

<b>Workshop CRUST 2019 - Abstract Form</b>	
<b>Title of Abstract</b>	Seismicity observed in the Mt. Amiata Geothermal Area
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<b>Abstract</b> (max. 250 words)	The crustal volume beneath Mt. Amiata is characterized by a high geothermal gradient, which makes the area particularly suitable for geothermal exploitation. Seismicity in the Tuscan Geothermal Areas is generally observed within the upper crust and is confined in depth by the K-horizon, a strong seismic reflector located in between 4-8 km b.s.l., often interpreted as the 400°C isotherme. The overlaying structure presents permeable layers of highly fractured volcanic rocks, saturated with hot water and steam. Geothermal exploitation from these layers started in the 1960's. Since then, shallow earthquakes have been occasionally observed close to the geothermal wells, and the question is whether these event are of natural origin or related to the exploitation of heat. To monitor the seismic activity inside the geothermal field of Mt. Amiata, we installed in 2015 a dedicated 8-station seismic network in the vicinity of the productive geothermal power plants for a 3-years recording period. The main challenges of our experiment are to automatically detect and locate the local microseismicity, trying to discriminate from natural seismicity those events caused by human operations. We use a waveform based detector to quickly scan the large dataset and automatically detect weak events in the target volume, providing also preliminary event locations, which are then refined in a second step, using standard and waveform based techniques. For hypocenters located close to the geothermal power plants, at a similar depth as the production level (3500 m b.s.l.), it remains very challenging to discriminate between natural and anthropogenic events.
<b>Type of presentation</b> (Oral or Poster)	Poster