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Climate of the Past Discussions

Interactive comment on "Heinrich Event 4 characterized by terrestrial proxies in southwestern Europe" *by* J. M. López-García et al.

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Dear Editor, We want to thank, firstly, the reviewer 1 comments in our manuscript, that have been very useful to improve the paper. All the minor suggestions have been changed, for the other commentaries the response are exposed following: 3.1. Small-vertebrate sorting and paleontological study In response to the question about the implementation of the method MCR. The validity of the method depends on the assemblage in each site. In the case of the Canyars site its validation is explained in pages 655 to 657. The small mammal assemblage from Canyars is composed by 15 species. According to Vigo (2002), 13 small mammal live today in the Canyars surrounding site, including the species introduced in historical times (such as Atelerix algirus, Suncus etruscus, Rattus spp. and Mus spp.). Taking into account these data

the assemblage of Canyars represents the 61.5% of the living today species, excluding the historical introduced taxa represents the 88.8% of the nowadays living taxa. A high percentage to think that the presented data is correct, representing clearly the original palaeocomunity. Other case is the amphibians and squamate reptiles which represents the 37. 5% and the 26.7% respectively, but these data can be explained by the type of predator that is the responsible of the small vertebrate accumulation, the diurnal bird of prey (Falco tinnunculus) (see pages 656-657). 3.2. Palaeoenviromental reconstruction The difference between Mid-European species tolerant and Non-strict Mediterranean. The Mid-European species tolerant to Mediterranean conditions have climatic requirements that not allow them to survived in sites with precipitation below 600 mm. On the other hand, the non-strict Mediterranean species refereed to the generalist species without climatic requirements (page 652) (Sans-Fuentes and Ventura, 2000; López-García et al. 2010b). 3.3. Palaeoclimatic reconstruction We used the MCR method in a lot of published peer-reviewed papers, it is true that perhaps we have to cited here a paper where we used the both data small mammal and herpetofauna together, for this reason we add to the manuscript the reference López-García et al. (2010a). In this paper we demonstrated that the qualitative data obtained with the MCR and the quantitative data obtained by the habitat weighting follows the same pattern using small mammal and herpetofauna together and together follows the late Pleistocene climate changes. On the other hand, in relation to global distributions and the use of the method, we understand the proposition of the reviewer but the Iberian peninsula functioned as a minicontinent (Font-Tullot, 2000), where the Pyrenees functioned as a really geographical barrier that allow us to make the intersections with MCR only for the Iberian peninsula. Moreover, there are a lot of endemism in Iberia that are not found in the rest of Europe (Palomo and Gisbert, 2005). Furthermore, in relation to the two examples exposed by the reviewer, both species M. arvalis and M. agrestis currently lived in the Iberian Peninsula, but not linked, as success in other parts of Europe, to tundra sites, but they are found in Iberia in sites with mid-European requirements (Sans-Fuentes and Ventura, 2000;

López-García et al. 2010b), in our case the Pyrenees and pre-Pyrenees, and we consider they current distribution in the Iberian Peninsula to make the intersections with the MCR. 5.3. Discussion In relation to discussion, we don't understand what the reviewer don't understand. The climatic and environmental of Heinrich Event represented in Figure 8 are exposed in Table 4, that is cited in the Discussion chapter. We think that the composition of Figure 8 is well explained in the figure caption, the discontinuous grey lines represents the data obtained from the different exposed sites with small-vertebrate studies (see Table 4 and Figure 8). In relation to minor points: Page 651 (line 10). The cites have been corrected Page 651 (line 13). This phrase has been corrected. Page 651 (lines 21-22): the Taxonomic Habitat Index is the same that the Habitat Weighting Method, we use the more recent name exposed by Andrews et al. (2006). Page 651 (lines 26-27): the habitat list has been deleted. Page 652 (line 16): the term used for the Iberian Peninsula as a minicontinet is used by climatologist to define the particular climatic conditions of Iberia (ex. Font-Tullot, 2000). Page 654 (lines 11-12): it is true that this sentence has not sense, we deleted it. Page 654 (line 13): it is a mistake that has been deleted. Page 655 (line 28): there is only a level, not various levels, often has been deleted. Pages 658-659: it is a mistake, we changed the percentages in text. Page 659 (line 1): Artemisa has been written in Italics. Page 659 (lines 5-29): the paragraphs repeated have been removed and the other information has been included in the previous chapter. Page 660 (line 16): we change Fig.7 by correct Fig. 6 Page 661 (line 14): we change MAT by MAP Page 622 (line 17): it is a mistake that has been corrected in the text Table 3. As suggest the reviewer we add in this table the currently data from the Barcelona Airport. Fig. 5. The figure reflect only the percentage of molars, incisors and postcranial elements with a digestion degree, in the figure is not represented the percentage of non digested bones, but we add these percentages in the figure caption. We hope that the changes done in the manuscript and the answers to the reviewer comments are satisfactory for you to consider the publication of our paper into your journal Climate of the Past. Yours Sincerely Dr. Juan Manuel López-García

Please also note the supplement to this comment:
http://www.clim-past-discuss.net/9/C200/2013/cpd-9-C200-2013-supplement.pdf

Interactive comment on Clim. Past Discuss., 9, 647, 2013.

	n	mean	Max	Min	sd	Current Values
MAT	46	10.11	13.00	6.00	1.75	15.6
MTC	46	2.72	9.00	0.00	1.59	8.8
MTW	46	18.50	22.00	16.00	1.35	23
MAP	46	757.6	1200	450	177	659
DJF	46	175.2	256	95	40	129
JJA	46	96.96	197	71	37	138

Fig. 1.