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High resolution GPR surveys to investigate the archaeological site of Norba (Norma, Italy)

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Norba is an ancient town of Latium region in Italy, situated about 1 km northwest of the modern town of Norma (Latina, Central Italy). Over the years, many studies and major excavations have been carried forward to learn about this archeological site, where many important urban elements are still visible today such as the well-preserved polygonal walls, domus, thermal baths, temples and the roman paving.
To enhance the knowledge of the unexcavated portions of the archaeological site and to locate the position of the unknown buried structures, geophysical prospections employing the Ground Penetrating Radar method were performed between September and November 2017. For the measurements, a GPR system SIR3000 (GSSI), equipped with a 400 MHz bistatic antenna with constant offset was employed to survey 14 different sectors closing to few excavated area. Taking into account the environmental conditions of the site and the nature of the hypothesized structures, some areas have been surveyed with a spacing interval between parallel profiles of 0.25 m while other areas have been investigated with a spatial interval between closed parallel profiles of 0.50 m. A total of 1122 profiles were collected employing the GSSI cart system equipped with an odometer for positioning along profiles.
All the GPR profiles were processed with GPR-SLICE v7.0 Ground Penetrating Radar Imaging Software (Goodman 2017). The basic radargram signal processing steps included: (i) post processing pulse regaining; (ii) DC drift removal; (iii) data resampling; (iv) band pass filtering; (v) background filter and (vi) migration. With the aim of obtaining a planimetric vision of all possible anomalous bodies, the time-slice representation technique was applied using all processed profiles showing anomalous sources up to a depth of about 2.5 m.
The preliminary obtained results clearly show the presence of a network of strong linear features, linked with the buried structural elements of the ancient town of Norba; some of this also show consistency with the buildings unearthed in the excavated sectors close to the surveyed areas.
Together with archaeologists, these anomalies, have been interpreted to have a better understanding of the archaeological definition of these features and to enhance the knowledge of the town's layout and mapping.

References

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