



Creep, slow slip and seismic tremors: insights from a lab experiment

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Seismic Tremors (named also Non Volcanic Tremors, NVT) and slow slip episodes (SSE) have now been well documented and studied in many subduction zones and along some continental faults. Despite the increasing number of observations, the causal mechanisms remain unclear. Most studies rely on the location of the NVT to infer their physical origin. Some have attributed NVT to the release of fluids, while its coincidence with slow-slip events (SSE) and the fast migrations of tremors has led others to consider slip on the plate interface as their source. Few laboratory friction studies have generated and recorded Tremor Like Signals (TLS). They link the seismic tremors to the frictional sliding, with or without the release of fluids. Here we show a systematic correlation between slip acceleration and the generation of seismic tremors, in both stable and unstable frictional regimes. These results provide a comprehensive image of how seismic tremors are generated in various tectonic contexts (subduction zones, continental faulting) and how they are linked to earthquakes.