



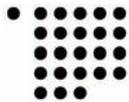
WADI SURA

Field Report
Season 2011-1

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University of Cologne



Cologne University of Applied Sciences

Deutsches Archäologisches Institut
Cairo Department



Deutsche
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Wadi Sura Project

<http://www.wadisura.phil-fak.uni-koeln.de>

Wadi Sura is a joint archaeological and conservation project of

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Institute of Prehistoric Archaeology and
Heinrich-Barth-Institut e.V. (HBI)

Cologne University of Applied Sciences (CUAS),
Cologne Institute for Conservation Sciences (CICS)

Deutsches Archäologisches Institut (DAI),
Cairo Department

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Jürgen Seidel, Bonn
www.kunstwerkfotograf.de



Report on the fourth field season of the Wadi Sura Project (Gilf Kebir, SW Egypt), spring 2011

Rudolph Kuper, Hans Leisen, Heiko Riemer, Olaf Bubbenzer,
Sabine Krause & Jürgen Seidel

1. Introduction

The beginning of the Wadi Sura field season in spring 2011 was originally scheduled for mid-February, but had to be postponed as a result of the Egyptian Revolution that took place following the popular uprising on January 25. Thanks to the mainly non-violent civil resistance during the following weeks of protest, and the turning over of power to the Military in February, the project's field campaign could eventually start during the first half of March. Yet, the field work did not encompass all of our various targets. In the light of a possibly unclear administrative situation and to save the project's budget, the field work was shortened from about eight weeks to a two weeks expedition with seven working days at Wadi Sura, and with only half of the team members. The field work focussed on two work aims:

- (1) Photographic documentation of the paintings and engraving in Wadi Sura II ('Cave of beasts'; see section 2.)
- (2) Geomorphological survey on the sand fill of Wadi Sura II (see section 3.1.) and playa sediments in its surrounding (see section 3.2.)

2. Digital photography of the rock art

A first photographic documentation of the approximately 8000 paintings and engravings in Wadi Sura II ('Cave of beasts') was carried out during the season 2010 by means of digital photo scanning using a 'Linhof Master Technika' camera together with an 'Anagramm' Scanback (**Fig.2.A**) (cf. Kuper et al. 2009b; 2010). This technique provided not only very high resolution pictures, but also the possibility of direct lighting that enabled the photographer to record the painted figures and their colours in highest definition and contrast, while the topography of the stone wall largely disappears. In turn, this technique is less sufficient for the recording of engravings and the docu-

