

# K E R M A

2008 - 2009

SOUDAN

Matthieu Honegger • Charles Bonnet • Jérôme Dubosson • Bastien Jakob • Camille Fallet • Philippe Ruffieux



Université de Neuchâtel  
Documents de la mission archéologique suisse au Soudan  
2009 | I

Université  
de Neuchâtel **unine**

I M P R E S S U M

**Université de Neuchâtel**

Documents de la mission archéologique suisse au Soudan  
2009 | I

**Institut de Préhistoire et des Sciences de l'Antiquité**

Espace Paul Vouga  
CH-2068 Hauterive  
Switzerland

**Scientific Committee** : Matthieu Honegger, Charles Bonnet, Louis Chaix, Nora Ferrero.

**Translation** : Caroline M. Rocheleau

**Layout** : Philippe Marti

HONEGGER, M., BONNET, C. & Collab. 2009. « Archaeological excavations at Kerma (Sudan) », *Documents de la mission archéologique suisse au Soudan* (1), Université de Neuchâtel.

The investigations of the Swiss Archaeological Mission started on November 30, 2008 and were completed on February 2, 2009.

The team directed by Matthieu Honegger conducted excavations at the eastern cemetery of Kerma and at the site of Wadi El-Arab, and also worked at the Kerma Museum. The team comprised the *rais* Khidir Magbul and Jaffar Abdul Fares, who guided 30 local workers, and three specialists from Switzerland who worked in their respective field : Louis Chaix (anthropology and archaeozoology), Marion Berti (archaeology and drawing) and Daniel Conforti (archaeology and drawing). Four students from the University of Neuchâtel (Jérôme Dubosson, Bastien Jakob, Camille Fallet, and Laure Bassin) and a student from the University of Khartoum (Shahinda Omer) also participated in the season's work.

The team led by Charles Bonnet, which worked at Dukki Gel and the ancient city of Kerma, was composed of the *rais* Gad Abdallah, Saleh Melieh, Abdelrazek Omer Nuri and Idriss Osman Idriss, who guided 60 local workers. It included five specialists from Switzerland : Philippe Ruffieux (ceramic studies), Inès Matter-Horisberger (drawing), Alain Peillex (drawing), Marc Bundi (technician, drawing), and Louis Chaix (archaeozoology).

Mr. Abdelhai Abdelsawi, inspector and curator of the Kerma Museum, monitored the progress of fieldwork and supervised the preparations for the Museum's second inauguration.

The Swiss Mission was supported by Mr. Hassan Hussein, director of the National Corporation of Antiquities and Museums of Sudan (NCAM) and his collaborators, Drs Salah Eddin Mohamed Ahmed and Abdelrahman Ali. Following the installation of three scale models representing the ancient towns of Kerma and Pre-Kerma, and the hut of El-Barga, a second inauguration of the Kerma Museum was held on January 10, 2009. The event was attended by a Swiss delegation of eight individuals representing political, scientific and academic institutions, the director and collaborators of NCAM, the president of the High Committee of the Kerma Cultural Complex (Sir El Hatim), several ministers, and the *wali* of Dongola.

This project is financed by the Swiss National Science Foundation (project n°101212-122592/1), by the State Secretariat for Education and Research of the Swiss Confederation and by private funds.

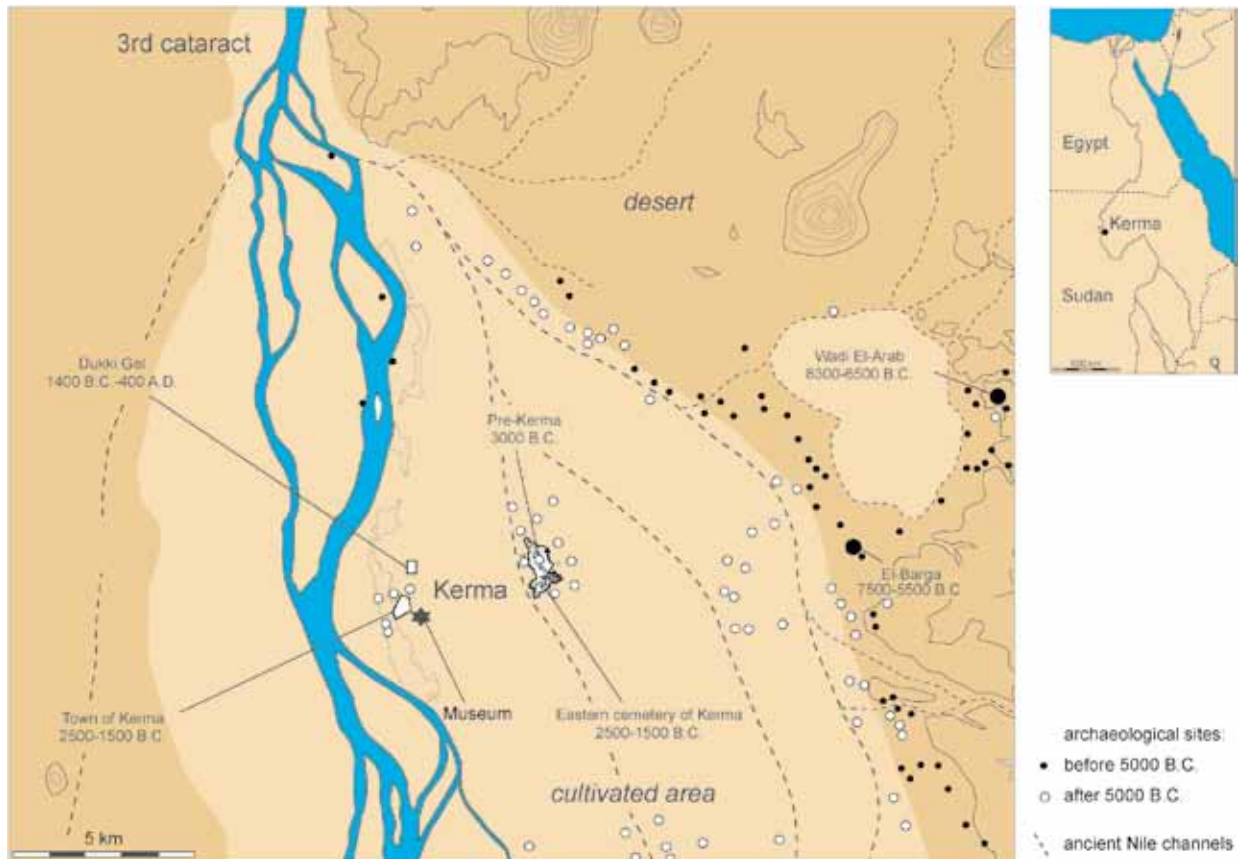
The investigations focused on the excavations of :

- a new sector in Wadi el-Arab;
- a new sector of the Pre-Kerma settlement;
- Ancient Kerma graves in the northern part of the eastern cemetery;
- fortifications and temples in Dukki-Gel.

This season, restoration and preservation work was conducted at the main archaeological sites :

- restoration of the stairs of the western Deffufa;
- building of *galus* walls and embankments to protect the eastern cemetery from destruction caused by car and lorry traffic and the expansion of cultivated fields.

Figure 1 | Map of the Kerma area with the location of the main archaeological sites and the Museum.



