

## ***Interactive comment on “Late Holocene vegetation changes in relation with climate fluctuations and human activities in Languedoc (Southern France)” by J. Azuara et al.***

**G. Jiménez Moreno (Referee)**

gonzaloj@ugr.es

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In this interesting study, Azuara et al. carried out a high-resolution pollen study of two mid- to late Holocene cores from S France. The data was interpreted in terms of vegetation changes due to climate and human impact. I don't have problems with the science of the paper and the data seem sound. However, in my opinion there are some issues that should be addressed before publication—see below:

-My major concern is the interpretation of the vegetation changes. One of the main goals of this study would be to separate the climate signal from the human impact. Sometimes this is not an easy task but the way this was done here is kind of confusing

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as many of the changes observed are explained as caused by both climate and human impact in two different sections (5 and 6). A better way of doing this would be dealing with a change at a time (from past to Present) and discussing about both factors in the same section.

-I was trying to find information about the lithology and age control of the studied cores but they were nowhere to be found. It seems that this information has been previously published but for many people this would be the first time they see these two records and so I strongly recommend showing this. In this respect, the sand intervals that are mentioned in the text are very interesting as they could somehow explain some of the changes observed in the pollen due to local vegetation changes in the marshy area.

-It is not clear in the paper why the expansion of evergreen Quercus is related with human impact. Please explain. Could that be due to climate? Maybe more seasonality in the precipitation in the late Holocene?

-In many different parts of the paper the authors talk about “migration” of plant species (Fagus, Abies, etc) towards the North during arid periods. This should be changed as plants do not migrate – they cannot “walk”. Those plants rather disappeared from the South due to tough conditions and remained in the North where they probably already occurred during mild conditions.

-It took me a while to get that a composite record is shown. That should be clearly stated in the material and methods section.

-The graphical information in the paper is quite poor – only three figures are shown. Why aren't the red shade-lines going to the top of figure 3, towards the AP proportions? In the same figure it is not clear why there are two colors in the graph with macrofloral remains. The use of letters in the different plots is kind of confusing as well.

I hope my comments help improving the manuscript. Cheers, Gonzalo Jiménez-Moreno

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