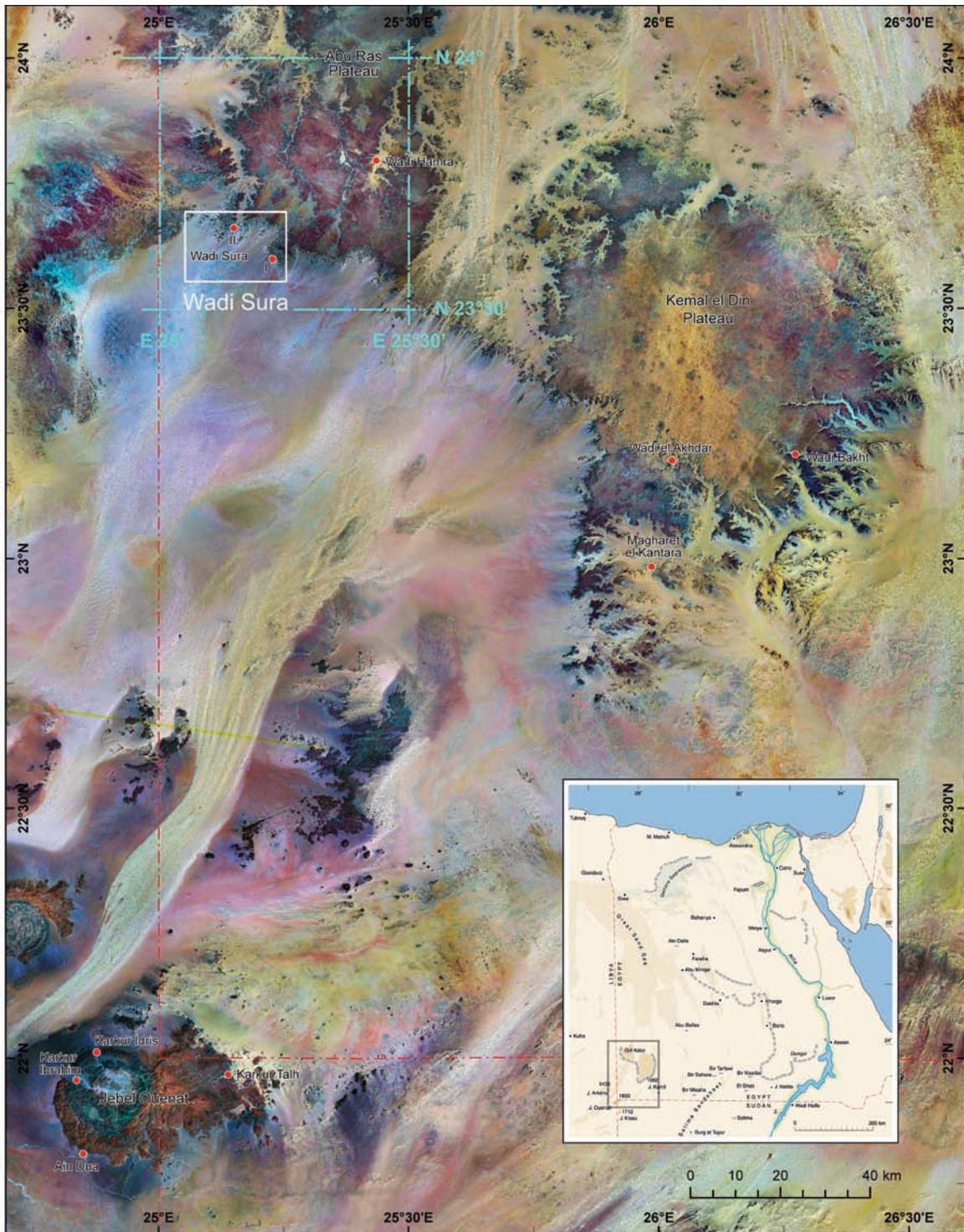


Fig. 1 Satellite map of the Gilf Kebir / Jebel Ouenat region showing the extension of the Wadi Sura Project's concession area (pale blue frame), including Wadi Hamra and Wadi Abd el-Malik, as well as the area surveyed in 2009–2011 (white frame).

