TITLE: Looking for surface faulting ancestors of the L'Aquila April 6, 2009 event: preliminary paleoseismological data and seismic hazard implications

PRESENTATION TYPE: Assigned by Committee **SECTION/FOCUS GROUP:** Union (U)
SESSION: An Earthquake in an Ancient City: the April 2009 L'Aquila (Central Italy) Seismic Sequence (This Session will be Webcast) (U05)
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Title of Team: ABSTRACT BODY: The occurrence of the Mw 6.3, April 6, 2009 earthquake has highlighted how critical is the knowledge of the location and of the characteristics of the active faults in a seismic region. This is true not only as a contribution to the seismic hazard assessment but also for the local planning of residential areas, plants and infrastructures.
The 2009 earthquake occurred on the Paganica normal fault (PF hereinafter) and produced 3 km-long, maximum 0.1 m-high surface rupture along its central section, and secondary slip along nearby tectonic structures.
The PF consists of a prominent morphologic scarp formed by the tectonic juxtaposition of Pliocene-middle Pleistocene and late Pleistocene alluvial deposits, and by lower scarps in late Pleistocene-Holocene deposits.
The fault, NW-SE striking and SW dipping, runs for a total length of about 20 km along the NE side of the Aterno River valley, a graben-type basin bounded by marked antithetic faults.
The limited extent and the small throw of the 2009 surface ruptures, when compared to the size of the Paganica long-term fault scarp, suggest that the PF probably experienced larger Magnitude earthquakes than the 2009 seismic event. Thus, although the April 6, 2009 earthquake and associated surface faulting caused loss of lives and major damage, we believe that this event does not fully characterize the seismic hazard of the area.
Therefore, a campaign of paleoseismological investigations is underway with the aim of defining the Max Magnitude, the average rate of displacement and the frequency of seismic events on the PF and on the nearby faults. An amazing "coseismic" trench, caved by the overpressure produced by the broken pipe of an aqueduct, provided the exposure of a 30-m wide fault zone of the PF. We show the preliminary results from the analysis of this site, as well as from other sites along the PF. In addition, we also present preliminary paleoseismological data from the antithetic Fossa fault. A major finding at this early stage of our field campaign is the recognition of large displacements (0.5 to 1 m) associated to individual events affecting deposits of Holocene age based on radiocarbon dating and pottery content.