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WORKING GROUP on GEOARCHAEOLOGY

International Association of Geomorphologists (IAG)
Association Internationale des Géomorphologues (AIG)

Newsletter 17

December 2016

Edited by Yasuhisa Kondo

The Working Group defines Geoarchaeology as “the geosciences and geographical methods and techniques applied to prehistory, archaeology, and history”. Its aim is to promote Geoarchaeology in an open-minded way and from an interdisciplinary point of view. (Fouache et al. 2010: 307)¹

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¹ Fouache, É., Pavlopoulos, K., Fanning, P. (2010): Geomorphology and geoarchaeology: cross-contribution. *Geodinamica Acta* 23: 207–208. <http://doi.org/10.1080/09853111.2010.9736394>



Out of Africa:

Geoarchaeological research in the Eastern Desert of Egypt

Karin Kindermann, Felix Henselowsky, Philip Van Peer and Olaf Bubenzer

It is generally agreed upon that modern man came from Africa to Eurasia sometime in the last 100,000 years; academics do not, however, always agree on the routes that were taken. This question is the focus of the Collaborative Research Centre 806 (CRC 806; <http://www.sfb806.uni-koeln.de>) “Our Way to Europe: Culture-Environment Interaction and Human Mobility in the Late Quaternary” based at the universities of Cologne, Bonn and Aachen. Within the framework of this large-scale project (funded by the Deutsche Forschungsgemeinschaft, DFG) academics of different disciplines are investigating possible routes that anatomical modern humans (*Homo sapiens sapiens*) may have taken to Eurasia. In this context, Northeast Africa can be considered a key region, as it connects Africa with the southern Levant by the bottleneck of the Sinai Peninsula. The focus of the archaeological and geoarchaeological investigations is on the ancient context of climate, natural environment and culture with a major perspective on the dispersal of human populations.

Initial point for the research in Northeast Africa was Sodmein Cave (*Figure 1*), which is located about 40 km north-northwest of the modern town Quseir in an isolated limestone complex of the Egyptian Red Sea Mountains. Although it was discovered over 30 years ago (Prickett 1979), a systematic scientific research was not carried out until the 1990s by the “Belgian Middle Egypt Prehistoric Project” (BMEPP) of the University Leuven (i.a. Moeyersons et al. 2002; Vermeersch and Van Peer 2012). Nevertheless, many issues are still outstanding at this important archaeological site. Hence, research has resumed since 2010 through cooperation between the universities of Cologne and Leuven within the CRC 806 project A1: “Out of Africa – Late Pleistocene Rock Shelter Stratigraphies and Palaeoenvironments in Northeastern Africa” (Kindermann et al. 2013).

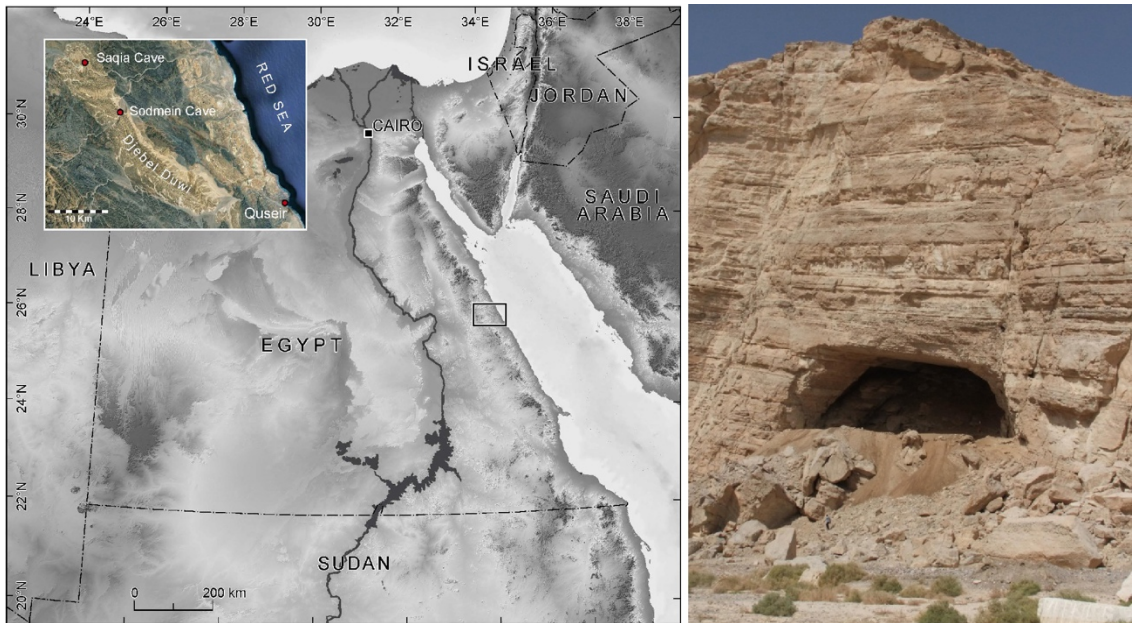


Figure 1: Left: Location of the research area at Sodmein Cave in the Egyptian Eastern Desert (square). The inlay illustrates Djebel Duwi and the site Sodmein Cave. Right: Wadi Sodmein with the cave during excavation 2010.

