



^{36}Cl exposure dating of post-glacial features along the Mt Vettore Fault (Central Apennines, Italy) constraining fault slip rate and last glacial advance.

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In the Central Apennines (Italy), up to now, no absolute dating directly based on the moraines has been carried out to constrain glacial oscillation. However, climatic constrains are often used in the Central Apennine to estimate long term (> 10 ka) fault slip rate. In addition slip rate assessments based on offset morphotectonic markers on the main branches of fault systems and encompassing several seismic cycles (> 10 ka) are sparse. This is particularly true for the Monte Vettore-Monte Bove fault system which triggered the 2016-2017 seismic sequence. We thus provide new assessment for the vertical slip rates along the Mt Vettore-Mt Bove fault system. Offset measurements were made using a 5-cm resolution DEM obtained through a drone survey and constrain a fault scarp height of 15.5 ± 1.4 m and a cumulative offset of 32-40.5 m. Samples were collected from the Valle Lunga terminal moraine at 1710 m asl and yield ^{36}Cl exposure ages of $12.7 + 2.2/-1.9$ ka while the flat, abraded surface located on top of the tectonic scarp yield ^{36}Cl exposure ages of $23.4 + 5.3/-4.3$ ka. Assuming the offset started to accumulate when climate conditions allow its preservation, thus once the surface was abandoned, we constrain a vertical slip rate of 1.2 ± 0.2 mm/yr along the master branch of the Mt Vettore normal fault. This rate is higher than the ones previously obtained from trenches along secondary splays of the Mt Vettore-Mt Bove and on the Norcia fault systems. Besides, the yielded chronology for the last glacial maximum in that area at ~ 23 ka is in good agreement with the timing previously proposed for the LGM in the Apennines.