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'Understanding volcanoes and society: the key for risk mitigation



Seismicity associated to the growth and destruction of the 2009 dome of Colima Volcano, Mexico

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Colima Volcano, seismic activity

The activity of Colima Volcano (19.514 ° N, 103.62 ° W, 3850 masl) between October 1 and December 30, 2009, was characterized by the formation of a dome in the small summit crater. This dome was destroyed during the period December 1 to 3, in a process that was accompanied by the formation of block-and-ash flows that ran down its eastern slope. The event was preceded by three months of high seismic activity. During the period mentioned we analyzed 1587 seismic events, which were recorded by the Colima Telemetric Seismic Network (RESCO acronym from its name in Spanish). Of the total number of events, 281 events are clearly high-frequency events or A-type, and their location could be determined, the rest are low frequency or are overlapping. The days with major seismic activity occurred on the 3 and 23 of November when about a maximum of 37 events was recorded. In this work we present the location of these earthquakes determined with the Hypo71PC location software. Our results show that the greatest concentration of hypocenters is located at depths between 0 and 10 km under the top of the volcano, the coda magnitudes ranging $2 < M_c < 3$. The shallow depths of these events and their magnitude suggest that they are associated with the fracturing of the upper layers of the volcanic edifice and its surroundings by the effect of the passage of the batches of the magma that was erupted during the explosive event.