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Type: **Keynote**

Supershear rupture and its interpretation for the 2025 Mw7.7 Mandalay, Myanmar Earthquake

Monday 8 September 2025 13:30 (1 hour)

Understanding the relationship between earthquake rupture dynamics and fault structure is fundamental to earthquake physics. The 2025 Mw7.8 Myanmar earthquake is a valuable case to advance this understanding. Here we show that the Mw7.8 Myanmar earthquake produced the longest inland rupture of near 500 km along the Sagaing fault passing through the seismic gap between Mandalay and Naypyidaw, with a fairly simple surface trace. The initial sub-shear bilateral rupture accelerated to a supershear speed as it propagated towards south and sustained for more than 200 km, as constrained by multiple seismic observations and analysis. The supershear segment coincides with complicated fault related structure. We propose that the combination of a simple fault geometry, sedimentary basin and this fault related complicated fault structure enabled the sustained supershear rupture. Our findings emphasize that observations and models encompassing more comprehensive fault related structure are crucial for advancing earthquake cycle simulations and improving seismic hazard assessments.

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In-person or online preference

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