

## ***Interactive comment on “Observations of a stratospheric aerosol veil from a tropical volcanic eruption in December 1808: is this the “Unknown” ~ 1809 eruption?” by A. Guevara-Murua et al.***

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General comments:

This paper provides fresh observational evidence, from historical nineteenth century South American literature, of a probable stratospheric volcanic eruption near the end of the year of 1808. The evidence is thoroughly vetted in terms of source verification and scientific description, despite the fact that the primary sources were not scientific by modern standards. I commend the authors for applying rigorous scientific analysis and for placing the documented evidence appropriately in the context of current research and understanding of the impact of volcanism on the global atmospheric and

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climatic environment. One significant contribution of this unique piece of research is to narrow the possible range of eruption dates of this potentially significant yet little-known eruption to the early part of December, 1808, a time period consistent with results from ice core studies. Moreover, the careful analysis by the authors pinpoints the boreal winter/austral summer as the season of eruption. All of these will probably help with and stimulate efforts to identify the source volcano in the tropics. In addition, the observed possible climatic effects (seasonal temperatures, precipitation and wind directions) at northern South America, as a result of a probable stratospheric volcanic eruption, could provide a check on model simulations of specific aspects (e.g., the positioning of the ITCZ) of climatic impact of volcanic eruptions. I think that the research in volcanic records, atmospheric dynamic and climatic impact is comprehensive and the work is exemplary in integrating physical science and historical research. Although the paper is in general well written, I do think that there is some redundancy in the description of observations of historic volcanic eruptions. In addition, I see some details as not necessary. Therefore, I suggest that this paper can be made more concise. See my specific comments below.

Specific Comments:

1. Page 1905, Line 15: Cooling is associated with atmospheric effects of volcanic eruptions. Therefore, it would be better to use words other than “extend beyond cooling” to refer to atmospheric effects. How about “In addition to cooling, large eruptions produce visibly observable global atmospheric effects”?
2. Page 1905, Lines 21-23: This sentence seems to imply that the Laki dry fog affected large parts of Europe, when in fact the dry fog was probably felt strongly only in Iceland.
3. Page 1905, Line 28 to Page 1906, Line 13: I think such detailed description of the observations of the Krakatau aftermath is not necessary. Maybe a concise summary is sufficient.
4. Page 1913, Lines 9-13: This description is almost identical to that in Page 1910,

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Lines 22-27.

5. Page 1914, Lines 6-8: I don't quite understand this. Why is it significant that the twilight glows seen in Lima were not seen in Bogota?

6. Page 1914, Lines 22-24: Would such a large eruption in Central America be expected to be recorded in the Spanish colonial archives?

7. Page 1918, Lines 12-22: I like this analysis of the possible social and political reasons why the 1808/1809 eruption was not documented in European and Western Hemisphere written historical records. However, as this is likely the opinion of the authors (I am guessing this, based on the lack of cited work for this part) and therefore quite speculative, I suggest to move this to the Discussion section.

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Interactive comment on Clim. Past Discuss., 10, 1901, 2014.