

Accepted Manuscript

The role of rheology, crustal structures and lithology in the seismicity distribution of the northern Apennines

L. Chiaraluce, M. R. Barchi, S. Carannante, C. Collettini, F. Mirabella, C. Pauselli, L. Valoroso

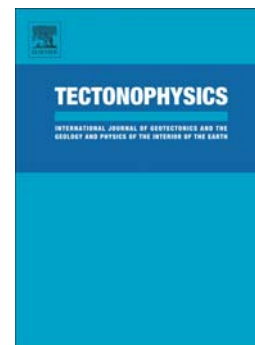
PII: S0040-1951(16)30528-5
DOI: doi: [10.1016/j.tecto.2016.11.011](https://doi.org/10.1016/j.tecto.2016.11.011)
Reference: TECTO 127313

To appear in: *Tectonophysics*

Received date: 14 July 2016
Revised date: 4 November 2016
Accepted date: 13 November 2016

Please cite this article as: Chiaraluce, L., Barchi, M.R., Carannante, S., Collettini, C., Mirabella, F., Pauselli, C., Valoroso, L., The role of rheology, crustal structures and lithology in the seismicity distribution of the northern Apennines, *Tectonophysics* (2016), doi: [10.1016/j.tecto.2016.11.011](https://doi.org/10.1016/j.tecto.2016.11.011)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



The role of rheology, crustal structures and lithology in the seismicity distribution of the northern Apennines.

L. Chiaraluce¹, M. R. Barchi¹, S. Carannante¹, C. Collettini^{1,3}, F. Mirabella², C. Pauselli² and L. Valoroso¹

¹ *Istituto Nazionale di Geofisica e Vulcanologia (Italy)*

² *Università degli Studi di Perugia, (Italy)*

³ *Università degli Studi di Roma, La Sapienza (Italy)*

Key words: Northern Apennines, earthquakes, seismicity cut-off, brittle ductile-transition; crustal rheology, Altotiberina fault.

Abstract

The Northern Apennines of Italy is a unique area to study active crustal processes due to the availability of high-resolution subsurface geology (deep borehole and seismic profiles) and seismicity (back-ground and seismic sequences) data. In this work we have investigated the relationship between crustal structures and lithologies, rheological profiles and seismicity cut-off by constructing three integrated profiles across the Umbria-Marche Apennines.

At first approximation we observe a good correspondence between the background seismicity cut-off and the modelled brittle ductile transition (BDT): 90% of the seismic activity is located above the transition. In the area characterized by active extension, where the majority of the seismicity is occurring, most of the crustal earthquakes are confined within the brittle layer at depth < 12 km. In areas where the brittle layer is affected by regional structures, we observe an active role played by these structures in driving the seismicity distribution. One example is the region where the gently eastward dipping Altotiberina low-angle normal fault is present, where the seismicity cut-off is

Download English Version:

<https://daneshyari.com/en/article/5781715>

Download Persian Version:

<https://daneshyari.com/article/5781715>

[Daneshyari.com](https://daneshyari.com)