
Identifying fossil cave entrances with ERT at Sierra de Atapuerca caves (Burgos, Spain)

Lucía Bermejo^{*†1,2}, Ana Isabel Ortega^{1,3,4}, Roger Guérin⁵, Josep Parés¹, Isidoro Campaña^{1,2}, Adrián Martínez-Fernández¹, José María Bermúdez De Castro¹, and Eudald Carbonell^{6,7}

¹Centro Nacional de Investigación sobre Evolución Humana (CENIEH) – Paseo Sierra de Atapuerca 3, 09002 Burgos, Espagne

²Doctorado Interuniversitario de Evolución Humana – C/ Don Juan de Austria, 1, 1^a planta, 09001 Burgos, Espagne

³Fundación Atapuerca – Carretera de Logroño, 44 - 09198 Ibeas de Juarros, Burgos, Espagne

⁴Grupo Espeleológico Edelweiss – Excma. Diputación Provincial de Burgos, C/Paseo del Espolón s/n, 09071, Burgos, Espagne

⁵Université Pierre et Marie Curie - Paris 6 (UPMC) – Université Pierre et Marie Curie - Paris 6 – 4 place Jussieu - 75005 Paris, France

⁶Institut Català de Paleoeologia Humana i Evolució Social (IPHES) – C/Escorxador s/n, 43003 Tarragona, Espagne

⁷Universitat Rovira i Virgili (URV) – Campus Catalunya, Avinguda de Catalunya 35, 43002 Tarragona, Espagne

Résumé

The Sierra de Atapuerca sites (Burgos, Spain) consist of various caves filled with sediments that bear outstanding archaeo-palaeoanthropological remains (Bermúdez de Castro *et al.*, 1997; Carbonell *et al.*, 2008; Ortega *et al.*, 2014). Identifying the development of this multilevel karstic system is therefore crucial for understanding these sites formation processes as well as for excavation planning strategies.

To this end, geophysical prospection has already been applied at Sierra de Atapuerca, revealing interesting information that has been verified by test pits. In particular, the ERT (Electrical Resistivity Tomography) method has proven to characterize this karst environment successfully, especially because of the high resistivity contrast that exists between the sediments that fill the caves and the limestone host rock (Ortega *et al.*, 2010; Bermejo *et al.*, 2017).

In this work, we present the results of the systematic ERT surveys carried out for the last years over all the passable areas of the range that contains this karstic system and in relation to all of its levels. More specifically, we present the profiles related to ancient cave entrances.

All these entrances have in common to be filled with sediments and covered by vegetation, fact that makes them indistinguishable in the field. The location of some of them has

*Intervenant

†Auteur correspondant: lucia.bermejo@cenieh.es

been possible thanks to previous topographic and geomorphological studies, whereas the rest were unknown to present.

The interpretation of these 2D ERT profiles has allowed indentifying the geometry of 3 known entrances. Besides, these profiles have unveiled the location of 3 other unknown entrances and their morphologies.

Keywords: Electrical Resistivity Tomography; Sierra de Atapuerca sites; karst geomorphology; geophysics applied to archaeology

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