## THE EARLY HOLOCENE SEQUENCE OF WADI EL-ARAB

This site is located 5 km north-east of El-Barga and includes a stratigraphic sequence of occupations dated between 8,500 and 6,000 BC. It is one of the very important sites of Africa that helps understand the transition to a sedentary way of life and stock breeding (Honegger 2007).

This year, an area of 64 square meters was excavated where three graves were discovered two years ago (sector 611W, see fig. 2 and 3). The aim was to preserve this part of the site - which was plundered last year - in order to complete the chronological sequence and to find more graves. The destruction was more important than any previous disturbances and impeded the excavations as work resumed in this sector. As previously noted at this site, the material discovered consists primarily of several lithic artefacts, fragments of ostrich eggshells and ceramic sherds. Faunal remains are less frequent. Some structures were identified : a pit of domestic function; a probable habitation structure dug in the sand; some pebbles' concentrations (fig. 4). The pits contained greater quantities of artefacts and better preserved bones. One grave was discovered and we hope that a cemetery will be located in the future. Due to the abundance of material and the precision required for the excavation of Mesolithic sites, only fifteen centimeters were cleared in this area. The excavation of this sector will continue for the two next years.

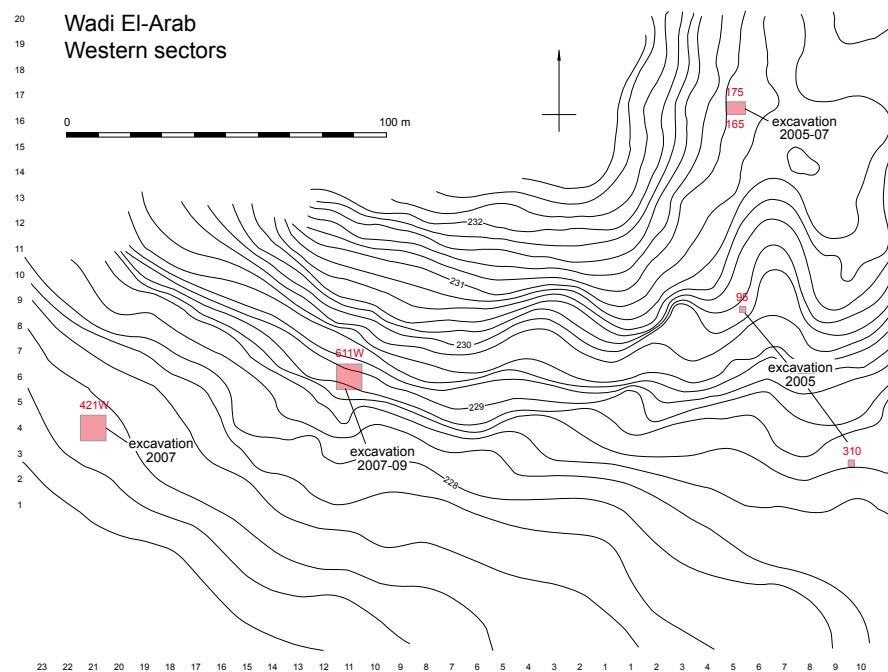


Figure 2 | Western sectors of Wadi el-Arab with the location of trenches and excavated surfaces.



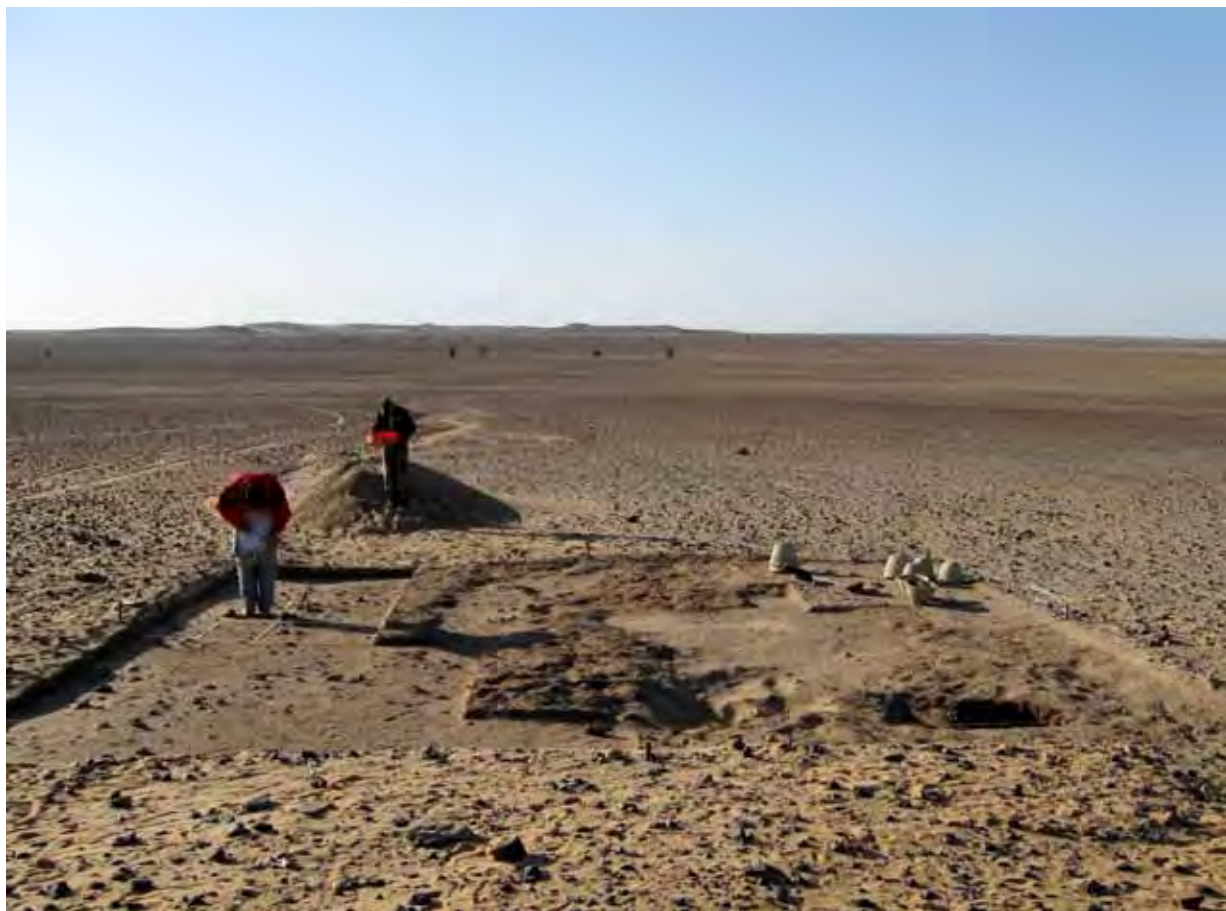


Figure 3 | View of the sector 611 during excavations.



Figure 4 | A concentration of pebbles which can correspond to the limit of a wall of the habitation structure or to a structure linked to a fireplace.

Figure 5 | The tomb 7 after excavation.

First, the 64 square meters surface was cleaned and carefully cleared in order to delineate possible structures and holes resulting from the pillage of the site. Then a second clearing of five to eight centimeters allowed us to define the five structures identified. These are rather well defined pits, generally containing a distinctive fill and occasionally less fragmentary remains. While the anthropogenic nature of several pits is undeniable, it is more problematic for three of them because they might have been affected by erosion and disturbances. The largest measures approximately three meters in diameter and its depth is over twenty centimeters. The structure might be the floor of a hut, but further excavation is necessary before this can be confirmed.



