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Landscape, resources and people during the Mesolithic and Neolithic times in NE Iberia: The Arba de Biel Basin

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ABSTRACT

The Upper Arba de Biel constitutes a small valley in north-eastern Spain where a detailed study of five archaeological sites (Peña-14, Legunova/Rambla, Valcervera and Paco-Pons) has been performed, defining the recurrent prehistoric occupation from the Late Magdalenian until the Chalcolithic. The aim of this study focuses on exploring the main drivers of long-term human persistence on a particular humid shelter located in the Pre-Pyrenean area. The combination of a multiproxy dataset evidenced by the detailed synthesis of lithic tools and pottery, faunal remains, pollen and charcoal assemblages has been integrated with a GIS approach and a regional cultural and palaeoenvironmental contextualization. After an occupation gap that coincides with the second half of the Younger Dryas and the first Holocene millennia synchronous to other archaeological records found in NE Iberia, the Arba de Biel valley was recurrently visited by small hunter–gatherer groups along the Mesolithic and by herders during the Neolithic.

These people profited this territory, independently of environmental changes, because the easy access to a wide spectre of economic resources (flint nodules, diverse vegetation supplies, varied preys, etc.,) in a heterogeneous mosaic-type landscape. The valley main habitation spots (Peña-14, Legunova/Rambla and Valcervera) could have been occupied at the same time by small groups that did not interfere each other. The use of the fifth rockshelter (Paco-Pons) seems to be related to the exploitation of copper mineral outcrops in the Neolithic and for metallurgical activities during the Chalcolithic. These last prehistoric visits to the valley reflect a notable shift in the human employment of the shelters: they cease to be living points to be used as funerary deposits.

1. Introduction

Humans have always interacted with their environment, being influenced by landscape and climate constrains along multiple time-scales (Hoelzmann et al., 2001; Migowsky et al., 2006; Staubwasser and Weiss, 2006; Muller et al., 2011). This topic remains interesting in the current scientific debate and global social concern (Nuñez et al., 2002; Costanza et al., 2007; González-Sampériz et al., 2009; IPCC, 2013; Wicks and Mithen, 2014). It is important to understand the degree of human resilience, response and/or adaptation to environmental changes in different sites and periods (Turney and Brown, 2007; Mercuri et al., 2011; Dugmore et al., 2012; Rosen and Rivera-Collazo, 2012). Therefore, it is necessary to integrate both archaeological and palaeoenvironmental records from key past climate transitions and key regional areas, in order to analyse the relationship between the variations in climate and social change (Rull et al., 2013; Armit et al., 2014).

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Key areas would be related to favourable regions with i.e., mild temperatures and abundant precipitation, together with diverse vegetation communities and resource supply, resulting in especially attractive shelters, and thus supporting periods of long human occupation. In respect to past climate transitions, the Pleistocene–Holocene boundary, including the first Holocene millennia, must be considered a key period because the high climate variability related to abrupt changes occurred at this time (Rasmussen et al., 2014), and the important cultural transition of hunter–gatherer groups which lead in a Neolithic society. It is well-known that since that moment, relationships between humans and their environment changed forever. This was time of land transformation by humans, or landscape, a product of social action which constitutes a particularly interesting framework.

In this sense, studies on cultural landscapes focusing on both the Epipalaeolithic transition and Neolithic periods are becoming increasingly important in Europe, especially those related to mountain environments (Bal et al., 2010; Ejarque et al., 2010; Galop and Catto, 2014). Low and mid-altitude areas would have been prone environments to be occupied multiple times, as shown by the numerous north-eastern Iberian records located around the Ebro Basin (Alday, 2006; Utrilla and Montes, 2009; Mangado, 2010; Borrell et al., 2012; Manen et al., 2014). In contrast, harsh climate features in high-altitude belts could hamper the continuous presence of human settlements and activities (Pérez-Sanz et al., 2011), although they must be considered as a part of the potentially usable landscape.

Potential of GIS platforms to integrate various disciplines into a common space are powerful and suitable tools for analysing a cultural landscape, putting aside its macro or micro spatial and time character (Plieninger, 2006). In this respect, the current landscape, independently of the considered area, is understood as a complex, dynamic construction arising from three basic actions: subsistence, social relationships and geographical constraints (Parcero, 2002).

