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An UMO landed on the Via Appia. Results of the Minor Centres Project in the Pontine plain, Lazio (Italy)

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The presentation will illustrate how large-scale magnetometer surveys can contribute to a better understanding of the scope and function of Roman rural centres in central Italy. Apart from discussing the remarkable results of the surveys linked to the project's main research objectives, it will also focus on a huge complex of magnetic anomalies detected next to the Via Appia, referred to as UMO (Unidentified Magnetic Object) as we have yet to find an explanation for it.

The Minor Centres Project at the Groningen Institute of Archaeology (GIA) aims to investigate the role of minor central places in the economy of Roman Central Italy. The core of the project is formed by field research on three rural central places: the sites of Astura, Forum Appii and Ad Medias (Fig. 1), all situated in the Pontine region (Lazio, Italy). These sites and their respective hinterlands are currently investigated through fieldwalking and magnetometer surveys, while specialist studies of the material evidence, predominantly pottery, help to reconstruct economic interaction and exchange.

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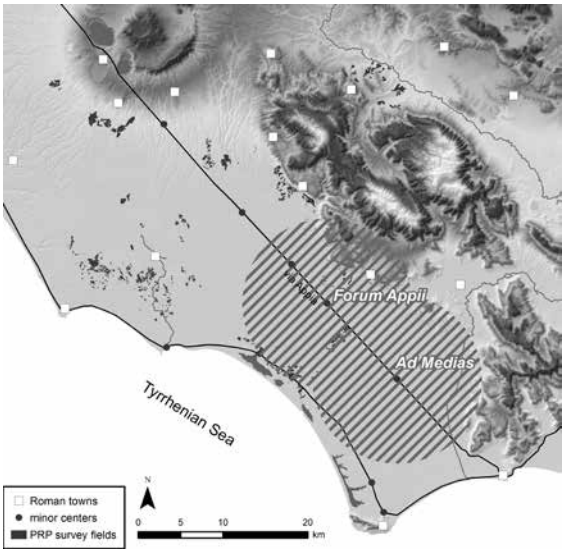

Fig. 1. Location of minor centres along the Via Appia and the investigated areas in the Pontine plain

The magnetometer surveys were aimed at the identification and interpretation of buried archaeological remains associated with the surface material scatters, and at establishing site extent. Different techniques were applied by several investigators, depending on local measuring conditions. Dual gradiometer systems (Bartington, Geonics) were applied to cover small plots in all three areas. To cover large areas on the two sites along the Via Appia, Forum Appii and Ad Medias, a DGPS controlled ten-gradiometer cart system LEA MAX (Eastern Atlas) was used.

The LEA MAX system consists of a light-weight frame carrying several sensors in parallel array, a GPS antenna (rover) and a digitizer LEA-D2 controlled by a mobile PC as a registration unit. For the magnetic survey in the Pontine plain, FEREX (Förster) gradiometer probes were used, measuring the difference between two Fluxgate sensors, the vertical distance between them being 65 cm. In large open areas, ten gradiometers were mounted on the frame in parallel array 0.5 m apart (Fig. 2).

The magnetic data from the gradiometers and the position data from the RTK-GPS are registered simultaneously. Measured data can be visualized immediately in the field to assess the quality and to expand the survey area, if worthwhile magnetic structures are detected. This was the case at the Ad Medias site, where unexpected results came to light. Processing in the field included decoding of data streams from sensors and the GPS, normalisation and drift correction calculated for each channel and a gridding-routine to create a map of the parallel profiles. Drift corrections are made over the full length of a profile, which could be up to several hundreds of meters. This corresponds to the dimension of the targeted fields in the Pontine plain.

Despite not exploiting the full potential of magnetic surveys at Forum Appii, where access to the fields in the available time frames was limited, the large-scale magnetometer surveys at Forum Appii and Ad Medias have shown a large amount of features related to subsurface remains associated with economic functions, such as traces of kilns, possibly associated spoil

Fig. 2. Magnetic survey at Ad Medias using the LEA MAX with 10 gradiometer probes; four individual suspended wheels reduce the effect of the heavily ploughed fields

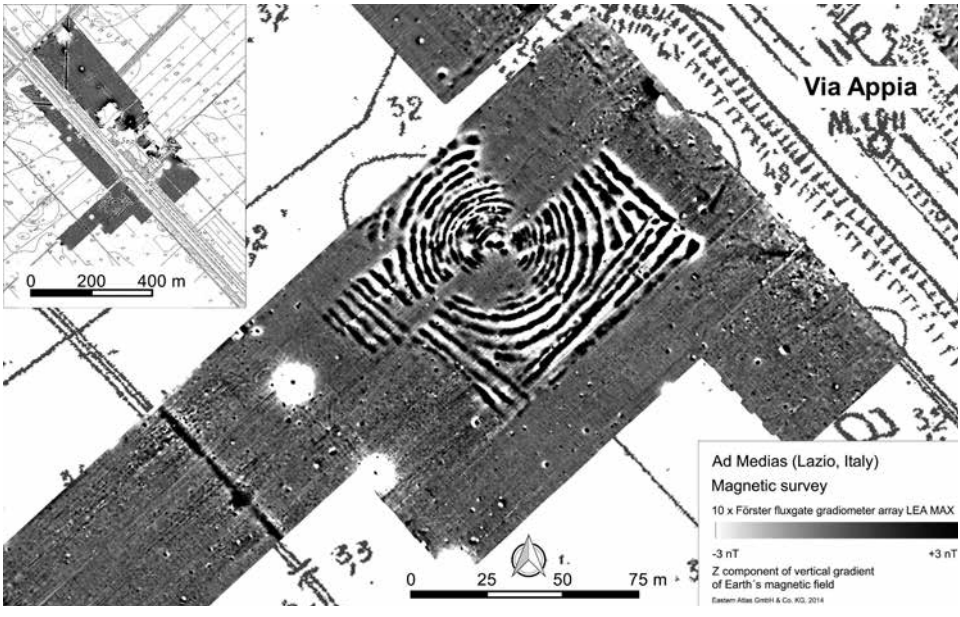

Fig. 3. Results of the magnetometer survey at Ad Medias; map at upper left shows the entire area covered at this site

heaps and clay pits as well as, in Forum Appii, warehouses to be associated with a river port. The results of the magnetic surveys allowed for a hypothetical scenario: Forum Appii was a substantial settlement of approximately 10 ha, involved in the production of metal and ceramics, while bog ore exploitation or loam extraction took place in the lower-lying surroundings. In contrast to Forum Appii, Ad Medias did not have a clear industrial function, based on the magnetic data, but rather seemed to have been a small stopover that could provide a number of important services to the local population and passing travellers.

To the south of Ad Medias, an exceptional structure of 100 m by 80 m was discovered (Fig. 3). The nature of this structure, formed by concentric circular anomalies up to 60 m in diameter and surrounded by linear anomalies, is unclear. This discovery, in an area with only few scattered surface finds, shows the potential of large-scale magnetometer surveys for the prospection and exploration of hidden landscape components beyond already known sites.

The audience is invited to actively contribute towards an interpretation of this UMO.

REFERENCE

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