Common Aims
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التعاون السودانى-الاماراتى في مجال الآثار
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Uncovering Sudan's Past in its Desert

The projects B.O.S. and ACACIA of the University of Cologne

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The three to eight thousand years ago, Sudan's vast land west of the Nile played an important role for the history of the country and the African continent as a whole. Monsoon rains coming from the south had turned the areas now a barren desert into a savannah-like environment, which allowed people to live and settle there. Their history has been revealed through the past seventy years by the projects B.O.S. (Bildungsforschung der Ost-Sahara) and ACACIA (Arid Climate, Adaptation and Cultural Innovation in Africa). More than 2000 sites have been discovered so far in the Sudanese desert between Laopya Arabi in and Wadi Howar (2). Most of them consist of scatters of stone artefacts, potsherds, bones, and of fireplaces of rock pictures representing important steps of cultural, technological and economical development. Settlements are mostly situated along the shores of former lakes and watercourses. Animal and plant remains are frequent.

These studies of the interrelation between climatic change and human settlement can only be carried out in close cooperation of archaeologists, geoscientists, botanists and zoologists. Working, travelling and living under extreme desert conditions (1) requires special personal and technical skills and major logistical efforts made possible thanks to the support by the German Research Council (DFG) and our Sudanese partners at the National Corporation for Antiquities and Museums (NCAM) and the Geological Research Authority of the Solar (GRAS).

5000 years of history of the Sudanesen Sahara: The case of Wadi Howar

The Wadi Howar, also called the "Yellow Nile", is an extinct system that once connected central Africa with the Nile valley. Human settlements along its course allow to reconsider the history of the interaction between man and environment in the Sudanese Sahara (3-9). In the 6th millennium BC the first settlers in the Wadi Howar region found perfect ecological conditions: permanent oasis in a savannah-type vegetation with large mammals as well as fish. They obtained their food by hunting, fishing and gathering, and complemented their diet with wild grain seeds in evidence through numerous grinding stones. Their pottery was decorated with "Waasy Line" motifs, the earliest ceramic tradition in the Old World.

With the beginning of the 4th millennium BC an economic change took place. Cattle henders are now occupying the large territory of the Sudanese Sahara. A tallennial type of vegetation persists and increasing aider marks the end of this period.
Extended occupation sites along the banks feature countless concentrations of bones and potsherds mainly with the so-called "Letterband" motif (Fig.6).

The Letterband people were the first pastoral nomads in the region and had links to the Nile Valley and later to Chad and beyond.

In the 3rd millennium BC increasing aridity changed people's ways of life again. Sheep and goat, better adapted to a drier climate, were added to the herds in which cattle now played a minor role.

Gathering and hunting was intensively practised to make up the shortage of food. Mobility became of greater importance and slothky was part of the domestic stock.

These changes are also reflected in the pottery decoration where new types of geometric patterns indicate links to the C-group and to the Kerma culture.

The story of human occupation in the Sudanese Sahara ends about 1100 BC when climatic conditions became too hostile for permanent settlement.

A notable exception is a fortress in the lower Wadi Howar some 110 km from the Nile (Fig. 150 metres in diameter, it is the largest construction in the Sudanese desert. It was probably built during Meroitic times and underlines the importance of Wadi Howar as a trade or transit route to inner Africa as late as 2000 years ago.
التصوير النطبي (الطب الأحترافي) في الجيولوجيا والبيئة، حيث تتم تغطية نماذج واسعة من البيئة والأرض، بما في ذلك الجوائز، والمناخ، وال מלאحة، والتنوع البيولوجي، والاسكان، والنشاط البشري، والبيئة. يوفر التصور النطبي أدواتًا مفيدة للعلماء والمختصين في مجال البيئة والبيئة، ويشمل المستخدمين الذين يبحثون في تأثيرات البيئة على البشر والبيئة، وكيفية تعامل البشر مع البيئة، وكيفية التأثيرات البيئية على الإنسان، وكيفية التأثيرات البيئية على الأنظمة البيئية، وكيفية التأثيرات البيئية على البيئة، وكيفية التأثيرات البيئية على الأنظمة البيئية، وكيفية التأثيرات البيئية على الأنظمة البيئية، وكيفية التأثيرات البيئية على الأنظمة البيئية، وكيفية التأثيرات البيئية على الأنظمة البيئية.
Climatic and environmental change

Northwest Sudan is a key area for the reconstruction of past climates and environments of the Sahara. Field evidence obtained during the last two decades indicates new circumstantial watercourses and lake deposits (1) that once covered large expanses of the present-day extreme desert. These sources of water were the basis for plant and animal life, and for early human occupation.

20,000 years ago, the Sudanese desert was much larger and even drier than today, covering half of the country and reaching about 400 km further south than today. About 11,000 years ago (8,800 BC), an abrupt climatic change turned most of the south-eastern Sahara into a savanna. This was the result of a major northward shift of the tropical rainfall belt bringing monsoonal rains some 700 km further north than today, up to the Sudanese Egyptian border (about 22-23°).

