



Noteworthy synchronous signal variations of summit and flank degassing rates on Mount Etna: preliminary geochemical data for Etna during the eruptions and seismic shocks $M > 4$ in 2018.

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Mount Etna volcano is well-known for its frequent eruptions and high degassing rates from its summit craters and flanks. The INGV geochemical monitoring networks for soil CO_2 flux and CO_2/SO_2 plume variation have recorded very significant degassing variations from both the flank and the summit craters during the second half of 2018, during which several significant volcanic events occurred. A new phase of eruptions which started in August 2018 after a 16 month period of quiescence, was punctuated by two strong seismic shocks in October and December. Past observations have distinguished a tendency for high variations in degassing rates marked by a sharp increase preceding the onset of volcanic activity, however the two earthquakes with magnitudes of 4.6 (6 October) and 4.8 (26 December) are the first to have been recorded since the geochemical networks have been operative. While no interpretative model is yet available to account for such a combination of events, two important aspects regarding the 2018 eruptions and their possible relationship with degassing rates are noteworthy: first, both the networks recorded almost synchronous high variations in degassing rates; second, both the earthquakes occurred during phases of minimum gas rate variations.

The 2018 period of high volcanic activity and the corresponding seismic episodes represent an invaluable first case study for Etna which combines data for both seismic shocks and geochemical signal variations. Our preliminary data provide stimulating food for thought and potential in exploring the possible interconnected dynamics between the degassing pattern and seismic activity of the volcano.