



Interactive comment on “The mud volcanoes at Santa Barbara and Aragona (Sicily, Italy): Their potential hazards for a correct risk assessment” by Alessandro Gattuso et al.

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Review #2 Thanks to Giovanni Martinelli for constructive comments to our paper. We are glad for the important suggestions for the work. 1) We accepted the change of Title in The mud volcanoes at Santa Barbara and Aragona (Sicily, Italy): A contribution to risk assessment. 2) In Mellors et al., 2007, a complete catalog for the Azerbaijan mud volcano eruption has been used. The average number of eruptions per year (3.2) in the Azerbaijan catalog has remained fairly constant since 1950. For an alternate estimate of catalog completeness, they used the eruption time-of-occurrence information. They found 25 (out of 116) eruptions since 1965 have the time of eruption

recorded, concluding that 4.2 eruptions per year is an upper bound on the average number of eruptions per year. Given the uncertainties, an average of 3.2 ± 1 eruption per year seems reasonable. In our paper, we have only 4 historical paroxysm events at Santa Barbara and only one occurred in recent time (2008). It's evident that a big gap of data occurred from 1823 to 2008. For the Aragona site, the main historical events reported in our paper are 2 (1777 and 1936) and 7 (from 1998 to 2020). As for Santa Barbara, the catalog of Aragona mud volcano paroxysms could be incomplete and different data gaps are present, mainly in the historical time. The intensity of the paroxysm events in both study areas is not very clear (we have, indirectly, only the height of the mud column). There is no intensity or magnitude of the events. To apply the Guttenberg-Richter, within some limitations, and display them in graphs similar to Fig.5 (Kijko, 2011) or to Fig.8 in Youngs RR, Coppersmith KJ (1985), we should have a robust database consisting of at least a few hundred paroxysmal events and the size of each individual event should be well estimated. For these reasons, we cannot apply the approach that kindly Prof. Giovanni Martinelli suggested to us. We would thank him for the possible future strategies that shared with us and that will find in the next future. We agree with Prof. Giovanni Martinelli to continue the investigation on the seismic approach to the mud volcanism study areas. In the next future, some stations will be implemented in order to collect data in near real-time mode, transmitting them to the operative monitoring room of the Palermo INGV. Our final goal is to understand properly the two mud volcanic system areas, with a multidisciplinary approach, both geochemical and geophysical. 3) Thanks for the comment. We translated it by a native English mother language translator.

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