

Interactive comment on “First evidence of active transpressive surface faulting at the front of the eastern Southern Alps, northeastern Italy. Insight on the 1511 earthquake seismotectonics” by Emanuela Falcucci et al.

PhD Zampieri (Referee)

dario.zampieri@unipd.it

Received and published: 21 February 2018

Revision of the manuscript

“First evidence of active transpressive surface faulting at the front of the eastern Southern Alps, northeastern Italy. Insight on the 1511 earthquake seismotectonics” by E. Falcucci, M. E. Poli, F. Galadini, G. Scardia, G. Paiero and A. Zanferrari

General comments

C1

The manuscript is a concise description of the results obtained from a paleoseismological trench analysis in the Friuli area (NE Italy), where in 1511 a strong earthquake occurred. This study permits to link the event to a reverse fault, well documented by a seismic line and surficial features. The text is well written, without redundant information. The applied methodology is appropriate, the data and interpretation are convincing, so the work is worth the publication with few improvements and integrations, mainly to the table 2 (see specific comments). This work will impact on the existing knowledge about the 1511 event and the seismic hazard of the close urban area, but it represents also a case study for a wider audience.

Specific comments

Table 2 of the Auxiliary material can be improved by a better organization and can be included in the text. Please draw a true table with columns and rows. Include a column with the laboratory and/or field label of the samples. Insert a column with specification of the type of analysed material (i.e. wood, charcoal, bulk). Please, comment in the text why the ages of the Unit 2 are so different. The ages of the two samples in Fig. 4c are similar (945 AD – 1047 AD and 674 AD – 893 AD), while the age of the sample in Fig. 4a is younger (1485 AD – 1792 AD). The age of the sample from the Unit 3 is very similar to that of the sample from the Unit 4. Could the age of Unit 3 refer to a reworked element?

Technical corrections

p. 1 line 11: a system of NW-SE trending dextral strike-slip faults. line 26: reverse fault ruptures, instead of: inverse ruptures.

p.3 lines 13-14: the BFCF trend is expressed in degrees from north, while the CVT trend is expressed in sectors. Please, uniform. line 20: insert the acronyms for the faults, i.e. PRM and TN. line 20: interpretable, instead of visible. line 30: on the CVT hanging wall.

C2

p. 4 line 1: reverse fault, instead of inverse tectonic structure line 9: clay, not clays line 13: insert a space between Fig. and 2c line 13: place has been found at the end of the sentence. line 27: "Unit 6 is unconformably overlaid". Looking at the figure 4a, in the middle part the boundary between the units 6 and 5 the looks like that of interbedded facies, because it is saw-toothed. Maybe, insertion of some bedding lines can help to unravel the relationships between unit 5 and 6.

p. 4 line 6: a tensional fracture, instead of an extensional fracture.

p.6 line 4: reverse-oblique, instead of inverse-oblique. line 5: shortening instead of compression.

p. 9 line 6 insert "and" in between Gosar, A. Bourlès, D.

Figures

Fig. 1: the label a, b, c are lacking. In b) the fault traces lying in the alluvial plain must be dashed lines (blind faults).

Fig. 2: please, enlarge the inset content on the upper right corner and explain the line drawing symbols (trenches, drill-hole and the arcuate line (is it the trace of the cross section in 2c?)). Specify which are the trenches a, b and c of Fig. 4. Are the three segments on the hanging wall anticline in c) the three trenches? If so, why are they inclined?

Fig. 3: in (a) the black rectangle cited in the caption is lacking. Please, explain also the significance of the curved dashed line.

Fig. 4: The deposit in grey colour infilling the erosional feature incising units 2 and 3 in all trenches is not labelled, nor is it described in the caption. The grey colour in the trenches 1 and 2 is similar, but different from that of trench 3. Are they different deposits?

Fig. 5: the hanging wall fold of the CVT fault in the cross-section is quite different from

C3

the same fold in the 3D scheme. Also the geometry of the faults is different.

Captions

Fig. 1: line 7: lower instead of lowe

Fig. 4: Trench instead of rench

Auxiliary material

Table 1, line 4: "Interpretazione stratigrafiche nel unità poligeniche tagliamento" must be erased

Table 2: Insert a full stop after description of Unit 5. Cancel one of the two full stops at the end of description of Unit 7. See also suggestions in Specific comments

Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2017-131>, 2018.

C4