

ka. Current model of Kostenki' palaeolithic (Middle Don basin, Central Russia) based on stratigraphic evidences and series of nearly 300 radiocarbon dates is four partial:

- Initial Upper Palaeolithic stratum (42-40 cal ka BP) as an association of the Spitsyean and the cultural tradition of cultural layer IVb at Kostenki 14;

- Early Upper Palaeolithic (40-36 cal ka BP) showing the pan-European bimodal structure with the coexistence of the Aurignacian and "transitional" Streletskian;
- Early Middle Upper Palaeolithic (34-32 cal ka BP) connected with the appearance of the Gravettian, but in association with the Gorodtsovian – a particular East European cultural unity;
- Recent Middle Upper Palaeolithic (27-25 cal ka BP) as an association of a number of Gravettian varieties in coexistence with assemblages of non-Gravettian affiliation.

Sites of LGM are absent at the area according to this model and two chronological gaps are attested: between the EUP and early MUP (~34-35 cal ka BP), and between the early and recent MUP (31-28 cal ka BP).

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## 9. PALEOMAGNETIC ANALYSES OF THE NORTHERN MARGIN OF AÏN BÉNI MATHAR - GUÉFAIT BASIN (EASTERN MOROCCO)

Álvarez Posada, Claudia (CENIEH, Burgos) [claudia.alvarez@cenieh.es](mailto:claudia.alvarez@cenieh.es)

Parés, Josep María (CENIEH, Burgos) [josep.pares@cenieh.es](mailto:josep.pares@cenieh.es)  
Carrancho, Ángel (Universidad de Burgos, Burgos) [acarrancho@ubu.es](mailto:acarrancho@ubu.es)

Villalain, Juan José (Universidad de Burgos, Burgos) [villa@ubu.es](mailto:villa@ubu.es)  
Aouraghe, Hassan (FSO, Univ. Mohamed 1er (Oujda, Morocco) [aouraghe1@yahoo.fr](mailto:aouraghe1@yahoo.fr)

Haddoumi, Hamid (Laboratoires des Géosciences appliquées, Faculté des Sciences Université Mohamed premier, 60 000 Oujda) [haddoumihamid@yahoo.fr](mailto:haddoumihamid@yahoo.fr)

Hammouti, Kamal (UMR7194, MNHN (France) [elhamkam@yahoo.fr](mailto:elhamkam@yahoo.fr)

El Harradji, Abderrahman (FLSH, Univ. Mohamed 1er (Oujda, Morocco) [elharradji@yahoo.fr](mailto:elharradji@yahoo.fr)

Sala, Robert (IPHES, URV (Tarragona, Spain) [robert.sala@urv.cat](mailto:robert.sala@urv.cat)  
Chacón, María Gema (UMR7194, MNHN (France) IPHES, URV (Tarragona, Spain) [gchacon@iphes.cat](mailto:gchacon@iphes.cat)

Dating Pleistocene occupations in the Circum-Mediterranean region plays a key role in the study of human evolution, as it is critical to establish an accurate time framework for better understanding how, when and why the first human expansions occurred outside the African continent. In Eurasia this out of Africa expansion and colonization probably occurred through the Middle East and along several pulses (Aguirre and Carbonell, 2001; Allué et al., 2013; Bermúdez de Castro and Martínón-Torres, 2012; Carbonell et al., 2008; Toro-Moyano et al., 2013) as documented by sites such as Dmanisi, with an age of 1.7 to 1.8 Ma (Ferring et al., 2011; Lordkipanidze et al., 2007) or archaeological sites presents in the Circum-Mediterranean basin such as Atapuerca, Pirro Nord, Ubeidiya, among others (Parés et al., 2011) with ages between 0.8 and 1.4 Ma.

However, the chronology of deposits in North Africa such as Ain Hanech and E-Kerbha, shows that, the dispersal from Africa of genus Homo, began earlier than previously thought, possibly since the beginning of the lower Pleistocene (Sahnouni et al., 2010; Parés et al., 2014). In this sense, the chronology of Paleolithic archaeological sites in Morocco, such as in the basin of Aïn Béni Mathar (eastern Morocco), can be crucial to contextualize old human dispersal in Northern Africa. Sediments and terraces in the Aïn Béni Mathar area, in the basin of the same name, contain remains of both Acheulean (Mode II) and Oldowian (Mode I) stone tools that have been discovered in successive campaigns since 2006.

In attempt to provide a first chronological context for these archaeological sites in Eastern Morocco, we have collected samples from two different yet related areas within the basin for paleomagnetic dating. The first succession is found near to the town of Aïn Béni Mathar, where 50 samples were obtained along a sequence of about 80 meters and the second one, near to the town of Guéfait, with a sequence of approximately 120 meters with 110 specimens. Paleomagnetic analysis was carried out at both University of Burgos, and CENIEH, and all samples were demagnetized by stepwise progressive alternating field of thermal demagnetization to determine the characteristic remanent magnetization (ChRM) directions.

The paleomagnetic analysis of both sequences have resulted in a two local magnetic magnetostratigraphies, where both normal and reverse polarities are observed. Due to the lack of biostratigraphic data, a conclusive correlation of the local magnetostratigraphy to the Geomagnetic Polarity Time Scale (GPTS) is not possible, although we will discuss possible options, which are constrained by the presence of stone tools remains.