

SCEC Community Earth Models: 2025 Updates and New Releases



CEM Co-Leaders:

Scott T. Marshall
Appalachian State University



Patricia Persaud
University of Arizona

**SCEC Proposals: will use
or contribute to CEMs**

2024: 43%

2025: 62%

With Many Contributions From:

CEM Model Developers



Future
You??

September 7-10, 2025

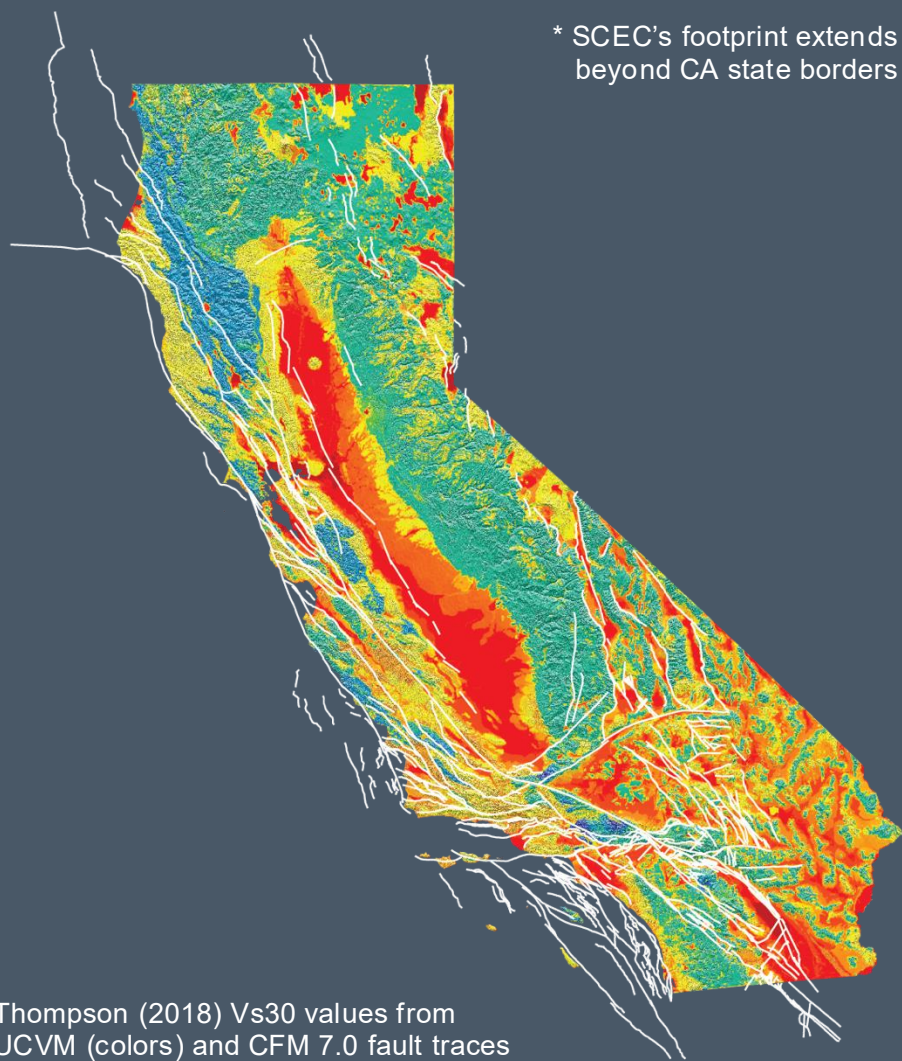
Hilton Palm Springs, California

Community Earth Models (CEMs)

The CEM Vision:

Enabling cutting-edge science with
community-driven products that
quantify key features of the greater
San Andreas system

* SCEC's footprint extends
beyond CA state borders

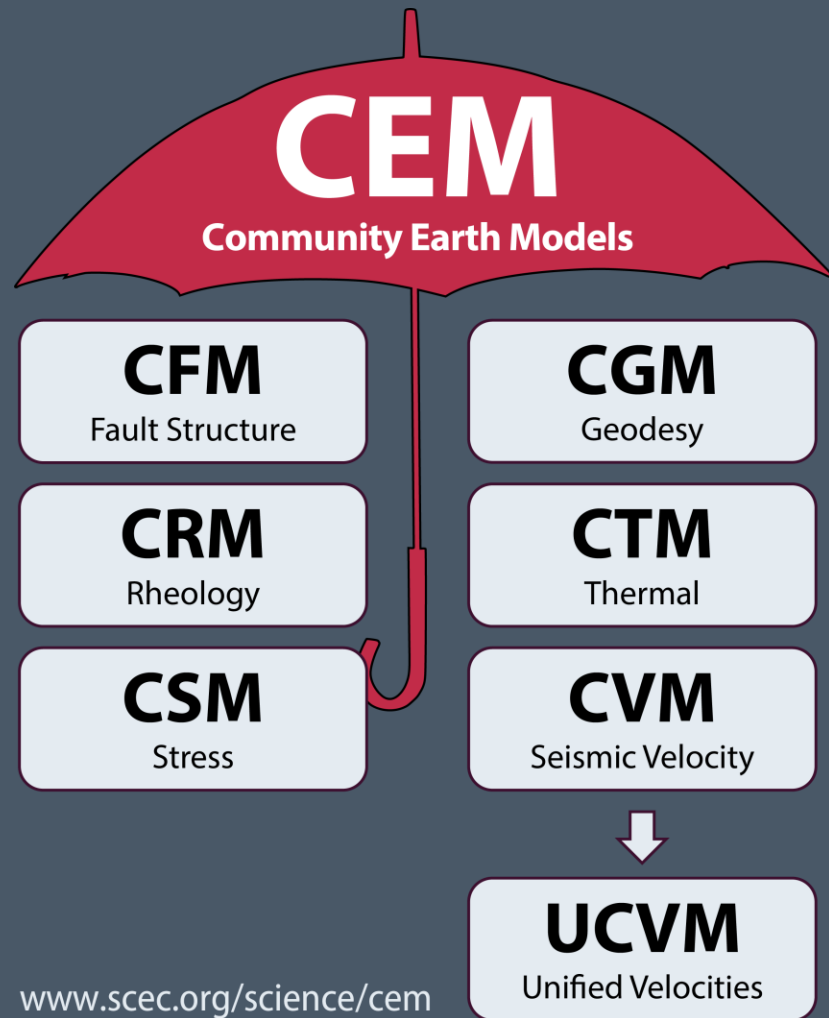


Thompson (2018) Vs30 values from
UCVM (colors) and CFM 7.0 fault traces

Community Earth Models

Current Inventory

- **CFM** : Community Fault Model
- **CGM** : Community Geodetic Model
- **CRM** : Community Rheology Model
- **CSM** : Community Stress Model
- **CTM** : Community Thermal Model
- **CVM** : Community Velocity Model
- **UCVM** : Unified Community Velocity Model Framework

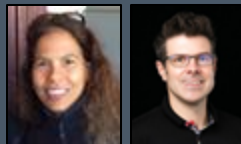




Community Earth Models Collaboration

SCEC CEM Developers

...and contributors!



SCEC Software & Web Team



Tran
Huynh



Phil
Maechling



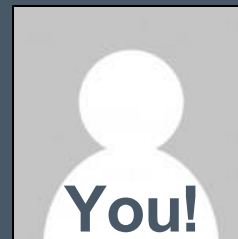
Mei-Hui
Su



Edric
Pauk



CEM Users





SCEC Homepage

Registration for SCEC2025 is still open!

[Register Now](#)

SCEC is now Statewide

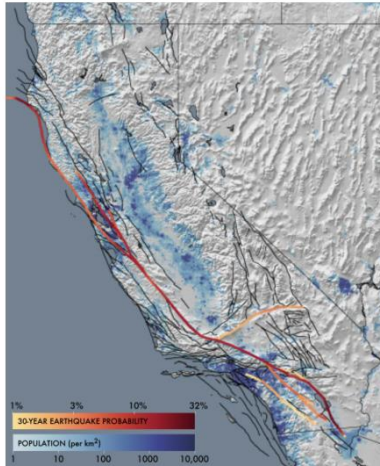
The Statewide California Earthquake Center **builds on SCEC's legacy** of leveraging cutting-edge research, interdisciplinary collaborations, and a systems-level approach. SCEC now focuses on the entire San Andreas Fault System which allows us to:

Address key science questions in a broader tectonic context,

Strengthen partnerships across disciplines to improve earthquake science and hazard analysis, and

Engage a wider range of participants, from academia and government to the public.

