

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

**Christopher Kilburn**

c.kilburn@ucl.ac.uk

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Following an overview of the historic behaviour of volcanoes in the Neapolitan district, this paper highlights the importance of planning for the long-term - even permanent - displacement of several hundred thousand people following a major volcanic emergency. The review cites the authors' previous work, but could be enhanced by adding references to studies by other groups (see suggestions at end).

Previous discussions of the emergency plans, especially for Vesuvius, have focussed on preparations before an eruption (e.g., Rolandi (2010) *J Volcanol Geotherm Res*, 189, 347-362; Papale (2017) *J App Volcanol* 6, 13). This paper raises the importance of considering also how to mitigate the economic and social consequences of long-

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term evacuation, which it has identified as a key goal for interdisciplinary social and volcanological studies. The results will have implications beyond the Neapolitan area. Nearly 70 cities with populations exceeding 100,000 live with the threat from volcanic eruptions (Heiken, 2013, *Dangerous neighbors: volcanoes and cities*. Cambridge) and so effective measures for permanently reducing the numbers at risk will have value worldwide.

The paper also notes the advantages of evacuation by sea (Lines 335-340). Have the authors assessed the numbers that could realistically be transported, especially during the 72 hours of the emergency evacuation? Local ferries have a notional capacity of 1,000 passengers and so c. 100 journeys would be required to transport numbers on the order of 100,000. For ferries to make a significant contribution, might it be necessary to increase the official evacuation time to more than 72 hours?

Fig. 4. shows an age of about 18 ka BP for the Pomici di Base at Somma-Vesuvius, whereas the text (Line 131) quotes 22 ka BP. Could the preferred age be confirmed? Rolandi (1998) has also recognised an earlier plinian eruption - the Codola eruption - at 25,000 BP (Rolandi, G., 1998. *The eruptive history of Somma-Vesuvius*. In: Cortini, M., De Vivo, B. (Eds.), *Volcanism and archaeology in Mediterranean area*. Research Signpost, 3, 77-88. He may additionally have described this eruption in a more widely distributed journal).

Fig. 7. The graph (and associated analysis) of ground movements at Pozzuoli, in Campi Flegrei, since Roman times is due to Bellucci et al. (2006, *Geol Soc London, Spec Pub*, 269, 141-158) and not to Troise et al. (2018) nor to Morhange et al. (2006 - Line 186).

Examples of additional studies that could be cited to broaden the review include:

(1) At Vesuvius, probabilistic analysis of hazard and risk have also been presented by Scandone et al. (1993, *J Volcanol Geotherm Res* 58, 263-271), Neri et al. (2008, *J Volcanol Geotherm Res* 178, 397-415), and Lirer et al. (2010, *Bull Volcanol* (2010) 72,

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411-429).

(2) At Campi Flegrei, alternative reconstructions of ground movements since Roman times have been proposed by Parascandola (1947, I Fenomeni Bradisimici del Serapeo di Pozzuoli. Genovese, Naples); Dvorak. & Mastrolorenzo (1991, USGS Spec Paper, 263, 1-47); Morhange et al. (2006, Geology, 34, 93-96); and Di Vito et al. (2016, Sci. Rep. 6, 32245).

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