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Geophysical survey to study active and capable faults in Friuli Venezia Giulia: the example of the Maniago thrust (Meduno, NE Italy).

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In the framework of the agreement between the Friuli Venezia Giulia Region (Geological Service), ISPRA and University of Udine, a multidisciplinary approach was utilized to study an active and capable fault located in the central Carnic Prealps (Friuli), namely the Maniago thrust.
The Maniago thrust belongs to the Quaternary front of the eastern Southern Alps (ESA), a WSW-ENE trending, SEE-verging fold and thrust belt, active from the Middle Miocene to the present.
In particular, the external front of the ESA in NE Italy consists in a set of low-middle angle, generally blind thrusts deforming the uppermost Pleistocene (LGM) and Holocene sediments of the high piedmont Friuli Plain. Deformation gives rise to drainage anomalies as well as uplifted and back-tilted paleo-landscapes. Tectonic activity is also testified by widespread historical and instrumental seismicity that makes the Friuli region one of the most seismic region in Northern Italy.
Following the geological and morphotectonic surveys made along the Meduna valley, where the Maniago fault cuts the late Pleistocene alluvial deposits, an about 900 m long and 1-5 m high morphological scarp was identified on the LGM Rivalunga terrace near Meduno, in correspondence to a possible surficial Maniago fault trace.
In order to understand if the observed scarp could be a tectonic one, integrated geophysical investigations across this morphological feature were planned.
In detail, on the Rivalunga terrace the following geophysical surveys have been performed: electrical resistivity tomography, seismic refraction and reflection, Ground Penetrating Radar (GPR), passive seismic (HVSR, ReMi), and MASW.
All the geophysical data showed, at different scale, remarkable lateral anomalies across the morphological scarp, highlighting that it is compatible with a tectonic origin.
Moreover, geophysical investigations imaged other structures and allowed to identify the optimal locations for subsequent digging of paleoseismological trenches.