[ABOUT SCEC | NEW BRANDING](#)



Our Natural Laboratory

SCEC's study area now spans the entire Pacific-North American plate boundary, from western Nevada to the Borderlands offshore, and from Baja California to Cape Mendocino. The extensive regional geophysical networks and direct access to major faults of the San Andreas Fault System opens up new research avenues.

Quick Links

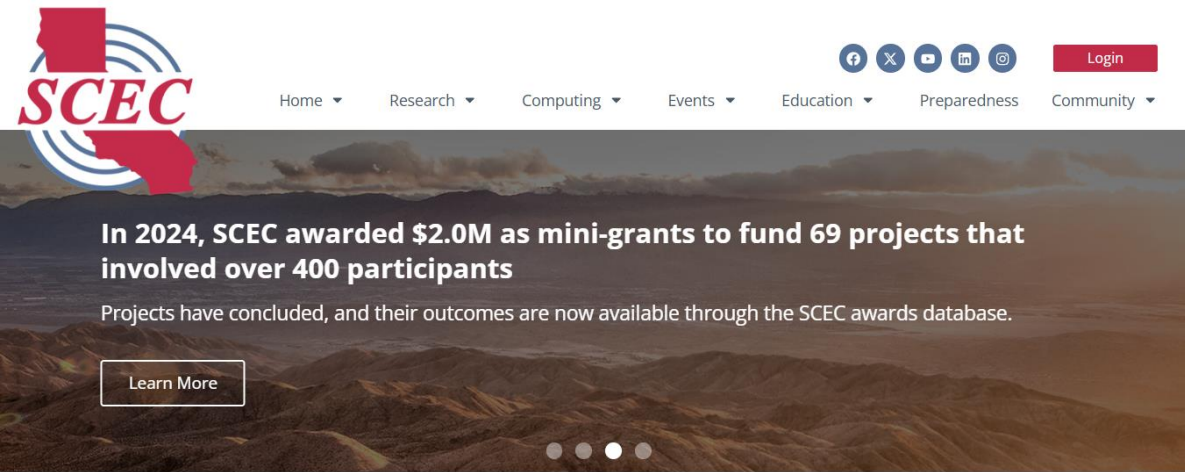
[SCEC Business Operations](#)

Hub for proposals, reports, profiles, & more

[Southern California Earthquake Center](#)

Archived website for the "Southern" Center

The CEM homepage is
linked on the SCEC
homepage



CEM Homepage

Registration for SCEC2025 is still open!

[Register Now](#)

COMMUNITY EARTH MODELS

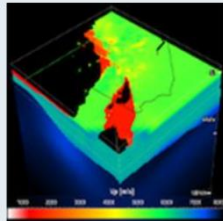
Unifying diverse data and expertise to build high-resolution models of key features of the lithosphere and asthenosphere for investigating seismic phenomena in California and beyond.

CEMs are easily findable
and accessible via a the
CEM homepage

The CEM widget
automatically scrolls
through the available CEMs

SCEC Community Earth Models (CEMs) and Datasets

CEMs are collaborative platforms featuring community-contributed data, models, and tools for earthquake system analysis. They enable 3D visualization, data exploration, sharing, and integrated modeling.



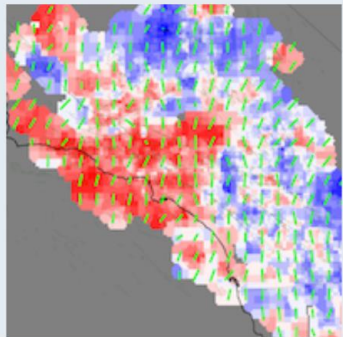
Unified Community Velocity Model (UCVM)

software for accessing seismic velocity models

A standard interface to multiple seismic velocity models that can be used to create velocity meshes for 3D wavefield simulations. UCVM is used by researchers working with Earth material properties on regional or local scales.

[UCVM HOME](#) | [CVM HOME](#) | [EXPLORER TOOL](#)

The CSM Widget



Community Stress Model (CSM)

suite of stress and stressing rate models

The CSM provides estimates of stress and stressing rates for various regions of California. The suite of models, derived using a variety of methods and datasets, are presented on a consistent grid.

[CSM HOME](#) | [EXPLORER TOOL](#) | [CSM ARCHIVE](#)

Link to
model
homepage

Link to
web-based
tools
“Explorer”

Link to citable
Zenodo archive

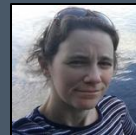
Findable

Accessible

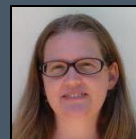
Interoperable

Reusable

CSM Group Leaders



Karen Luttrell
(LSU)



Jeanne Hardebeck
(USGS)

[Login](#)[Home](#)[Research](#)[Computing](#)[Events](#)[Education](#)[Preparedness](#)[Community](#)

COMMUNITY STRESS MODEL

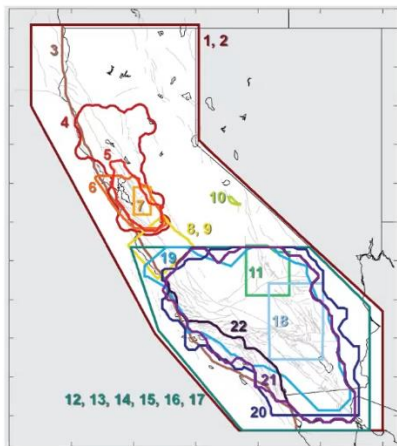
The SCEC CSM provides stress and stressing rate estimates across California, derived from various models and datasets and presented on a uniform grid, to give a more detailed picture of the SAFS stress regime.

Registration for SCEC2025 is still open!

[Register Now](#)

New SCEC Community Stress Model Covers All of California

The SCEC Community Stress Model (CSM) now spans the entire San Andreas Fault System (SAFS), from Southern to Northern California. Leveraging a decade of collaborative research by dozens of SCEC scientists, the **2024 CSM release** fills critical data gaps in **Community Earth Models (CEMs)** and aims to improve the characterization of in-situ stress states across California. This expanded statewide CSM is a valuable resource for researchers, enhancing hazard assessment and providing a more detailed understanding of the SAFS stress regime.



CSM: A Suite of Models of Stress and Stressing Rates

The SCEC Community Stress Model includes **twenty-two distinct models**, each based on different data types (e.g., focal mechanisms, borehole breakouts, geodetic data), methodologies (e.g., stress inversions, kinematic modeling), and underlying assumptions. These models, while covering subregions of California, collectively provide a more robust and nuanced representation of the region's stress field. We welcome new and updated contributions of models of stress, stressing rate, or stress observations.

[LEARN MORE](#)[CSM Archive](#)[CSM Explorer Tool](#)[Contributed Models](#)[Select References](#)[Contact Us](#)

CSM Homepage

CSM is first to employ the new CEM homepage style

Model background page provides details of how models are constructed

Other CEM homepages targeted by end of 2025

[About SCEC](#)[About CEM](#)

The **SCEC Community Stress Model (CSM)** is a suite of contributed models of stress and stressing rate in the California lithosphere. For more information about the CSM, see the [CSM homepage](#) or the [CSM archive](#). For detailed instructions, refer to the [user guide](#).

