

Rupture nucleation processes accompanying tremor and slow slip in gel friction experiments

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We have been elucidating similarities between our analogue experiments and earthquakes through some examples, such as coexistence of fast and slow slip, GR relation, size-duration scaling, and supershear rupture. In this study, we observed rupture nucleation processes for large events. As a result, we found the occurrence of tremor in coincident with slow slip. We also found that the duration of a slow event is proportional to the minus one-third power to the driving velocity. This power law behavior suggests that the slow slip process is determined independently of the characteristic velocity scale of the system. We will elucidate the relationship between frictional constitutive law and the macroscopic behavior. We will also discuss the realistic geological setup for our lab systems.

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