

Área de Microestratigrafía/Microstratigraphy Area

MICROSTRATIGRAPHY AREA

OUR RESEARCH



The MicroStratigraphy area focuses on the study of site formation processes of the archaeological record through the application of high-resolution geoarchaeological techniques of analysis such as soil micromorphology in tandem with physical-chemical, geochemical and mineralogical analyses. The objective of our research is to unravel the complex interaction of formation processes that gives place to the stratigraphic genesis of the archaeological sites, studying how human actions, abandonment and sedimentary processes were transformed into archaeological deposits. We have 3 research sublines:

- **Subline 1. Urban transformation processes in Roman public spaces:** with the objective of identifying urban transformation processes, secondary uses of the space and abandonment processes in Roman towns from the Early Empire to Late Antiquity in *Hispania*.
- **Subline 2. Urban transformation processes in North Africa:** we study urban sites from the former territory of *Mauretania Tingitana*, where we develop microstratigraphic analyses of urban sites from the Protohistoric Mauritanian period to the Late Antiquity.
- **Subline 3. Microstratigraphic analysis of Protohistoric Iberian:** we are currently studying Iberian, Tartessian and Phoenician urban and ritual sites to 1) identifying singular ritual behaviors and activities recorded in the microarchaeological scale; 2) ascertaining the different uses of the ritual areas; and 3) reconstructing the biography of the ritual sites in a diachronic and stratigraphic perspective.

PEOPLE

Staff

Mario Gutiérrez Rodríguez (Juan de la Cierva Formación Postdoctoral Fellow)

I am a geoarchaeologist and specialist in microstratigraphic analysis. My expertise covers archaeological soil micromorphology and its integration with other high-resolution microarchaeological research techniques, such as FTIR and μ -XRF. Recently, I have expanded the methods of my expertise by incorporating the analysis of lipid biomarkers from bulk sediment samples.

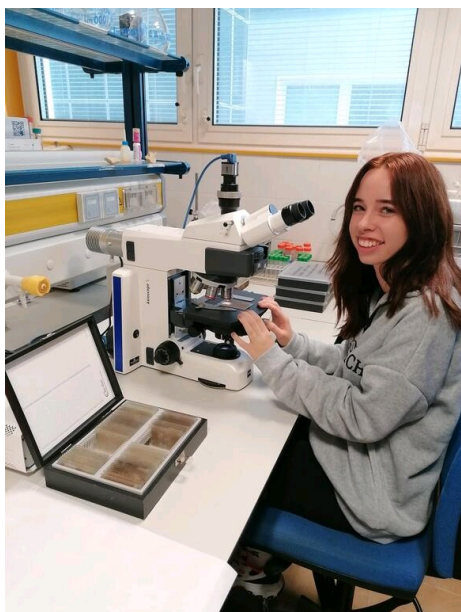
Most of my contributions are on topics related to Roman Archaeology, and most of my research focuses on unravelling secondary uses and abandonment processes in Roman towns to understand their urbanistic transformations from the Early Roman Empire to Late Antiquity. Recently, I have become interested in the Protohistoric societies and carry out geoarchaeological research at several Iberian sites, including urban and ritual sites. Fieldwork is one of my priorities: I currently participate in several excavation projects in Spain, North Africa and Italy. I owe a great deal to my academic advisors and to my colleagues at the IUIAI-UJA, collaborators from other institutions and students, all of which have contributed enormously to my career.



