

Digital resources for mapping the population movement in the Roman Empire

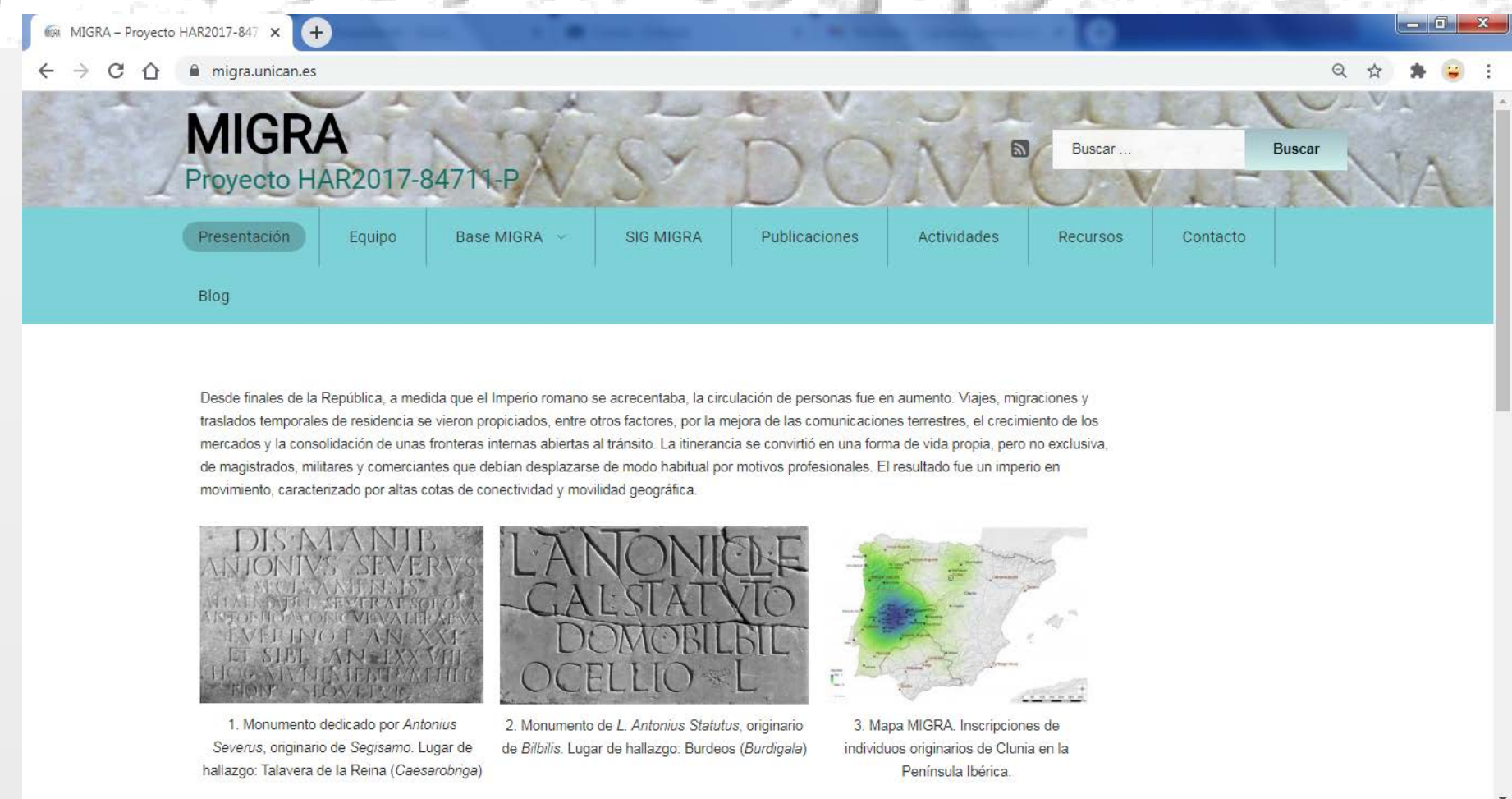
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MIGRA is an acronym that means “Mapping Inscriptions revealing Geographic Mobility in Roman Antiquity”. Digital resources applied to epigraphy are a useful tool for mapping geographic mobility in Roman times. This is the aim of the MIGRA project (HAR2017-84711-P), whose starting point is the development of an epigraphic database linked to a Geographic Information System (GIS), which allows to reflect the intensity and direction of migratory movements.