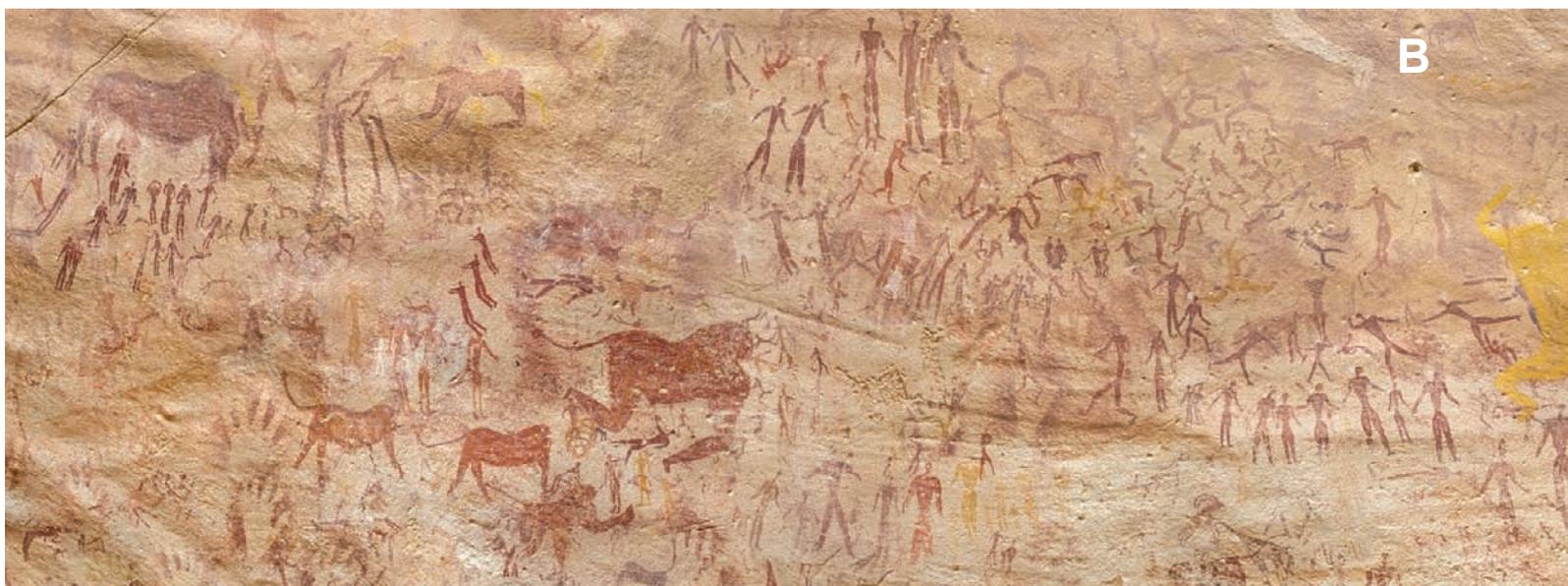
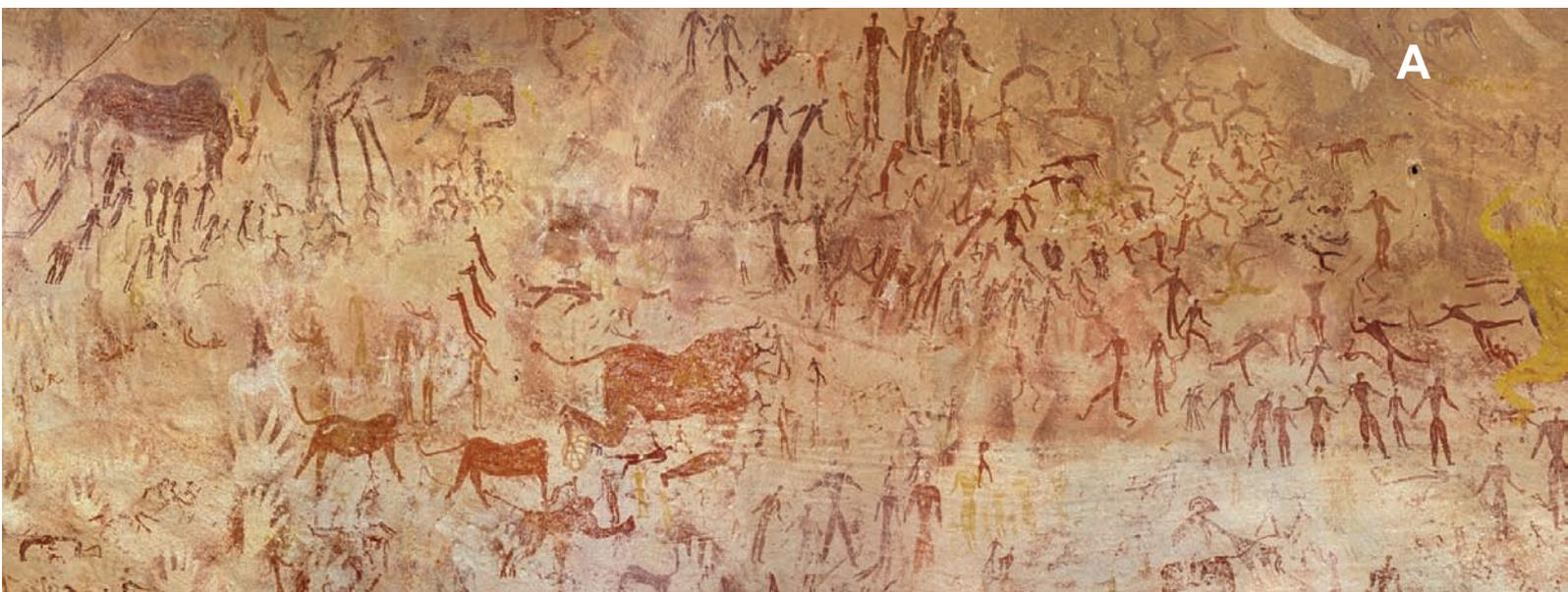


Fig. 2 Two types of photographic techniques applied to the same sheet of images of a 360 x 130 cm sheet in the central part of the rear wall of Wadi Sura II ('Cave of beasts'): Scanback photography carried out in 2010 (A) vs. conventional digital photography in 2011 (B).



A Digital photography using a speedy and high resolving scanback ('Annagramm') with two soft lights enables high definition recording of the paintings and minimal topographic shadowing. The long exposure time of 7 to 35 min per shot, however, requires long working campaigns which are unsatisfactory in the present application.



B Digital photography (Phase One back and body) with two soft diffused flashes from above enables a short working time, while the wall's topography is more pronounced by shadows (see, e.g., lower left and upper right). As a negative effect, the microtopography of the stone, e.g. exposed sand grains, may produce interfering reflections (in particular in damaged parts of paintings).

