



## **Structural “old” records in young faults: a case study from Eastern Italian Alps**

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The Cenozoic multiphase tectonic history of basement rocks along the Periadriatic fault system in the Alps justifies the complex structural pattern of the faults belonging to this system. Three main tectonic lineaments have been recognized west of the Adige River: i) Oligocene E-W trending faults (e.g. Tonale fault), ii) Miocene NE-SW trending faults (e.g. North Giudicarie fault), iii) Quaternary NW-SE trending morphological lineaments.

New pseudotachylyte veins were discovered at the hangingwall of the North Giudicarie fault (Bresimo Valley) along mylonitic-to-cataclastic and cataclastic high-angle shear planes with compressive and transpressive kinematics.

$^{40}\text{Ar}$ - $^{39}\text{Ar}$  dating on the pseudotachylytes yielded Early Oligocene ages, in apparent contrast with the regionally pervasive fault planes parallel to the Miocene North Giudicarie fault.

Field structural observations and dating confirm the need to be careful in combining geochronological ages with tectonic brittle deformation, especially in these peculiar alpine regions with a complex multiphase deformation during Cenozoic.