☐ Borehole SHmax☐ CFM7.0☐ GFM

Select Map Type

ESRI Topographic

[Explore Models](#)[Select Region](#)[RESET](#)

Select CSM Model Johnson-Hearn - stressing rate

Select Model Metric SHmax - horizontal compression azimuth [orientation]

Select Model Depth 1 km

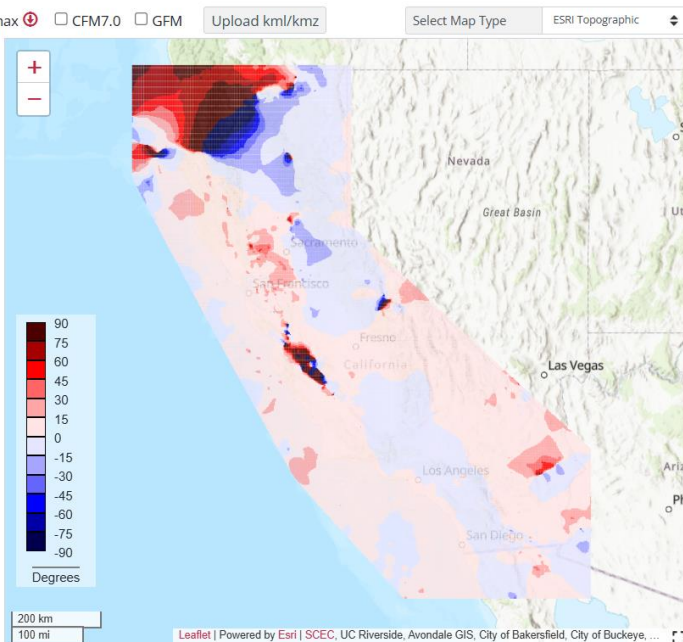
Change Opacity 0% 80 100%

You Selected:

Johnson-Hearn model contributed by K. Johnson and E. Hearn. This is a stressing-rate model based on geodetically inferred strain rates. Model values do not vary with depth.

SHmax indicates the azimuth [orientation] of the most compressive horizontal stress is north/south (0), east/west (+/-90), northeast/southwest (positive), or northwest/southeast (negative).

For more model details and metrics, see [CSM archive](#)



Id Model Metric Depth (km) Num Data Points Downloads

Metadata for selected region will appear here.

CEM Explorers

Web-based tools for Community Earth Models

All CEMs have an “Explorer”
that helps users explore the
model (leaflet-based map)

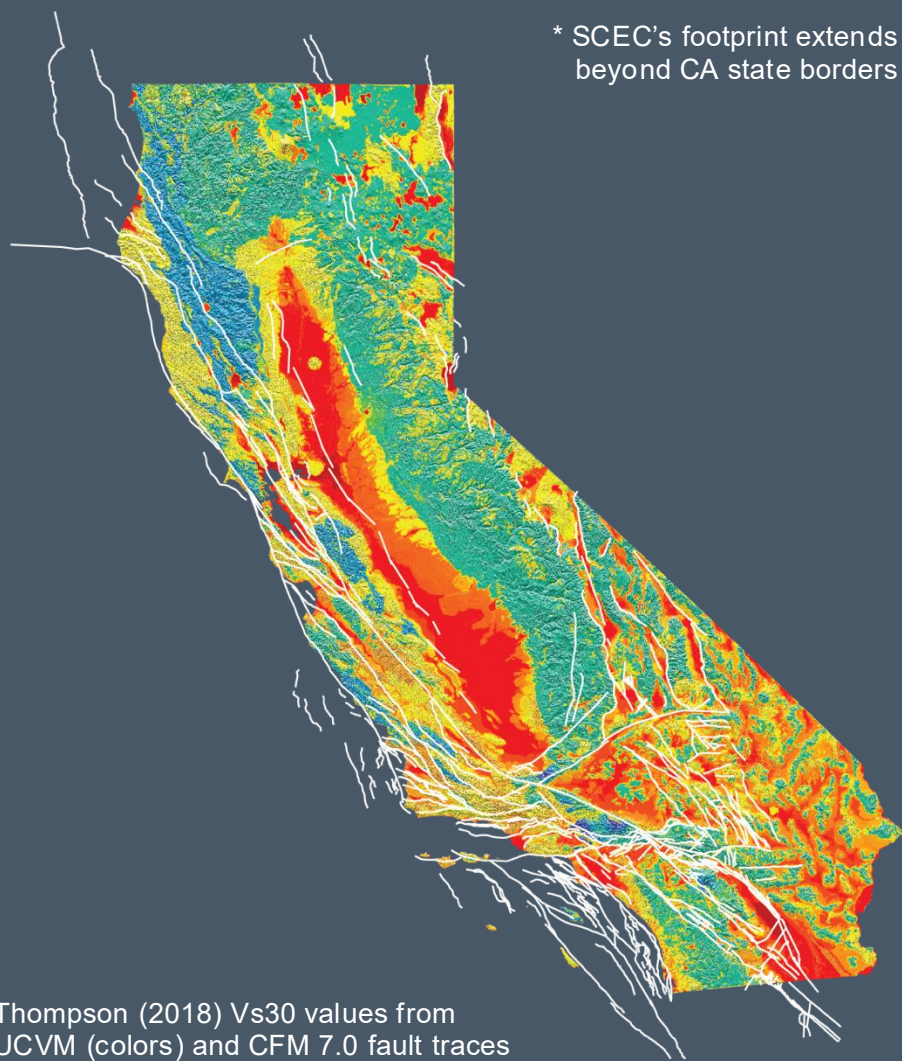
Some are still “Provisional”
moho.scec.org

If you have any issues, let us
know! **Drop by our CEM
helpdesk!**

Community Earth Model Explorer Updates

1. New CVM Explorer
2. CFM Explorer Updates
Integration with Earthquake-to-fault
Association Service

* SCEC's footprint extends
beyond CA state borders



Thompson (2018) Vs30 values from
UCVM (colors) and CFM 7.0 fault traces

[About SCEC](#)[About CEM](#)

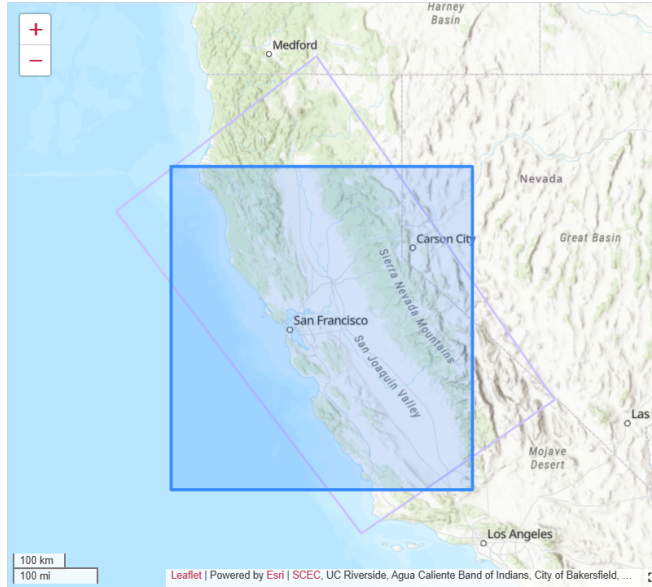
The SCEC Community Velocity Model (CVM) Explorer allows easy access to a range of seismic velocity models using the UCVM package. The interface allows for downloading data in csv format and various visualization capabilities including 2D horizontal slices, 2D vertical cross sections, and 1D vertical profiles. See the [user guide](#) for more details and usage instructions.

☐ CFM7.0
 ☐ GFM
 ☐ CTM

| | | |
|---------------------|---------------------|--|
| Select CVM Model | CS 248 | |
| Select Profile Type | 2D Horizontal Slice | |
| Select Z Mode | Depth (m) | |

Draw a rectangle (click and drag) on the map or enter coordinates below

| | |
|-------------------------------------|-----------------------------------|
| <input type="text" value="-125"/> | <input type="text" value="35"/> |
| <input type="text" value="-118.5"/> | <input type="text" value="40.5"/> |
| <input type="text" value="10000"/> | <input type="text" value="Vs"/> |



Model Selected: CS 248

UCVM Abbreviation: cs248

Description: CS248 is the velocity model used for CyberShake Study 24.8 in Northern California. It was constructed by tiling together the USGS SFCVM v21.1, CCA-06, and a 1D velocity model derived from the Sierra region of the SFCVM. The Nakata/Pitarka correction was applied to the gabbro. The minimum Vs was 400 m/s, ...

For additional information about UCVM and included models refer to the [UCVM Github homepage](#)

Disclaimer: SCEC and the CEM development teams do not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein

Material Property for selected locations will appear here.