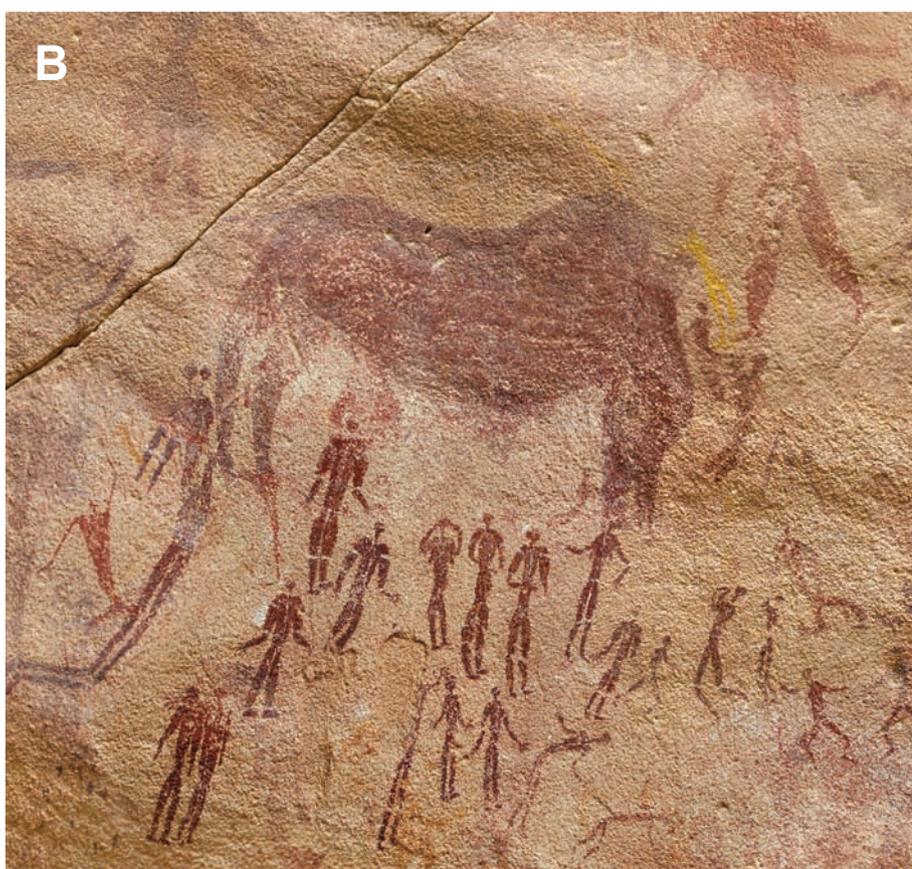


Fig. 2 continued
Sheet detail showing a
'headless beast'.