Obviously, there is a confluence of interests between GIS and epigraphic research. GIS can contribute to an epigraphic research managing all the geographical information that makes up an epigraphic record in a comprehensive way. This is more evident when the epigraphic sources studied have a very important geographic component that is mandatory to study or shows a geographical mobility characteristics that must be researched. This last one is the aim of the MIGRA project.

The use of simple and scientific community commonly used tools makes easier the learning course to those researchers in charge of introducing the data in every step of the process (figure 2). This is one of the aims looked forward in the design of the information flow (figure 1). This flow was designed to allow researchers, with no necessary knowledge about GIS, cartography or Epigraphy at same time, to add information, producing beneficial synergies for the whole project.



Website: www.migra.unican.es

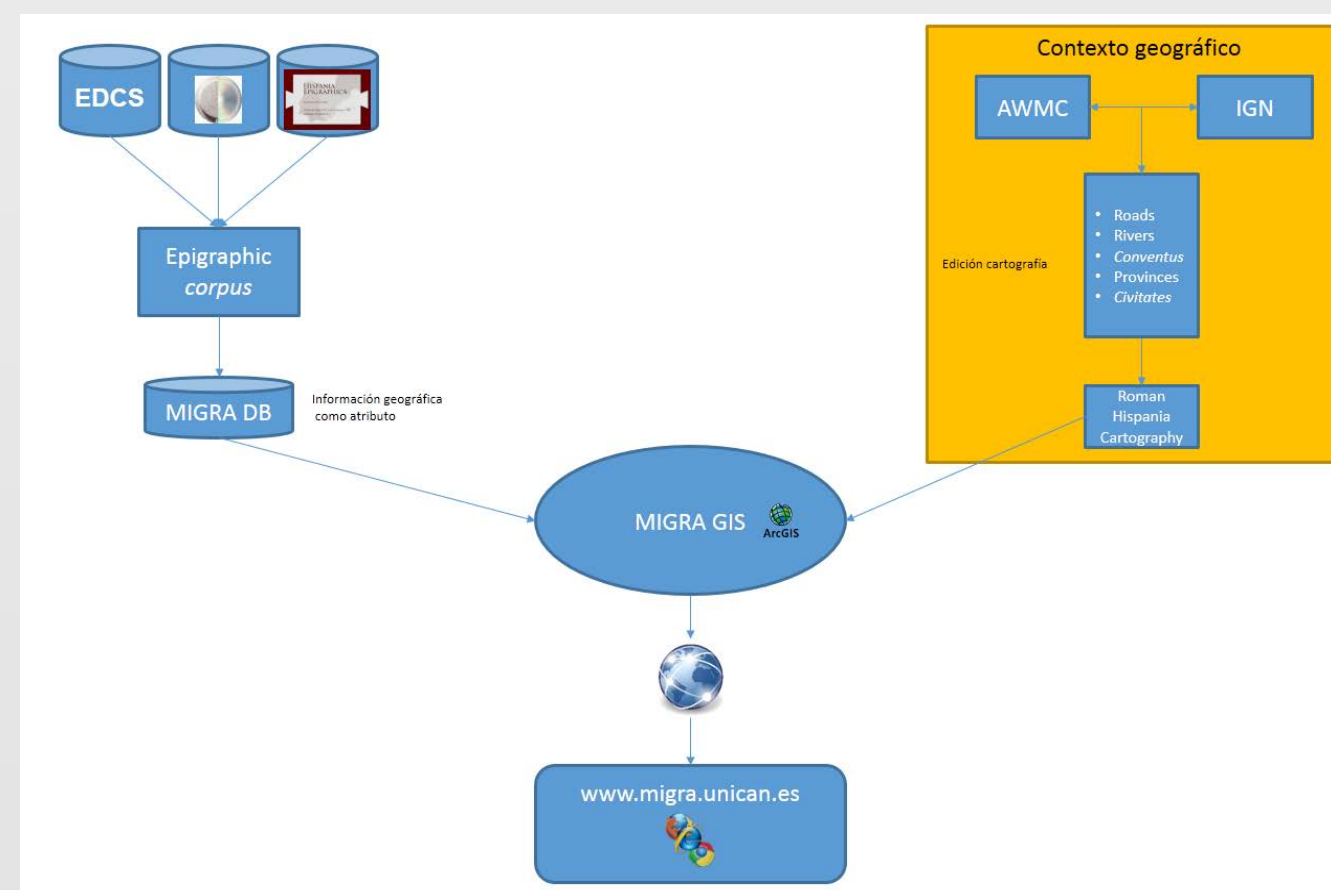


Figure 1: information flow designed for MIGRA project

Roman inscriptions documenting population movements between cities are collected in MIGRA database. These displacements are usually detected through the homeland of origin (*origo*) mentioned after the individuals' names, or through other explicit references provided by the epigraphic texts. The georeferencing of both, the places where the inscriptions were found and the corresponding cities of *origo*, facilitate the mapping of displacements, thus showing demographic trends and migratory flows.

Therefore the information given by the epigraphic data must be integrated with the geographical data contained in the epigraphic text and the finding context. So, we need to use all the tool that allow us to combine both realities, epigraphic one and geographical one. The use of GIS allows this integration, the geographical data and the attributes from the inscriptions contained in MIGRA epigraphic corpus (figure 3).



Figure 2: Tools used in MIGRA Project

Digital cartography of the Roman Empire makes possible to contextualize the epigraphic sources. Geographical layers in MIGRA are being designed from available digital resources. Likewise, GIS give us the chance to relate all these data with the geographical environment of the roman Hispania, by adding different layers of information related to this historic region.

Therefore, to elaborate the GIS of the MIGRA Project, Roman Hispania geographical information layers have been created using diverse sources, e.g. *Tabula Imperii Romani*. The main source of information about the ancient Hispania are the cartographies from the Ancient World Mapping Center of North Carolina University. These layers have been downloaded, corrected (if needed) and added to the information system. Furthermore, sometimes was necessary to use modern cartographies to edit the ancient world cartography. Different geographical layers from Spanish National Geographical Institute (IGN) are used in this way.