A tomb was discovered on the surface north of the sector, adding to the three found previously (fig. 5). Rather disturbed by its proximity to the surface, the body of the deceased is missing part of its cranium and most of the bones of the right side. The deceased rested in a flexed position on its left side, the head towards the west and facing north. In contrast with one of the graves excavated in 2006, which revealed a necklace made of Red Sea shells, no burial goods were found in association with this tomb. These burials should be dated to between the 7<sup>th</sup> and the beginning of the 6<sup>th</sup> millennium BC. The material discovered during the excavations is abundant and the density of artefacts - notably flints and ceramics - is high. The two clearings brought to light 6941 pieces carved from siliceous rock (the majority from the alluvial flint called chert as well as a few pieces in carnelian and rock crystal).

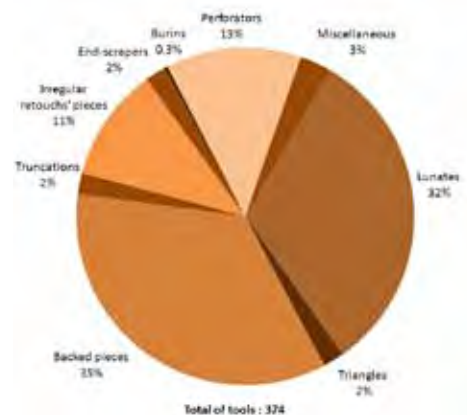


Figure 6 | Proportion of the different types of flint artefacts found in sector 611.

We note 249 nuclei and 3323 flakes, among which the rare blades. The ratio of transformation into tools is low : only 374 pieces, the majority of which are segments (fig. 6).

Figure 7 | Pottery discovered in the first two clearings of the sector 611.



A more in-depth study is needed to reveal possible influences that might appear in these lithic implements, but, at first glance, Egyptian influences are practically non-existent and flint from the chalky limestone environments of the North does not appear to have been imported. There is one exception, however. Two bifacial points found on the surface north of sector 611 might have an Egyptian origin considering their scarcity in Nubian prehistory. They might otherwise be fragments of spear points dated to the Kerma period, such as the quartz ones found in the city of Kerma or the famous examples from Mirgissa. They would thus be isolated finds linked to the Classic Kerma fort located nearby.

The ceramic sherds are occasionally of large dimensions and often entirely covered with impressed motifs (fig. 7). These complete the series originating from sectors 65/75 and 95 currently under study, which indicate an evolution between 7800 and 6600 BC. The diversity of motifs is rather similar to that already known, with a few new variants. The assemblage clearly shows that we are dealing with a sequence situated at the beginning of the 7<sup>th</sup> millennium BC, represented with rocker stamp, dotted wavy line and herring bone pattern (alternating pivoting stamp) decorations. It is possible that future successive clearings will reveal previous occupations. In any case, this chronological bracket is rather interesting for the study of the transition to a pastoral economy with the appearance of domesticated cattle (cf. Honegger 2005). It shall also allow the evaluation of the impact of southern Egyptian influences (Nabta Playa), which appear at this period. In this context, the meticulous gathering of faunal remains is paramount and numerous bones were consolidated before sampling in order to insure a better preservation. Yet, this year, the first faunal inventory made by Louis Chaix did not reveal domesticated cattle, as had been the case in previous years at Wadi el-Arab.



In the western sector of the Pre-Kerma settlement, an area of 1000 square meters was studied in order to define the extension of the agglomeration and its complexity (fig. 8). Many postholes delineated fences and circular structures, and eight pits of small diameter were discovered (fig. 9). Most are shallow, but one is 1.60 meter deep and might correspond to a small well. The other pits contained much charcoal and many fireplaces were located. These were related to a craft activity involving fire (ceramics firing, beer production, etc), but as of yet Pre-Kerma sherds have not been discovered within these structures. These features and their apparent organisation cannot be related to the Middle Kerma graves dug in this area, so their dating remains problematic. Therefore, C14 dates will be needed to confirm the Pre-Kerma attribution. Should these structures indeed date to the Pre-Kerma, then this season's discoveries would confirm the considerable size of the settlement and the possible existence of a specialised craft activity area.

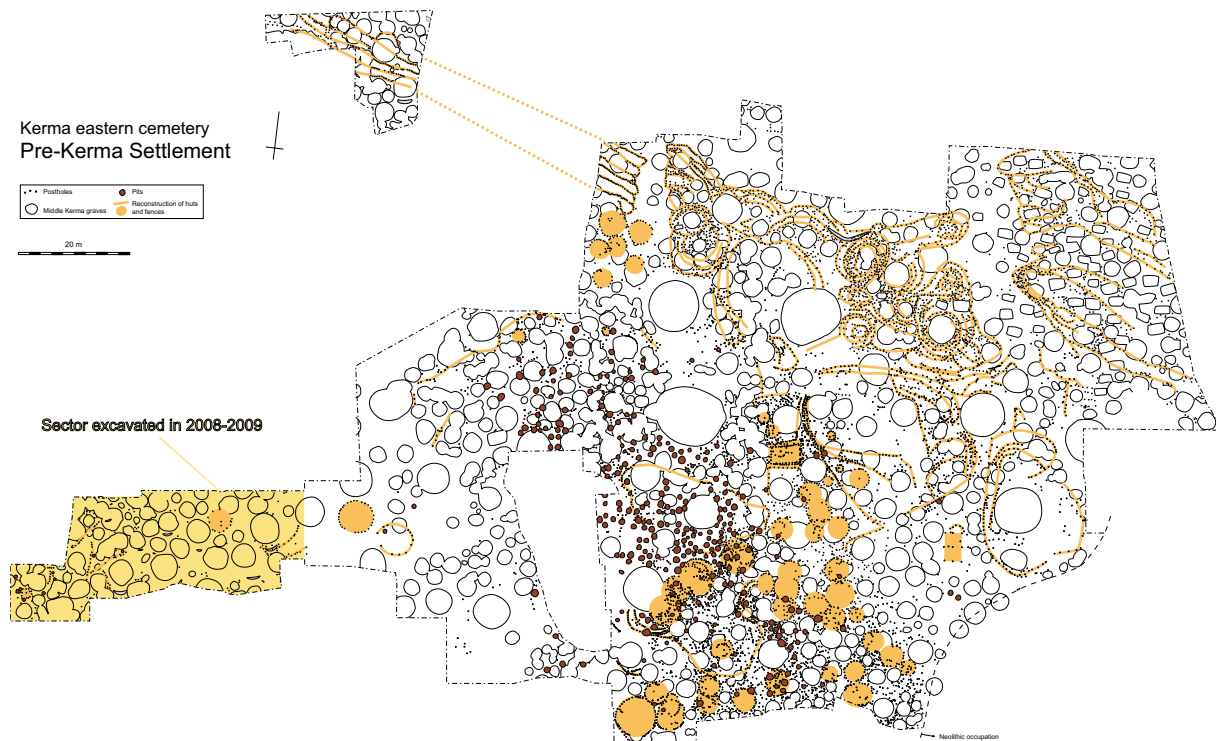


Figure 8 | Plan of the Pre-Kerma agglomeration with the sector excavated during the campaign 2008-2009.



Figure 9 | View of the sector with its pits and small circular structure.

