#### **Supplementary Information for**

## Thematic vent opening probability maps and hazard assessment of small-scale pyroclastic density currents in the San Salvador Volcanic Complex (El Salvador) and Nejapa-Chiltepe Volcanic Complex

(Nicaragua)

Andrea Bevilacqua<sup>1</sup>, Alvaro Aravena<sup>2,3</sup>, Augusto Neri<sup>1</sup>, Eduardo Gutiérrez<sup>4,†</sup>, Demetrio Escobar<sup>4</sup>, Melida Schliz<sup>5</sup>, Alessandro Aiuppa<sup>6</sup>, Raffaello Cioni<sup>2</sup>.

<sup>1</sup>Istituto Nazionale di Geofisica e Vulcanologia, Sezione di Pisa, Pisa, Italy.

<sup>2</sup>Dipartimento di Scienze della Terra, Università di Firenze, Firenze, Italy.
<sup>3</sup>Laboratoire Magmas et Volcans, Université Clermont Auvergne, Clermont-Ferrand, France.
<sup>4</sup>Dirección del Observatorio Ambiental, MARN, San Salvador, El Salvador.
<sup>5</sup>Instituto de Geología y Geofísica, UNAN, Managua, Nicaragua.
<sup>6</sup>Dipartimento di Scienze della Terra e del Mare, Università di Palermo, Palermo, Italy.

15 <sup>†</sup>Recently deceased.

5

Correspondence to: A. Aravena (alvaro.aravena@uca.fr).

### San Salvador Volcanic Complex - Ballistics



**Figure S1:** Density distribution of the probability of vent opening at San Salvador Volcanic Complex, associated with the occurrence of volcanic activity able to produce ballistic fragments. (a) Mean value. (b) 5<sup>th</sup> percentile. (c) 95<sup>th</sup> percentile. Results are expressed in percentage per km<sup>2</sup>.

### San Salvador Volcanic Complex - Low-intensity fallout



**Figure S2:** Density distribution of the probability of vent opening at San Salvador Volcanic Complex, associated with the occurrence of volcanic activity able to produce low-intensity fallout pyroclastic deposits. (a) Mean value. (b) 5<sup>th</sup> percentile. (c) 95<sup>th</sup> percentile. Results are expressed in percentage per km<sup>2</sup>.

# Nejapa-Chiltepe Volcanic Complex - Ballistics



Figure S3: Density distribution of the probability of vent opening at Nejapa-Chiltepe Volcanic Complex, associated with the occurrence of volcanic activity able to produce ballistic fragments. (a) Mean value. (b) 5<sup>th</sup> percentile. (c) 95<sup>th</sup> percentile. Results are expressed in percentage per km<sup>2</sup>.

### Nejapa-Chiltepe Volcanic Complex - Low-intensity fallout



Figure S4: Density distribution of the probability of vent opening at Nejapa-Chiltepe Volcanic Complex, associated with the occurrence of volcanic activity able to produce low-intensity fallout pyroclastic deposits. (a) Mean value. (b) 5<sup>th</sup> percentile. (c) 95<sup>th</sup> percentile. Results are expressed in percentage per km<sup>2</sup>.



**Figure S5:** Density distribution of the probability of vent opening at San Salvador Volcanic Complex computed using an event countingbased approach (i.e. the polygenetic central vent presents a weight higher than monogenetic vents). These maps are associated with the occurrence of volcanic activity able to produce lava flows. (a) Mean value. (b) 5<sup>th</sup> percentile. (c) 95<sup>th</sup> percentile. Results are expressed in percentage per km<sup>2</sup>.

40



### San Salvador Volcanic Complex Ballistics (event counting-based approach)

Figure S6: Density distribution of the probability of vent opening at San Salvador Volcanic Complex computed using an event countingbased approach (i.e. the polygenetic central vent presents a weight higher than monogenetic vents). These maps are associated with the occurrence of volcanic activity able to produce ballistic fragments. (a) Mean value. (b) 5<sup>th</sup> percentile. (c) 95<sup>th</sup> percentile. Results are expressed in percentage per km<sup>2</sup>.