



Tidal modulation of thermometric signals acquired at Mt. Etna (Italy)

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A volcanic system is subjected to stress fields due to its interaction with the Earth's interior, the atmosphere, the Moon and Sun. The total stress field is thus a superposition of different time dependent terms, some of which, are periodic with well known periods. The periodic components are linked mainly to the earth-tides which are well defined and entirely predictable. The question then arises if the weak tidal periodic component of the stress and strain fields could induce an observable modulation in any of the flux processes related to the thermal volcanic activity. In the present work, we analysed thermometric signals recorded on Etna volcano at sites very close to the main active craters zone. The aim of the study was thus to investigate about the presence of a signals modulation connected to the main lunar tidal components. The data sets at hand were treated with a stacking method named Hicum for signal analysis, whereby a weak signal can be detected in a noisy environment. Finally, the opportunity to study weak correlations between geophysical, geochemical and volcanological parameters makes the proposed methodology a valuable tool for the understanding of the ongoing processes within the volcano edifice.