

Neolithic settlement around the paleolake of Gebel Ramlah (Egyptian Western Desert): genesis, chronology, settlement systems and economy between the 10th and 4th millennium cal BC

Today the Sahara is the largest, extremely dry desert in the world, covering an area of over 9 million sq. kilometers, and one of the most inhospitable regions. However, not always it was so inaccessible territory. Just after the Ice Age (ca. 9550 years BC) climate became more humid, changing the desert into a green savannah for another several thousand years. A typical feature of the environment of the Egyptian Western Desert (eastern part of the Sahara) at that times were large seasonal lakes filled with rain waters. Favorable environmental conditions attracted the first Neolithic pastorals, who came there around 9300 years BC and stayed for almost 6000 years, up to the moment the Sahara became dry again.

One of such lakes is located ca. 1500 km west of Abu Simbel and the Nile valley, by the foothills of a rocky massif of Gebel Ramlah that stays ca. 100 meters above the surrounding desert. During last several years traces of numerous settlements and unique burial complex were discovered and partially studied. This last contains six cemeteries including the one for newborns, numerous single burials and small aggregations of graves. Some of the settlements were very large and permanently inhabited while the others only seasonal. Today, on the desert surface numerous objects of everyday life left by prehistoric people are visible, like fragments of clay pots, ostrich egg shell containers, flint and stone tools, grinding stones etc. Differences between concentrations of such artefacts are different enough to reconstruct various zones of activities within villages. One may notice there traces of habitation units, fire-places for food preparation, economic zones where eatable plants were processed, flint workshops and even places, where animals were tied.

The main scientific problem aimed to be solved is the reconstruction of settlement history of the area around palaeolake of Gebel Ramlah inhabited by Neolithic pastoral societies between ca. 9,300 cal BC (first dated traces of El Adam settlement) and the end of the Neolithic, ca. 3600 cal BC. It will include: **1/**. Defining the main settlement stages and its absolute chronological framework; **2/**. Description of settlement systems; **3/**. Characterization of functional differentiation of settlements; **4/**. Reconstruction of subsistence of the pastoral societies; **5/**. Recognition of genetic connection of different Neolithic populations; **6/**. Recognition and description of symbolic behaviors; **7/**. Reconstruction of the paleoenvironment in each period/phase; **8/**. Description of changes in the main categories of archeological finds.

To reach project's goals it is planned to carry out archaeological excavations, field prospections, geological and geomorphological research, GIS analyses and studies of main categories of archaeological artefacts, specialized analyses (microfauna, paleobotanical macroremains, anthracological, phytoliths and starches analyses, studies of food remains o pottery, bioanthropological and traseological research, human and animal aDNA analyses, geochemical and sedimentological analyses of rocks and sediments, stable isotopes, mineralogical and physio-chemical analyses of pottery, ¹⁴C and OSL dating). Studies and analyses will be conducted by specialists of each branch of science.

Completion of the project objectives will have fundamental importance for research on human populations inhabiting the Western Desert in the Holocene. This is the first comprehensive, interdisciplinary research project in this region, respecting and correlating settlement studies with sepulchral context. Therefore, for the first time there is a chance to record and follow more precise genetic relations of local Gebel Ramlah populations with those living in northern and central Africa. In consequence, Gebel Ramlah will be used in future as a reference point for other projects conducted in northern and central Africa.