Result, Plot and Metadata will appear here

Download data (.csv format)

Plot data

Extraction time: 17.91 sec

Horizontal Slice(vs) by Depth with CS 248



CVM Explorer

Web-based tools for Community Velocity Models

What does the Explorer do?

- Search/Query/Download
 - Uses UCVM software & GMT scripts
 - 24 CVMs; 6 tiled models
 - Extract data in .csv format
- Extract Interpolated Profiles
 - 2D horizontal slices
 - 2D cross sections
 - 1D profiles
 - 0D point extraction
- Plots saved in pdf/png formats
- No specialized software needed

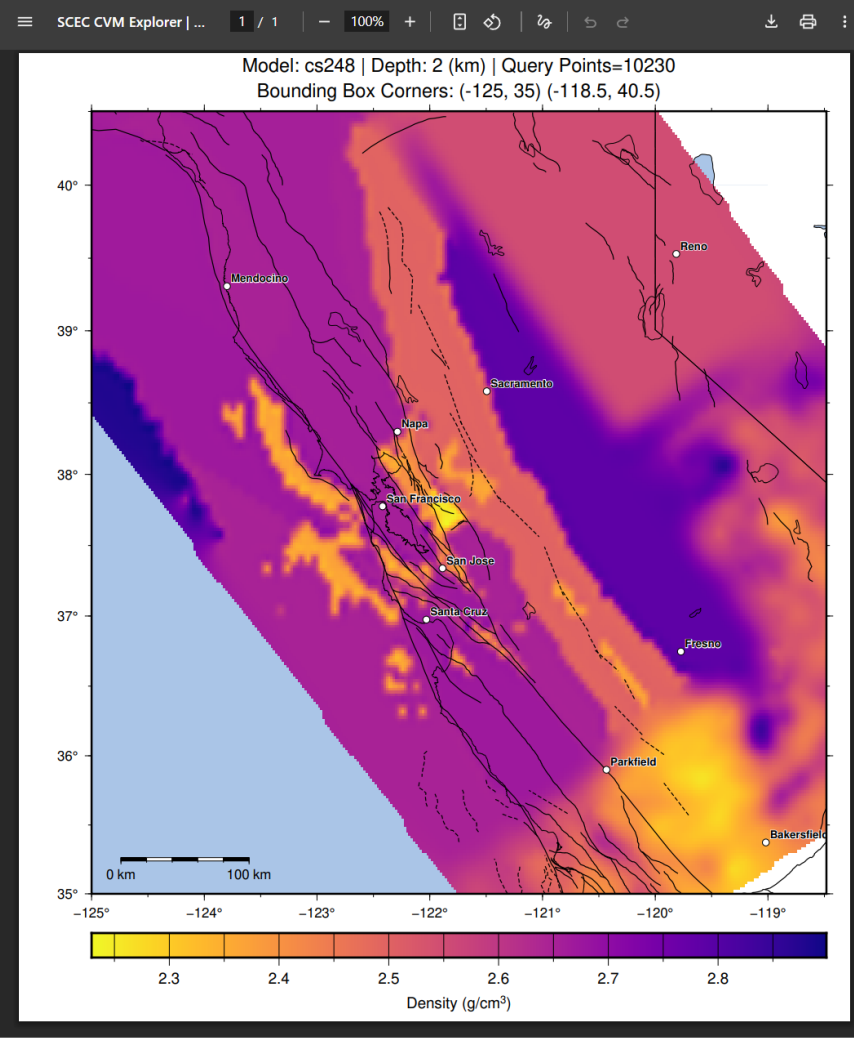


CVM Explorer

Web-based tools for
Community Velocity Models

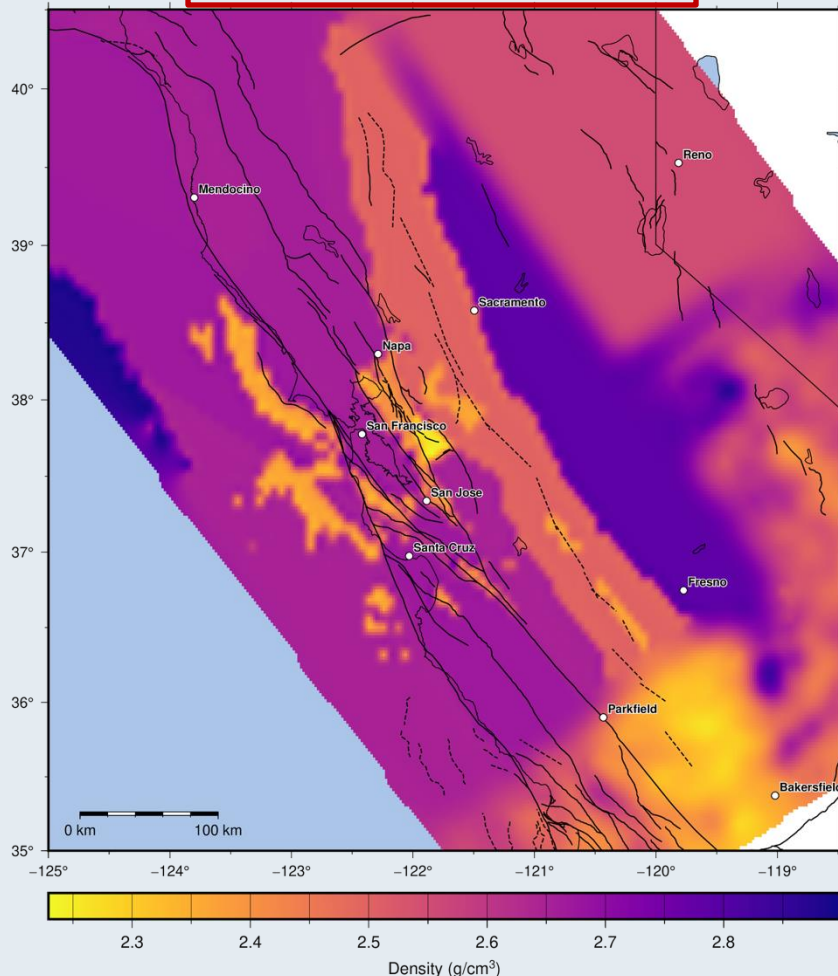
What does the Explorer do?

- Search/Query/Download
 - Uses UCVL software & GMT scripts
 - 24 CVMs; 6 tiled models
 - Extract data in .csv format
- Extract Interpolated Profiles
 - 2D horizontal slices
 - 2D cross sections
 - 1D profiles
 - 0D point extraction
- Plots saved in pdf/png formats
- No specialized software needed



Model: cs248 | Depth: 2 (km) | Query Points=10230
Bounding Box Corners: (-125, 35) (-118.5, 40.5)

Easy to reproduce!



CVM Explorer

Web-based tools for
Community Velocity Models

What does the Explorer do?

- Search/Query/Download
 - Uses UCVL software & GMT scripts
 - 24 CVMs; 6 tiled models
 - Extract data in .csv format
- Extract Interpolated Profiles
 - 2D horizontal slices
 - 2D cross sections
 - 1D profiles
 - 0D point extraction
- Plots saved in pdf/png formats
- No specialized software needed

[About SCEC](#)[About CEM](#)

The SCEC Community Velocity Model (CVM) Explorer allows easy access to a range of seismic velocity models using the UCVM package. The interface allows for downloading data in csv format and various visualization capabilities including 2D horizontal slices, 2D vertical cross sections, and 1D vertical profiles. See the [user guide](#) for more details and usage instructions.

