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Natural Hazards and Earth System Sciences
Discussions

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

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Dear Authors, I suggest you considering the following recent paper:

Dahlgren, et al. (2014), Comparison of the StressâĂŘStimulated Current of Dry and FluidâĂŘSaturated Gabbro Samples, Bull. Seismol. Soc. Am., 104(6), 2662–2672, doi: 10.1785/0120140144.

Dahlgren and his colleagues investigated charge generation as function of stress in gabbro both for dry samples and samples saturated with fluid. Similarly to previous experiments, stress-related electric currents were observed in dry samples. On the contrary, no electric current was generated in fluid-saturated samples during several cycles of stress loading. Since the Earth's crust is fluid saturated, Dahlgren, et al. (2014) conclude that significant electric currents are not expected to be generated the

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days before earthquakes during the slow stress accumulation in the region of earthquake nucleation. As a consequence, electric and magnetic signals are expected not to be observed on the Earth's surface.

In my opinion you should include in your manuscript a section in which the results of Dahlgren, et al. (2014) are discussed. Particular attention should be paid on the generation of magnetic pulses in the presence of fluids, as well as on how fluids influence magnetic pulses when they cross the Earth's crust. If the influence of crustal fluids is not discussed, your semiconductor model of rocks hypothesizes a merely dry (but not real) Earth's crust. This, however, must be pointed out in your manuscript.

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