

***Interactive comment on “A re-evaluation of the Italian historical geomagnetic catalogue: implications for paleomagnetic dating at active Italian volcanoes” by F. D’Ajello Caracciolo et al.***

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This paper describes a re-evaluation of the the Italian historical data compilation by comparison to other field reconstructions from historical and archeomagnetic data and in conclusion provides guidelines for the most suitable secular variation curve for paleomagnetic dating of southern Italian volcanics. The topic clearly is of interest both for paleomagnetic dating and in terms of past geomagnetic field reconstructions and thus merits publication in SE. The manuscript is generally well-written, but slight improvements of the English usage are advisable. However, I have several questions and comments about the (description of the) methods and assumptions and I recommend

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some moderate revision of the manuscript before final publication.

Questions and comments to the authors Major points: 1) The re-location to the Stromboli location and the consideration of the westward drift are the most important new aspects in this paper. I found it rather difficult in some parts of the manuscript to understand exactly how the data had been treated and what implications that might have. In my opinion it would be important to include the equations about the re-location using the pole method for declination and inclination data, and also the equations how the westward drift then was taken into account.

2) From the text I understand that the values in tables 1 and 2 and displayed in Figs. 3 and 7 are values from a smoothed polynomial curve. That fact should be mentioned in the captions. I think it could also be useful to include the polynomials with the confidence intervals in Fig. 6, in order to evaluate the effect of the smoothing polynomial.

3) Geomagnetic jerks indicated in Figs. 3 and 7 and related discussion in the text: It seems to me that two different phenomena have been mixed up here. Note that there is a significant difference between geomagnetic jerks and archeomagnetic jerks. In the plotted curve you might expect to find archeomagnetic jerks showing up as cusps, as these are significant changes in the field directions. Geomagnetic jerks, however, are defined as significant changes in secular variation, i.e. the first derivative of the field components. You would not expect to see cusps at the times of geomagnetic jerks in the shown figures, but you would have to plot the derivatives of the field components. The discussion has to be modified accordingly. See also M. Mandaia and N. Olsen (2009): Geomagnetic and archeomagnetic jerks: where do we stand? EOS, 90 (24), 208.

4) Westward drift correction: the westward drift correction factor has been calculated from data only from 1805 onwards. Indeed it seems to me that when using pre-1805 data, one would obtain an eastward instead of westward drift with that method, or would the considerations of Fig. 4 also give negative values in that time period? Why should

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it be justified to apply the westward drift correction to the whole timeseries?

5) p.4, l. 19/20: It is right that in principle the modeling method of Pavon-Carrasco can take advantage of the whole data base. However, the mentioned publication states that the curve of data relocated to Viterbo has been used. The sentence should be modified to avoid misunderstanding.

Minor details and some suggestions for improvement of English usage: I suggest using "via the pole method" instead of "via pole method" (several occurrences throughout the manuscript) p. 6, l. 4: "from sites" instead of "by sites" p. 6, l. 4: "e.g. north of Rome" doesn't really make sense. Do you mean "i.e. north of Rome", or perhaps "mostly north of Rome"? p. 6, l. 10: replace "null corrections" by "no corrections" p. 7, l. 6: what's the purpose of the two dashes around 100 nT? p. 8, l. 12: "from further consideration" instead of "by" p. 9, l. 7: perhaps "have concentrated on" instead of "have contended on" p. 10, l. 14: Either give arguments why the data are very valuable, or remove the rest of this sentence from "but the few measurement. . ." onward. p. 10, l. 16: correct spelling of "Furthermore" p. 10, l. 26: correct spelling of "greater" p. 23: Fig. 6 seems to include more data points for inclination prior to 1650 than Fig. 2, although the caption and text say that it's the same data.

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