☐ CFM7.0 ☐ GFM ☐ CTM

 CVM-S4.26.M01

 1D Vertical Profile

 Depth (m)

Pick a profile point on the map or enter latitude and longitude below

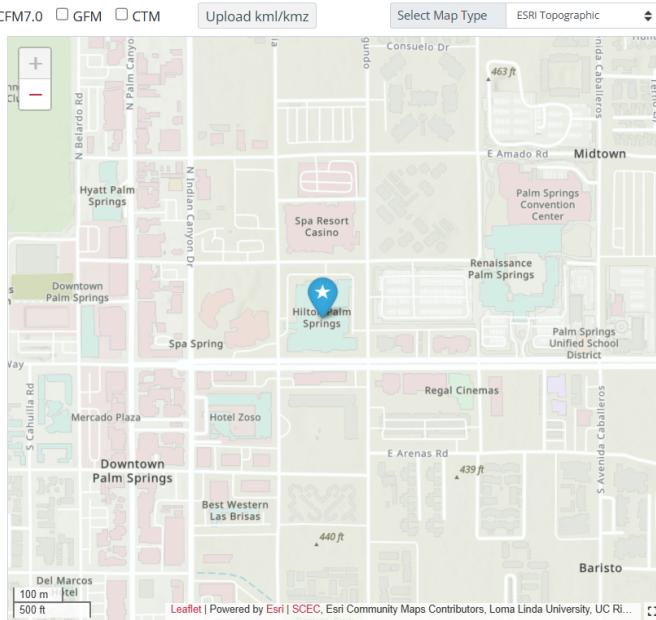
Model Selected: CVM-S4.26.M01

UCVM Abbreviation: cvmsi

Description: CVM-S4.26.M01 is a 3D seismic velocity model based upon CVM-S4.26 which is a tomography improved version of the CVM-S4 model. CVM-S4.26.M01 preserves some of the geotechnical information in the original CVM-S4 model that was lost during the tomography improvements used to create CVM-S4.26 ...

Reference: [Lee et al., \(2014\)](#) [Taborda et al., \(2016\)](#)

For additional information about UCVM and included models refer to the [UCVM Github homepage](#)



Material Property for selected locations will appear here.

Result, Plot and Metadata will appear here.

| | | | |
|--|-------------------|--|--|
| | CVM_1757036140966 | Download data (.csv format) Plot data | Vertical Depth Profile (vs) with CVM-S4.26.M01 |
|--|-------------------|--|--|



CVM Explorer

Web-based tools for Community Velocity Models

What does the Explorer do?

- Search/Query/Download
 - Uses UCVM software & GMT scripts
 - 24 CVMs; 6 tiled models
 - Extract data in .csv format
- Extract Interpolated Profiles
 - 2D horizontal slices
 - 2D cross sections
 - 1D profiles
 - 0D point extraction
- Plots saved in pdf/png formats
- No specialized software needed



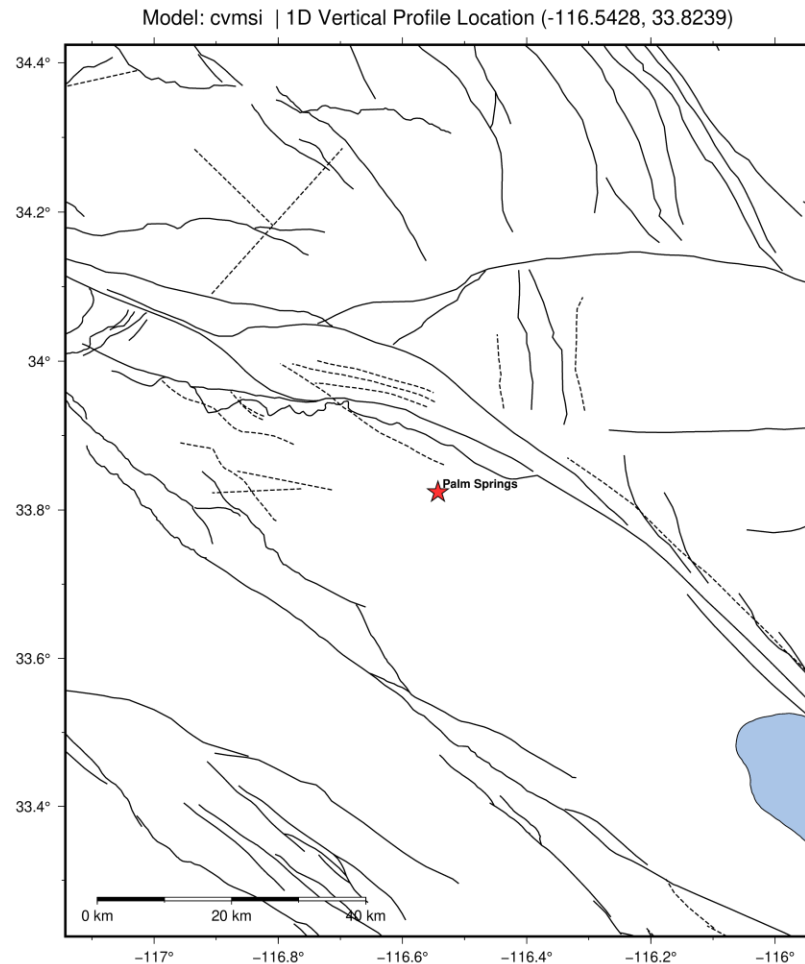
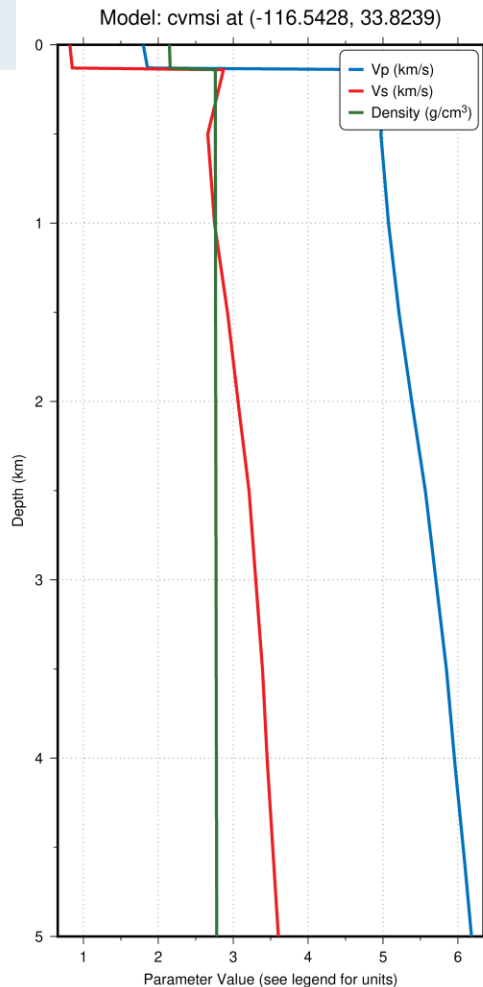
1D Profile

1D Vertical Profile Plot

CVM: CVM-S4.26.M01

Lee et al., (2014)

Taborda et al., (2016)

