Supplementary Material

The February 2018 Seismic Swarm in São Miguel, Azores

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2GFZ German Research Center for Geosciences, Potsdam, Germany

3CIVISA Centro de Informação e Vigilância Sismovulcânica dos Açores, S. Miguel Island - Azores, Portugal

4IVAR Instituto de Investigação em Vulcanologia e Avaliação de Riscos

5OGS National Institute of Oceanography and Applied Geophysics, Trieste Italy

6INGV National Institute of Geophysics and Vulcanology, Rome, Italy

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# Supplementary Figures and Tables

## Supplementary Figures

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**Supplementary Figure 1.** Hypocentral 2D histograms of the earthquakes located with Loki, using the same grid used for location. (a) Map and (b) longitude and (c) latitude cross-sections of the 409 events with coherence higher or equal to 0.5, using velocity model *rfcmlaa*. The blue cross represents the average location of the selected events. The cluster is more populated between the Fogo volcano and the Congro fissural complex at depths of 7-15 km. A picture containing chart

Description automatically generated

**Supplementary Figure 2.** Temporal evolution of the cumulative number of earthquakes after each step of our workflow, using the *rfcmlaa* velocity model: (a) IPMA (solid green line) and CIVISA (solid gray) reference catalogs, (b) Lassie detections, (c) Lassie revised detections, (d) Loki results with coherence ≥ 0.5 and (e) Final earthquake catalog obtained with the template matching. Results after each step are marked with solid red lines, whereas the CIVISA catalog is shown with a solid gray line for comparison. The automatic process could reproduce ~ 84% of the manually picked CIVISA catalog.

Diagram, schematic

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