

Reply to E. Gutierrez (Referee)

General comments

The paper by Mar Génova "Extreme pointer years in tree-ring records of Central Spain as evidence of volcanic eruptions (Huaynaputina, Peru, 1600AC) and other climatic events" Is, in my opinion, a really interesting research that shows important results about how trees reflect the climatic variability and other phenomena as the volcanic eruption of the volcano Huaynaputina. This geologic event has not been reported before in Spain by the dendrochronologist. Regarding the climate variability, the paper is in agreement with previous results from other scientists reporting a higher variability for the 20th century, specially for the second half. This variability is the highest throughout the 4 centuries covered by this study. Even though it was also high for the 17th century (first half) nothing compares to the second half of the 20th as temperatures are much higher than before.

Thanks you very much

The paper will improve if the English is deeply corrected. But this is not a reason to reject the such an interesting paper. But I am not a native English speaker.

Me and the translator revised another once the text and tried to improve the comprehension and the English, you can see in the new text.

Regarding the Title It does not match well with the objectives and with the research. I suggest a change for the title to reflect better the content of the paper. Extreme pointer years in tree-ring records of Central Spain as evidence of climatic events and volcanic eruptions (Huaynaputina, Peru, 1600AC). "eruptions" or 'eruption'? How many years of eruptions were recorded by tree-rings? The eruptions of one single year or several years of eruptions?

Title is changed by: **Extreme Pointer Years in Tree-Ring Records of Central Spain as Evidence of Climatic Events and the Eruption of the Huaynaputina Volcano (Peru, 1600 AD).**

Other comments.

Abstract

P424 L17 "period" or 'interval' ?

Changed

Introduction

P4225 L3 "the range of knowledge deriving" range??

This sentence is changed to "the knowledge of the past climate of the Iberian peninsula from documentary studies has grown considerably".

P4225 L8 "proceeding"???

This sentence is changed to "Sometimes this documentary data have been compared with other proxies, mainly from dendroclimatic reconstructions"

Material and methods

P4228 L1 change "treetops" by 'crowns'

Changed

P4230 L8 change “indicated” by ‘used’

Changed

P4230 L11 & L14 change “diminution” by ‘decrease’?

Changed

P4230 L21 change “a brusque” by ‘an abrupt’?

Changed

P4231 L6-7 change “an extensive” by ‘a long’?

Changed

P4231 L13 change “in the order of” by ‘of’

Changed

P4231 L25 change “in” by ‘for’

Changed

P4232 L7-8 I do not understand the meaning of that phrase “No value that was: : :”

This sentence is changed to "No value is anomalous, nor do any of them deviate much from the general range obtained, so all the chronologies have been accepted in carrying out this study."

P4234 L3 “individual chronologies,” Does the author mean chronologies established for each tree?

Yes

P4234 L2-6 confusing

This sentence is changed to "Table 3 shows only extreme growth values matching with respect to the first criterion in 75% or more of the local chronologies and which fulfil the second criterion in the regional chronology".

Discussion

P4236 L19-21 “Furthermore: : : “ Delete, it has been said just some line before P4237

Done

P4237 L13 “The pointer years 1962, 1963 and 1965 could well correspond with the period of dry summers : : :” One way to be sure of that the author can draw a bioclimatic diagram and be sure. Besides the year 1963 was very cold as well. The same with the year 1879 that is also a pointer year in North Africa (Cedrus atlantica chronologies).

In effect the analysis of the Navacerrada register shows that both 1962 and 1964 were dry, 1963 is cold but not too.

P4237 L17 damp? I do not understand the meaning of that word here

I change two paragraphs of this page because confusing, the text now is: The negative pointer years 1962, 1963 and 1965 correspond more or less with dry summers in

Navacerrada (1962, 1964) and were dry throughout Spain, according to Vicente-Serrano (2006), whereas 1986 ring was formed after the dry year of 1985 (see figure 7).... Meanwhile the positive 1959, 1973 and 1976 pointer years correspond with wet years.

P4237 L22. The summer of year 1994 was dry and hot over the whole Europe. Was this a good climatic year for the pines studied?

In Valsaín it is a good growth year if it is compared with 1995 and 1996, even though it is the driest year of Navacerrada record.

P4238 L5 “storm” Were they storms of snow and rain? Does the author know if there were snow avalanches? The winter of that year, 1996, was one of the most extreme snow avalanche events in the Pyrenees (see Muntán et al. Nat. Hazards Earth Syst.Sci., 9, 1599–1612, 2009).

1996 is a pointer year only in the studied site named Valsaín (the others chronologies are not so long) and I am sure in this site was not avalanches. The damages were branches breaking under the weight of snow - frozen snow and afterwards strong winds- (J. Donés, pers. comm.).

P4238 L8-9 “– affected the normal development of the cambium in this year.” Probably due to the damage and crown reduction?

Yes. Thanks this last comments I changed the paragraph P4238 L3-16 to clarify these questions: "This year was anomalous to the normal development of the cambium, due to the branches breaking under the weight of snow (J. Donés, pers. comm.)."

P4238 L19-20 Change “Our data” by ‘our results’ and improve the sentence. There always exists variability in tree-ring chronologies. I think that the author means that pointer years are not evenly distributed throughout time.

This sentence was changed to: Our results show that pointer years and intervals are not evenly distributed throughout time, instead of both in the 17th and 20th centuries the macroclimatic anomalies that affected growth were more frequent and more extreme than in the other two centuries analysed.

Figures and Tables

Fig 3 not cited in the text

Cited

Fig 4 labels and tick-labels bigger

Done

Fig 5 must be improved

Done

Fig 6 improve the graph (Y-scale?) and the legend, it is not clear. The author could split the figures into two or three parts to better see the pointer years.

Done

Fig 7 improve, do not use the grey and make clear the labels and tick-labels

Done