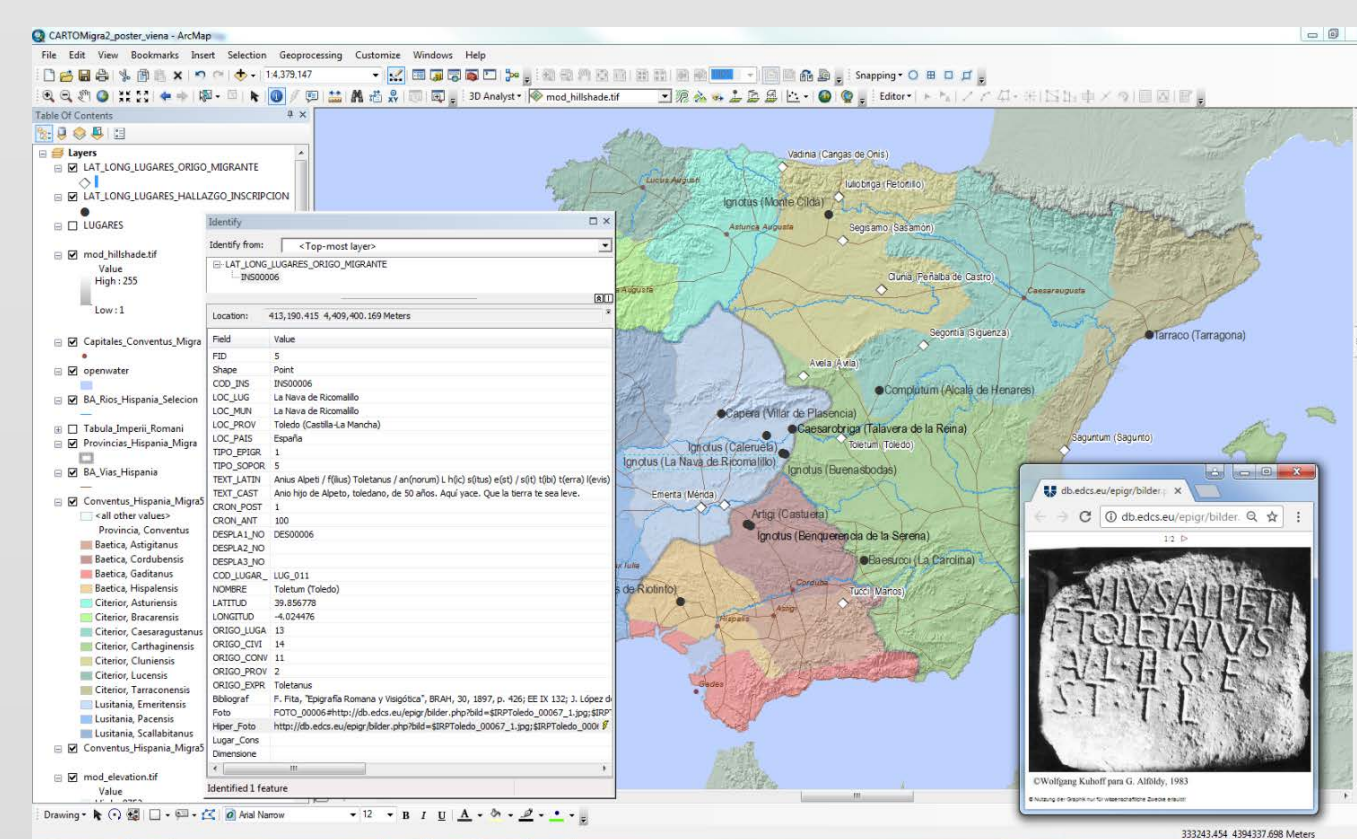


Figure 3: Screenshot from the MIGRA Geographical Information System

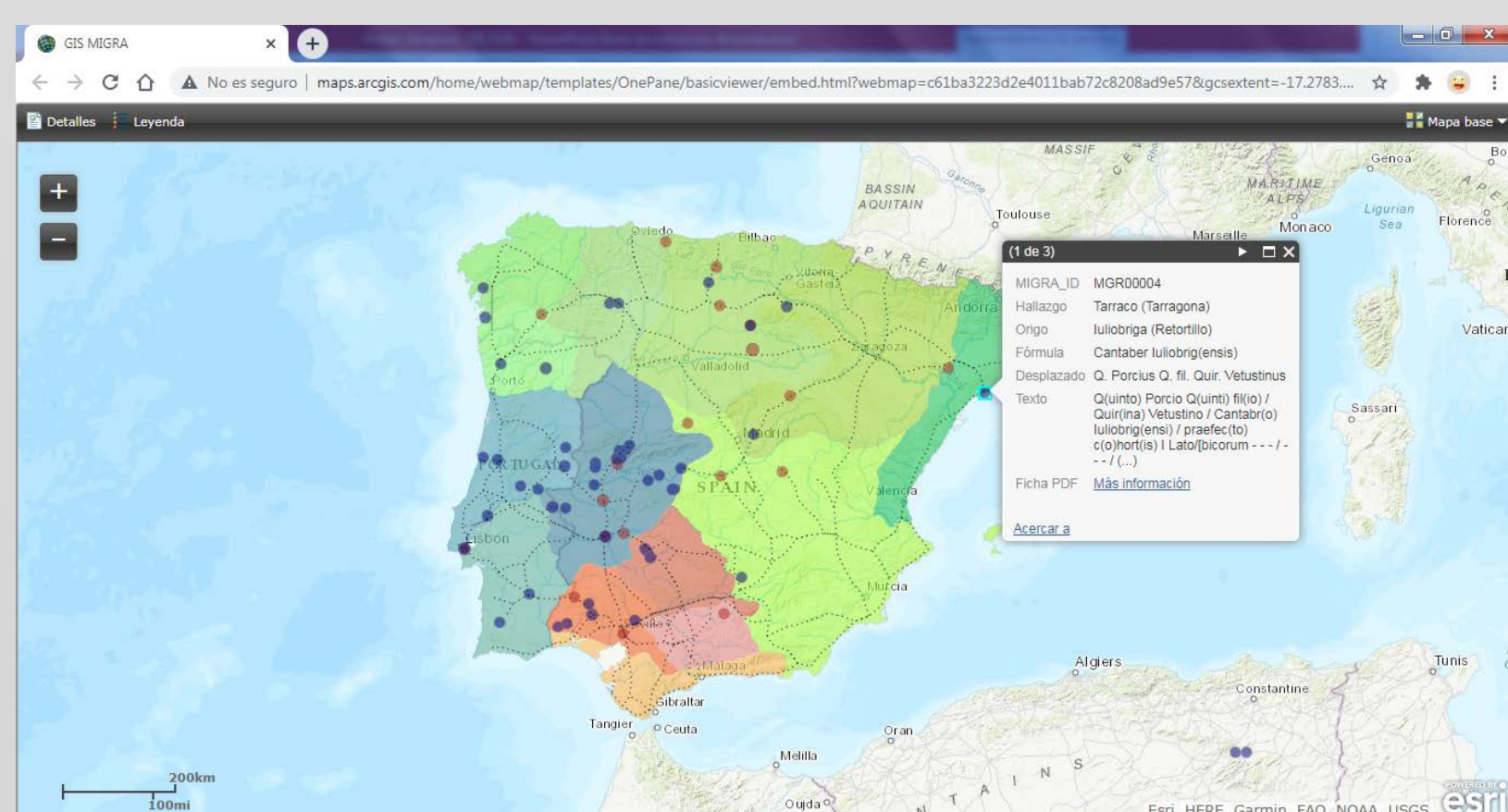


Figure 4: Screenshot from the MIGRA website. GIS based research

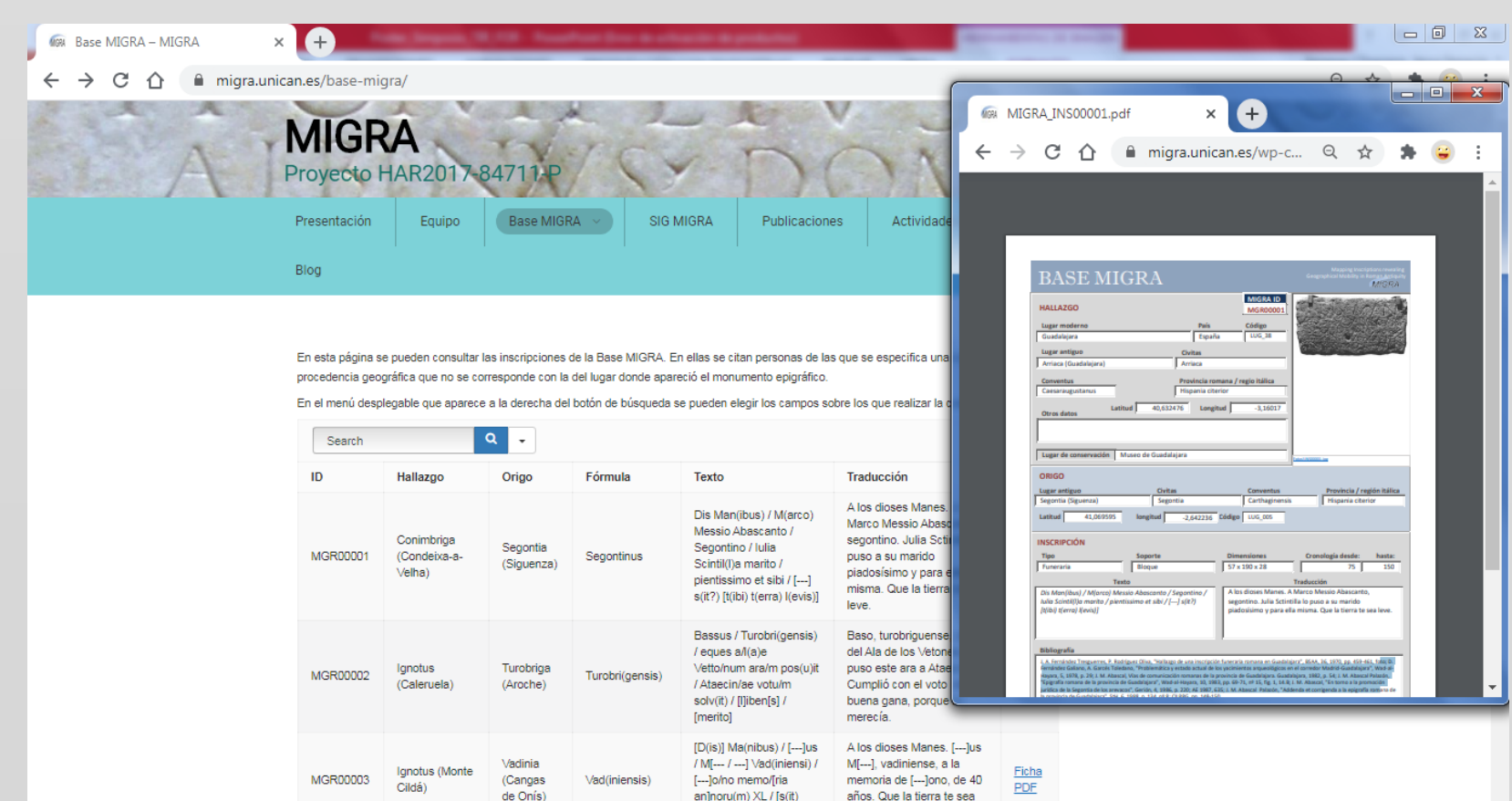


Figure 5: Screenshot from the MIGRA website. Table based research

Following the theoretical studies about the use of GIS in Archaeology