Solid Earth Discussions

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Comment on se-2020-218

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Community comment on "Reply to Norini and Groppelli's comment on “Estimating the depth and evolution of intrusions at resurgent calderas: Los Humeros (Mexico)” by Urbani et al. (2020)" by Stefano Urbani et al., Solid Earth Discuss., https://doi.org/10.5194/se-2020-218-CC1, 2021

We thank Urbani et al. for the opportunity to further contribute to this constructive discussion to define the structural and volcanological evolution of the resurgent processes affecting Los Humeros Volcanic Complex (LHVC). Here we would like to focus on two points that in our opinion are particularly significant among the elements presented in the Reply submitted by Urbani et al. that could be further discussed.

- A new article about the structure of LHVC has just been accepted and published online: Bonini M., Maestrelli D., Corti G., Del Ventisette C., Moratti G., Carrasco-Núñez G., Giordano G., Lucci F., Norini G., Piccardi L., Urbani S., Montanari D. (2021). Modelling intra-caldera resurgence settings: Laboratory experiments with application to the Los Humeros Volcanic Complex (Mexico). Journal of Geophysical Research: Solid Earth. https://doi.org/10.1029/2020JB020438. In this work, which includes most of the authors of Urbani et al. (2020 and Reply under review):

  - the Las Papas and Las Viboras structures are analyzed in the field and identified as recent faults dislocating the Cuicuiltic unit.

  - the Arroyo Grande and Maxtaloya structures are similarly studied by Bonini et al (2021) and identified as recent faults displacing the Cuicuiltic unit.

  - Bonini and co-authors conclude “that surface deformation of caldera floor may be induced by renewed magmatic pressure produced at approximately 4.5 km depth”, in agreement with Norini et al. (2015, 2019).

- The temperature logs of the H4 well presented by Norini and Groppelli (2020) and in the Reply by Urbani et al. were obtained with two different methodologies. The log presented by Norini and Groppelli is a stabilized formation temperature profile (Arellano et al., 2003, and references therein). In any case, neither of these two logs show an anomalous temperature at the depth of 425 +/- 170 m calculated by Urbani et al

(2020).

In our opinion these points, among others, suggest that the arguments discussed in our Comment are still valid (Norini and Groppelli, 2020) and more constructive discussion and data are needed to improve the knowledge of the LHVC structure and evolution.

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