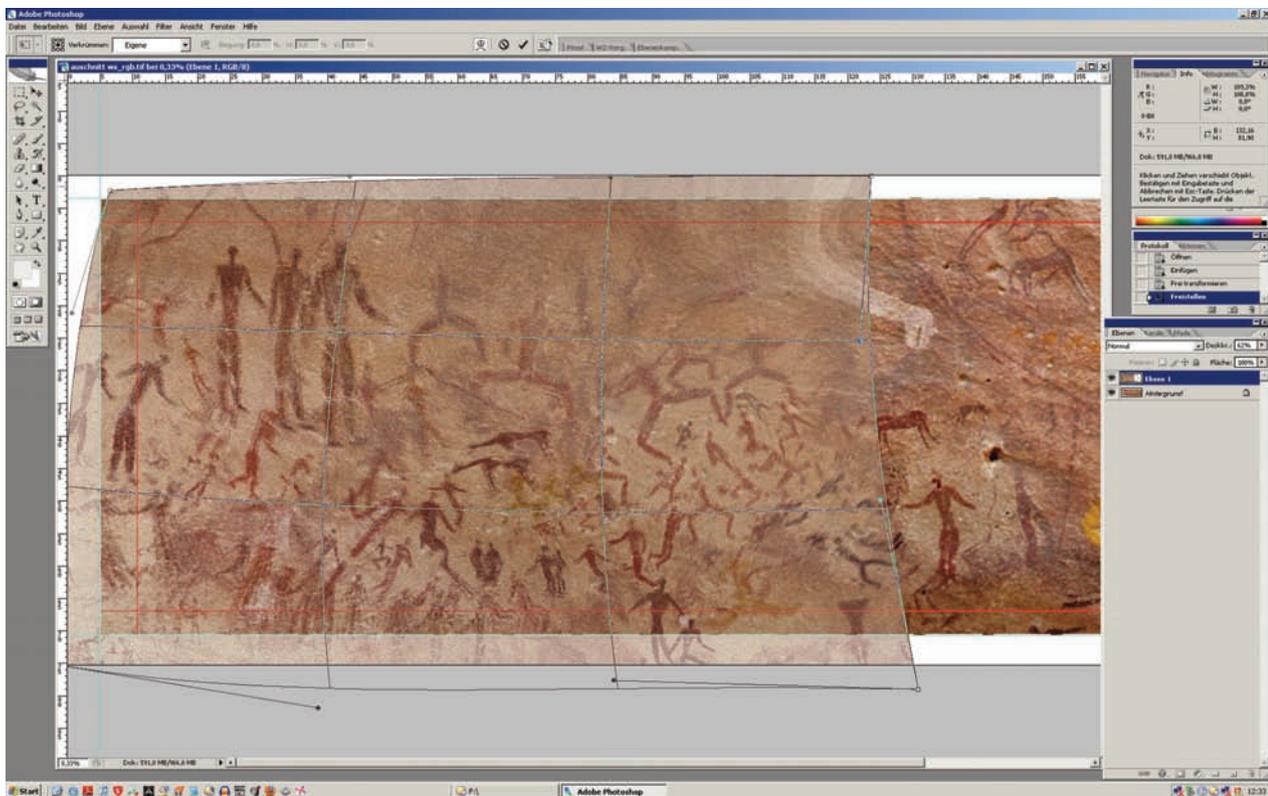


Fig. 3 Rectifying a high resolution picture (overlain) taken in 2010 by means of Adobe Photoshop software. A low resolution picture of the same scene calibrated to scale by the 3D scanning software is underlain.

mentation of the physical properties of the stone. This points to the fact that there is no optimal photographic technique that enables documenting all facets of rock art its entirety. The campaign in spring 2011 was, therefore, devoted to a second complete recording of the shelter's rock art by means of another photographic technique. This technique comprised a computer-operated 'Phase one' digital camera and two flashes from above that aimed at paralleling soft daylight conditions with a slightly higher definition of the topography and the stone (**Fig. 2,B**). Both techniques will allow to document and publish the results in a comprehensive way in order of the requirements needed in archaeology and conservation.

The photographic recording was, moreover, optimized by means of the 3D laser scanning undertaken in autumn 2009 (Kuper et al. 2009b). The 3D modelling of the shelter enabled establishing a grid system on the painted rear wall of about 200 'sheets', each of which has the size of 96 x 67 cm. This grid system was developed in order to publish the photo documentation in a 1:2 scale catalogue volume with one double page having the size of a sheet. The sheet grid was used to justify the individual picture details during photographing in order to minimize the number of photos to be taken per sheet, and likewise to reduce the effort of stitching images together. The individual photographs are rectified by means of Adobe Photoshop software and low resolution photographs calibrated by the 3D model (**Fig. 3**).

3. Geomorphological survey

3.1. Sediment fill of the Wadi Sura II shelter

During the spring 2009 campaign, the sand slope and sediment fill under the rock overhang of Wadi Sura II ('Cave of beasts') was tested by means of a hand auger (Kuper et al. 2009a). The testing indicated a sterile sandy sediment down to c. 3.5 m, without reaching the base of the fill. It was, therefore, decided to test the sediment fill by means of a more appropriate hand drill and coring devices to take sediment samples for further analysis (**Figs. 4; 5**).

Finally, the second drilling in spring 2011 reached a depth of 6.5 m below the current level in the shelter. Again no artificial material were discovered in the core. The sediment seems to change at about 3.5 m below the current surface from eolian sand to a more gritty material that may be interpreted as a horizon of rock weathering. However, further sedimentological analysis is needed to interpret the results more accurately.



Fig. 4 Drilling the sediment fill under the rock shelter of the 'Cave of beasts' (Wadi Sura II) in 2011. The drilling finally reached a depth of almost 6.5 m below the current sand level.

