

Kanalia 2

Satellite Remote Sensing and Historical Aerial Photography Survey

A GeoEye-1 image from 4 May 2010 was used for satellite remote sensing at Kanalia 2 (Figure 1). The satellite image has an off-nadir angle of 9.9° and a ground sampling distance (GSD) of 0.50 m (panchromatic) and 1.80 m (multispectral). In addition to the satellite imagery, an aerial photograph from 24 May 1982 with a scale of 1:30,000 was used for remote sensing (Figure 2).

Kanalia 2 lies in relatively flat agricultural land surrounded on the north, east and south by the foothills of Mt. Pelion. The artificial Kanalia reservoir borders the western side. Various streams and irrigation channels pocket the terrain. There are few modern constructions apart from a scattering of farm installations. Olive tree and/or citrus tree cultivation predominates, although other low standing crops are grown. Elevations range from 50-80 masl in the agricultural region. Kanalia 2 is wedged in between an irrigation canal to the north and greenhouses to the south. The 1982 aerial photograph shows that these modern features cannot be more than 30 years old. In general, there appears to be little else that has changed around the site in the 30 years between the datasets. Two small stream beds also lie immediately to the east and south. The excavations of the Neolithic site are clearly visible in the satellite imagery. One notes a trench approximately 30 m x 20 m and excavated remains of walls. In the adjacent field to the west the boundaries of perhaps a future trench have been demarcated.

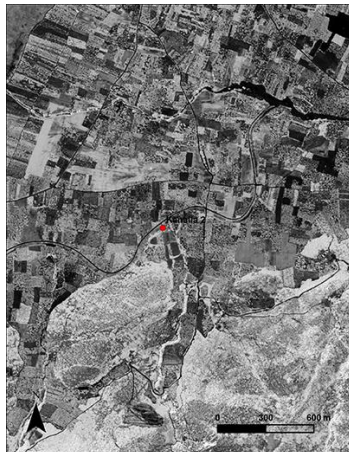
Beyond the visible architectural remains (Fig.5) in the satellite imagery, nothing else was extracted from this site from remote sensing (Figures 3-4). It is most probable that we are dealing with an isolated house, or a complex of small building, and not a magoula, and this would explain the difficulty in extracting surface anomalies from the satellite imagery. Vague suggestions for more architectural wall relics are shown to the east of the excavated complex. Most of the other surface anomalies in a 1 km radius around Kanalia 2 are hydrological features (blue) from former stream beds and/or seasonal flooding. A handful of anomalies have roughly circular forms (yellow), but this may be from concentrations of water. A few others are likely from agricultural activity, such as former plow lines (brown).



Figure 1. Kanalia 2 from a 4 May 2010 GeoEye-1 image



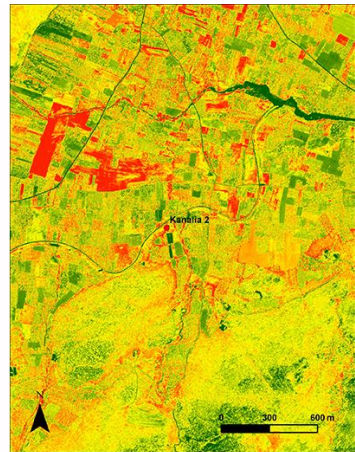
Figure 2. Aerial photograph of Kanalia 2 from 24 May 1982



ARVI



Decorrelation Stretch



Green NDVI



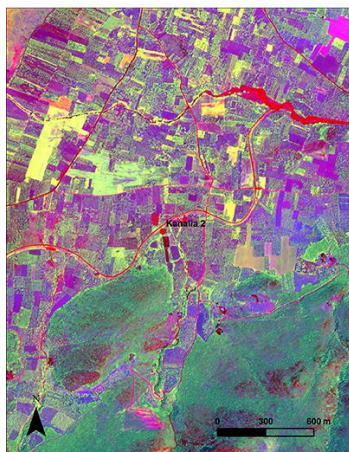
MSAVI



MSR



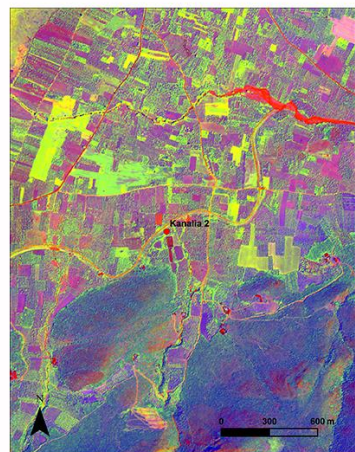
NDVI



PCA



RGB to IHS



Tasseled Cap

Figure 3. Spectral filters and vegetation indices applied to the 4 May 2010 GeoEye-1 image around Kanalia 2

