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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Pre-earthquake magnetic pulses" *by* J. Scoville et al.

J. Scoville et al.

atpsynthase@mail.com

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Dear Dr. Masci,

I can understand that you might be somewhat suprised that a seemingly innocuous suggested reference could spark such a lively discussion.

You should understand that I *routinely* perform experiments of the type described in Dahlgren et al. (2014). I did one yesterday, and I will do another later today. These experiments *never* produce the results reported in that paper, even when the same equipment is used in an identical experimental setup. The results of the paper you cite are simply not reproducible. In fact, the opposite results are achieved consistently.

You can surely understand our reluctance to cite results that we know to be incorrect.

I personally suspect that, in addition to the problems that are evident from the text of Dahlgren et al. (2014), some wires on the instrumentation got reversed, or some equivalent error, leading to the incorrect results.

A more detailed discussion of fluid-saturated rocks could be interesting, but would constitute a separate study. We note in the manuscript that the crustal rocks in fault zones (often thought to be fluid saturated, a fact that we should perhaps make explicit) exhibit semiconductivity, with conductivities often falling in the range 0.1-1 S/m, so the semiconductor equations applied in the manuscript should constitute a reasonable model of their large-scale electrical properties.

Best Regards,

John Scoville

References

Dahlgren, P. R., M. J. S. Johnston, V. C. Vanderbilt, and R. N. Nakaba (2014), Comparison of the stress-stimulated current of dry and fluid saturated gabbro samples, Bulletin of the Seismological Society of America, 104, 2662-2672.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 7367, 2014.