During the early-Holocene humid phase, the 110 km long and up to 10 km

التغير المناخي و البيئي

المنطقة الشمالية لسودان هي منطقة حيوية لناقلات Firearms، حيث تم تصميمه على أن يكون مقاومًا للعوامل الطبيعية. وجدت أدلة حقلية تشير إلى أن هناك نهرًا جديدًا ونحاس ف/ac من المياه التي كانت موجودة في مكان لا يمكن تقديره (1) والتي كانت تغطي جنوبًا على حدود السودان محليًا (حوالي 22-23°).

20,000 سنة مضى، كانت غرب السودان أكثر ح 사람ًا وفوقو الرطوبة من اليوم، ويغطي النصف الغربي من البلاد ويبلغ طوله حوالي 110 كم وعرضه 10 كم.ببدأت التغيير المناخي المفاجئ حوالي 8,800 قبل الميلاد، حيث تحولت الغرب بسرعة إلى السافانا. هذا الناتج عن نقل مياه الخريف الشمالي في درجة حرارة يؤدي إلى هطول أمطار شمالي على حدود السودان، وهي تغطي شرقي السودان ومصر بالقرب من حدود السودان. خلال فترة الهولوسين المطيرة المبكرة، كانت هناك نهر طويل بطول 110 كم وعرض 10 كم.
wide Wadi Howar - now a dry wall - was the Nile’s most important tributary from the Sahara. According to the geological evidence, it must have resembled present-day environments in Northern Kordofan 350 km to the south (445). Remains of a wide range of aquatic and savannah animals including fish (6), crocodile, hippo, elephant, rhino and giraffe, and abundant prehistoric artifacts attest to most favourable living conditions. The increased rainfall allowed for intensive human settlement and also led to a high regional groundwater table that supported numerous lakes such as the so-called “West Nubian Palaeo-lake” west of El Atum - once Northern Sudan’s largest freshwater lake (>5,000 km²; i.e., half the size of the Gezira).

About 5,300 years ago (5,200 BC) was the beginning of the desiccation of the Eastern Sahara. The desert fringe shifted southward crossing the Wadi Howar about 3,000 years ago. The lakes vanished and Wadi Howar turned to a chain of marshes until it ultimately became extinct about 2,000 years ago, leaving the entire region deserted. Recent observations along the Wadi Howar however, show a remarkably lush vegetation indicating increasing rainfall during the past few years. This could be a first sign of a trend towards a renewed “greening” of the Sahara, possibly as a result of global warming.
As an outcome of ACACIA's long-term commitment to contribute in the protection of the natural and cultural heritage of northern Sudan and a joint Sudanese-German mission in 1998, a Protected Area centred at the Nile's once most important tributary from the Sahara has been officially declared in 2001 ("Wadi Howar National Park"). The park area covers more than 100,000 km² and stretches over some 500 km from the Sahelian zone to the hyperarid Saharan desert. Africa's largest country now also owns the earth's largest natural and cultural reserve with an outstanding potential for conservation and economic development.

The Wadi Howar region offers a great scenic diversity and a variety of geographical, biological and archaeological features. The park area (2) includes the northern part of the Medaib Hills with their numerous volcanic craters; the Jebel Rahib which can be considered as a Geological Museum (1), the endless granite plains interspersed with inselbergs (3) and crescent-shaped dunes; and the impressive sandstone landforms of Jebel Tagurn and Zolat el Hamud. The Muhu and Nukhala lakes (4) as well as the oases of El Atrim and Layya are distinctive landmarks of the Eastern Sahara.

The escarpments and access routes also offer spectacular sights such as the true "forest in the desert" (5) in the upper Wadi Howar, the picturesque Selima ruins of the Great Selima Sand Sheet, the blue marble hills near Laqqa Omran, the limestone plateau of Jebel Abyad, the huge escarpment of Jebel Negadasha with Wadi Mlik in its foreland, or the vast dune fields in the foreland of the Emnedi mountains.

A major reason of WHNP is the preservation, inhabitation or reintroduction of wildlife adapted to desert environments such as addax, oryx, barberry sheep, doncas and other gazelles, which still were abundant about 50 years ago, but also cheetah, ostrich, falcon and other species. This increasing vegetation along Wadi Howar and Wadi Maghar is a recent asset. As yet unaffected by tourism, Northwestern Sudan retains the last occurrences of intact Neolithic and Palaeolithic surface sites in the Sahara. Among the prominent archaeological features are the rock art of Zolat el Hamud and Wa-
The development of the Wadi Howar area means utilizing the economic potential of a vast, presently almost waste region. It will enhance and complement the country's attraction by environmentally sustainable desert tourism. The involvement and improvement of the living conditions of the local population is a prerequisite for its success. The protection of Sudan's unique desert heritage is of utmost importance for present and future generations.

The declaration of WHNP was the crucial move forward to prevent any avoidable damage from northern Sudan's national heritage by uncontrolled off-road tourism, illicit hunting and industrial use that have ravaged other Saharan regions. Next steps comprise the proposal and minimization of Natural and Cultural World Heritage sites, the quest for funding, and the design and implementation of appropriate management plans.