Geophysical Research Abstracts
Vol. 19, EGU2017-18735, 2017
EGU General Assembly 2017

Energetic wave-package after first P-wave arrival during 2016 Central Italy seismic sequence: results from F-k array analysis in Amatrice area

Daniela Famiani, Paola Bordoni, Fabrizio Cara, Giovanna Cultrera, Alessia Mercuri, Giuliano Milana, and Maurizio Vassallo

Istituto Nazionale di Geofisica e Vulcanologia, Italy

Following the M 6.0 of August 24 2016 Amatrice earthquake, a temporary seismic network was installed in the village of Amatrice, under the umbrella of the Italian Center for Seismic Microzonation (http://www.centromicrozonazionesismica.it), who conducted a preparatory survey to seismic microzonation with other Italian Institutions.
This work focuses on data analysis of 7 stations installed in the Amatrice terrace which is representative of the geological condition of the town, with the aim of studying the possible presence of secondary effects during the seismic sequence caused by site conditions. Stiff bedrock outcroppings were also sampled with 2 reference stations.
Preliminary analyses carried out on several earthquakes with Ml > 4 highlight the presence of a low frequency phase with a high energy content at 6 -7 seconds after the first P-wave arrival in almost all the recordings. This wave package was observed for the Mw 6.5 of October 30 earthquake and it has the highest amplitude of the entire recordings, having PGA values of 0.5 g and frequency between 2 and 3 Hz. Frequency-wavenumber analysis performed for the 7 stations array gives an important contribution for the interpretation of this phenomenon, showing that the low frequency wave-package for the examined events does not always show back-azimuth and slowness values compatible with the very first portion of the seismic record. It could be associated to the presence of reflected or refracted waves generated by secondary effects as geological or morphological heterogeneities at local or larger scale.