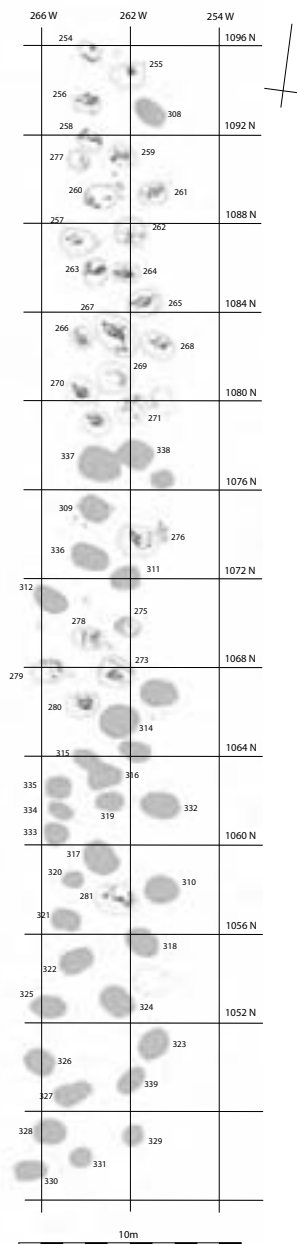


Figure 10 | Plan of sector 27 with the location of excavated burials in grey.

Figure 11 | Double burial during excavation (tomb 317).

In order to understand the spatial organisation of the funerary ritual and to collect more data on the origin of the Kerma civilisation, we continued the excavation of sector CE27, which was partially studied by Charles Bonnet and Béatrice Privati in 1998-1999 (Bonnet 1999). This sector is located north of the cemetery in the most ancient area, where two C14 dates have given results between 2500 and 2400 BC. Close to this area were discovered a few years ago graves containing only ancient C-Group pottery (sector 28). We think that the understanding of the relation between these two sectors which are culturally different will help us to understand the process of formation of the Kerma civilisation.

Thirty-two new graves were opened this season, adding to the 28 graves excavated ten years ago (fig. 10). Several were plundered in ancient times, but others were much better preserved. These revealed numerous single burials as well as a grave containing two adults, where a sacrificed individual accompanied the deceased (fig. 11). The graves were usually poor in funerary deposits and objects. The ceramics deposited on the surface had long since disappeared and their remains were usually found in the fillings of the funerary pits. When the grave was not plundered, the deceased was found resting on a cowhide and in well-preserved cases the burial even revealed remains of goats horns, leather, sandals and other organic materials (fig. 12). Occasionally, adornments - beads and pendants - and uncommon objects like mace heads were discovered (fig. 13).





Figure 12 | Sandal from the grave 323.

#### List of objects discovered in sector 27 of the eastern cemetery

Numerous sherds, organic material, and skeletal remains were discovered on the surface, in the fill of the funerary pits, and in proximity to the deceased. The excavated graves were numbered from 308 through 339.

Figure 13 | Beads of bone and stone's pendant discovered in the burial 322.



<b>Grave Number</b>	<b>Grave Number</b>
<i>Surface</i>	<i>Nubian seal</i>
<i>Surface</i>	<i>Mace head</i>
<i>Surface</i>	<i>Stone vessel (fragment)</i>
308	<i>ca. 30 faience beads</i>
309	<i>2 faience beads</i>
313	<i>ca. 50 faience beads</i>
315	<i>Bone pendant</i>
316	<i>1 faience bead</i>
317.1	<i>Stone vessel (fragment), ca. 50 faience beads</i>
317.2	<i>ca. 200 faience beads</i>
318	<i>Bone pendant, polished catfish spine, faience bead</i>
321	<i>Stone pendant, bone pendant, 5 large ostrich eggshell beads, ca. 20 small ostrich eggshell beads</i>
323	<i>ca. 30 faience beads organised in a geometric pattern</i>
324	<i>Stone pendant</i>
326	<i>Bone pendant</i>

## PALAEOANTHROPOLOGY OF HUMAN SKELETAL REMAINS FOUND IN THE ANCIENT KERMA GRAVES

The anthropological study was initiated by the author (Camille Fallet) in collaboration with Louis Chaix, in order to determine the gender, age and pathologies of the skeletons. All the anthropological remains were stored at Kerma, where they will be studied and used in the training of Sudanese students, a collaboration effort with the University of Karima-Dongola. This partnership will become a reality with the soon-to-be-completed Centre of Nubian Culture, which is an annex of the new Kerma Museum.

The study corpus contains 34 individuals from the 32 excavated tombs, including a double burial and the tomb of a woman with a foetus. A complete catalogue was created in which appear the state of preservation, the determination of gender and age, a description of possible pathologies and traumas, certain measurements of the long bones, and the calculation of the cephalic index. At this stage in the study, we have not systematically noted non-metric characteristics, whether cranial or dental. In general, the skeletons are well preserved, if not excellently so. It is the plundering that occurred in ancient times which caused the most damage. In many cases, remains of skin, flesh and hair were still preserved (fig. 14).

Gender determination of the individuals follows the method advocated by Bruzek (1996), which consists of the observation of the five pelvic zones and is estimated to be more than 95% reliable. For comparison purposes, we have also used the method of Ascàdi and Nemeskéri (1970), based on the observation of 13 characteristics, mostly cranial. This method, slightly less reliable (80 – 90%), has been mostly abandoned nowadays, but it was used for a very long time, notably on skeletons from over 300 Kerma burials excavated by C. Bonnet between 1977 and 1999. As for age, it is determined by the principles of Schmitt (2001) and Lovejoy (1985) for adults and those of Bath-Balogh and Fehrenbach (2006) as well as Schwartz (2007) for non-adults.

The excavated tombs contained 29 adults : 20 males, 5 females and 4 undetermined. The proportion of men is much higher than that of women and represents more than three-quarters of the buried adult individuals in the excavated area. Evidently, it is still too early to draw any meaning from it. The excavated area is not very large and the data from the earlier excavations have yet to be input. It is interesting to note that the determination of gender often gave different results depending on the method used. While the results based on the coxal bone (Bruzek method) are presented here because of their reliability, the data based on the observation of cranial morphology often showed discrepancies (Ascàdi and Nemeskéri 1970). This is related to the fact that the population, notably men, has rather slender skulls (dolicho-cephalic), which favours the identification of women amongst the male population.





Figure 14 | Skull of a man from the tomb 308.

Figure 15 | Mended fracture of the left lower arm of an individual from tomb 333.



Immature individuals are few. Including the foetus, only five have been counted and the majority indicates children between the ages of one and seven. It remains difficult to draw conclusions here as well, but it must be brought to mind that, generally speaking, the numbers of immature individuals in the Kerma necropolis are low. If we take into consideration the age of the adults, we note that the distribution of adults based on their age at death is rather consistent, with a slight peak for the group between 27 and 44 years old.

As far as pathologies are concerned, osteoarthritis is the most common and is identified in 12 out of 25 adults. Among these, eight show osteoarthritis in the lumbar vertebrae. Generally found in isolated cases, the other parts of the skeleton affected are the cervical and thoracic vertebrae, the sacrum, the mandibular condyle, the femoral head, the humeral trochlea and the phalanxes of the feet. Two cases of cavities on molars, three instances of tartar, and one abscess were noted on the mandible and the maxilla of five individuals. All traumas noted are fractures. The areas most affected are the lower arms and the hands (fig. 15). The individuals with a fracture of the lower arms are not those with hand fractures. We have also noted the fracture on a left collarbone as well as three individuals with fractured ribs and another with a fracture on the two fibulae. Incidentally, all fractures were mended. The study of the pathologies of the Kerma population has already shown its potential (Judd 2002). Undertaken on a wide series of individuals, it is possible to assess the population's health as well as identify in some cases the activities performed by certain individuals or groups of the Kerma population.