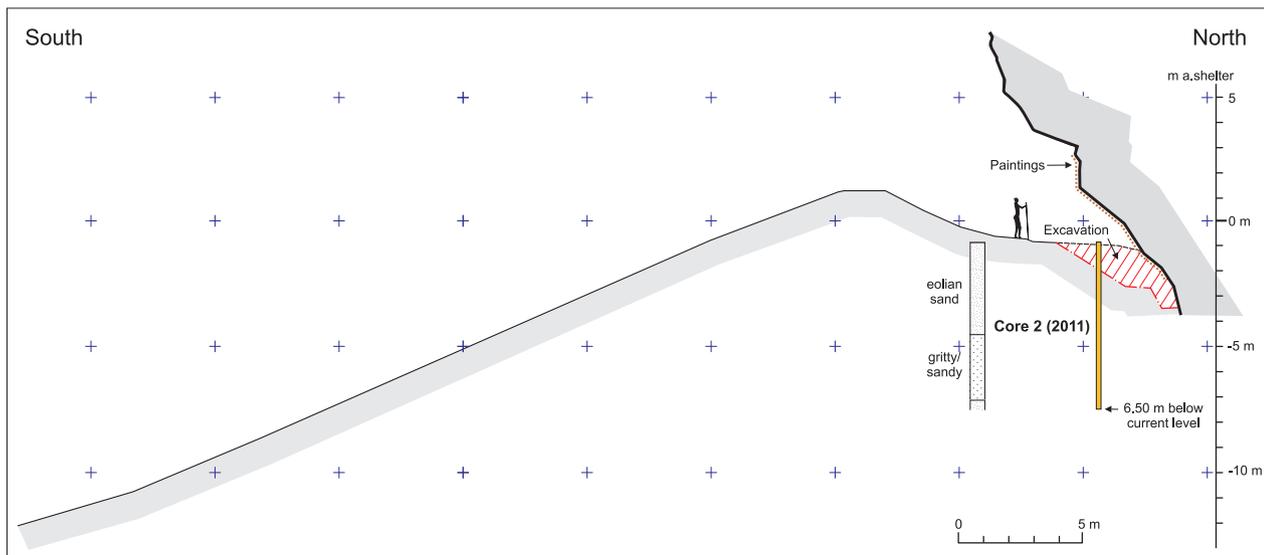
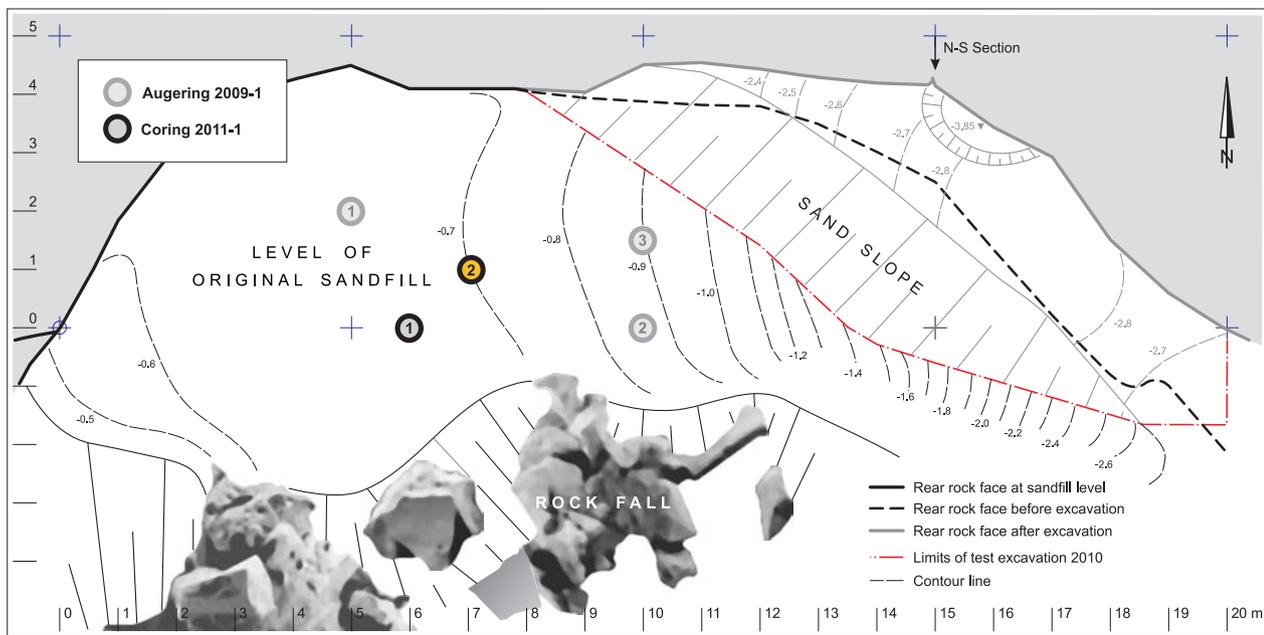


Fig. 5 Plan (top) of the Wadi Sura II shelter ('Cave of beasts') showing the positions of drillings carried out in 2009 and 2011. The second coring in 2011 reached a depth of almost 6.5 m below the current sand level as indicated in the section (below). Note that the core is 8 m west of the section indicated here.

3.2. Playa sediments

The field survey carried out within three field seasons during the years 2009 and 2010 have primarily focussed on the archaeological remains and the location of sites in the landscape. Geomorphological factors were part of the field recording, e.g., as implemented by a topographical and geomorphological check list in the site analysis sheet used during the survey. The survey had, how-

Fig. 6 Survey of the sediments of the middle playa terrace at Wadi Sura 09/1.



ever, indicated the existence of a number of playa sediments in basins, often in close connection to archaeological sites. It became clear that these endorheic basins (basins at the end of a wadi drainage system, where the water does not flow out, but forms an episodic lake until the water becomes completely evaporated) had trapped rainwater during the Holocene wet phase, and that pre-historic people had used the water for consumption. Therefore, it was highly appreciated to gain further information about the chronology and geomorphology of the playa sediments, and their palaeoenvironmental significance.