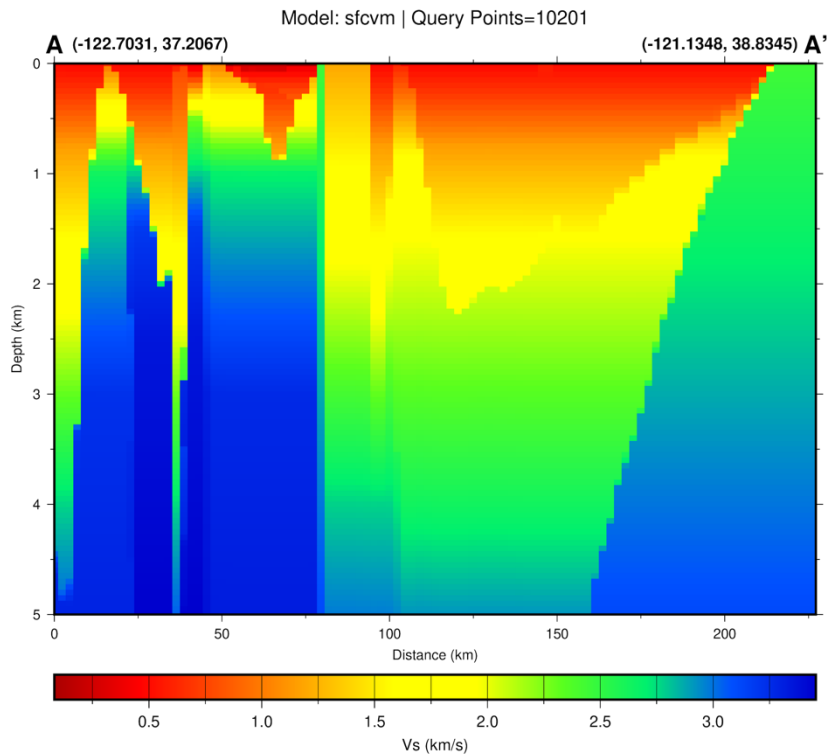




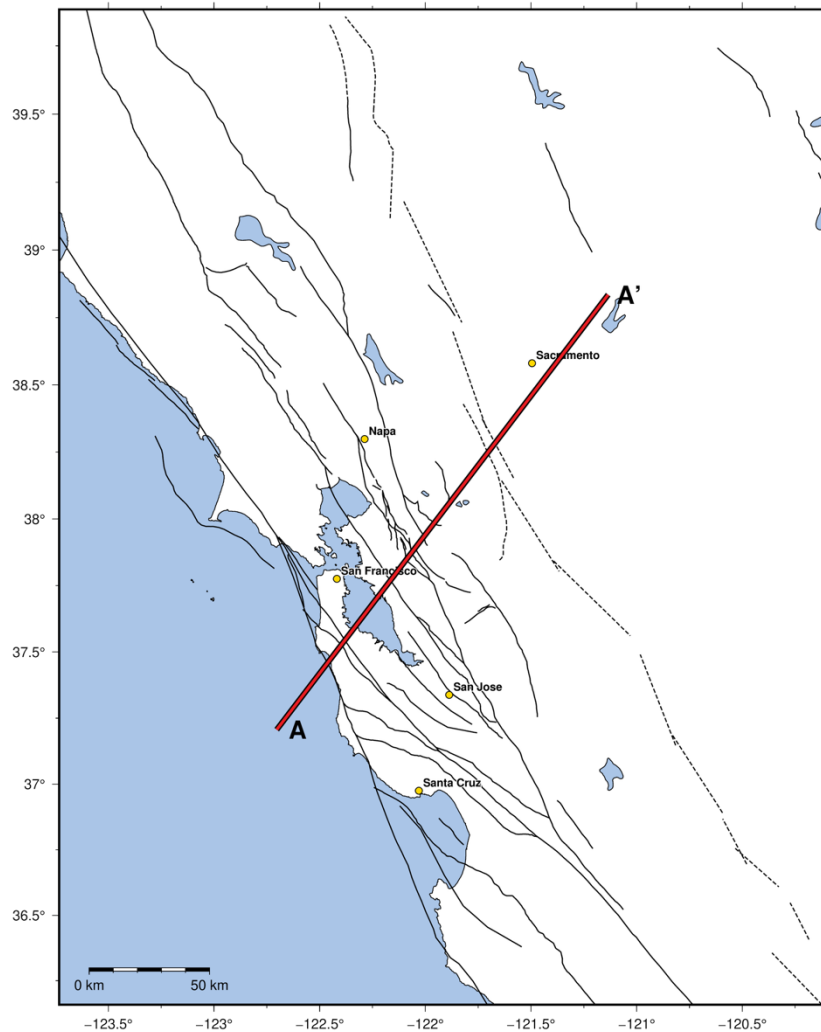
CVM Explorer Plots

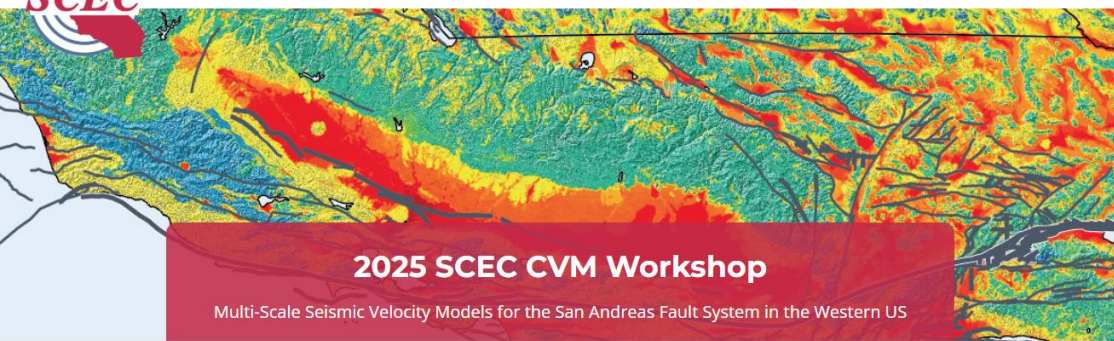
Vertical Cross Section Plot

CVM: SF Bay Model (Aagaard et al., 2021)



Model: sfcvm | Vertical Profile Location (-122.7031, 37.2067) to (-121.1348, 38.8345)





2025 SCEC CVM Workshop

Multi-Scale Seismic Velocity Models for the San Andreas Fault System in the Western US

Date: April 4, 2025 (08:30am – 4:30pm Pacific)

Location: Online via Zoom

Workshop Organizers: Patricia Persaud (U Arizona), Kim Olsen (SDSU), Artie Rodgers (LLNL),
Phil Maechling (USC), Yehuda Ben-Zion (USC)

View Workshop Report

Summary

SCEC hosted a workshop to accelerate the development and improvement of multi-scale seismic velocity models that are essential for accurate ground motion simulations and seismic hazard assessments in California and beyond. While significant progress has been made, challenges remain in integrating new data, improving resolution, merging models, and assessing uncertainties. This workshop focused on planning a coordinated research approach to develop multi-scale P- and S-wave velocity models for the San Andreas fault system in the Western US, targeting seismic wavefield simulations up to 5-10 Hz, a frequency range critical for engineering applications. Participants discussed tomography workflows, strategies for merging high-resolution local models and regional models, integrating diverse geophysical data, and developing robust uncertainty quantification methods. The workshop also addressed the development of essential IT tools for model management and access, ensuring practical implementation of workshop recommendations. Discussions at the workshop will guide the development of the next generation of SCEC CVMs, which will advance our understanding of crustal structures and seismic hazards.

Workshop Objectives

Community Velocity Models (CVMs) provide foundational information for many basic and applied topics including the determination of earthquake locations and other source properties, imaging of the subsurface, and simulations of ground motions for use in seismic hazard models. However, current large-scale velocity models within the state of California lack the deterministic information needed for ground motion simulations at the high frequencies required in engineering applications. To address this limitation, the next generation of CVMs should resolve fine-scale seismic structure, in particular in basins, the shallow crust, and around fault zones to allow simulations of ground motion in areas of high population density and critical infrastructure to

2025 Workshop

Multi-Scale Seismic Velocity Models for the San Andreas Fault System

Focused on issues facing CVMs and multi-scale merging methods



Patricia Persaud
(Arizona)



Philip Maechling
(SCEC)



Kim Olsen
(SDSU)



Yehuda Ben-Zion
(SCEC)



Artie Rodgers
(LLNL)

<https://www.scec.org/events/2025-scec-cvm-workshop/>



About SCEC

About CFM

The SCEC Community Fault Model (CFM) includes complex, three-dimensional faults. This CFM explorer provides a simplified two-dimensional map view. It currently supports multiple CFM versions and allows users to view and download fault geometry data without accessing the entire CFM model archive.

Selected faults can be visualized in a basic 3D format using the "PLOT3D" button. For detailed instructions, refer to the [user guide](#).

Choose CFM Model : **7.0 PREFERRED** 7.0 ALTERNATIVES 7.0 RUPTURES 6.1 PREFERRED 6.1 ALTERNATIVES 6.1 RUPTURES 5.3 PREFERRED

Search by
Reset

Search recent EQ(0)

Load relocated seismicity

Upload kml/kmz

Select Map Type
ESRI Topographic

CFM Fault Objects

☐ OCBA-PVZ-MULT-Palos_Verdes_fault-CFM6
☐ SFBY-CYZ-CLYV-Collayomi-CFM7
☐ WTRA-SBTS-ANCP-Anacapa_Dume_fault-CFM3
☐ SFBY-SAFZ-MNTM-Pilarcitos-CFM7
☐ BNRA-BMFZ-MULT-Black_Mountain_fault-CFM3
☐ BNRA-NDVZ-MULT-Northern_Death_Valley_fault-CFM2
☐ CASC-BMMR-MDRV-Mad_River-CFM7
☐ GVFA-CGVT-BBLH-Great_Valley-CFM7
☐ BNRA-SDVZ-MULT-Southern_Death_Valley_fault-CFM6
☐ CASC-BMMR-BLDM-Bald_Mountain_Big_Lagoon-CFM7
☐ CASC-CASC-FRNT-Cascadia_Subduction_Megathrust-CFM7
☐ CASC-LSLM-EROF-Little_Salmon_offshore-CFM7
☐ CASC-RSFD-EELR-Russ-CFM7
☐ CASC-LSLM-MULT-Little_Salmon_onshore-CFM7
☐ CASC-MNDC-1992-Petrolia_sequence-CFM7
☐ CASC-MNDC-PCFC-Mendocino-CFM7
☐ CRFA-BPPM-EAST-Big_Pine_fault-CFM4
☐ CRFA-BPPM-LKWL-Lockwood_Valley_fault-CFM2

+

-

Fault ▾

Area ▾

Zone ▾

Section ▾

Last Update ▾

Avg Strike ▾

Avg Dip ▾

Area (km²) ▾

PLOT3D ▾

DOWNLOAD ▾

Metadata for selected faults will appear here.

