Between 11th and 14th February 2012 a geophysical survey was conducted at Antinoupolis, in El Minya Governorate, Egypt. Work was carried out on behalf of Antinoupolis Foundation (www.antinoupolis.org), as part of the fieldwork of the Florentine archaeological mission at the site directed by Prof. Rosario Pintaudi of the Istituto Papirologico at the Universita di Firenze.

Antinoupolis was founded by the Roman Emperor Hadrian on his imperial tour of Egypt in October of 130 AD, although some remains at the site pre-date this foundation, a temple of about 1250 BC from the reign of Ramses II. The city of Antinoupolis was created to be the new god’s (the compound deity Osir-Antinous’s) cult centre, and the city was lavishly endowed with elaborate monuments, including a temple, to celebrate the new god, some of which were still extant at the turn of the eighteenth century, were documented by the French at that time. The city of Antinoupolis became an active Christian centre, with settlement continuing well into the medieval period. Many early travellers’ accounts from this time detail the features of the city including dozens of monasteries and churches and many impressive Roman monuments from the era of the city's foundation, some remaining in use. The city’s population finally suffered a severe decline at some time in the medieval period, and dwindled to the small Moslem village on the riverbank which exists today.

Today the circuit of the city walls enclose c. 113 hectares, forming a rough trapezoid about 1.5 km by 0.75 km., and this area is largely covered with tumbled architectural fragments and enormous mounds of pottery and debris. Outlying associated features are extensive and include cemeteries, monasteries, quarries, and other ancient remains. Throughout the first decades of the twentieth century the city's surface was excavated and disturbed by locals looking for treasure and fertilizer from the silt-rich mud brick and by early excavators, such as Albert Gayet and J. de M. Johnson, looking for inscribed papyrus fragments and mummies. Some very interesting papyri were recovered, although the evidence recorded little information about the city’s inhabitants or urban form.

The 2012 geophysical survey season was designed to test two specific survey techniques at the site with a view to commissioning future geophysical survey at the site to map the extent and nature of buried archaeological deposits associated with the Hadrianic, late antique and early medieval city and its associated necropolis. The techniques of magnetometry and Electrical Resistivity Tomography (ERT) were applied at the site to trial the effectiveness of the methods.

Four areas were surveyed using magnetometry (Fig. 1) to assess the effectiveness of the technique over differing geological and archaeological deposits. Area 1 focused on part of the ancient city in the immediate vicinity of the mission house, adjacent to...
an open SCA excavation trench. Area 2 was located over deposits in the wadi to the north of the city and the north cemetery to assess the use of magnetometry in locating mud-brick tombs and ceramics in sandy deposits. Area 3 was located at the northern end of the Cardomaximus to assess the tell deposits in the area associated with a large depression at the end of the principal street of the site, and Area 4 focussed on the East Gate of the city, to assess the mixed sandy and tell deposits in the area, and find the possible remains of a large structure supposedly located in the area (Fig. 2). In addition three ERT profiles were surveyed (Fig. 3) at the site, to assess the application of the technique, and to measure the depth of archaeological deposits across the harbour edge of the city (Profile 1), the wadi crossing along the Cardomaximus (Profile 2) and the remains of the hippodrome to the north of the city (Profile 3).

Figure 2 Magnetometer survey being conducted at the East Gate

The results of the survey indicate that both techniques of magnetometry and ERT work effectively at Antinoupolis. The magnetometry in areas 1 to 4 indicate the presence of buried archaeological deposits in varying degrees of preservation, with the results from areas 2 and 4 providing the clearest indications.

Results from the cemetery and wadi in Area 2 (Fig. 4) indicate the presence of extensive mudbrick tombs across the shoulder of land at the entrance to the wadi, corresponding with dumps of ceramic and animal bone in the area. The bottom of the wadi itself appears to be devoid of structural remains, although some tombs are present in the results along the channels on the north side of the wadi.

Results from Area 4 in the vicinity of the East Gate provide the most impressive example of the response to magnetometry from the 2012 season (Fig. 5). The line of the defensive city wall is visible, with an inwardly curving entrance at the East Gate. Within the walled area two sets of triple foundations mark the northern and southern sides of a massive peristyle or structure with outer paving and structures immediately to the north-east. A line of possible column bases marks the north-eastern side of the structure, with two large rooms or chambers marking the sides of the entrance to the feature. An open area in the centre of the structure is visible, together with a number of smaller rooms. The dimensions of the structure, at 95m across and at least 130m in length, gives an indication of the scale and nature of possible buried archaeological features associated with the city.
Results of the first season of survey at Antinoupolis indicate that magnetometry applied within the city, and across the necropolis of the city, would assist in understanding the layout and nature of the urban plan and cemeteries at the site. Targeted ERT survey will also help to address some of the more specific questions about the possible harbour area of the city and the sub-structure of the larger edifices. It is hoped that more exciting results will be forthcoming in the following seasons of work.