

## ***Interactive comment on “Fluctuations of Glaciar Esperanza Norte in the North Patagonian Andes of Argentina during the past 400 yr” by L. Ruiz et al.***

**Anonymous Referee #2**

Received and published: 10 February 2012

Overall, an interesting contribution and competently done. Two major comments:

1) It is quite long and there is some repetition; it could be gone through and cut down by several pages.

2) Errors associated with the tree-ring dating of the moraines could be made more explicit. For example, in Figure 5 and Text, I wonder if it would be better to round the ages of the moraines based on tree rings, given the errors and assumptions you needed to make. The figure seems to imply one year accuracy. For example, the outermost moraine could be 1650 (+/- ?), the 1691 could be 1690 or even 1700, etc. Or even better, a range could be given, based on the age range of trees and estimates of the potential errors of the assumptions. Similarly, Figure 6 could be drawn with some estimation of the errors – a wider band rather than a line.

C2635

A few comments: Line 81: “As mentioned above” not needed

Line 110: “During the warm season the westerlies are stronger...” Don’t you mean “weaker”? I would think the westerlies are stronger in winter, when the pole-equator temperature gradient is greater. Or am I missing something?

Line 118: “notorious” is not a very good word here; I assume you mean “large”.

Line 160-161: do you mean “the size distribution and shape of the clasts”? The sentence is not entirely clear.

Lines 170-173: It is not clear to me how accurate this estimation would be or why 20 yrs was chosen as the default. Perhaps a comment on the assumed precision, or else a note stating that it really doesn’t matter at the scale of the analysis. And a statement of how many samples were estimated this way.

Line 192: “digitized”

Line 193-194: drop “the freely available software”, but perhaps give a url.

Line 312ff: This is an interesting observation, but the discussion of it would it be better in the Discussion rather than Results.

Line 361-2: reword – not clear. Alternatively, lines 361-372 could be simply dropped, they are out of place and repetitive. Same with the first sentence of the next paragraph.

Line 400: “. . .”is interesting for a number of reasons:” drop this phrase and get right to the results – if it were not interesting you wouldn’t be discussing it, so not needed.

Line 413: “The available evidence. . .”

Discussion and Conclusions: This is quite long, and there is a fair bit of repetition and some speculation. I would suggest going through and cutting it back to just summarize the history of the site, with a brief discussion of the relation to others and the climate causes.

C2636

Figure 2 caption: you mean "see Figure 3"? But I don't quite understand what this figure is. Is it a retouched photo? The green debris fans look odd. The colors on the bottom legend don't resemble that on the photo in my version. Also, I assume it is taken with a wide-angle lens, and greatly distorts the picture. To say the boulder is 5 m is not very helpful; I assume the photo covers several km from west to east, but using this as a scale suggests it is a few hundreds of meters. I think we need some explanation.

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Interactive comment on Clim. Past Discuss., 7, 4073, 2011.

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