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Connecting slow earthquakes to seismogensis on Central Range fault and Longitudinal Valley fault

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The discovery of slow earthquakes provides insights into fault slip dynamics over the past two decades. The seismic signature of slow earthquakes, known as tectonic tremors, not only demonstrates episodic and continuous deformation below the seismogenic zone but also plays a pivotal role in contributing to the regional seismic moment budget. Understanding how slow earthquakes contribute to the earthquake cycle is crucial, especially with the availability of tremor catalogs, but it remains unknown in Taiwan. How can we objectively quantify the interplay and interaction between slow and fast earthquakes? How can we systematically establish a stress model for the active faults in the immediate neighborhood of tremors? Using the newly cataloged tectonic tremor catalog by Ide and Chen (2023), we are able to implementing machine learning algorithms to define the recurrence patterns of slow earthquakes in Taiwan. Together with the updated repeating earthquakes catalog that provide information of deep slip rates, we attempt to calculate how stress accumulation is derived from aseismic slip change during its own cycle, and how much such aseismic stress influence the earthquake cycles in on Central Range fault and Longitudinal Valley fault.

Keywords: tremor, earthquake swarm, repeating earthquake, GNSS, Central Range fault, slip inversion