



Interplay Between Tectonic and Seasonal Deformation From Integrate Analysis of Velocity Variations and Geodetic Measurements

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Numerous studies have shown that velocity variations estimations made through noise cross-correlations, share a close relationship with seasonal patterns (rainfall, temperature, atmospheric pressure), which ultimately affect the stress of the crust. In this study, we focus on estimating these seasonal factors with the purpose of carefully evaluating the physical changes of crustal properties due only to the dynamics of the tectonic plates. For this, we calculate the velocity variations close to the Pollino Fault Systems (Southern Apennines, Italy) which is a major seismic gap in historical seismic release and has been reported to host transient slow slips along with seismic sequences. The presence of karsts aquifers also adds interesting hydrological characteristics in this region, which we observed using noise-based and GPS techniques. In parallel, we estimated the velocity variations due to the rainfall through a pore pressure modeling and find common patterns in between velocity variation and geodetic measurements. Our study permits to unravel the contribution of hydrological forcing and tectonic deformation, and thus estimate the stress accumulation/release along this major active fault system.