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Solid Earth Discussions

Interactive comment on "Particle size distributions by laser diffraction – Part 1: Sensitivity of granular matter strength to analytical operating procedures" *by* F. Storti and F. Balsamo

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Overall this manuscript is well thought out, and the authors have gone to great lengths to create a workflow for creating specific SOPs for given sediments. Moreover, the concepts presented here show the possibility of using a laser diffraction particle size analyzer successfully on weaker materials. Although there are other factors/problems associated with the use of laser diffraction particle size analyzers which should be considered when interpreting data (ie. problems with measuring finer particles as described in Jonkers et. al. 2009), this paper explores many factors in great detail. The figures are well made, and in combination with the interpretations presented in the text,

clearly demonstrate the results and conclusions presented by the authors. Thus, I have no specific suggestions pertaining to the methods, content or interpretations presented. I do however have a few minor edits listed below. Some typographical/rewording suggestions are made in the attached PDF.

1- A brief list of some examples of strong and weak sediments would be beneficial, preferably in the introduction, page 95 after line 23. The inclusion of this information would make this paper more useful by further emphasizing the possibilities of measuring particle size on weak sediments.

2- Page 102 after line 23. An additional possibility should be considered as a fourth option. When there is a mix of coarse and fine particles in a sample, as in the CABRE sample, at high pump speeds sand moves through the sample measurement chamber slower than the finer particles, thus creating the illusion of a higher content of fines. This can be observed simply by removing the sample cell, and observing the sediment move through the sample measurement chamber.

3-Figure 24- The flow chart presented in fig. 24 is designed well, however it would be helpful if abbreviations were either eliminated in the chart and words spelled out, or the abbreviations were explained in the caption.

4-I am curious why ethyl alcohol is used as a dispersant. I would assume that it is used with the carbonate breccia to negate the possibility of particles becoming finer by dissolution in water? Or is it being used to breakdown the electromagnetic bonds between clay sized particles? A brief paragraph at the beginning of section 7 describing why ethanol was used and what possible effects it would have on the quartz sand and carbonate breccia would be beneficial. Also, was the dispersant refractive index changed when the ethanol is used?

5-Measure precision should probably be changed to measurement precision throughout the manuscript

6-Ethylic alcohol should be changed to ethanol or ethyl alcohol throughout the manuscript.

Please also note the supplement to this comment:
http://www.solid-earth-discuss.net/1/C48/2010/sed-1-C48-2010-supplement.pdf

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Interactive comment on Solid Earth Discuss., 1, 93, 2009.