Thus, the present study focuses integrating the available local and regional-scale palaeoenvironmental data together with a unique, chronologically well-constrained archaeological study, including GIS analyses, confined to an ecotone of north-eastern Iberia: the upper Arba de Biel Basin in the central-western Pre-Pyrenees (Fig. 1). This is a relatively small area (10,000 ha) located ~700 m a.s.l. in where at least five different rock shelters (Legunova, Peña-14, Valcervera, Rambla de Legunova and Paco-Pons) (Fig. 2) show a striking persistence of occupation covering the time-interval between 14 and 4 cal ka BP. Culturally, this period spans from hunter–gatherer groups from Late Magdalenian (not discussed here) to the dawn of the Metal Ages. Therefore, the reasons for recurrent occupations during this long period might have varied through time, as well as the climate impacts on humans, and the human impact in the landscape surroundings. The particular location of the settlements implies a variety of ecosystem services (Sharukán and Whyte, 2005) supporting the occupation recurrence, although environmental fluctuations and cultural changes occurred.

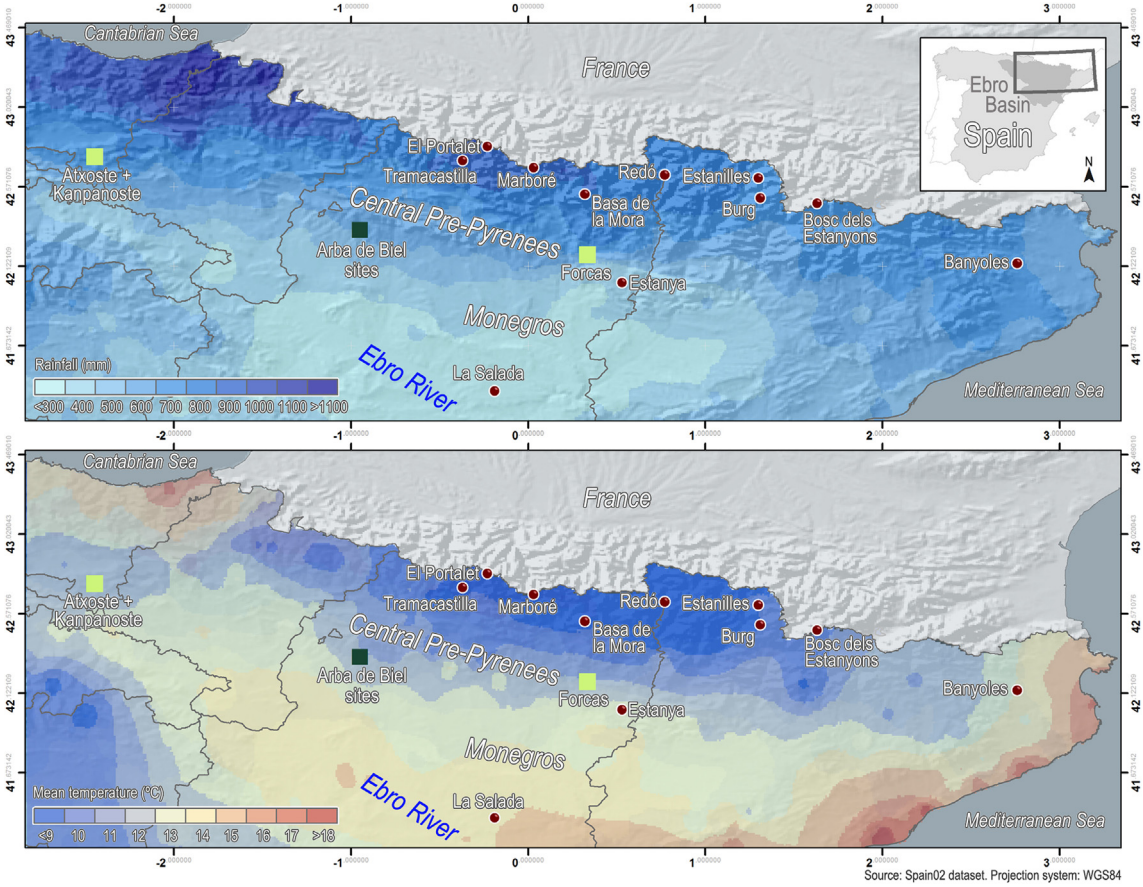

Fig. 1. Location of the archaeological (squares) and palaeoenvironmental sites (points) discussed in the text. Average precipitation and temperature maps have been included and follow Herrera et al., 2002.