W.I.4 Reprocessing of a vintage 2D reflection seismic line across the Norcia-Mt. Vettore faults, Area of the Mw = 6.5 earthquake (2016-2017 sequence, Central Italy)

M. Ercoli[1], D. Marti[1,2] & R. Carbonell[1,2]

[1]*Dept. Fisica e Geologia, Univ. degli Studi di Perugia*; [2]*CSIC-Inst. Earth Sciences Jaume Almera*

The Central Italian region is among the most seismically active areas of the Mediterranean region, and it is often struck by earthquakes of Mw > 6.0. The recent strong seismic sequence (9 main earthquakes of Mw > 5) started during the August 2016 at Amatrice and it reached its peak the 30th October 2016 with the Mw =6.5 mainshock . The epicenter was located about 7 km depth between Norcia and Mt. Castelluccio di Norcia basins (Monti Sibillini chain), producing impressive surface ruptures at the Mt. Vettore. But despite the large amount of datasets and studies made available so far, uncertainties still remain about the complex subsurface geology of the area. The presentation addresses the seismic processing and interpretation effort carried out on seismic line NOR2 (ENI, S.p.a.) that goes across the Norcia and Castelluccio di Norcia basins. The resulting seismic section reveals new details that contribute to better constrain the subsurface structure of the study area. The two basins (Norcia and Castelluccio di Norcia) are clearly visible and it is possible to detect the contact between the Quaternary deposits and the underlying bedrock. Some alignments and offsets of reflectors enhance the visualization of the main faults: the Castelluccio di Norcia Basin is clearly limited on its west side by a steep W-dipping normal fault visible down to about 3.0 s. Here, some sub-horizontal or gently E-dipping high amplitude reflectors are clearly visible down to 8.0 s, making it possible to extend the previous interpretation . This work confirms that a targeted reprocessing of a vintage industrial seismic line provides new and clear images of the subsurface geology of the epicentral area between Norcia and Castelluccio di Norcia basins. The work carried out enhances the value of new processing of vintage seismic reflection data. Such data is relatively expensive to acquire, however it is unique as it reveals high resolution details of the subsurface not achievable otherwise.