

## **The Maniago thrust: an active and capable fault at the front of the eastern Southern Alps (NE Italy). Implication for the seismic hazard assessment in Friuli.**

Maria Eliana Poli (1), Emanuela Falcucci (2), Stefano Gori (2), Andrea Marchesini (1), Giovanni Monegato (3), and Adriano Zanferrari (1)

(1) Dipartimento di Scienze Agroalimentari, Ambientali e Animali, Università di Udine, Italy (eliana.poli@uniud.it), (2) Istituto Nazionale di Geofisica e Vulcanologia, L'Aquila - Roma, Italy, (3) CNR - Istituto di Geoscienze e Georisorse, Torino, Italy

In the framework of the agreement between the Friuli Venezia Giulia Region (Geological Service), ISPRA and University of Udine, in order to improve knowledge about the active and capable faults of the Friuli Venezia Giulia and update the Italy HAZard from CApable faults database (ITHACA), new geological, morphotectonic, geophysical and paleoseismological studies were carried out on the Maniago thrust (central Carnic Prealps, Friuli) near Meduno (PN).

The Maniago thrust belongs to the Quaternary front of the eastern Southern Alps (ESA), a south-verging fold and thrust belt, in evolution from the Middle Miocene to the Present. The development of this polyphase thrust belt is linked to Adria microplate indentation. Up today Adria moves northward about 2-3 mm/yr (Caporali et al., 2013) and its indentation is accommodated not only by the WSW-ENE trending, SSE-verging thrust-front of the ESA in Veneto and Friuli regions, but also by the NW-SE trending, right-lateral strike slip fault-systems in W-Slovenia.

The external front of the ESA in NE Italy is arranged as a set of low-middle angle, generally blind thrusts deforming the uppermost Pleistocene (LGM) and Holocene sediments cropping out in the Friuli piedmont Plain. Morphotectonic investigations identified surficial traces of the recent fault activity, generally represented by drainage anomalies and gentle scarps connecting uplifted and back-tilted Quaternary paleo-landscapes of the outlet of the valleys with the plain. Tectonic activity is also testified by widespread historical and instrumental seismicity that make the Friuli region one of the most seismic region in N-Italy.

The study area is located at the lower reach of the Meduna valley, where the incision of the Meduna River crosses the Miocene succession and starts to cut the alluvial deposits of the piedmont plain (Pliocene-Holocene in age). The study shows that the valley configuration has been shaped during the Pliocene-Quaternary with long lasting steady intervals, spaced out by periodic tectonic pulses linked to the activity of the thrust front of the ESA. The most recent pulse related to the Maniago thrust shows an Upper Pleistocene – Holocene slip rate of about 0.5-0.6 mm/yr (Monegato and Poli, 2015).

During the last pulse the activity of the Maniago thrust gave rise to a tectonic scarp (about 800 m long and 1-5 m high) in the LGM Rivalunga terrace near Meduno. The digging out of two paleoseismological trenches showed that the Maniago thrust is not only an active fault but also a capable one. Moreover the very recent age of the deformed stratigraphic units (1460 AD), compared with the DBMI-11 Catalogue (Rovida et al., 2011), allowed to consider the 1776.07. 10 earthquake ( $I_{max}=8-9$ ), as the last seismic event linked to the Maniago thrust tectonic activity.