After a brief check of the possible basins containing playa remnant in the Wadi Sura study area, it was decided to concentrate the work on an in-depth study of the playa basin just in front of the ‘Cave of beast’ (**Fig. 6**; cf. **Fig. 7**). The basin and its artefacts are listed among the site number 09/1. Archaeological remains almost all fall into the so-called Gilf B phase, c. 6500–4400 calBC (**Fig. 7**; cf. Kuper et al. 2009a; 2009b; 2010), indicated by distinctive potsherds and transversal arrow heads found on the western and eastern shores of the former lake. Given that one of the potsherds was found embedded in the upper playa layers, we had initially suggested a mid-Holocene age of, at least, the upper section of the approximately 3.5 m playa sedimentation in this basin.

Although no final evidence is yet given to conclude on the age of the playa sediments, the visual inspection of the playa sediments suggests a Pleistocene age of, at least, the lower and middle parts of sediments. These parts consist of white sediments with varying contents of kaolinite, resembling the calcareous muds of Pleistocene lakes elsewhere; while only the uppermost playa layer appears as a reddish sandy to silty sediment, such as known from numerous Holocene playa pans in the Western Desert of Egypt.

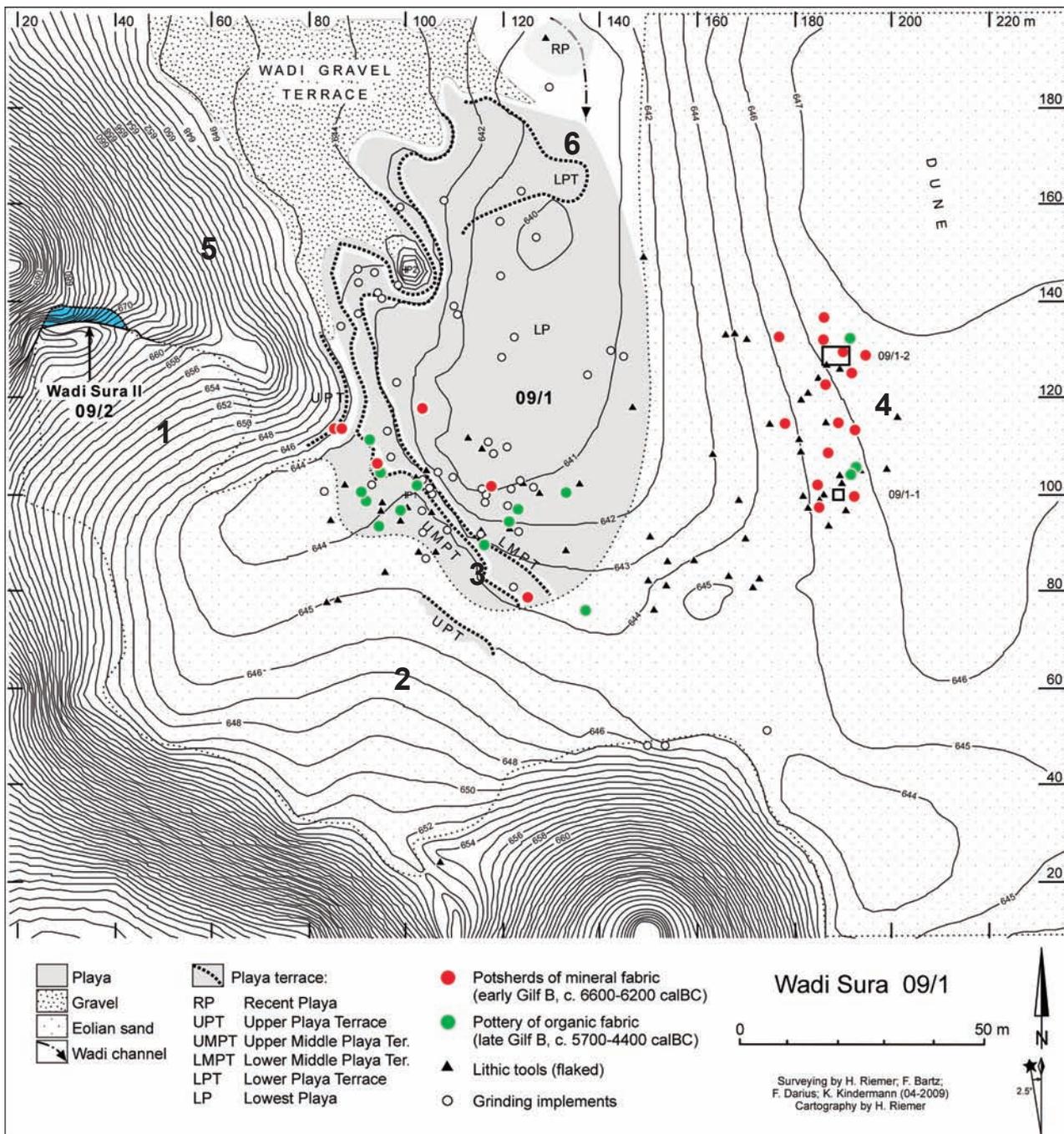


Fig. 7 Topographic map of the playa basin at site 09/1 (based on tachymetric surveying carried out in 2009). The rock shelter of Wadi Sura II ('Cave of beasts') is in the upper left (blue). The approximate extension of the episodic lake during the Holocene humid phase is indicated in gray. Potsherds around the former lake shore are marked in red and green; they can be dated to the mid-Holocene phase Gilf B (c. 6500–4400 calBC). Nos. 1 to 6 refer to sediments shown in **Fig. 8**.



Fig. 8 Sediment from geomorphological units around the 09/1 playa basin (for localisation see **Fig. 7**)

- 1 Eolian sand from the slope in front of the ‘Cave of beasts’ (Wadi Sura II)
- 2 Southern ‘dune’ containing reworked lokal sandstone
- 3 Whitish middle playa
- 4 Eastern ‘dune dam’ mainly composed of reworked sandstone
- 5 Local sandstone
- 6 Whitish lowest playa

To integrate the playas at this site into a model of the geomorphological development of the entire site (**Figs. 4; 5**), the sediments around the basin were studied as well. It appears that the geomorphology of this location is quite complex, because it obviously combines general climatic impacts with affects of the local topography, fluvial activity, and wind erosion or accumulation. It is suggested that the white kaolinites were formed during a more humid phase of the Pleistocene, but subsequently extensively wind-eroded during the hyper-aridity of the terminal Pleistocene, thus forming an endorheic basin when the rains returned during the Holocene humid phase. Along the western shore of the episodic lake, Pleistocene playa sediment were obviously still unclosed during the mid-Holocene, and some of the artefacts dropped onto and into the muds.