there are two different ways in that these tools are useful: managing the information and the research and analysis of the data. Both ways are complementary but not always are used into integrated method. In MIGRA, these two ways of use are combined to research the inscriptions about the geographical mobility in ancient times. Therefore, once the data are entered into the GIS and the database, this information can be analyzed, e.g. a study of the density of migrants mentioned in the epigraphic sources with the same *origo* (figure 6). These analyses are being used to understand the migratory flows dynamics.

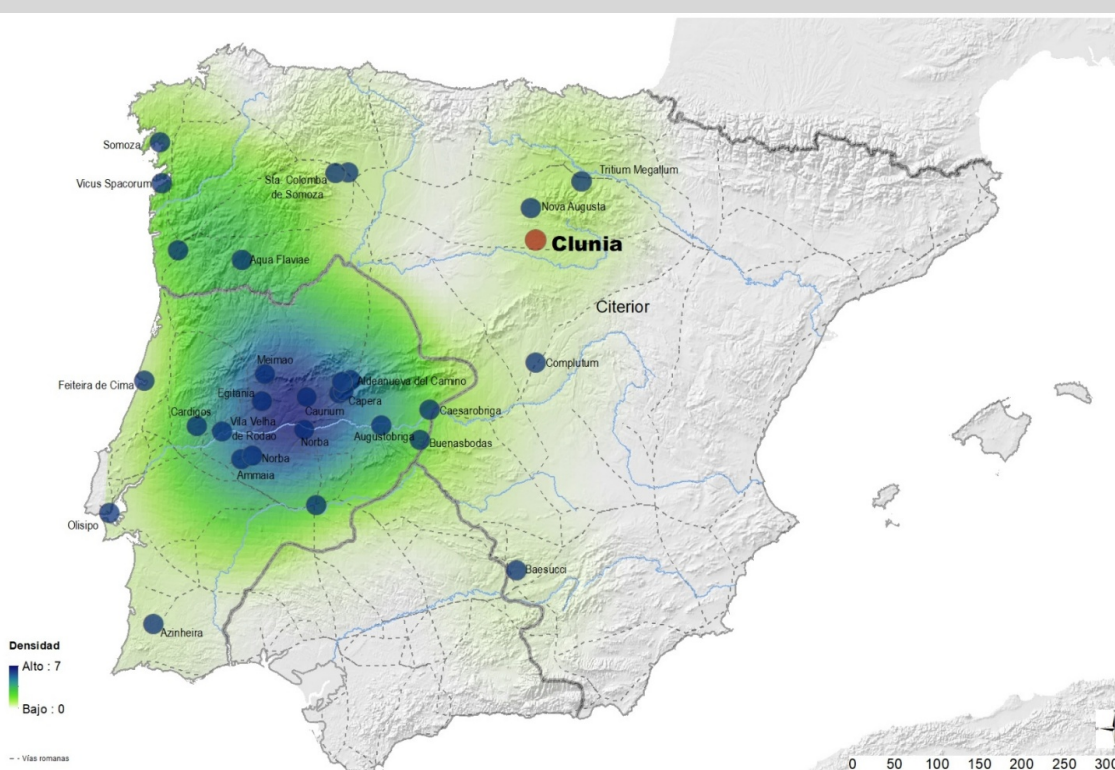


Figure 6: Map from density analysis of inscriptions with Clunia origo

The tool chosen to publish the information collected, analyzed and produced in the MIGRA project is a website. On this website, researchers will be able to search for this information both in table format and geographic enquires on the interactive map (figures 4 and 5). The aim of this tool it to provide the data obtained about geographic mobility in the Roman Empire at the service of the research community, integrated into a digital cartography.