

Poster Presentation Number 30, We (17:00-19:00)

ESR dating of fluvial deposits from the Middle Tagus Basin (Central Spain): new numerical age results for the Acheulean sites of Pinedo and Cien Fanegas

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The Middle Tagus basin is characterized by a stepped terrace system where 12 terraces have been identified in addition to the present floodplain (named T1 to T12 from top to bottom) in the Toledo area (Spain). Some of these fluvial deposits have delivered numerous key archaeo-palaeontological sites to understand the characteristics and timing of the Acheulean settlement in the Iberian Peninsula [1]. However, the amount of chronological data available is surprisingly very scarce, making the present-day chronostratigraphic framework of the Middle Tagus basin quite limited. Palaeomagnetic study carried in T7 (+60m) suggests that the Matuyama-Brunhes boundary may be registered in this deposit [2]. T10 (+25-30m) has delivered two archaeological sites both showing an important collection of Acheulean stone tools in association with Middle Pleistocene large mammals [3]: Pinedo (Toledo) and Cien Fanegas (Aranjuez), located 1.5 km and 14 km upstream of Toledo, respectively. Because the high dose rate values measured for quartz precluded standard OSL analyses, these sites have been dated using post-IR IRSL, indicating chronologies older than 250 ka (Pinedo: >280ka; Cien Fanegas: 292±17ka). Amino Acid Racemization has been also employed at Pinedo site and provides a somewhat younger age of 226±37 ka [4]. To refine this chronology, the Electron Spin Resonance (ESR) dating method has been applied to optically bleached quartz grains from both T10 and T7 terraces. Samples were processed following the Multiple Centre approach which consists in measuring the ESR signals of both the Aluminium (Al) and Titanium (Ti) centers (more details in [5]). The present work presents not only the first ESR age estimates obtained for Pinedo and Cien Fanegas sites in T10 (+25-30m), but also the first numerical ages ever obtained for T7 (+60m). These results demonstrate the interest of using a combination of different dating methods to achieve more accurate chronologies for fluvial terraces systems.

References [1] Rubio-Jara, S., Panera, J., Rodríguez-de-Tembleque, J., Santonja, M., Pérez-González, A. In press. Large flake Acheulean in the middle of Tagus basin (Spain): Middle stretch of the river Tagus valley and lower stretches of the rivers Jarama and Manzanares valleys. *Quaternary International*. [2] Pinilla, L., Pérez-González, A., Sopena, A., Parés, A., 1995. Fenómenos de hundimientos sinsedimentarios en los depósitos cuaternarios del río Tajo en la Cuenca de Madrid (Almoguera-Fuentidueña de Tajo). *Monografías del Centro de Ciencias Medioambientales*. 3, 125-139 [3] Querol, M.A., Santonja, M., 1979. El yacimiento achelense de Pinedo (Toledo). *Excavaciones Arqueológicas en España*, 106. Ministerio de Cultura, Madrid. Pp 181 [4] López-Recio, P.G., Silva, P.G., Roquero, E., Cunha, P.P., Tapias, F., Alcaraz-Castaño, M., Baena, J., Cuartero, F., Morín, J., Torres, T., Ortiz, J.E., Murray, A.S., Buylaert, J.P., 2015. Geochronology of the Acheulean sites of Pinedo and Cien Fanegas (Tagus River valley), and implications for the fluvial evolution in the environs of Toledo (Spain). *Estudios Geológicos*. 71 (1), 1-14 [5] Duval, M., Sancho, C., Calle, M., Guilarte, V., Peña-Monné, J. L., 2015. On the interest of using the multiple center approach in ESR dating of optically bleached quartz grains: Some examples from the Early Pleistocene terraces of the Alcanadre River (Ebro basin, Spain). *Quaternary Geochronology*. 29, 58-69.

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European Society for the study of Human Evolution
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