



## Strain rate and stress field in Switzerland

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In this study we test whether the surface deformation and the seismic activity are in agreement in terms of seismic moment release and stress/strain orientations within the territory of Switzerland. We find that for most of the country, the stress released ( $\sim 2.0 \cdot 10^{11}$  N·m/yr) is consistent with the lithosphere deformation ( $< 5 \cdot 10^{-8}$  /yr) constrained using the Global Positioning System (GPS). South of the Alpine front, we note that surface strain rates displays few agreement with long-term (and deep) deformation of the upper mantle. In this area, we propose that shear strain is being distributed in the upper crust as a result of the clockwise rotation of the Adria plate. For three regions (Basel, Swiss Jura and Ticino), we find that seismic current activity and surface deformation not to be in agreement. In the Basel area, deep seismicity exists while surface deformation is absent. This situation contrasts to what is found in the Ticino and the Swiss Jura, where seismic activity is close to absent but surface deformation is detected ( $\sim 2 \cdot 10^{-8}$  /yr). While the surface deformation and seismic activity is inconsistent for the Ticino, we find them to comply in the Valais region where  $MW \geq 6$  events are historically documented. Our comparison implies that the Ticino faces the potential of damaging earthquakes every hundred to few hundred years.