



## Seminario

# Seismic Rocks rheology controls the thickness of the seismogenic layer

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### **Abstract:**

The strength of crustal rocks largely controls the nucleation and propagation of seismic ruptures during the earthquake cycle. However, the influence of rocks resulting of co-seismic slip on the strength of the crust in seismically-active regions has yet to be established. Here we measured for the first time the strength of pseudotachylyte-bearing rocks (solidified friction-melts produced during seismic slip) from the Gole Larghe fault zone, Italy. Flow law parameters derived from plastically-deforming pseudotachylyte suggest that the presence of pseudotachylyte along faults drastically reduces the strength of the seismically-active continental crust. Comparison of our experimentally derived flow law for pseudotachylyte to observed earthquake depth distributions on Earth demonstrates that seismicity is rare at depths below pseudotachylyte deforms plastically. Therefore, the presence of seismically-generated pseudotachylyte likely controls the thickness of the seismogenic layer in the continental crust.

**Proponente:** Giulio Di Toro