

Interactive comment on “Estimating the depth and evolution of intrusions at resurgent calderas: Los Humeros (Mexico)” by Stefano Urbani et al.

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This is a relatively short paper evaluating the depth and evolution of intrusions at Los Humeros caldera, Mexico. It utilises structural field analysis and analogue sand box experiments to suggest that surface deformation is a result of cyptodome intrusion at a relatively shallow depth (c. 425m). It is not particularly innovative or novel, but does add some useful new information about Los Humeros caldera.

The main problem with the paper is that it is poorly written, hence is quite hard to follow. The description of events during the Caldera/Post-caldera evolution is confusing, largely because of differing names used. For example; the Cuicuilitic Member is variously called simply ‘Cuicuilitic’ (in some figures), Cuicuilitic member, Cuicuilitic de-

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posits, Cuicuilitic pyroclastics, Cuicuilitic rocks, and Cuicuilitic stage, with occasional reference to the mapping unit Qtc! There is no real description of this unit, which appears to be a key to understanding the evolution, but one assumes it is a Plinian airfall deposit, so perhaps 'Cuicuilitic Pyroclastics' is the best term to use. Perhaps a simple table within Section 2, showing stratigraphy would help, but using terminology consistent with the text and figures. There are lots of redundant words in the text (e.g. Page 2, line 4: 'On this regards') and variability in spelling (e.g. Maztaloia in text; Maxtaloia in figures). There are a number of apparent typos (e.g Cilinder for Cylinder in Fig. 2; Obsydian for Obsidian in Fig. 9). Figures in general do not relate well to the text, and labelling sometimes seems to differ from the caption (e.g. Figure 5e).

Section 4.2 is also not well written. Why are only experiments 4, 5 and 6 shown? Did experiments 1, 2 and 3 fail, or show different results not compatible with the conclusions? Why also are only the results of experiment 5 and 6, and not 4, shown in Figure 6, and which experiments are shown in Figure 7? The reference to 'graben formation' should specify 'apical graben formation', otherwise there is a danger of confusion with regional tectonic features.

Apart from the use of redundant words and poor English, the Discussion section is much better and is reasonably justified by the data provided. Title, Abstract, Conclusions and References are all appropriate. Figures are all generally useful, although 1 and 9 are very small and hard to read, and the use of red lettering in some darker figures (e.g. 5 and 6) is not recommended, as it is hard to read. I am not sure some photos add a great deal (e.g. Figure 4b and f). The caption to Figure 8 is inadequate! In Figure 9c, why is the Los Humeros intrusion 'projected', if between 7.3 – 3.8ka, and in the legend what is 'Hydrothermalism' (Alteration?)?

A version with suggested editorial changes is either attached to this review, or will be sent separately to the editor.

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Please also note the supplement to this comment:

<https://www.solid-earth-discuss.net/se-2019-100/se-2019-100-RC1-supplement.pdf>

Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2019-100>, 2019.

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