

# Exploring 'Slow Earthquakes' in Laboratory Experiments

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Over the last decade Earth scientists' have discovered fault failure that has the ability to fail slowly over the course of days to weeks to months called slow-slip events. Though much work has been done to document slow-slip phenomena worldwide, the underlying mechanics of these slow-slip events or 'slow earthquakes' are still not understood. With the aim of learning more, we performed preliminary experiments in a simple lab setting in order to study fault behavior and explore the conditions that might facilitate slow slip on faults. Here we loaded our sample into a biaxial apparatus with a direct shear-loading configuration. Starting at 0.1 MPa, we increased pressure at a constant rate while measuring the displacement and stress along the slip surface during experiments. We found that increasing the normal stress created different slip speeds along the fault plane. This as a result allowed us to document a complete frictional stability transition in the lab, and produce slow-slip behavior.