Correction to "How pore fluid pressurization influences crack tip processes during dynamic rupture"

Nicolas Brantut*, and James R. Rice†

January 3, 2013

In the article "How pore fluid pressurization influences crack tip processes during dynamic rupture", by N. Brantut and J. R. Rice (*Geophysical Research Letters*, 38, L24314, doi:10.1029/2011GL050044, 2011), the equation expressing the slip rate evolution in time for a non-singular, semi-infinite crack propagating at a constant speed v_c (equation (8) in the original paper) was mistyped, and should read:

$$V(t) = \frac{2}{\pi} v_c g_{III}(v_c) \frac{\tau_p - \tau_r}{\mu} \left(2\sqrt{\frac{v_c t}{R'}} + \left(1 - \frac{v_c t}{R'}\right) \ln \left| \frac{1 + \sqrt{v_c t / R'}}{1 - \sqrt{v_c t / R'}} \right| \right). \quad (1)$$

Consequently, equations (18) and (20) should also be modified as followed:

$$\Delta T_m = \frac{\tau_r}{\rho c} \sqrt{\frac{\pi G v_c g_{III}(v_c)}{2\alpha_{th}\mu}}, \quad (2)$$

and

$$\frac{f_w \Delta p_m}{\tau_r} = \frac{f_w \Lambda}{\rho c} \frac{1}{\sqrt{\alpha_{th}} + \sqrt{\alpha_{hy}}} \sqrt{\frac{\pi G v_c g_{III}(v_c)}{2\mu}}. \quad (3)$$

Figure 4 in the original paper was drawn using the flawed equation (18), and the corrected curves should be multiplied by a factor 5/3 (i.e., an positive offset of $\log_{10}(5/3)$ should be added in the log-log plot). All other curves and simulations were performed with the correct formulas, and the arguments presented in the text of the article remain unaffected.

acknowledgments
We thank Dr. Yuanyuan Cheng from Harbin Institute of Technology, China, for pointing out these inconsistencies.

*Rock and Ice Physics Laboratory, Department of Earth Sciences, University College London, London, UK.
†Department of Earth and Planetary Sciences and Division of Engineering and Applied Sciences, Harvard University, Cambridge, Massachusetts, USA.