

## ***Interactive comment on “An Early Low Latitude Aurora Observed by Rozier (Beziers, 1780)” by Chiara Bertolin et al.***

### **Anonymous Referee #1**

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I have carefully read the paper titled “An Early Low Latitude Aurora Observed by Rozier (Beziers, 1780)”. The authors present a suspected aurora observed by Francois Rozier on 15 August 1780 in Beauséjour, close to Beziers (at MLAT= 50.18°N, according to the authors). It should be noted that the observation was made under adverse weather conditions (presence of a lightning storm). In section 4, the authors indicates that at the same time an aurora was also observed at Ratisbon (Germany, 49° N), 5.5° further north than Beziers, and recorded in Angot’s catalogue (Angot, 1897). If this article is selected for publication, I suggest some revisions to the manuscript and other small suggestions before it can be published in ANGEOD.

1 Background and Introduction Line 20: For the physical mechanism of the aurora origin, (Vazquez et al. 2014) is not the appropriate reference (see e.g., Brekke, A.,

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2013, Physics of the Upper Polar Atmosphere, 2nd edn. Springer, Heidelberg). Lines 25-26: The three articles cited relate to the Carrington event. It is interesting to point out other exceptional events, such as that of 1921 (Silverman, S.M., Cliver, E.W.: 2001, J. Atmos. Solar-Terr. Phys. 63, 523), as well as that which occurred in 1770 (Hayakawa, H., et al.: 2017, Astrophys. J. Lett. 850, L31). Line 26: About LLA, the authors state that "and have been considered a proxy of solar activity". This needs to be correctly documented. Overall, I think that this section needs to be improved and expanded with more background information.

2 Methodology 2.1. The Observer The subsection (2.1), which is a biography of F. Rozier, is unnecessary and the text should be reduced considerably. Lines 35-39: please refer to reliable sources for accurate information and remove the links. 2.2. The Documentary Source and the Observation description Lines 65-66: The book's title should be rectified as follow: Observations sur la physique, sur l'histoire naturelle et sur les arts, avec des planches en taille-douce Lines 66-67: The subtitle should be rectified as follow: Observation sur une Nuée rendue phosphorique par une surabondance de l'électricité, vue de Beauséjour près de Beziers, le 15 Août Lines 82-83: bad translation: The sentence "avant-coureurs de l'orage" means "before the storm" not "before it was orange colored" Line 93: The sentence "l'orage s'éloigna de Beziers" means "the storm moved away from Beziers", not "the orange moved away from Beziers" Line 101: why the author uses the term "explosion"? Page 2: Footnote 1: The reference must be written correctly as indicated in "Manuscript preparation guidelines for authors" of ANGEOD (Publisher, Location. . .). Also, please indicate the relevant pages. 3 Analysis of the Observation Line 105: Please specify how you obtained the two values of solar depression angle (13° and 14.9°). Lines 113-121: Color: as I said before, the orange color is not specified by the author. Therefore, this paragraph must be corrected. Lines 133-134: There is no exact definition of the low latitude, but for me the present event must be classified as a mid-latitude aurora!

4 Discussion Lines 138 and 140: (Angot, 1897) not (Angot, 1896) Lines 157-

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160: A similar phase opposition and anti-correlation between auroral occurrence and sunspot were reported by some authors. It is an important point which must be well-documented (see e.g., Silverman, S.M., 1992, Secular variation of the aurora for the past 500 Years, Rev. Geophys. 30, 333–351).

Overall, a more extended state of the art is needed. Some articles relating to the present work should be viewed and cited (e.g., Ordaz, J., 2010, Auroras boreales observadas en la Península Ibérica, Baleares y Canarias durante el siglo XVIII, Treb. Mus. Geol. Barcelona 17, 45-110; Legrand, J. P., & Simon, P. A., 1987, Two hundred years of auroral activity (1780-1979), AnGeo 5, 161-167; ...)

Conclusions I think the conclusion is too short and it does not summarize the work in sufficient detail.

References Line 237: The source of the data (WDC-SILSO) must be cited properly as indicated on their website. I think: SILSO data/image, Royal Observatory of Belgium, Brussels. In addition, you can also indicate the version.

Figure 1 is not cited in the text. Furthermore, Figure 1 (b) hides part of Figure 1 (a); I think it is better to remove Figure 1 (b).

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