudan (Mack and Robertshaw 1982) could also indicate some kind of relationship between this decoration and the Nilo-Saharan populations that perhaps was established in the Mesolithic period as first proposed by J. E. G. Sutton (1977). In any event the sites discovered in our survey fill to some extent the supposed population gap in this area during the last millennia BC. They appear to connect the sites of the Eastern Butana with others known in the Southern Gezira such as Jebel Tomat, Jebel Moya or Rabak, all dated to the 5th millennium bp and, therefore, contemporary with the site of Raboub (Haaland 1987, 45-7). The material from two sites surveyed in the West Butana by Balfour Paul (1952) and re-examined by our team in the Khartoum National Museum, Abu Miriam and Abu Zumein, also show close similarities with the Jebel Moya Late Neolithic cultural assemblage.

Near the Wad Medani-Gedaref road we recorded several sites, which were located at the foot of Jebel el-Ugheilif and Jebel Denabo (nos 80, 13° 56' 53" N / 34° 33' 10" E; UTM E 0667754/N 1542551, and 81, 14° 00' 11" N / 34° 32' 47" E; UTM E 0667025/N 1548628). The first site, located near a well used by Shukriya nomads, consisted of several large natural rocks with some holes cut into them (for grinding?), a feature very frequent in the Butana (Napflöcher, cf. Hintze 1959, pl. 45). Some quartz flakes were found in the vicinity of those rocks, together with a few undecorated sherds whose fabric is similar to typical Mesolithic pottery. On the eastern flank of Jebel Denabo, beside another well, there was a flat vertical rock decorated with engravings of animals moving to the right in several rows (Colour plate XLVII). The animals (horses, camels and donkeys) were schematically sketched and probably date to a recent period. Finally, we visited the well-known site of Jebel Qeili (no. 94, 15° 30' 09"



Plate 3. The sherds in the picture are disposed to show the change in decoration from tocket impression (upper row), both with multiple (left) and double pronged (right) comb, to simple impression (lower row) that took place during the Neolithic period in Central Sudan.

N / 33° 46' 15" E; UTM E 0582704/N 1713919), where we examined some decorated sherds found scattered around the hill and on the flat top of the rock. Six were decorated with incisions, six with simple impression and one had a rippled surface. All these patterns of decoration suggest a Late Neolithic date for the site.

#### The historic sites

Even though our main interest was the prehistoric sites, we recorded all the archaeological remains, including some probably very recently abandoned villages, found during our travels in the area. One of the most common sites in the Wadi Raboub-Hag-Hasib area, as in most of the Butana steppe, are the tumuli fields. Some ten sites of this kind were detected in the area. Since no material cultural remains were found, it is not possible to suggest any date or cultural association for most of these graves. However, some burial grounds probably could be Islamic, since the mounds were slightly elongated in an approximately north-south direction and there were also small graves, with stones marking an oval shape with the same orientation, in between the largest tumuli. Small stones arranged in circles also marked most of these mounds. In some sites recent Islamic graves, still marked by flags on long wood poles, suggest that the use of the cemetery continues until the present.

Another kind of tumuli was characterised by perfectly circular mounds, between 5 and 10m in diameter, covered with white pebbles. This type seems to be abundant in the area between Wadi el-Hag and Wadi Hasib, with a large field of more than 90 tumuli near Hafir Umm Mohhar (no. 61, 15° 33' 02" N / 33° 22' 20" E; UTM E 0539920/N 1719277) (Colour plate XLVIII).

Some other sites along the Wad Medani-Gedaref road, cemeteries and settlements, were characterised by the presence of incised Funj pottery (Crawford and Addison 1951,

pl. 31). The ruins of a Christian church made of fired bricks were found near Kordogeili (no. 74, 14° 20' 47" N / 33° 34' 56" E; UTM E 0562786/N 1586131).

#### **Conclusions**

The fact that so many sites have been discovered during a short survey season clearly indicates the rich archaeological potential in the Central Sudan. The flat topography and the clear visibility of this part of the country facilitate low-cost, relatively fast and efficient surveys. But such topography, combined with the heavy summer rains and the many irrigation schemes, also favours increasingly intensive agriculture, and does not contribute to the conservation of many of the archaeological sites. These sites seem to be disappearing rapidly; in fact, most of the sites discovered have been badly disturbed – if not totally destroyed – by human activity. Twenty years ago, another survey was made near this area and also concluded with the same observations (Vila 1979, 121-34).