The excavations focused on the ancient fortified town of Dukki Gel, specifically on the Eighteenth Dynasty fortifications and the Nubian religious centre located in front of the eastern gate. It also included the architectural analysis of the urban centre's central temple (fig. 16). The results of this archaeological campaign highlight the clash between Nubian traditions and Egyptian culture, but also their reciprocal influences.

### The early Eighteenth Dynasty town

The rounded wall of the fortifications discovered last year was followed this season in both a northern and southern direction. South, a door and 1.80 m wide stairs lead to the temenos of Hatshepsut's temple. On either side of this door is a large semi-circular bastion, organised with other smaller bastions perpendicular to the door (fig. 17). These structures were later modified and augmented with a second wall with bastions of 1.60 meters in diameter.

Figure 16 | Schematic plan of Dukki Gel with the remains of the Eighteenth Dynasty in blue.

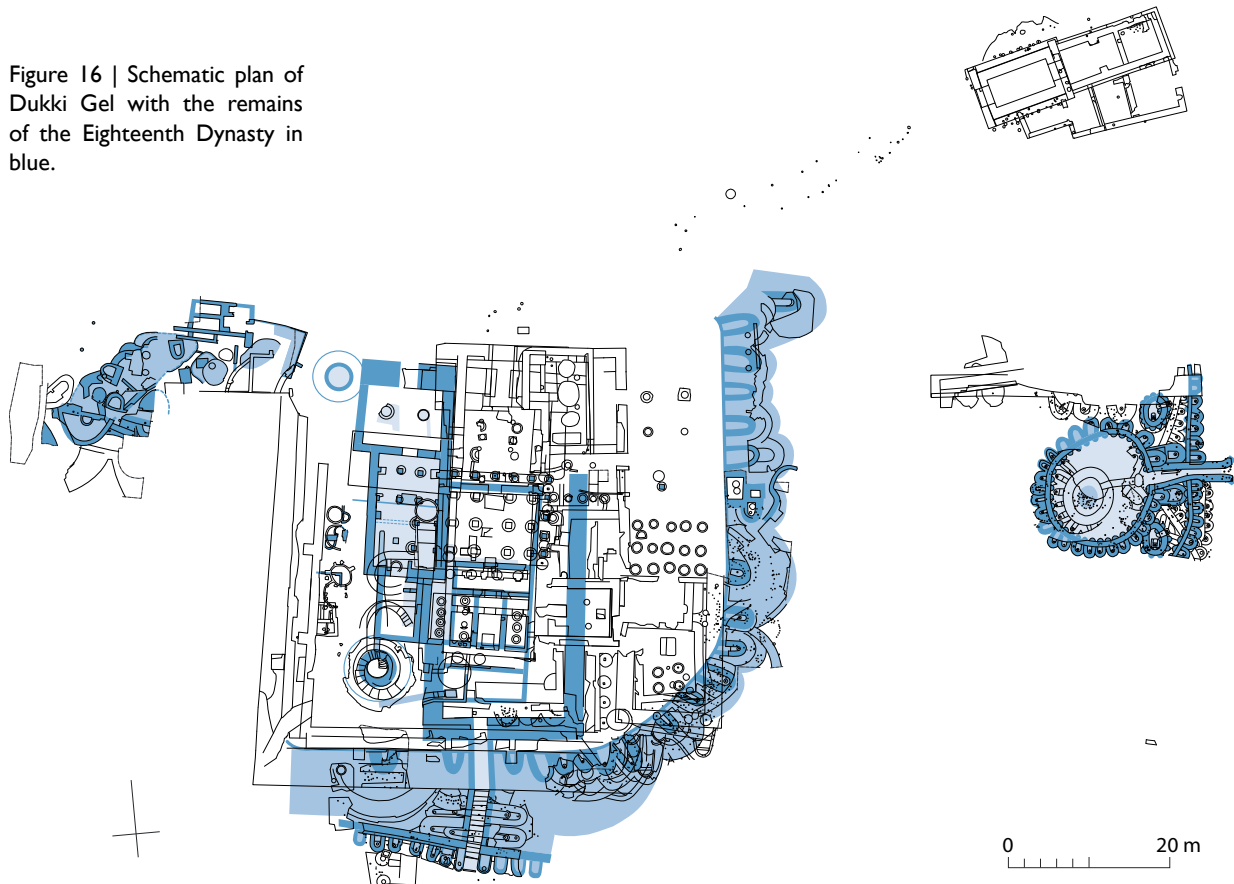


Figure 17 | View of the entrance to the main temple.



These huge fortifications, which follow Nubian architectural tradition, were first constructed by Thutmosis I and II, and probably by the last king of Kerma as well. West from the entrance, two circular bases linked by mud brick wall ties might indicate important architectural features that remain to be uncovered in the southern sector. The remains of a Napatan circular silo and a wall dated to the same period were also identified in that area. These large food reserves belonged to a workshop where offering breads were made in terracotta moulds. The accumulation of these bread moulds eventually created the hill of Dukki Gel.

#### A Nubian religious centre

The Napatan circular temple discovered two years ago is related to an architectural complex founded at the beginning of the New Kingdom (Bonnet 2007). The remains of two other circular temples were discovered this year, under *galus* columns dated before the campaign of Psamtik II. The older of the two is of oval shape and includes postholes at its centre, which indicate that the naos was a hut. The temple measures 4,5 by 3,75 meters from the inside and its walls are 1,25 meters thick; it is reinforced by 12 rounded buttresses. This unusual building is comparable to the second oval temple, which measures 15x3,75 meters on the interior and has walls 0,65 meter thick. It encircles the ancient temple and also comprises rounded buttresses, which resemble a crown around the unit. Rectangular postholes located in these buttresses appear to form a system of reference markers used during the construction phase.

To the east once stood the monumental entrances of these two temples. While the door of the first construction was relatively simple in conception, the entrance of the second was more elaborate. It included two parallel buttresses linked to a wall with many small bastions that encircled the entire complex (fig. 18).



