Corrigendum

Corrigendum to "New approaches to inferences for steep-sided domes on Venus"
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A typographical error contained in Quick et al. (2016) indicates the incorrect units for the value of the combined quantity $(r_o h_o^3)$ that is the basis of Figs. 5, 6, and 7, and Tables 2 and 3. Using the values of r_o and h_o provided in Table 2, it can easily be shown that the combined quantity is correctly stated as $r_o h_o^3 = 0.617$ km^4.

As correctly stated in Quick et al. (2016), the combined quantity of $(r_o h_o^3)$ determines the family of curves shown in Fig. 5. The derivation of this relationship is shown below for completeness. Note that all results as reported in Quick et al. (2016) remained unchanged.

Using a value of $\varepsilon = 0.25$ from (18), where $n = 3$ is assumed for a Newtonian fluid, (19) can be written as

$$x^* = \frac{r^{*2}}{4t^*}\left[\frac{\Phi}{4}\left(\frac{Q^*}{\pi}\right)^{3/4}\right]^{-1} \tag{E.1}$$

where the variables with "*" are in their dimensionless form as defined in Section 3.2 of Quick et al. (2016). Eq. (E.1) can be converted back to a dimensioned form by using expressions for Q^* in (17), r^* and t^* in (13), and τ_{vv} in (14),

$$x^* = \frac{r^2}{\Phi u_o h_o t}\left[\frac{Q_o}{\pi u_o h_o^2}\right]^{-3/4} \tag{E.2}$$

Assuming a volume flow rate for a dome of $Q_o = 2\pi u_o r_o h_o$, as stated in Section 3.2.1, and the radial velocity, u_o, for a Newtonian fluid as defined in (28), Eq. (E.2) can be re-written as,

$$x^* = \left(\frac{3\nu_o}{\Phi g'}\right)\left(\frac{r^2}{t}\right)\left[2r_o h_o^3\right]^{-3/4} \tag{E.3}$$

Recalling that ν_o, Φ, and g' are all constant, Eq. (E.3) can be re-arranged as,

$$\left(\frac{r^2}{t}\right) = x^*\left(\frac{\Phi g'}{3\nu_o}\right)\left[2r_o h_o^3\right]^{3/4} \tag{E.4}$$

where the independent variable, x^*, takes on values from 0 to 1. Eq. (E.4) is constrained by knowledge of the final dome radius, r_f, at time t_f, when $x^* = 1$. Thus, the family of curves shown in Fig. 5 for $r_o h_o^3 = 0.617$ km^4 were selected to provide the best fit to the existing data for the Rusalka dome. Note in Eq. (E.4) that t and ν_o are directly proportional to each other. Thus, selection of a specific viscosity is directly reflected in the emplacement time (e.g., an order of magnitude increase in ν_o results in an order of magnitude increase in the emplacement time, t_f, for a fixed final dome radius, r_f).

Reference

Quick, L.C., Glaze, L.S., Baloga, S.M., Stofan, E.R., 2016. New approaches to inferences for steep-sided domes on Venus. J. Volcanol. Geotherm. Res. 319:93–105. http://dx.doi.org/10.1016/j.jvolgeores.2016.02.028.