

Remote Sensing and GIS Applications in the Study of the Geographical Distribution of Ancient Settlements in the Kafr el-Sheikh Governorate in Northern-Central Delta, Egypt

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This paper explores the potential of geographical methods, combined with toponymical and historical research in explaining the regional distribution of historical settlements in the northern-central part of the Nile delta in Egypt. The geographical analysis was based on satellite remote sensing, studies of ancient maps, limited field control and overlay techniques applied in a *GIS*.

The study area corresponds to the present governorate (province) of Kafr el-Sheikh. The aim of the project was to get an overview of the position of ancient settlements and to analyse how toponymy and linguistic studies could contribute to a tentative dating of such places. This paper focuses on how landscape information was revealed and combined with research in humanities.

The study focus is on a relatively late period in Egyptian history. The area was probably sparsely populated until it shifted from wetland pasture to more intense land-use as a result of Roman drainage projects. The northernmost part of the area was extensively settled only during Late Ptolemaic-Roman times and again abandoned in the early Islamic period. The northern part of the study area is dominated by abandoned settlements (tells) from the period, whilst most of the still existing villages from the same period lie in the south, *i.e.* on higher ground that have been less prone to large-scale environmental change.

Various types of satellite data were used in the study, *i.e.* Aster, Landsat *ETM*, Spot *XP* and *IKONOS*. Ancient maps surveyed by the French expedition to Egypt 1798-1801, topographical maps from the 20th century and modern photogrammetry based topographical maps were used in the same GIS to analyse landscape change during the last centuries.

Only 78 tells (ruin mounds) in the study area are registered by the Egyptian Supreme Council of Antiquities (*SCA*). They, however, represent only a small portion of the ancient settlements, which could be traced and identified. As a result of the integrated study approach almost 300 ancient settlements could be identified in the study area.

Key words: *Toponymical, Linguistic, Ptolemaic-Roman, Photogrammetry, Settlements*