
Magnetic method in the study of environmental context of settlement: case studies from Fayum Oasis (Egypt)

Tomasz Herbich*¹

¹Institute of Archaeology and Ethnology, Polish Academy of Sciences (IAE PAN) – Al. Solidarności 105
00-140 Warsaw, Pologne

Résumé

Research at two Greco-Roman sites located on opposite sides of the Fayum oasis well illustrates the potential of geophysical methods in paleoenvironmental studies. One site, Philoteris (Medinet Watfa), was located at the edge of the desert, and agriculture was possible here only thanks to water supplied by channels. The other, Al-Qarah al-Hamra, was located on the north-eastern bank of Lake Karanis, covering the lowest part of the oasis. Surface investigations, satellite image analysis and magnetic studies (DAI project) have allowed to accurately reproduce the plan of channels in Philoteris. Magnetic studies have shown, however, that one of the channels, dug to the depth of 4 m in the bedrock, was not used. The study showed a lack of magnetic Nile mud deposits, present in other channels. The crisis in water management in this part of Fayum in the 4th century is confirmed by written sources.

The settlement in Al-Qarah al-Hamra was found due to the presence of pottery fragments on the surface. The site lies on a flat area covered with a layer of sand, with no traces of architecture on the surface. The magnetic map (UCLA and Groningen University project) gave a clear plan of the settlement. In the north-eastern part (further from the lake), a strip of disturbances was registered. Analysis of the magnetic image allowed to hypothesize that the settlement was destroyed as a result of a sudden increase in the lake's water level. The zone of disturbances corresponds therefore to the accumulation of mud material from buildings washed out with water. Archaeological sounding confirmed that the settlement was destroyed by flooding. Ceramics from the settlement do not exceed the 4th century. The lack of water in Philoteris and the flooding of Al-Qarah al-Hamra – both registered by magnetometry - are probably a consequence of the same phenomenon. Water was supplied to Philoteris from an artificial reservoir (fragments of the dam are still preserved), fed with water from the Nile. A cataclysm (earthquake?) probably destroyed the reservoir. This stopped the supply of water to settlements located significantly above the level of the Karanis Lake (such as Philoteris), and simultaneously caused an increase in water level in the lake, leading to the destruction of settlements located at the lake shore (such as Al-Qarah al-Hamra).

Mots-Clés: Ancient Egypt, Greco, Roman period, Fayum oasis, magnetic method

*Intervenant