The most interesting outcome of our survey was the discovery of a significant number of sites, most of them of large extent, belonging to the Late Neolithic Period. This period is still ill-defined in its main features, such as its chronological duration and even its designation (Jebel Moya Complex?). The remains of these sites, however, will likely yield useful information concerning the cultural dynamics and population movements that took place between the adoption of an animal husbandry economy in the Central Sudan and the onset of the Kushite state organisation.

#### **Bibliography**

Balfour Paul, H. G. 1952. 'Early cultures on the northern Blue Nile', Sudan Notes and Records 33(2), 202-215.

Caneva, I. (ed.) 1988. El Geili: the history of a Middle Nile environment 7000 B.C. - A.D. 1500. Cambridge Monographs in African Archaeology 29. BAR International Series 424. Oxford.

Caneva, I. 1991. 'Jebel Moya revisited: a settlement of the 5<sup>th</sup> millennium BC in the middle Nile Basin', Antiquity, 65: 262-268.

Caneva, I. and A. E. Marks 1990. 'More on the Shaqadud pottery: evidence for Saharo-nilotic connections during the 6<sup>th</sup>-4<sup>th</sup> millenium B.C.', Archéologie du Nil Moyen 4, 11-35.

Caneva, I. and A. Gautier 1994. 'The desert and the Nile: Sixth millennium pastoral adaptations at Wadi el Kenger (Khartoum)', Archéologie du Nil Moyen 6, 65-92.

Crawford, O. G. S. and F. Addison 1951. Abu Geili and Saqadi & Dar el Mek. The Wellcome Excavations in the Sudan, vol. III, Oxford.

Fattovich, R., A. E. Marks and A. Mohammed-Ali 1984. 'The archaeology of the Eastern Sahel, Sudan: preliminary results', The African Archaeological Review 2, 173-188.

Fernández, V. M. 1982. 'El cementerio Kerma de Abri-Amir Abdallah (Provincia del Norte): excavaciones de la Misión Arqueológica Española en El Sudán', *Trabajos de Prehistoria* 39, 279-334.

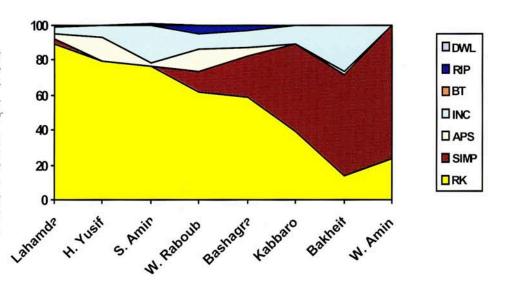
Fernández, V. M. 1984. 'Early Meroitic in Northern Sudan: the assessment of a Nubian archaeological culture', *Aula Orientalis* 2(1), 43-84.

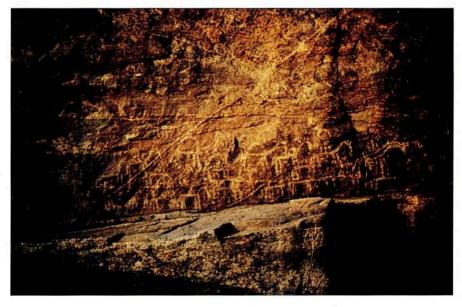
Fernández, V. M. 1985. La cultura Alto-meroitica del Norte de Nubia. Evolución de la cultura material y el ritual funerario en el Norte de Nubia del siglo III al I a.C.: la necrópolis de Amir Abdallah. Colección Tesis Doctorales, 132/85. Universidad Complutense de Madrid, Madrid.