Research students

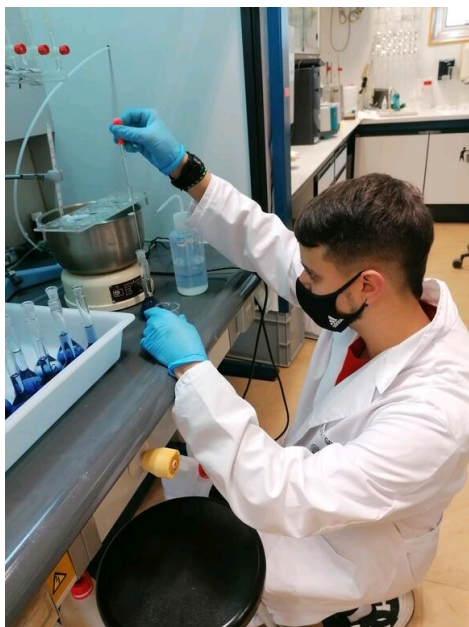
Míriam Quiles Morales

I am a Master's student in Archaeology of Cultural Landscapes at the University of Jaén, being my interests the Geoarchaeology and the Protohistory of Iberia. I am currently doing my Master's thesis on the microstratigraphic analysis of occupation surfaces at Protohistoric Iberian sites. To do that, I use archaeological soil micromorphology, which I will combine with Raman spectroscopy in a near future.



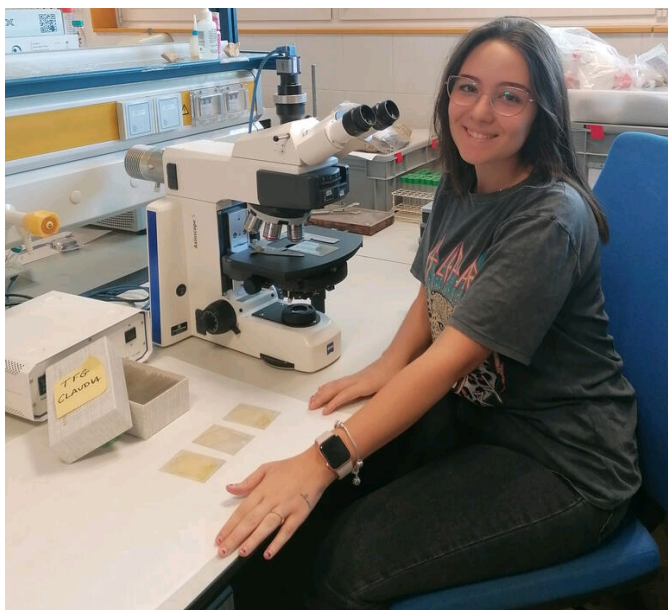
Manuel Rodríguez López

I am an undergraduate student in Archaeology at the University of Jaén, being my interests Roman and Late Roman Archaeology. I have undertaken my undergraduate dissertation on physical-chemical analyses applied to sediments from the Byzantine phase of *Septem Fratres* (modern Ceuta), the last Byzantine town in North Africa.



Claudia Martínez Cruz

I am an undergraduate student in Archaeology at the University of Jaén, being my interests the Pleistocene sites of the Iberian Peninsula. I have undertaken my undergraduate dissertation on a microtaphonomic analysis of bone remains by means of soil micromorphology and μ -XRF in the archaeological site of Fuente Nueva-3 (1,2 Ma, Orce, Granada).



Sebastián Narváez Bustamante

I am an undergraduate student in Archaeology at the University of Jaén, being my interest the analytical methods applied to the archaeological record. Currently, I am doing an ICARO internship at the MicroStratigraphy area of the Physical-Chemical analyses Lab, thanks to which I am acquiring the basic skills on geoarchaeological laboratory protocols.



THE LAB

The MicroStratigraphy area is equipped with high-end ZEISS petrographic microscopes and the necessary equipment for GC-MS and GC-C-IRMS sample processing (fume hood, laboratory benches, samples storage facilities, gas and water sources, etc.). Also, we have equipment (pH-meter, calcimeter, UV spectrophotometer) and lab supplies (solvents, standards, glassware, etc.) to perform physical-chemical analyses on bulk archaeological sediment samples.