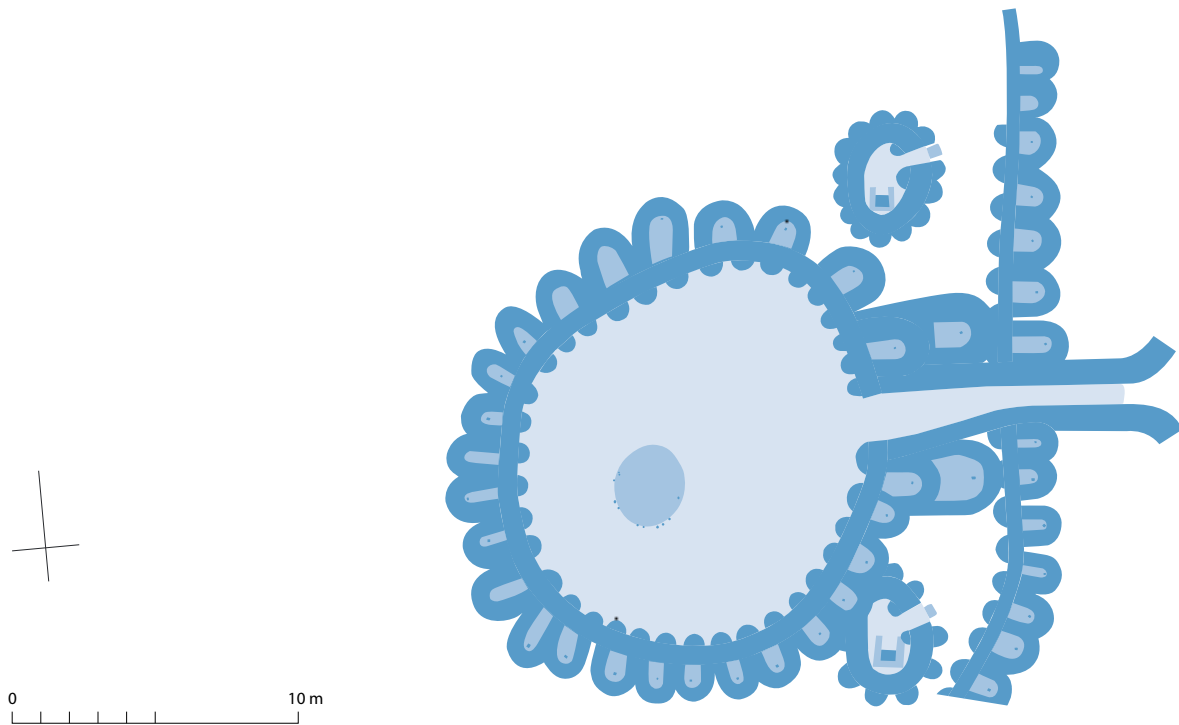
Figure 18 | View of the fortifications of the circular temple.

Although the dimensions of the latter were less important than those of the Egyptian temple complex located to the west, it nonetheless evokes a similar idea expressed in Nubian style (fig. 19). The dating of these two circular temples was possible due to the great quantity of sherds - even if of small dimensions. The majority was dated of the Eighteenth Dynasty, whereas less than a quarter of the assemblage dated to the end of the Classic Kerma period.

#### The central temple of the Egyptian complex

In order to narrow down the relative chronology of the succession of temples erected at the beginning of the New Kingdom, the excavations begun last year south of the central temple continued. The sanctuary wall of Thutmosis I was cleared for a few meters. In its south-west angle it was built around and then cut by later buildings erected by Hatshepsut - a large wall measuring 2.4 meters wide, with an entrance in the same axis as the central temple. A staircase coming from the south goes through the fortifications of the religious complex. Under Thutmosis III, the imposing constructions of Hatshepsut were systematically destroyed, resulting in a thick layer of decorated or inscribed blocks, pottery, red bricks, earth and fragments of sandstone.





The overseers in charge of Thutmosis III's construction site used a curious system of measurement. Pits more than two meters in diameter were dug at the base of the interior face of the temenos wall of Hatshepsut's temple. Square-shaped markers of mud brick or stone were discovered at the bottom. After ritually depositing ceramics over these markers and partially filling the pits, a small wall was built to serve as orientation marker for the new buildings under construction. Under the corners of large walls built by Thutmosis III unusual circular mud brick foundations were discovered.

The access to the northern New Kingdom well shall have to be studied in more detail in the future because several construction phases are now obvious. The discovery of two mud brick column bases and a transverse wall indicates the presence of a pronaos in front of Thutmosis I's sanctuary. The access to the well was moved outside the sanctuary, behind the temple. Under Hatshepsut, the direct connection between the sanctuary and the well was turned into an annex, while Thutmosis III later created an underground passage between the two. Finally, Thutmosis IV built a new corridor to reach the west room of the tripartite sanctuary. These architectural details give a better understanding of the ritual activities associated with water and the cult of Amun.

Figure 19 | Plan of the fortifications around the circular temple.

The 2008-2009 excavation season at Dukki Gel, like in previous years, produced a great quantity of ceramic material. Over ten thousand sherds from the six main excavation areas were examined. Three sectors were revealed to be rather interesting with regards to ceramics, in terms of quantity and the nature of the assemblages unearthed.

The first of these sectors is located in the southern portion of the central temple, which includes a part of the successive sanctuaries dated to the first half of the Eighteenth Dynasty as well as the space separating them from the southern enclosure of the religious quarter of ancient Pnubs. Large quantities of sherds had been discovered there during previous excavation campaigns.

This season, the analysis of the masonry erected early during the Egyptian occupation under Thutmosis I revealed that important work was conducted during the reign of Thutmosis III, destroying in part the foundations of earlier buildings. The evidence consists of great pits dug at the time of the construction project, in which the builders placed numerous ceramic vessels during a possible foundation ritual (fig. 20).

Plates, bowls, beer jars, goblets with pierced bottom (of the “flower pot” type) and large jars comprise the majority of these offering deposits (see the inventories of New Kingdom ceramics from Nubian sites ; Holthoer 1977, Williams 1992). Commonly found in religious context, this material follows typological forms found in Egypt at this time as attested by decorations with red bands and, occasionally, a decorative splash (this is generally referred to as “splash decoration”; for studies on this subject see Aston 2006).



Figure 20 | Pits with vessel's deposits dating of Tuthmosis III.

Figure 21 | Destruction layers of a building with Eighteenth Dynasty's pottery.



Also noteworthy is a carefully crafted vase bearing a hieroglyphic inscription displayed in columns, unfortunately fragmentary. Its study has yet to be completed. The majority of these ceramics was probably thrown locally by Egyptian and Nubian potters. The forms and the composition of clays follow the purest of Pharaonic tradition. The majority of the pottery is indeed made in alluvial clay of the types NILE B and NILE C. Moreover, some few sherds are in marly clay (MARL) and could be possible Egyptian importation (for the Vienna system of technological classification of pottery, see Nordström and Bourriau 1993).

The second sector that revealed abundant material is the zone located east of the eastern temple, between the Meroitic pylon and the east entrance, which was cleared in 2007-2008. Thousands of sherds were discovered in the destruction layer of a building. All that remained of it are column bases aligned along the north-south axis of the Meroitic temple wall (fig. 21).

The recovered material dates primarily to the reign of Thutmosis III, as evidenced by the numerous bowls, cooking vessels and red-rim plates (often including splash decoration), beer jars, goblets with pierced bottom, jar stands of various sizes, and storage jars either entirely covered with a red slip or decorated with red and black bands, occasionally on a white background.

Moreover, several seal impressions came to light in this sector. Whereas one of the stamps printed into the mud stopper of a jar might indicate a production demesne, another revealed the name of Pharaoh Amenhotep II, successor of Thutmosis III.

In fact, a portion of the ceramics seems to date to his reign. Such appears to be the case for bowls with wide red bands on the rim or jar stands with a dash of red and yellow colour, the first evidence of the polychromy developed during the reign of his successors (several studies concerning New Kingdom painted ceramics were consulted, notably Hope 1987 and Brissaud 1979).



Figure 22 | View of the first Nubian circular temple.

The third area of interest is the Nubian religious quarter located east of the Egyptian temples. Several development phases of this religious complex were brought to light during the excavations. The clearing of the oldest sanctuary known to date (fig. 22) revealed a particularly interesting ceramic assemblage of which 15 percent is in the Classic Kerma tradition. These wares were mixed with Egyptian material to be dated to the early Eighteenth Dynasty, probably the reign of Thutmose I, at the onset of Egyptian colonisation of the region by the powerful New Kingdom sovereigns.

