

***Interactive comment on* “The Volcanoes of Naples: how effectively mitigating the highest volcanic risk in the World?” by Giuseppe De Natale et al.**

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Review of the manuscript “ The Volcanoes of Naples: how effectively mitigating the highest volcanic risk in the World? “ by Giuseppe De Natale, Claudia Troise, Renato Somma.

This is a very nice article that makes the point about a hot topic such as volcanic risk in the Neapolitan area. I have a few comments to improve the paper and make it a real reference for similar summaries about volcanic risk:

1) I would spend words to distinguish between long-term and short-terms assessment; This is particularly about hazard, and it is about forecasting during unrest. At Campi Flegrei caldera this is an even hotter topic. More in general, I think the paper would

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benefit of this: the nice introduction seems to prelude to some discussion of the short-term forecasting, especially when false and missing alarms are described or where it is said that successful decision were taken “in progress” (e.g., Hekla or Montserrat). So a brief description of the state-of-the-art, including contradictions, can be given, very likely when describing each of the three Neapolitan volcanoes. Of course, most of the interest turns around Campi Flegrei and its ongoing unrest. This has a peculiar relevance, given the high-level of OV monitoring and the impressive amount of publications that have appeared based on monitoring data.

2) The concept of progressive evacuation is important. Phasing is already invoked for other emergency plans (e.g. the La Soufrière the Guadeloupe one approved by Préfecture de Guadeloupe in France). It would be highly interesting if more insights and/or point of views could be given for CF caldera, where the main vent of next eruption is known probabilistically and where a robust local phreatic phase could start anticipating the magmatic one, which in turn can evolve following different scenarios. I think that the concept of phasing/progressive evacuation might already be introduced around line 330, where the logistical non-sense of an immense red area is discussed.

Some specific comments: -Line 60 “as it can be” . . .

-Personally I think that entire cycles of public conferences should be given around the concepts of “false” and “missing” alarms. This is likely one of the best way to make people understanding and appreciating the uncertainty of (short-term) hazard assessment, eruption forecasting and decision-making. It implies, of course, that whatever one may do in hazard assessment and forecasting is likely to be wrong for someone else. I think that in the case of many codes of law those two concepts may lead to opposite juridical implications and force a priori the decision (think about the "procurato allarme" and "mancato allarme"). I wonder if the Authors wants to spend few words on this.

-Line 140, about the De Natale et al; (2000) interpretation: please say few words on

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the explanation offered in that paper.

-Line 190: I think that the reference here should be also given to Moretti, R., Troise, C., Sarno, F., & De Natale, G. (2018). Caldera unrest driven by CO₂-induced drying of the deep hydrothermal system. *Scientific reports*, 8(1), 1-11. In this paper the symmetry between post-1984 subsidence and the on-going unrest is described for the first time.

-Line 206: there is place to cite papers that promote this hypothesis: Moretti et al 2017 G3, Moretti et al., 2018 SciRep, Troise et al. 2018, but also Moretti et al. 2013 (on EPSL) where it was first formulated. The paper that better summarizes interpretations and querelles is certainly “Moretti, R., De Natale, G., & Troise, C. (2020). Hydrothermal versus magmatic: geochemical views and clues into the unrest dilemma at Campi Flegrei. In *Vesuvius, Campi Flegrei, and Campanian Volcanism* (pp. 371-406). Elsevier. Åž Again, a brief description of the short-term hazard assesement (i.e. outcomes of monitoring quantities) could help, especially for CFC and its unrest.

-Line 345 on: people reallocation and 2nd life is a really good point of discussion Is any previous experience about this ? perhaps from different experiences such as cyclones. If yes, please cite.

-Line 355 on. Please take it as a very minor point that you can obviously disregard: could you do some parallel with the economic impact of the covid19 pandemics ? I say that because it would help a lot in terms of perception.

-Line 445 on. Still about 2nd life. Given the “size” of the problem you outline, I wonder if this could be part of a general socio-economic development plan of Keynesian nature at a national scale. Again, do you know if similar experiences have been done in this sense, even at a smaller scale and for different risks ?

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