Can directional resonances be used to map intensely deformed fault zones of Mt. Etna volcano?


Introduction

A significant contribution by Project of the agreement of 2008-2010 is also acknowledged.

Microtremor recordings and array experiment at Piano Pernicana

References

Soil-gas measurements (Radon, Thoron, CO2)

Earthquake results show frequency and direction of polarization in good agreement with noise results.

Earthquake data analysis at Piano Pernicana

Earthquake data analysis at the Tremestieri fault

Conclusions

1) strong directional resonances characterize the horizontal components of ground motion in the intensely deformed fault zones of the fault system.

2) Microtremor measurements in the area around Piano Pernicana show evidences of increased horizontal particle motion in the fault zones (close to area).

3) The occurrence of directional resonances, if confirmed in other faults, can be a powerful tool to map buried damaged fault zones on the Mt. Etna volcano.

The spectra of EW, NS and Z components HVSRs, for the entire and at the fault zone, are shown in the following plots. The main purpose of this study was to check if seismic noise horizontal polarization can be associated to the main faults on Mt. Etna volcano.