While the site of Dukki Gel brings considerable amounts of information regarding Nubian ceramics of the first millennium BC, it also offers no less important insight on the Egyptian presence in Nubia during the New Kingdom and on the relations maintained with the metropolis.

The older occupations phases - about which more precise data are brought to light with each excavation season - offer exceptional insight into the transition that occurred in ceramic manufacture, from the ancient and refined tradition of the Kingdom of Kerma to the great “industrial” production of its northern neighbour.

A first inauguration of the Kerma Museum took place on 19 January 2008, bringing together local authorities and representatives of several foreign countries, notably the Swiss ambassador. However, museographic work had not been entirely completed and the construction and installation of the three scale models representing the reconstruction of the main sites had yet to be done. These models were created between the end of 2007 and June 2008; they were the objects of a focus exhibition at the museum of Laténium, which opened on 17 June 2008. The exhibition closed on 25 August, a few days before the models were sent to Sudan. This event was covered by the media (*Le Temps*, *Le Matin dimanche*, *le Courrier*, *l'Express*, regional news reports and two broadcasts on the show “Impatience” on the SSR).

The three models, created by Hugo Lienhardt, represent the Mesolithic hut of El-Barga at the scale of 1/10 (7000 BC; fig. 23), the Pre-Kerma agglomeration at the scale of 1/100 (3000 BC) and the city of Kerma, scale of 1/100 (2500-1500 BC; fig. 24). Following their installation in the Kerma Museum at the beginning of the year, a second inauguration was held on 10 January 2009. The second event was attended by a Swiss delegation comprised of political, scientific and academic personalities, by Sudanese ministers, and representatives from the local and regional authorities. On this occasion, the members of the Sudanese Committee of the Kerma Museum have stressed the importance of the cultural centre located near the museum complex (fig. 25).

Figure 23 | Scale model of El-Barga in the gallery dedicated to the Mesolithic period.





Figure 24 | Scale model of the city of Kerma.

Indeed, this centre will enable studies related to the excavations and the museum collections to be conducted, will increase the interaction between Swiss and Sudanese researchers, and will increase the participation of universities in this field (universities of Dongola, Karima and Neuchâtel).



Figure 25 | View of the museum and the cultural centre during construction.





Figure 26 | Members of the Swiss delegation at the museum on the inauguration day.

The interest shown towards the Museum by the local and regional population in 2008 exceeds our expectations. Whereas foreign visitors count only for 500 admissions (the country remaining difficult to enter), the number of Sudanese visitors is close to 16,000.

This incredible success can be explained by the population's participation in the excavations for several decades, their sensibility towards their cultural heritage and their interest in everything concerning their origins and their identity. The Swiss delegation noted the success of this undertaking and the relevance in developing collaborations in the fields of culture and training, even in a country that appears at first glance to present other priorities (fig. 26).

During the winter 2008-2009, a website has been created which presents the activities of the Swiss archaeological mission in Sudan. Made in French and English, it shows the main activities of the team, the historic of the research, the scientific results, many images, some publications in PDF file and the work on the museum. The address is [www.kerma.ch](http://www.kerma.ch).

## RESTORATION AND PRESERVATION

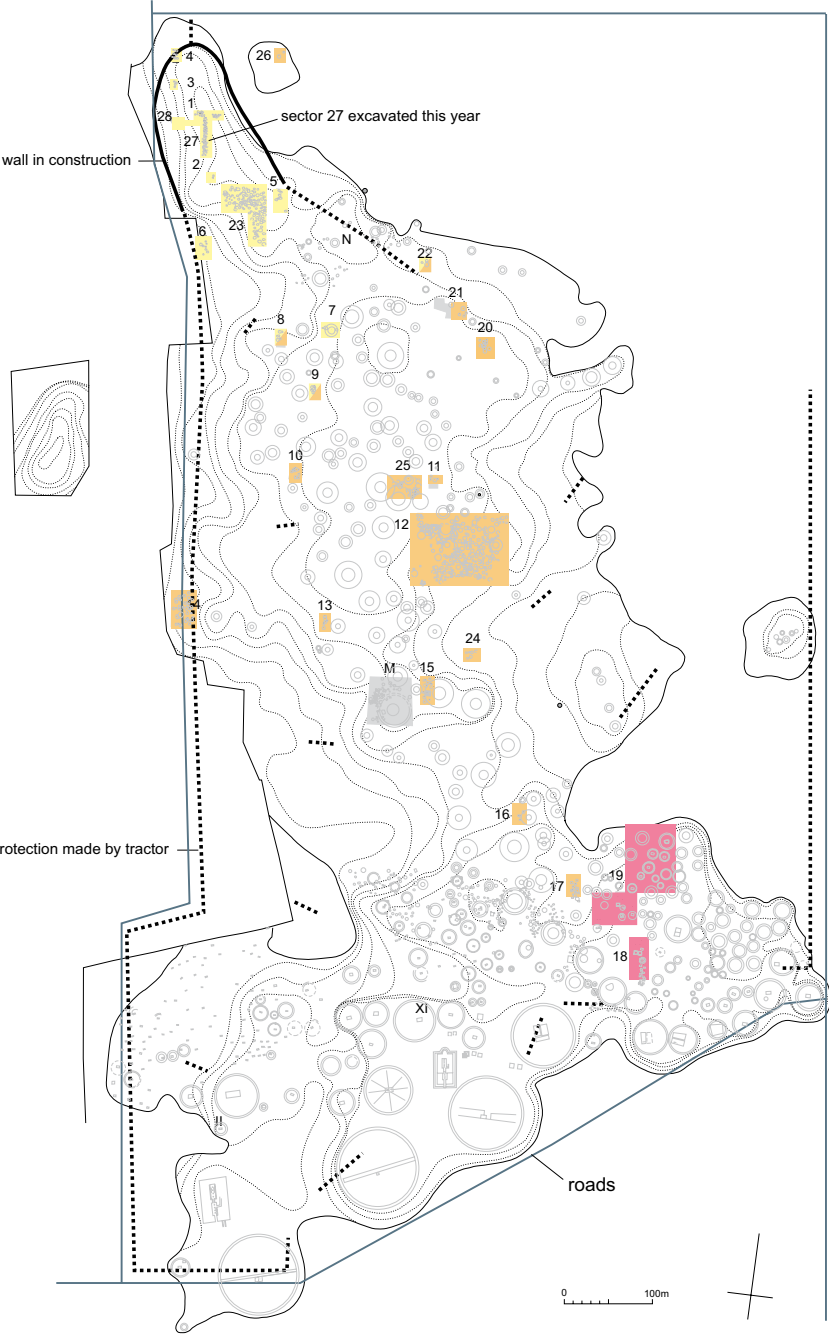
Due to the popularity of the Museum and the site of Kerma, it was necessary to consolidate the stairs leading to the top of the western Deffufa. Cement stairs were built in order to encourage access via them and thus preserve the rest of the temple. In the future, a small wall will be built in the eastern part to block the access to the top from any way other than the stairs.

This year the eastern cemetery suffered from the building of many irrigation canals, which resulted in the increase of lorry traffic and the creation of many new roads across the necropolis. The cultivators maintain their pressure and continually try to extent their agricultural fields in the direction of the cemetery. In response to this situation and in agreement with Mr. Abdelhai Abdelsawi, inspector and curator of the Kerma Museum, we decided to build a *galus* wall that will surround the graves of the entire area and close it to car and lorry traffic (fig. 27). Due to its cost, the construction will take 3 to 5 years to complete. As we cannot wait so long to protect the cemetery, an embankment produced by a tractor was made along the limit of the governmental parcel and a new road has been created (fig. 28).



