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Interactive comment on "Cyclic fracturing during spine extrusion at Unzen volcano, Japan" *by* O. D. Lamb et al.

M. J. Heap (Editor)

heap@unistra.fr

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Dear Mr Lamb,

I have now received three reviews of your manuscript. The comments are generally supportive. Based on the reviewers' comments, and my own reading (see below), moderate revision is requested. Please now prepare a point-by-point rebuttal letter and revised manuscript. Thank you for submitting your work to Solid Earth,

Mike Heap (Topical Editor)

Editor comments

Page 2110, Line 17: What do you mean by "ductile failure"?

Page 2124, Line 10: The work cited to support this statement are all from the same working group. Perhaps it would help to also cite Okumura et al. (2015, JGR)?

Page 2124, Line 18: Typo. "produce".

Page 2124, Line 24: Why would "extremely dynamic" temperature and stress conditions favour pseudotachylyte formation? The formation of these features requires constantly changing temperatures and stresses? I would reword these sentences to improve clarity.

Page 2125, Line 20: Higher porosity magma is more likely to be brittle? Is this true? The statement of crystals and pores influencing the mechanical response of magma should be supported by references. Cordonnier et al. (2012, Geology) springs to mind.

Page 2125, Line 27: Is there not a reference to Thomas and Neuberg (2012, Geology) missing here?

Page 2126: Line 27: "magma failure results from strain localisation". This, for me, is an odd statement. In this context, isn't magma failure defined as the localisation of strain?

Page 2126: Line 29: Do you mean "outgassing" here?

Page 2128: Lines 20-21: I'd say it was more than "highly unlikely"!

Page 2128: Lines 24: Fluid saturation can also increase elastic wave speeds. Did the authors consider this as an explanation? Have a look at O'Connell and Budiansky (1974, JGR).

Page 2128: Lines 25: Surely a classic reference to how cracks reduce elastic wave speeds is needed here? What about O'Connell and Budiansky (1974, JGR)?

Page 2129, Line 29: I think references are needed to support the statement regarding the influence of fluids on rock strength and seismic velocities.

Interactive comment on Solid Earth Discuss., 7, 2109, 2015.