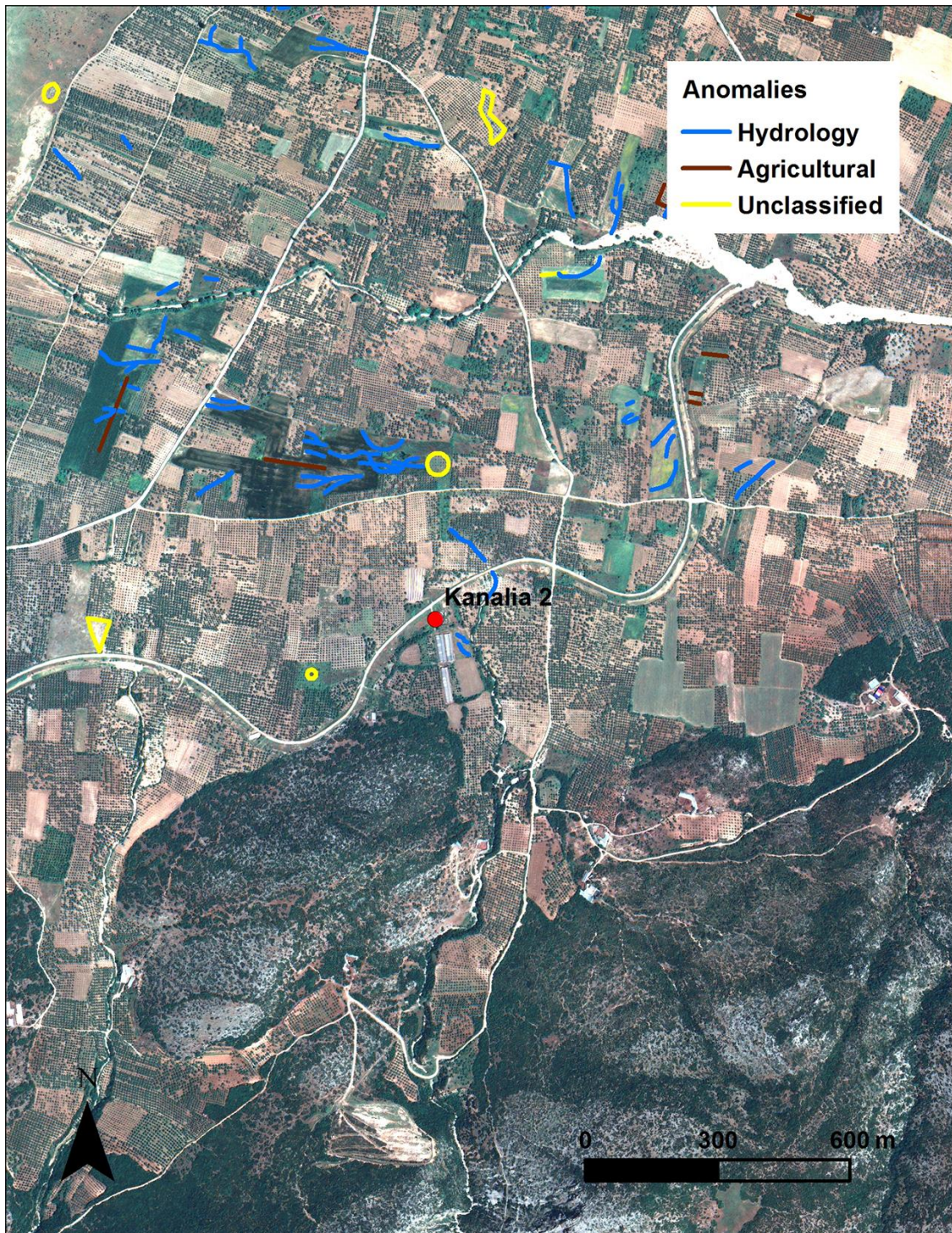


Figure 4. Surface anomalies from the 4 May 2010 GeoEye-1 image within a 1 km radius around Kanalia 2.



Figure 5. Walls surrounding the yard (13x16m) to the south of the house (covered by a modern protection structure) are obvious in the satellite imagery.