Figure 27 | Protective wall made of *galus* during construction.

Figure 28 | Plan of the eastern cemetery with the excavated sectors during these last thirty years and the measures of protection taken against the destruction made by vehicular traffic.



Thus, in these circumstances, it was essential to designate a new *gaffir* to watch over the eastern cemetery so that this year's protective measures would not be destroyed after our departure as we strive to preserve this extraordinary funerary area. In agreement with Mr. Abdelhai Abdelsawi, we propose as a *gaffir* the *rais* Khidir Magboul, who has been working with us in the eastern cemetery for the last ten years and who agreed to move with his family to a house near the cemetery.

## BIBLIOGRAPHY

- ASCADI & NEMESKÉRI 1970 ASCADI, G. & NEMESKÉRI, J. 1970. *History of human life span and mortality*, Budapest, Academmiiai Kiadó.
- ASTON 2006 ASTON, D. A. 2006. « Making a splash. Ceramic decoration in the reigns of Tuthmosis III and Amenophis II », in : CZERNY, E. & alii (eds.). *Timelines. Studies in honour of Manfred Bietak, Orientalia Lovaniensia Analecta*, 149, vol. I, Louvain : 65-74.
- BATH-BALOGH & FEHRENBACH 2006 BATH-BALOGH, M. & FEHRENBACH, M.-J. 2006. *Illustrated dental embryology, histology, and anatomy*, 2<sup>nd</sup> edition. Elsevier Saunders.
- BONNET 1999 BONNET, C. 1999. « Kerma : rapport préliminaire sur les campagnes de 1997-1999 », in : BONNET, C. & collab., « Les fouilles archéologiques de Kerma (Soudan) », *Genava*, n.s., 47 : 57-76.
- BONNET 2007 BONNET, C. 2007. « La ville de Doukki Gel après les derniers chantiers archéologiques », in : BONNET, C., HONEGGER, M. & collab., « Les fouilles archéologiques de Kerma (Soudan) », *Genava*, n.s., 55 : 187-200.
- BRISSAUD 1979 BRISSAUD, P. 1979. « La céramique égyptienne du règne d'Amenophis II à la fin de l'époque ramesside », in : VERCOUTTER, J. (ed.). *Hommages à Serge Sauneron, vol. I : Égypte pharaonique (Bibliothèque d'étude, vol. 81)*, Cairo : 11-32.
- BRUZEK 1996 BRUZEK, J. & alii. 1996. « Evaluation des caractères morphologiques de la face sacro-pelvienne de l'os coxal : approche pour une proposition d'une méthode de diagnose sexuelle », in : CASTEX, D. & alii. *Les ensembles funéraires, du terrain à l'interprétation, Actes du Colloque du GDR 742 du CNRS, n° spécial des Bulletins et Mémoires de la Société d'Anthropologie de Paris*, n.s. t. 8, fasc. 3-4 : 491-502.
- HONEGGER 2005 HONEGGER, M. 2005. « Kerma et les débuts du Néolithique africain », in : BONNET, C., HONEGGER, M. & collab., « Les fouilles archéologiques de Kerma (Soudan) », *Genava*, n.s., 53 : 239-249.
- HONEGGER 2007 HONEGGER, M. 2007. « Aux origines de Kerma », in : BONNET, C., HONEGGER, M. & collab., « Les fouilles archéologiques de Kerma (Soudan) », *Genava*, n.s., 55 : 201-212.
- HOLTHOER 1977 HOLTHOER, R. 1977. *New Kingdom pharaonic sites : the pottery*, Uppsala, The Scandinavian Joint Expedition to Sudanese Nubia, vol. 5 : 1.
- HOPE 1987 HOPE, C. A. 1987. « Innovation in the decoration of ceramics in the mid-18<sup>th</sup> Dynasty », *Cahiers de la céramique égyptienne*, tome 1 : 97-122.
- JUDD 2002 JUDD, M. A. 2002. « One accident too many ? », *The British Museum Studies in Ancient Egypt and Sudan* 3 : 42-54 ; <http://www.thebritishmuseum.ac.uk/bmsaes/issue3/judd.html>.
- LOVEJOYE 1985 LOVEJOYE, C. O. & alii. 1985. « Multifactorial determination of skeleton age at death : a method and blind tests of its accuracy », *American Journal of Physical Anthropology*, 68 : 1-14.
- NORDSTRÖM & BOURRIAU 1993 NORDSTRÖM, H. A. & BOURRIAU, J. 1993. « Ceramic technology : clays and fabrics », in : ARNOLD, D. & BOURRIAU, J. (eds.). *An Introduction to ancient Egyptian pottery*, fasc. 2, Mainz : 143-190.



- SCHMITT 2001 SCHMITT, A. 2001. *Variabilité de la sénescence du squelette humain. Réflexions sur les indicateurs de l'âge au décès : à la recherche d'un outil performant*. Thesis presented to Bordeaux I University (unpublished).
- SCHWARTZ 2007 SCHWARTZ, J. H. 2007. *Skeleton keys : An introduction to human skeleton morphology, development and analysis*, 2<sup>nd</sup> edition, Oxford, Oxford University Press : 231-233.
- SCHWARTZ & alii 2007 SCHWARTZ, G. T., GODFREY, L. R. & MAHONEY, P. 2007. « Inferring primate growth, development, and life history from dental microstructure : The case of the extinct giant Malagasy lemur, *Megaladapis* », in : BAILEY S. E. & HUBLIN J.-J. (eds). *Dental perspectives on human evolution : state of the art research in dental anthropology*, New York, Springer Press : 147-162.
- WILLIAMS 1992 WILLIAMS, B. B. 1992. *New Kingdom remains from cemeteries R, V, S, and W at Qustul and cemetery K at Adindan*, Chicago, The Oriental Institute of the University of Chicago, vol. VI.

#### FIGURE ACKNOWLEDGMENTS

- |  |   |
|--|---|
| Matthieu Honegger                            | Figures 1, 2, 3, 4, 7, 8, 9, 12, 13, 14, 15, 24, 25, 27, 28 |
| Bastien Jakob                                | Figures 5, 6  |
| Jérôme Dubosson                              | Figure 10   |
| Laure Bassin                                 | Figure 11   |
| Marion Berti                                 | Figures 16, 19  |
| Charles Bonnet et<br>Inès Matter Horisberger | Figures 17, 18, 20, 21, 22                                  |
| Daniel Conforti                              | Figures 23, 26  |





## SUMMARY

Matthieu Honegger & Charles Bonnet	Archaeological excavations at Kerma (Sudan) • Preliminary report to the 2008-2009 season
Matthieu Honegger & Bastien Jakob	The early Holocene sequence of Wadi el-Arab
Matthieu Honegger	The Pre-Kerma agglomeration
Matthieu Honegger & Jérôme Dubosson	Ancient Kerma graves of the eastern cemetery
Camille Fallet	Palaeoanthropology of human skeletal remains found in the Ancient Kerma graves
Charles Bonnet	Dukki Gel: temples and fortifications
Philippe Ruffieux	The pottery of Dukki Gel
Matthieu Honegger	The Kerma Museum
Matthieu Honegger & Charles Bonnet	Restoration and preservation