ARCHAEOLOGICAL SITES UNDER STUDY

The MicroStratigraphy lab hosts an micromorphological thin sections collection of diverse archaeological sites from southern Spain, North Africa, and the Balearic Islands. This collection is progressively growing, and archaeological sites from new geographic regions will soon be incorporated, like Italy and Tunisia. Some of these sites and their chronologies are:

- Prehistoric sites: Fuente Nueva -3, Barranco León and Venta Micena
- Protohistoric sites: Puente Tablas, Castellar, Haza del Rayo, Ilturgi, El Turuñuelo, Varica Virtudes, Jutia, Ull de Canals, Ibi, Cerro del Villar
- Roman and Late Roman sites: Castulo, Ilturgi, Baelo Claudia, Munigua, Hispalis, Torreparedones, Gades, Tamuda, Emerita Augusta, Calescoves, Septem Fratres, Isla del Fraile.

Feel free to look at our samples in more detail by using the GeoDig platform! Here we host all the primary research data of our lab: <http://geodig.synology.me>



OUR LATEST RESEARCH

- **Gutiérrez Rodríguez, M.**, Bernal-Casasola, D., Díaz Rodríguez, J.J., Vargas Girón, J.M., Moujoud, T.,

- In press. The urban biography of a Mauritanian town: microstratigraphic analysis of the eastern quarter of Tamuda (Morocco). *African Archaeological Review*. Manuscript accepted for publication.
- **Gutiérrez Rodríguez, M.**, Lechuga Chica, M.A., Moreno Padilla, M.I., Bellón Ruiz, J.P., 2022. Microstratigraphic analysis of the main Roman road in Hispania. The Via Augusta where it passes through the Ianus Augustus (Mengíbar, Spain). *Archaeological and Anthropological Sciences*, 14 (142), 1-32. <https://doi.org/10.1007/s12520-022-01602-6>
 - **Gutiérrez Rodríguez, M.**, Pérez-Asensio, J.N., Martín Peinado, F.J., García Vargas, E., Tabales, M.A., Rodríguez Ramírez, A., Mayoral Alfaro, E., Goldberg, P., 2022. A third century AD Extreme Wave Event identified in a collapse facies of a public building in the Roman city of Hispalis (Sevilla, Spain), in: Álvarez Martí-Aguilar, M., Machuca Prieto, F. (Eds.), *Historical Earthquakes, Tsunamis and Archaeology in the Iberian Peninsula*, Natural Science in Archaeology. Springer, Singapore, 267-311. https://doi.org/10.1007/978-981-19-1979-4_12
 - **Gutiérrez Rodríguez, M.**, Orfila Pons, M., Goldberg, P., 2021. The geoarchaeological evidence of a sanctuary use during Roman times. High-resolution microstratigraphical analysis of Cova dels Jurats (Calescoves, Menorca), in: Machaue, S., Rueda, C., Grau, I., Roure, R. (Eds.), *Rock and Ritual. Caves, Shelters and Stones in Prehistory and Antiquity*, Mondes Anciens. Presses universitaires de la Méditerranée, Montpellier, pp. 129-141.
 - **Gutiérrez Rodríguez, M.**, 2021. Site formation processes in the public Thermae of Munigua during Late Antiquity: Archaeological soil micromorphology, physicochemical analyses and geochemistry, in: Schattner, T., Martini, W. (Eds.), *Mulva VIII. Die Thermen Und Das Forum*, Madrider Beiträge. Reichert Verlag, Berlin, pp. 257-270.
 - **Gutiérrez Rodríguez, M.**, 2021. Estudio arqueológico de un humedal desaparecido, in: Rueda Galán, C., Herranz Sánchez, A.B., Bellón Ruiz, J.P. (Eds.), *Exvotos Iberos. Paisajes Sagrados, Peregrinaciones y Ritos. Pilar Palazón in Memoriam*. Publicaciones de la Universidad de Jaén, Vicerrectorado de Proyección de la Cultura y Deporte, Jaén, pp. 70-75.
 - Bellón Ruiz, J.P., Lechuga Chica, M.A., Moreno Padilla, M.I., **Gutiérrez-Rodríguez, M.**, 2021. Ianus Augustus, Caput Viae (Mengíbar, Spain): An interprovincial monumental border in Roman Hispania. *Journal of Roman Archaeology* 34, 3-29. <https://doi.org/10.1017/S1047759421000283>
 - Rueda Galán, C., Herranz Sánchez, A., Bellón Ruiz, J.P., **Gutiérrez Rodríguez, M.**, Lechuga Chica, M.A., Moreno Padilla, M.I., Portillo, M., Alba Sánchez, F., Abel-Schaad, D., Martín-Peinado, F.J., 2021. Interdisciplinary methodology for the characterisation of a temporary paleo-wetland in loma de Úbeda (Jaén, Spain). *Inland Waters* 11, 1-13.
 - **Gutiérrez-Rodríguez, M.**, Brassous, L., Rodríguez Gutiérrez, O., Martín Peinado, F.J., Orfila, M., Goldberg, P., 2020. Site formation processes and urban transformations during Late Antiquity from a high-resolution geoarchaeological perspective: Baelo Claudia, Spain. *Geoarchaeology* 35, 258-286. <https://doi.org/10.1002/gea.21769>
 - **Gutiérrez Rodríguez, M.**, 2020. "Microhistorias de la tierra": la aportación de la micromorfología de suelos y sedimentos a la Arqueología en la Península Ibérica, in: Díaz-Andreu, M., Portillo, M. (Eds.), *Arqueología e Interdisciplinariedad: La Microhistoria de Una Revolución En La Arqueología Española (1970-2020)*. Publicacions de la Universitat de Barcelona, Barcelona, pp. 263-272.
 - **Gutiérrez-Rodríguez, M.**, Goldberg, P., Martín Peinado, F.J., Schattner, T., Martini, W., Orfila, M., Bashore, C., 2019. Melting, bathing and melting again. Urban transformation processes of the Roman city of Munigua: the public thermae. *Archaeological and Anthropological Sciences* 11, 51-67. <https://doi.org/10.1007/s12520-017-0527-0>
 - **Gutiérrez Rodríguez, M.**, Toscano, M. Goldberg, P., 2018. High-resolution dynamic illustrations in soil micromorphology: A proposal for presenting and sharing primary research data in publication. *Journal of Archaeological Science: Reports* 20, 565-575. <https://doi.org/10.1016/j.jasrep.2018.05.025>

