

# Soil Deposits Associated to Human Occupations in the Middle Tagus: Micromorphological Contribution.

Opeyemi L. Adewumi<sup>1,2,3,4\*</sup>, Luiz Oosterbeek<sup>1, 3, 4</sup>, Mário Quinta-Ferreira<sup>1,2</sup>, Josep Vallverdú i Poch<sup>5,6</sup>  
\*Corresponding author: adewumiopeyemi.ao@gmail.com

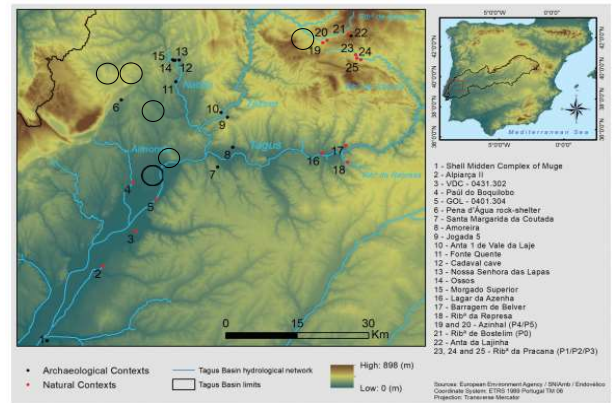
1. Centro de Geociências, Portugal,
2. Universidade de Coimbra, Portugal,
3. Instituto Terra e Memória, Mação, Portugal,
4. Instituto Politécnico de Tomar, Portugal
5. Àrea de Prehistoria, Universitat Rovira i Virgili (URV), Avenida de Catalunya 35, 43002 Tarragona, Spain.
6. IPHES, Institut Català de Paleoecologia Humana i Evolució Social, C/Escofaxador s/n, 43003 Tarragona, Spain.



## Introduction

In the middle Tagus, which defines as a sort of ecotonal area where almost all geological substrata that exist in western Iberia also occur within a range of 70 kilometres, one may recognise a diversity of strategies undertaken by various human groups in the Holocene, mostly oriented toward the intensification of the use of specific resources, e.g. hunting certain species, growing or not domesticated animals and/or plants, preferred use of specific local lithic resources, etc (Mozzi et al., 2000, Oosterbeek et al., 2020). While the region is very important from the ecological and human evolution perspectives, it also suffers from slow sedimentation and high erosion rates, generating difficulties in the evaluation of the stratigraphic sequences (Adewumi et al., 2020). The assessment of this process creates an opportunity to study soil occupation and to assess the main stratigraphic sequence both in open air sites and in caves through micromorphology.

## Relevant sites to this study



Iberian Peninsula showing the Tagus Basin, with detail area of study indicating the location of the sites under study (Map: Luis Costa)

## Objectives

The purpose of this PhD project is to reassess the Holocene sequences of several sites (above) in the middle Tagus basin, excavated and studied by CGEO team in the last three (3) decades through a micro-morphological assessment of their stratigraphies. This will allow the identification of possible sedimentary hiatus in the Early Holocene sequences, widespread palaeosol, associated to agropastoral activities, stratigraphic disturbances associated to seismic activity and major anthropic interference in the sedimentation and diagenetic processes.

## Materials and Methods

Field sampling

- Thirty samples
- Different and relevant stratigraphic units



Laboratory analysis

- Thin section fabrication



Thin section descriptions

- Bullock et. al., 1985; Stoops, 2003; Macphail and Goldberg, 2017



## Expected Results

The micro-morphological studies in this context will identify the stratigraphic sequences; proffer a systematic assessment of the sequences identified and result to a comprehensive and contextual understanding of the cultural processes and sedimentary dynamics of the Tagus context.

## References

- ❖ Adewumi O. L., Oosterbeek L. & Quinta-Ferreira, M. (2020). Sequencing Early and Middle Holocene deposits and human occupations in the Middle Tagus, Portugal: micromorphology assessments. In Encontro com a Ciência e Tecnologia em Portugal, 3 e 4 November, 2020, Centro de congressos de Lisboa. [https://www.researchgate.net/publication/352837617\\_Sequencing\\_Early\\_and\\_Middle\\_Holocene\\_deposits\\_and\\_human\\_occupations\\_in\\_the\\_Middle\\_Tagus\\_Portugal\\_Micromorphology\\_Assessments/related](https://www.researchgate.net/publication/352837617_Sequencing_Early_and_Middle_Holocene_deposits_and_human_occupations_in_the_Middle_Tagus_Portugal_Micromorphology_Assessments/related)
- ❖ Bullock, P., Fedoroff, N., Jongerius, A., Stoops, G., Tursina, T. & Babel, U. (1985). *Handbook for soil thin section description*. Waine Research Publications, Wolverhampton, UK.
- ❖ Macphail, R. I. & Goldberg, P. (2017). *Applied Soils and Micromorphology in Archaeology*. Cambridge University Press: Cambridge, UK.
- ❖ Mozzi, P., Azevêdo, T., Nunes, E. & Raposo, L. (2000). Middle Terrace Deposits of the Tagus River in Alpiarça, Portugal, in Relation to Early Human Occupation. *Quaternary Research - Quaternary Res.* 54. 359-371. 10.1006/qres.2000.2154.
- ❖ Oosterbeek, L., Pereira, T. & Almeida, N. J. (2020). Moving tasks across shapes. Reassessing mechanisms of the agropastoralist spread in Central Portugal. Mação: Instituto Terra e Memória, *série ARKEOS*, vol. 50.
- ❖ Stoops, G. (2003). Guidelines for analysis and description of soil and regolith thin sections. Madison, WI: Soil Science Society of America Inc.

## Acknowledgements

Opeyemi L. Adewumi is a PhD student in Geology (Geoarchaeology), University of Coimbra, Portugal financed by FCT (UI/BD/150841/2021). The authors express their gratitude for the support to this ongoing research, granted by the Portuguese Foundation of Science (UIDB/00073/2020).



ENCONTRO COM A CIÊNCIA E TECNOLOGIA EM PORTUGAL  
16 a 18 MAIO 2022  
#ciencia2022PT