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Transient deformation along the Pollino fault (Southern Italy) and induced stress changes over the fault.

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The Pollino fault system is the most important seismic gap in Italy, although the main fault is capable of strong earthquakes, as inferred from paleoseismological studies. Both DInSAR and GPS data were collected over a time interval of more than a decade (1995-2000 and 2003-2008, respectively), showing surface displacement consistent with the normal faulting mechanism of this fault. The interpretation of deformation datasets, as surface effects due to on-fault transient deformation, shows an average slip velocity over the fault up to 8mm/yr and 4mm/yr from DInSAR and GPS datasets, respectively, with limited patches slipping up to about 20mm/yr.
The transient deformation inferred can introduce stress changes over the fault. The analysis shows that CFF over the locked patches increases significantly in the time interval under investigation due to the observed transient. Positive CFF accumulated in the 13-year time span of observations over locked patches equals a stress build-up obtained in a 100-year period, considering average, steady-state rates over the seismic cycle.