CFM Explorer

New tools for searching and displaying recent EQs

New "Search recent EQ"
What can it do?

- Search/Query/Download
 - Uses USGS API to query near real-time ComCat catalog
 - Can download event data in .csv
- Links to ComCat
- Visualize EQs in 2D and 3D
- Compare to CFM faults in 2D and 3D!!

A Statistical Method for Associating Earthquakes with Their Source Faults in Southern California

Walker S. Evans¹, Andreas Plesch^{*1}, John H. Shaw¹, Natesh L. Pillai², Ellen Yu³, Men-Andrin Meier³, and Egill Hauksson³

ABSTRACT

We present a new statistical method for associating earthquakes with their source faults in the Southern California Earthquake Center's 3D Community Fault Models (CFMs; [Plesch et al., 2007](#)) in near-real time and for historical earthquakes. The method uses the hypo-center location, focal mechanism orientation, and earthquake sequencing to produce the probabilities of association between a given earthquake and each fault in the CFM as well as the probability that the event occurred on a fault not represented in the CFM. We used a set of known likely associations (the Known Likely Sets) as training or testing data and demonstrated that our models perform effectively on these examples and should be expected to perform well on other earthquakes with similar characteristics including the full catalog of southern California earthquakes ([Hauksson et al., 2012](#)). To produce near-real-time associations for future earthquakes, the models have been implemented as an R script and connected to the Southern California Seismic Network data processing system operated by the California Institute of Technology and the U.S. Geological Survey to automatically produce fault associations for earthquakes of $M \geq 3.0$ as they occur. To produce historical associations, we apply the method to the most recent CFM version (v.5.2), yielding modeled historical associations for all events of $M \geq 3.0$ in the catalog of southern California earthquakes from 1981 to 2016. More than 80% of these events and 99% of moment within the geography covered by the CFM had a primary association with a CFM fault. The models can help identify clusters of small earthquakes that indicate the onset of activity associated with major faults. The method will also assist in communicating objective information about the faults that source earthquakes to the scientific community and general public. In the event of a damaging southern California earthquake, the near-real-time association will provide valuable information regarding the similarity of the current event to forecast scenarios, potentially aiding in earthquake response.

KEY POINTS

- Identifying source faults is difficult, time consuming, and subjective but critical for earthquake response.
- We develop and implement an automated method for associating earthquakes with known faults.
- The method can improve operational response, hazard assessments, and fault model completeness assessments.

providing several options for the earthquake source. Finally, our knowledge of the fault structure is generally incomplete, and thus earthquakes may occur on faults that have not been previously recognized or do meet criteria (e.g., fault size) that warrant their inclusion in regional fault maps or models.

Today, source fault determinations are typically produced by expert examination of earthquake and fault-related data to manually identify source faults using information such as

CFM

Earthquake-to-Fault Associations

Evans et al. (2020)

What can this do?

- Runs real-time on all EQs in SoCal >M3
- Associates EQs with CFM faults (or not in CFM)
- Valuable for rapid response and talking to media
- Now updated to CFM 7.0
- Integrated with CFM Explorer

Caltech/USGS SCSN Event Information

Magnitude: 3.8
Time (PT -||- UTC): 2025/05/19 12:09:19 ---||--- 2025/05/19 19:09:19
Coordinates (lat,lon): 35.048, -119.039
Location: 15.3 km (9.5 mi) NW from Grapevine, CA
Depth (km/miles): 6.0/3.7
USGS ComCat URL: [ci41156568](#)

CFM 7.0 Fault Association Probability

Most Likely

[White Wolf fault](#) (79%)
[2D Event-Fault view](#)
[3D Event-Fault view](#)

Alternates

Not associated with a CFM modeled fault (17%)
Other CFM faults (4%)

Probability Summary

| Fault Name | Distance (km) | Probability (%) | CFM Object Name |
|---------------------------------------|---------------|-----------------|--------------------------------------|
| White Wolf fault | 2.29 | 79 | GVFA-WWFZ-MULT-White_Wolf_fault-CFM5 |
| Not in CFM. See below. NA: Not in CFM | 17 | | Not in CFM |
| Pleito fault | 9.28 | 4 | GVFA-PLFZ-MULT-Pleito_fault-CFM2 |

Background Information

Earthquakes can occur both near or on known faults and in places where no clear fault zones are known. Using the statistical method of Evans et al. (2020) [doi.org/10.1785/0120190115](#) the location and focal mechanism of this earthquake suggest the above association with modeled faults and their surroundings in the [Community Fault Model \(CFM\) doi.org/10.5281/zenodo.4651667](#) provided by a partnership with the Statewide California Earthquake Center (SCEC), Harvard University, Appalachian State

CFM

Earthquake-to-Fault Associations

Evans et al. (2020)

What can this do?

- Runs real-time on all EQs in SoCal >M3
- Associates EQs with CFM faults (or not in CFM)
- Valuable for rapid response and talking to media
- Now updated to CFM 7.0
- Integrated with CFM Explorer

Subject [External] SCSN quake (M3.7): Association with SCEC CFM 7.0 Faults (ci40186202)

Caltech/USGS SCSN Event Information

Magnitude: 3.7
Time (PT -||- UTC): 2025/02/14 23:44:05 ---||--- 2025/02/15 07:44:05
Coordinates (lat,lon): 34.041, -118.91
Location: 10.1 km (6.3 mi) WNW from Malibu, CA
Depth (km/miles): 15.4/9.6
USGS ComCat URL: [ci40186202](#)

CFM 7.0 Fault Association Probability

Most Likely

[Anacapa-Dume fault](#) (35%)
[2D Event-Fault view](#)
[3D Event-Fault view](#)

Alternates

Not associated with a CFM modeled fault (11%)
Other CFM faults (54%)

Probability Summary

| Fault Name | Distance (km) | Probability (%) | CFM Object Name |
|--|---------------|-----------------|---|
| Anacapa-Dume fault | 4.43 | 35 | WTRA-SBTS-ANCP-Anacapa_Dume_fault-CFM3 |
| Malibu Coast fault-east | 3.62 | 30 | WTRA-SFFS-SMMT-Malibu_Coast_fault_east-CFM6 |
| Malibu Coast fault-west | 4.01 | 24 | WTRA-SFFS-ANCP-Malibu_Coast_fault_west-CFM5 |
| Not in CFM. See below. NA: Not in CFM 11 | | | Not in CFM |

Background Information

Earthquakes can occur both near or on known faults and in places where no clear fault zones are known. Using the statistical method of Evans et al. (2020) [doi.org/10.1785/0120190115](#) the location and focal mechanism of this earthquake suggest the above association with modeled faults and their surroundings in the [Community Fault Model \(CFM\)](#) [doi.org/10.5281/zenodo.4651667](#) provided by a partnership with the Statewide California Earthquake Center (SCEC), Harvard University, Appalachian State University, and the [Southern California Earthquake Data Center](#). This information is subject to change as more up-to-date data become available. For more information, see <https://www.scec.org/article/619>.

CFM Fault: SCEC CFM Fault name and closest segment when relevant;
The CFM is developed and maintained by Andrew Plesch and John H Shaw at Harvard University, Dept of Earth & Planetary Sciences and Scott T. Marshall at Appalachian State University, Dept of Geological and Environmental Sciences.

