On August 24, 2016, at 01:36 UTC a $M_L = 6.0$ earthquake struck central Italy with its epicenter between the villages of Accumoli and Amatrice and a hypocentral depth less than 10 km. The mainshock was characterized by a macroseismic field with a maximum felt intensity higher than VIII MCS and a maximum recorded PGA of $0.433 \text{ g}$ (Amatrice station E-W component; ReLuis-INGV Workgroup 2016). The source fault failure generated a seismic sequence characterized by thousands of aftershocks. The seismogenic structure corresponds to a fault segment which is part of the Mt. Gorzano extensional fault system. The latter is NNW-SSE oriented and extends for about 25 km between the towns of Norcia and Amatrice. The estimated width is about 11 km and the depth is about 11 km (INGV Workgroup, 2016). Since the beginning of the seismic sequence, the INGV National Seismic Network recorded and localized more than 5000 earthquakes within the above mentioned areas: 158 earthquakes characterized by magnitude in the range 3.0 – 4.0; 15 events in the range 4.0 – 5.0; 1 event characterized by a magnitude $> 5.0$ (Mw 5.3 on August 24 at 02:33 UTC close to Norcia town; EMERGEO Workgroup, 2016).

Furthermore, since the first hours after the mainshock, the Research Centre for the Geological Risks (CERI) of the Sapienza University of Rome operated in the field to update the Italian Catalogue of Earthquake-Induced Ground Failures (CEDIT). Such a catalogue stores data about ground effects induced by earthquakes with an epicentral intensity of at least 8 on the MCS scale, which occurred from 1000 AD (Martino et al., this volume).

The National Civil Protection Department (DPC) asked to all Universities and Research Institutes involved in the Center for Seismic Microzation and its applications (CentroMS) to perform Seismic Microzation studies in municipalities affected by a macroseismic intensity $\geq 7$ MCS. In detail, the Department of Earth Sciences of Rome University “Sapienza”, ENEA, Polytechnic University of Turin and Department of Earth Sciences, Life and Environment, University of Urbino formed a Working-Group focusing on the Seismic Microzation study in the municipality of Accumoli. The main goal requested by DPC was the in-depth analysis and improvement of available Level 1 of Seismic Microzation as to identify possible stratigraphic or topographic 1D-2D amplification effects and areas prone to landslides or debris coverage instabilities. Afterwards, Level 3 of Seismic Microzation in Accumoli and selected hamlets will be performed as to plan the post-emergency reconstruction of the sites destroyed by the earthquake.

We here present the preliminary results about the Accumoli municipality, which is located in central Apennines and in particular in the northern portion of a NW-SE oriented extensional basin structure; it is bounded by the Laga Mts. to the E and by the Sibillini Mts. to the W. The eastern portion of this area is characterized by the outcrop of a succession of calcareous, marly-calcareous, to marly units (Upper Trias - Miocene p.p.), while in the central and western sectors Miocene siliciclastic turbiditic deposits (Messinian in age) widely crop out (Pierantoni et al., 2013). The Miocene turbiditic terrains belong to the basal arenaceous, arenaceous-pelitic and pelitic-arenaceous members of the “Monti Della Laga Formation” (Cacciuni et al., 1995). The area of Accumuli lies in the upstream portion of the Tronto River basin, whose trunk-valley here
flows mainly northward. Hillslopes are characterised by the presence of landslides of different typology, dimension and state of activity, remnants of hanging relict landscapes, testified also by depositional river terraces and slope-waste deposits; at the junctions of the main tributary streams with the Tronto River well-developed alluvial fan also occur.

A detailed geological survey of the Quaternary continental deposits together with geophysical analysis (e.g. single station HVSR, SSR, MASW, Re.Mi, ERT) is being carried out in order to identify unit areas susceptible to local seismic amplification. Such an amplification can be locally ascribed both to stratigraphic and topographic factors.

The narrow Tronto river-valley is prone to 2D amplification effects due to both valley-shape and heterogeneities of the alluvial filling, here mainly composed of gravel and sand. 2D amplification effects due to peculiar landforms, such as narrow ridges and edges of rock-scarps, that host some villages (i.e. Colleposta, Collespada and Cassino) can have a relevant role on local seismic response of the area. Moreover, considering the 24th August mainshock and the related near fault conditions, the influence on the amplification phenomena due to non-vertical incidence of seismic waves on slopes cannot be neglected. Such conditions can determine wave focusing and effects related to seismic directivity. Geophysical investigations including active and passive multichannel seismic surface-waves analysis, seismic body-wave tomography, H/V spectral ratio inversion, and P- and S- down hole tests, will be performed to estimate 1D and 2D subsurface velocity models and complemented by electrical resistivity tomography and ground probing radar to help defining morphological and constraints for the seismic interpretation. Furthermore, lab tests and geological surveys will be performed to define, in more detail, the engineering geological and seismic models and provide reliable input for the modelling of the expected local seismic amplification. The obtained results have also undoubted scientific implications.

References
ReLuis-INGV Workgroup; 2016: Preliminary study of Rieti earthquake ground motion records V2 changes related to seismic activity may control fluid circulation at depth forcing crustal fluid to migrate upwards, especially along faults (King, 1986; Ciotoli et al., 2007). Fluid circulation at depth may alter the geochemical characteristics of the fault core (Annunziatellis et al., 2008), which in turn can influence soil gas concentrations at the surface (e.g., Baubron et al., 2002;