Statewide California Earthquake Center

Welcome to the 2026 SCEC SEAS Workshop

Sequences of Earthquakes and Aseismic Slip

Brittany Erickson, Eric Dunham, Mohamed Abdelmeguid, Pierre Romanet, Prithvi Thakur and Taeho Kim

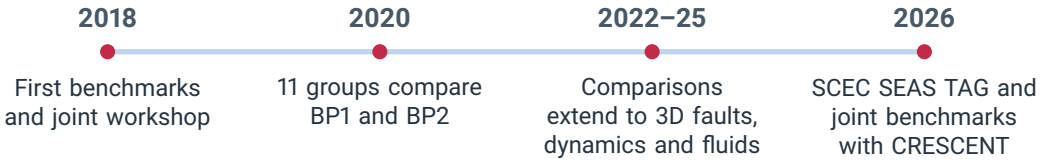
Thank you to the Tran and Edric! | SCEC Award 26093

Goals of this workshop

- Welcome new participants!
- Provide an update on our recent benchmark efforts and introduction of the upcoming benchmark BP9 jointly with CRESCENT.
- Jointly with the SEAS community discuss adapting complex 3D fault geometries, geared towards the development of a new long-term benchmark direction.

SEAS since 2018

Brittany Erickson, Junle Jiang and Michael Barall started SEAS in 2018, building on the benchmarking effort of the dynamic-rupture community's work.



SEAS benchmark platform · CRESCENT comparison platform

Benchmarks so far

BP1–BP2	Strike-slip sequences, dynamic rupture and the effect of nucleation size.
BP3–BP5	Dipping faults, free surfaces and three-dimensional geometry.
BP6–BP7	Fluid-driven slip, friction laws and repeating earthquakes.

At this workshop

BP8	Fluid injection on a velocity-strengthening fault.
BP9	Dipping fault.

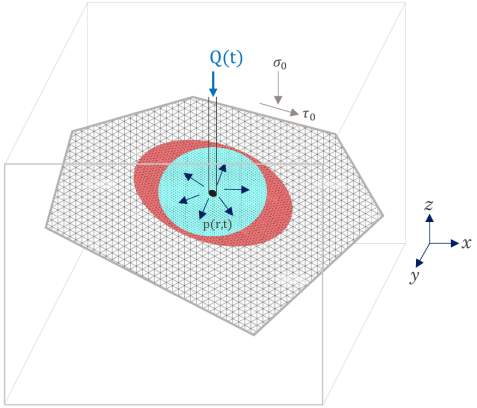
Full benchmark descriptions

Overarching science targets

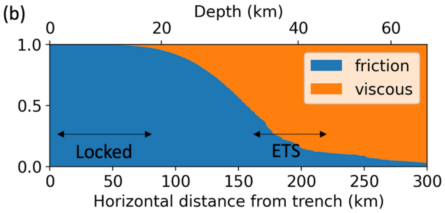
- Advance physics-based models of earthquakes and aseismic slip throughout the earthquake cycle.
- Determining what physical processes explain observables.
- Use earthquake-cycle simulations to inform models of seismic hazard.

Science in today's talks

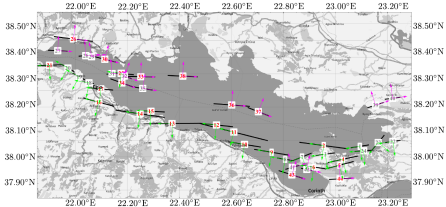
Injection and fault slip



Frictional–viscous transition



Multifault sequences



Lecampion et al. (2026), Fig. 4 · Zhang, Ozawa and Dunham, in prep, · Ciardo and Romanet (2026), Fig. 8

Today's agenda

09:10 **Session 1: Fluid-induced slip and nucleation**
Taeho Kim and Brice Lecampion

10:30 **Session 2: Numerical challenges in SEAS**
Brittany Erickson, Navid Kheirdast and Wenqiang Zhang

12:00 **Session 3: Multifault interactions in SEAS models**
Federico Ciardo, Bruce Shaw and Mohamed Abdelmeguid

12:35 **Discussion**

Adjourn at 13:00.