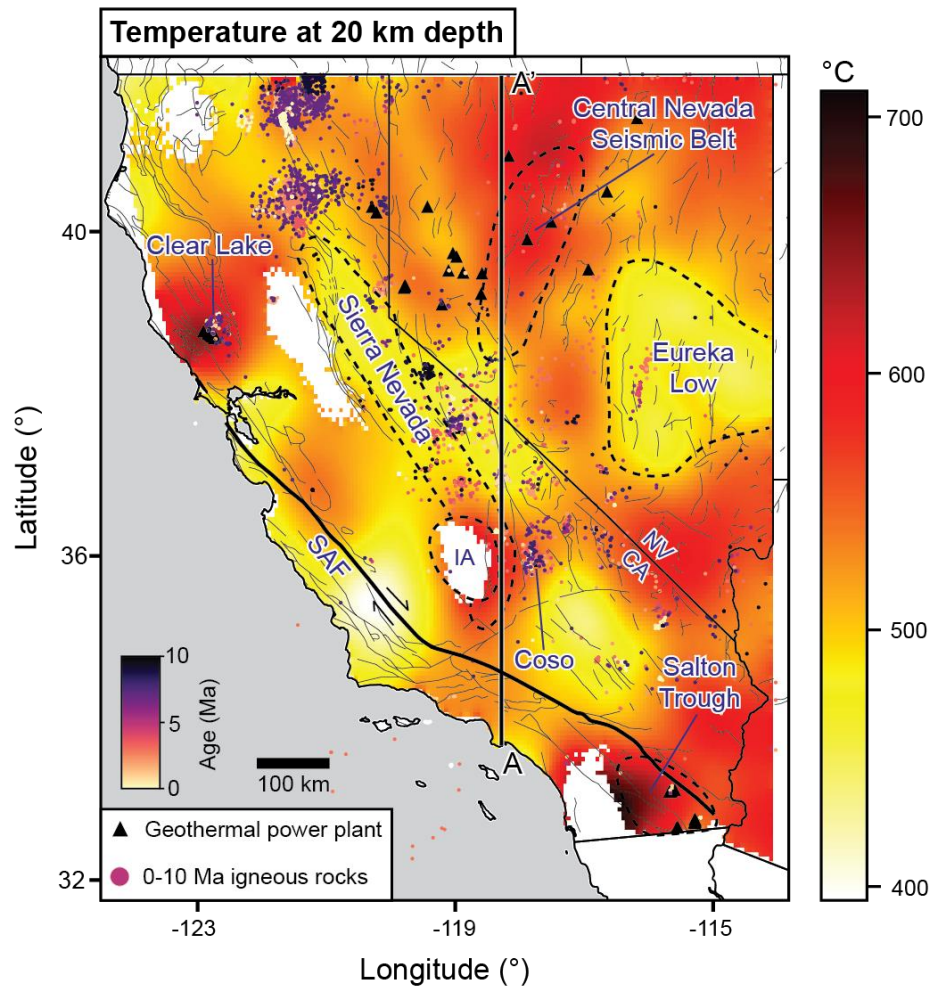
CFM

Earthquake-to-Fault Associations

Evans et al. (2020)

What can this do?

- Runs real-time on all EQs in SoCal >M3
- Associates EQs with CFM faults (or not in CFM)
- Valuable for rapid response and talking to media
- Now updated to CFM 7.0
- Integrated with CFM Explorer



Lee et al., in review

Community Thermal Model Explorer

Coming Soon!

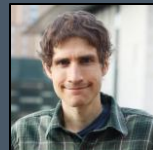
The CTM Explorer will have similar functionality to the CVM Explorer



Terry Lee
(UNR)

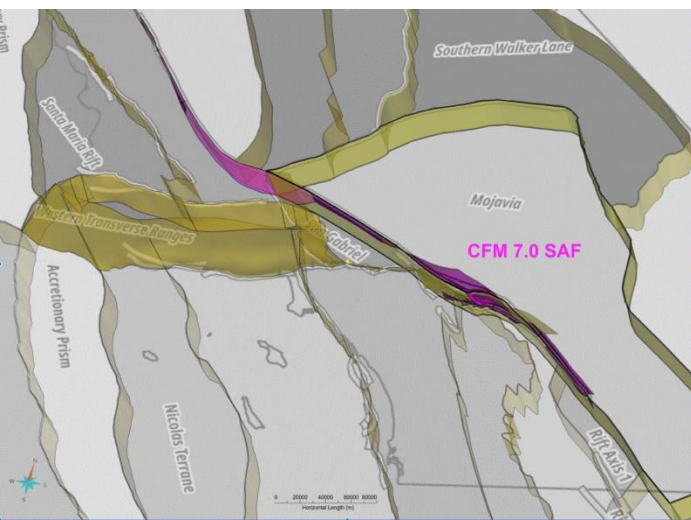
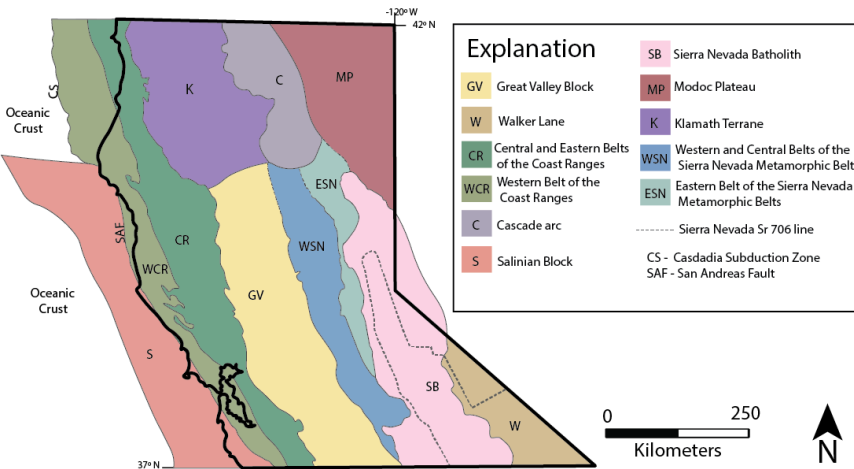


Andrew Zuza
(UNR)



Daniel Trugman
(UNR)

Major Geologic Provinces of NorCal (Mike Oskin)



Reconciling the GFM with CFM faults (Andreas Plesch)

Geologic Framework Model (GFM)

The GFM is going statewide!

SCEC Statewide GFM/CTM Workshop
August 14-15, 2025 @ UC Davis

Mike Oskin, Andrew Zuza, Terry Lee, Laurent Montesi,
 Oliver Boyd, Yuehua Zeng, Sierra Rack

SCEC Community Rheology Model Workshop,
Integrating friction into the CRM,
September 6, 2025 @ Hilton Palm Springs

Alexis Ault, Sylvain Barbot, Caroline Seyler

Plenary Talk by Mike Oskin
Tues 2:30pm @ SCEC 2025

California's Geological Framework and Consequent Fault-System Behavior



SCEC 2025

Community Earth Models Helpdesk

We can help!

Available During Poster Sessions

- Ask questions!
- Try our CEM "Explorers"
- Meet CEM developers

SCEC 2025

Community Earth Models Helpdesk

We can help!

Available During Poster Sessions

- Ask questions!
- Try our CEM “Explorers”
- Meet CEM developers

Sunday Sept 7

SCEC Product Name

8:00 PM - 9:00 PM

Tandem and SeisSol

9:00 PM - 10:00 PM

Community Geodetic Model

Monday Sept 8

10:00 AM - 11:00 AM

Community Fault Model

11:00 AM - 12:00 PM

UCERF3/BBP/pyCSEP

4:30 PM - 5:30 PM

MOOSE-FARMS/QuakeWorx

8:00 PM - 9:00 PM

Unified Community Velocity Model

9:00 PM - 10:00 PM

Community Stress Model

Tuesday Sept 9

10:00 AM - 11:00 AM

Community Rheology Model / GFM

11:00 AM - 12:00 PM

Community Thermal Model

4:30 PM - 5:30 PM

OneSciencePlace