The sequence of Sodmein Cave – with more than 4 m, containing stratified human occupation debris – indicates that the cave was visited regularly by humans during the Pleistocene, as well as later during the Holocene. The lowest levels can be attributed to the early Nubian Complex, the regional manifestation of the Middle Stone Age (MSA) in Northeast Africa, and have been dated by TL-dates of flint artefacts about 120 ka (Mercier et al 1999; Schmidt et al. 2015). It attests human presence during the last Interglacial and indicates that the environmental conditions were considerably more favorable than the current dry desert climate. The archaeological excavations were accompanied by sedimentological and micromorphological investigations for a better understanding of the site formation processes (Figure 2).



Figure 2: Archaeological and geoarchaeological investigations at Sodmein Cave – i.a. archaeological excavation, micromorphological sampling, sediment analysis and laser scanning.

In the nearer surrounding of the cave several geoarchaeological surveys were conducted, giving a good insight into the former Late Pleistocene landscape development of the area and help to identify potential locations of archaeological finds. By analyzing satellite images in the area around Sodmein Cave, for instance, numerous well-preserved surface remnants (terraces) were documented. Surveys on these old terraces, showing mainly dark desert pavement, yielded preferentially Pleistocene artefact concentrations. Hence, it became increasingly clear that these terraces represent parts of the former Pleistocene surface. Such old wadi terraces and small playa basins in correlation with archaeological finds give us information about the human behavior in this area and provide palaeoenvironmental evidences, derived from sedimentological and morphometrically analysis of the given landscape features.

Unfortunately, the political situation in Egypt changed after the Arab Uprisings in autumn 2010 and fieldwork was not always possible as planned because of unrests, elections or permit delays. Therefore, some of the scheduled field investigations, laboratory analyses as well as datings had to be postponed. Another modern threat is the mining of limestone by heavy machinery in the immediate surroundings of Sodmein Cave (Kindermann et al. 2013). On the satellite images from the years 2003, 2011 and 2016 the influence and destruction of the mining is clearly visible over the years (*Figure 3*).

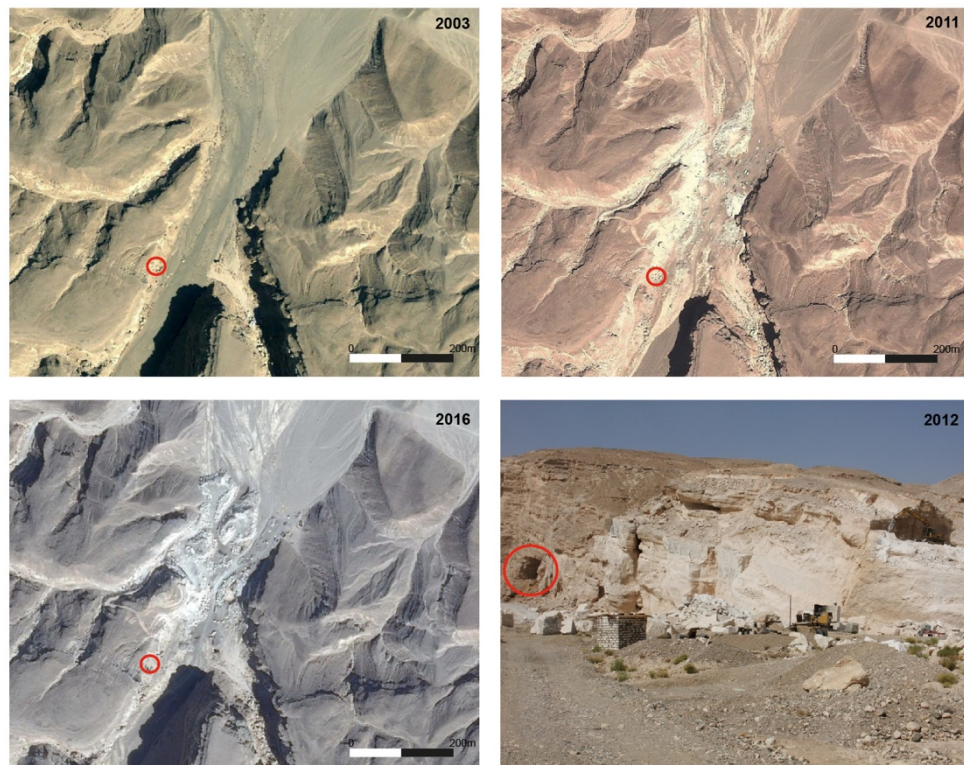


Figure 3: Satellite images (GoogleEarth) from 2003, 2011 and 2016 visualizing the disturbance over the years by the mining company. The photograph from 2012 is showing the limestone exploitation by heavy machinery. The red circle marks the location of Sodmein Cave.

Against this background of the current threats we will continue with the geoarchaeological research in this area, to obtain as much information as possible. In order to reconstruct regional human-nature interactions, it is planned to focus on modeling and the reconstruction of the regional settlement history. Sodmein Cave is an exceptional archaeological site in north-eastern Africa, with a unique stratigraphy of human occupation debris ranging from MIS 5 until the Holocene and hence its investigation promises further insights for the 'Out-of-Africa' debate.

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