During the same time the eastern shore was already formed by a whitish ‘sand dune’ that actually represents fine reworked local debris from the slopes and wadi terraces. On top of this ‘dam’, archaeological material from the Holocene humid phase were found.

The uppermost (reddish) playa is intersected from the lower white playa by a layer of sand that possibly accumulated during a first dry spell at the end of the mid-Holocene. Sand accumulation occurs on top of this reddish playa, though this material is again composed largely of local material. It is only the steep sand slope in front of the ‘Cave of beasts’ that predominantly points to accumulation of eolian sand.

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The team of the fourth field season in spring 2011 comprised (in alphabetical order): Prof. Dr. Olaf Bubbenzer (geographer/University of Heidelberg), Dr. Frank Darius (botanist/ecologist, EEAA Cairo), Dr. Karin Kindermann (prehistoric archaeologist, EEAA), Sabine Krause M.A. (conservator, CUAS), Dr. Rudolph Kuper (prehistoric archaeologist, UoC), Oliver Palm (technician), Dr. Heiko Riemer (prehistoric archaeologist, UoC), Dipl. art. Jürgen Seidel (professional photographer). The Supreme Council of Antiquities (SCA) was represented by inspector Mazhar Ezzet Abd el-Raheen.

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References

Kuper, R. & H. Riemer 2010

Archaeological survey at western Jebel Ouenat, SE Libya. *Libya Antiqua* N.S. 5: 189–199.

Kuper, R., H. Riemer, F. Förster 2009a

Report on the first field season of the Wadi Sura Project (Gilf Kebir, SW-Egypt), spring 2009. Report submitted to the Egyptian Supreme Council of Antiquities. <<http://www.wadisura.phil-fak.uni-koeln.de>>

Kuper, R., H. Leisen, H. Riemer, F. Förster, S. Krause, E. Büttner, F. Darius & K. Kindermann 2009b

Report on the second field season of the Wadi Sura Project (Gilf Kebir, SW Egypt) in autumn 2009. Report submitted to the Egyptian Supreme Council of Antiquities. <<http://www.wadisura.phil-fak.uni-koeln.de>>

Kuper, R., H. Leisen, H. Riemer, F. Förster, S. Krause & J. Seidel 2010

Report on the third field season of the Wadi Sura Project (Gilf Kebir, SW Egypt) in spring 2010. Report submitted to the Egyptian Supreme Council of Antiquities. <<http://www.wadisura.phil-fak.uni-koeln.de>>