



2026 SCEC **TANDEM** Training Workshop

Modeling the Earthquake Cycle from Faults to Supercomputers

June 22–24, 2026, Scripps Institution of Oceanography, UC San Diego, SCEC Award 26020

Organizers: Bar Oryan, Alice-Agnes Gabriel, Dave May, Jeena Yun, and Yohai Magen

UC San Diego



**NATIONAL
DATA PLATFORM**



SCRIPPS INSTITUTION OF
OCEANOGRAPHY

The workshop at a glance

A 2.5-day, science-driven discussion and hands-on training for physics-based modeling of sequences of earthquakes and aseismic slip (SEAS) using **Tandem**, an open-source discontinuous Galerkin HPC code for complex fault systems.

39

participants
(37 in person, 2 remote)

22

institutions

8

countries

>80

applications for the
available seats

4

invited talks

4

hands-on training sessions

6

participant talks

23

posters in two sessions

Applications were solicited through the SCEC, SZ4D, CIG, CRESCENT, and Quakeworx mailing lists, the cohort was mainly graduate students and postdocs. Selected participants received on-campus room and board, with partial flight support for qualified applicants.

Invited speakers and organizers

Invited talks

Brittany Erickson

University of Oregon, USA

Pierre Romanet

CEREMA / GéoAzur, France

So Ozawa

ERI, University of Tokyo

Tom Heaton

Caltech, USA

Organizing team

Bar Oryan

Alice-Agnes Gabriel

Dave May

Jeena Yun

Yohai Magen

Scripps Institution of
Oceanography, UC San Diego



Scientific program and computing infrastructure

Scientific program

- Invited talks + six participant talks + two poster sessions
- Open model-development time with Tandem developers on hand
- Guided tour of SDSC and Expanse



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- Preparing input files and launching simulations
- Postprocessing and visualizing Tandem output
- Mesh generation with Gmsh
- Compiling and running Tandem on HPC systems



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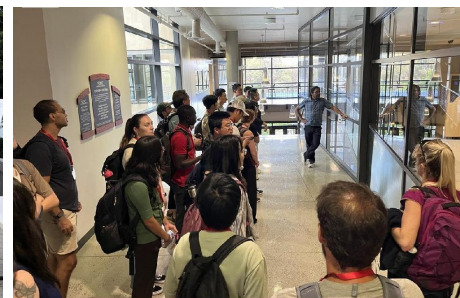
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Compute access for every participant

- Quakeworx Science Gateway on SDSC Expanse
- JupyterLab image on the National Data Platform
- Tandem Docker container and UTM virtual machine for laptops
- All notebooks and materials openly available on GitHub



Outcomes

Post-workshop survey, 23 responses (11 graduate students, 6 postdocs, 4 research scientists, 1 faculty, 1 other)

4.7 / 5

overall value, format, and organization (each)

4.8 / 5

sufficiency of computing resources

3.6 / 5

confidence using Tandem afterwards, most arrived with 0

22 of 23

cited hands-on exercises as contributing most to learning

Community impact

- **A new international cohort of early-career researchers** can design, run, and interpret SEAS simulations with Tandem, on **laptops** and on **large-scale HPC resources**
- Several participants left with **prototype models** for their own study regions, including, the Indo-Burma subduction zone, the Alpine Fault, shallow slow slip events, and intraplate swarms, and to **benchmark** against in-house codes
- All training materials and computing environments remain **freely available**; multiple respondents want joint projects, shared resource repositories, and contributions to the Tandem code base

Lessons learned

- Roughly 80 applications for the available seats and the participants' positive **response support future workshops for a growing open-source HPC SEAS modeling community**
- More time wanted for the **HPC compilation session** and **open model development**
- Most requested **follow-ups**: more example problems (15 of 23), a community Slack or email list (11), help interpreting outputs (10), more recorded tutorials (10), and help with mesh generation (10)

Training materials: github.com/TEAR-ERC/tandem-training



Date: June 22-24, 2026

Location: Scripps Institution of Oceanography, UC San Diego, La Jolla, CA

Workshop Organizers: Bar Oryan, Alice-Agnes Gabriel, Dave May, Jeena Yun, Yohai Magen

SCEC Award: 26020

[View Workshop Report](#)

RESEARCH ARTICLE | JULY 23, 2026

Newly Published

Tandem: An Open-Source High-Performance Computing Volumetric Software Package to Model Sequences of Earthquakes and Aseismic Slip Across Complex Fault Systems

Alice-Agnes Gabriel; Piyush Karki; Yohai Magen; Bar Oryan; Thomas Ulrich; Jeena Yun; Dave A. May

Author and Article Information

Seismological Research Letters (2026) | <https://doi.org/10.1785/0220250436> | [Article history](#)

Agenda, talks, and report: scec.org/events/2026-tandem-training-workshop

Thank you!

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