THE MICROSTRATIGRAPHY AREA ON THE NEWS

Un maremoto destruyó Sevilla en el siglo III

Un estudio de seis universidades españolas y extranjeras desvela que la gigantesca ola recorrió más de 40 kilómetros y alcanzó Hispalis con una altura superior, al menos, a los 670 metros



Seville 'was hit by tsunami' in Roman era



Dred and shell fragments have led archaeologists to conclude that Hispalis, present-day Seville, was hit by a tsunami

ALAMY

A massive wave of at least seven metres (23ft) hit a Roman settlement in Seville in the 3rd century, archaeologists and geologists have concluded.

- [The catastrophe that flooded the city of Hispalis](#) (Interview in the Spanish National Radio, 10/08/2022)
- [Seville was hit by a tsunami in Roman era](#) (The Times, 20/07/2022)
- [An Extreme Wave Event partially destroyed the Roman town of Seville](#) (Interview in Canal Sur Radio, 26/07/2022)
- [A violent event destroyed the Roman town of Seville](#) (El Español, 25/07/2022)
- [A massive tsunami destroyed the Spanish city of Seville in the 3rd century](#) (El País, 22/07/2022)
- [Excavations resumed at Cerro del Villar](#) (Diario Sur, 9/9/2019)

CONTACT

We are located at the University Institute for Iberian Archaeology at the University of Jaén (Spain)

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