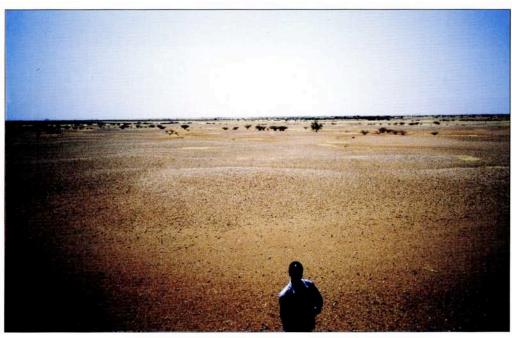
- Fernández, V. M., A. Jimeno, M. Menéndez and G. Trancho 1989.
  'The Neolithic site of Haj Yusif (Central Sudan)', Trabajos de Prehistoria 46, 261-9.
- Fernández, V. M., A. Jimeno, M. Menéndez and J. Lario 1997. "The Mesolithic sites of Sheikh Mustafa and Al Mahalab (Central Sudan): a preliminary report', Cahier de recherches de l'Institut de Papyrologie et d'Egyptologie de Lille 17/2, 21-27.
- Fernández, V. M., A. Jimeno, M. Menéndez, J. Lario, L. Chaix and G. Trancho (in press). "The Blue Nile Project. Survey and excavations in the Central Sudan, 1989-2000", Complutum 14.
- Fernández, V. M., A. González-Ruibal 2001. 'Historia, arqueología e identidad de un pueblo fronterizo: los Berta de Benishangul (Etiopía)', Pasado y presente de la construcción identitaria: una aproximación desde la arqueología y la antropología, Arqueoweb 3(3), december 2001 (http://www.ucm.es/info/arqueoweb).
- González-Ruibal, A. and V. M. Fernández (in press). 'House Ethnoarchaeolgy in Ethiopia. Elements for the analysis of domestic space in Benishangul (West Ethiopia)', in X. Allán, P. Mañana and M. Borrazas (eds), Archaeotecture. Archeology of Architecture, British Archaeological Reports, International Series, Oxford.
- Haaland, R. 1987. Socio-Economic Differentiation in the Neolithic Sudan. British Archaeological Reports, International Series 350, Oxford.
- Hintze, F. 1959. 'Preliminary Report of the Butana Expedition 1958, made by the Institute for Egyptology of the Humboldt University, Berlin', Kush 7, 171-196.
- Jimeno, A., V. M. Fernández, M. Menéndez and J. Lario 1996. "The Mesolithic/Neolithic of the Blue Nile (East Bank): chronological seriation and settlement patterns' in L. Krzyzaniak and M. Kobusiewicz (eds), Interregional contacts in the Later Prehistory of Northeastern Africa. Poznan, 335-345.
- Kendall, D. G. 1971. 'Seriation from abundance matrices' in F. R. Hodson, D. G. Kendall and P. Tautu (eds), Mathematics in the Archaeological and Historical Sciences. Edinburgh, 229-264.
- Mack, J. and P. Robertshaw (eds) 1982. Culture History in the Southern Sudan. Archaeology, Linguistics and Ethnohistory. British Institute in Eastern Africa, Nairobi.
- Menéndez, M., A. Jimeno and V. M. Fernández 1994. 'The archaeological survey of the Blue Nile (East bank): aims and first results', in C. Bonnet (ed.), Études Nubiennes (Conférence de Genève, Actes du VII Congrès international d'études nubiennes, 3-8 septembre 1990), vol. II: 13-18.
- Sadr, K. 1991. The Development of Nomadism in Ancient Northeastern Africa. Philadelphia.
- Sutton, J. E. G. 1977. 'The African Aqualithic', Antiquity 51, 25-34.
- Vila, A. 1979. La prospection archéologique au sud de la cataracte de Dal, vol. 11. Paris.

Colour plate XLVI. Exploration on the Blue Nile. Chronological seriation of the eight Early and Late Neolithic sites discovered and/or re-examined during the survey. The curves show the variation of percentages of pottery decoration types. RK: Rocker impression (including packed, spaced and plain types); SIMP: Simple impression, usually zoned; APS: Alternatively Pivoting Stamp; INC: Incision; BT: Black Topped; RIP: Ripple ware; DWL: Dotted Wavy Line.





Colour plate XLVII. Exploration on the Blue Nile. Rock with schematic engravings of animals (right to left: horses, camels and donkeys) on the eastern flank of Jebel Denabo, south of the Wad Medani-Gedaref road (no. 81). The horizontal width of the panel is 1.55m.



Colour plate XLVIII.
Exploration on the Blue
Nile. The tumuli field
near Hafir Umm
Mohhar (no. 61).