

## ***Interactive comment on “Revisiting the statistical analysis of pyroclast density and porosity data” by B. Bernard et al.***

**B. Bernard et al.**

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General comments:

#1: Symbol and definition table: we agree with the reviewer and included a table of symbols and definitions with links to the results of the numerical codes. The n number is clearly defined in the text L105. We don't feel necessary to include a sample set number as it would not be used in any calculation.

#2: equation form: to answer some of reviewer#1 comments the form of the equations has been changed, solving the issue raised by reviewer#2.

#3: stability analysis: this paragraph has been reworked to answer to the reviewer's comment. The figure 4 represent the slope below 5% of absolute error compared to

C660

the number of measurements. If the slope is high (>1 for example) it means that if we add some measurements the density average might change a lot. This is actually explained in the paragraph 3.2.

#4: Graphical parameters: we agree with the reviewer. The sentence has been modified to explain better how the Folk and Ward parameters allow a better distinction of the deposits.

#5: Analytic error compared to fluctuation of the porosity mode: in general the relative error on density measurements using the Houghton and Wilson (1989) methodology is under 5% and similar for the Kueppers et al (2005) methodology. Nevertheless the fluctuation of the porosity mode cannot be compared to the analytical error in the case because it is based on the same data. The fluctuation is not an error, it is an artefact due to the use of frequency analysis.

Specific and technical comments in the pdf:

Most of the comments are relevant and have been used to improve the manuscript, see the annotated version of the manuscript.

For the figure 1 the shape of the cumulative curves 1B and 1D are similar and can be superposed through a rotation of 180 degrees and not a mirror as proposed by the reviewer. Therefore we did not changed the text.

Please also note the supplement to this comment:

<http://www.solid-earth-discuss.net/7/C660/2015/sed-7-C660-2015-supplement.pdf>

Interactive comment on Solid Earth Discuss., 7, 1077, 2015.