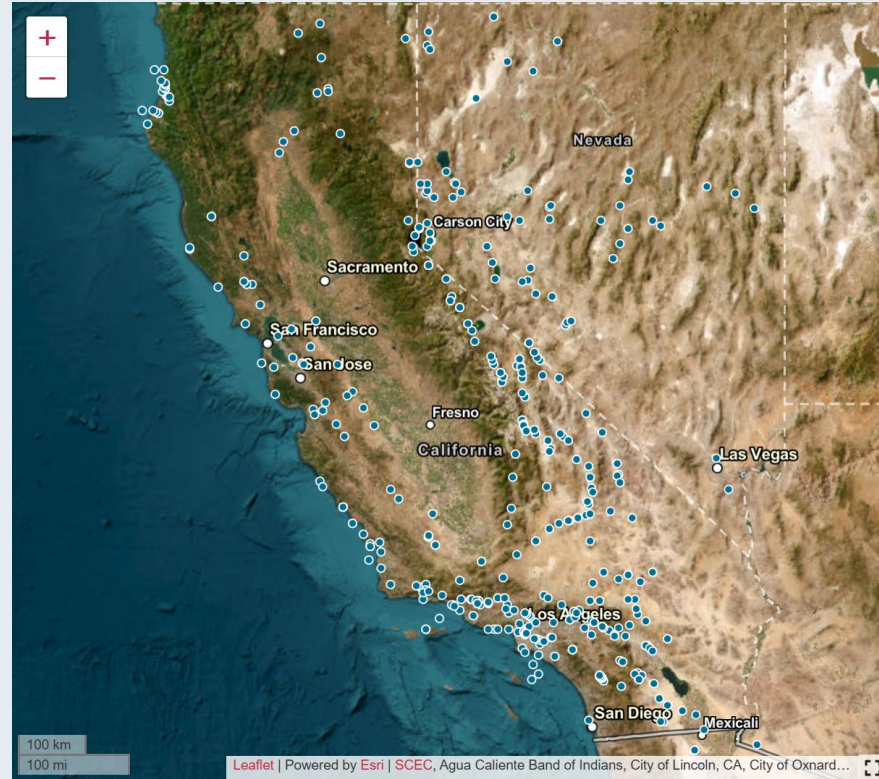


# The Geologic Slip Rate Database (GSRD) the Community Fault Model (CFM) and Cyberinfrastructure for SCEC-hosted databases



**Scott Marshall**  
Appalachian State University



June 3, 2026

UNREST Workshop, Pismo Beach, CA

GSRD Homepage | <https://southern.scec.org/research/gsrd>

New GSRD Explorer | <https://moho.scec.org/gsr-d-explorer/>



Login

Home ▾ Research ▾ Computing ▾ Events ▾ Education ▾ Preparedness Community ▾

In 2024, SCEC awarded \$2.0M as mini-grants to fund 69 projects that involved over 400 participants

Projects have concluded, and their outcomes are now available through the SCEC awards database.

Learn More

Registration for SCEC2025 is now 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.

### 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.



#### Geologic Slip Rate Database (GSRD) *geologic slip rates for CA, NV, and northern Mexico*

SCEC's GSRD centralizes field-derived geologic slip rates crucial for seismic hazard estimates (e.g., NSHM), linked to relevant source publications. As a living archive, it welcomes updates via a user submission form.

[GSRD HOME](#) | [EXPLORER TOOL](#)

SCEC GitHub

SCEC Zenodo

Data Management

Select References

Contact Us

# SCEC IT/Web Team

CEMs: A collaboration between scientists, IT professionals, and the community



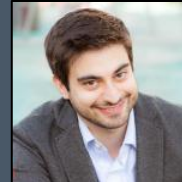
## Tran Huynh

Associate Director for Science Operations  
USC/SCEC



## Scott Callaghan

Associate Director for Information Technology  
USC/SCEC



## Edric Pauk

Software Engineer / Web Developer  
USC/SCEC



## Mei-Hui Su

CXM Software Engineer  
USC/SCEC



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.

About SCEC  
About CEM

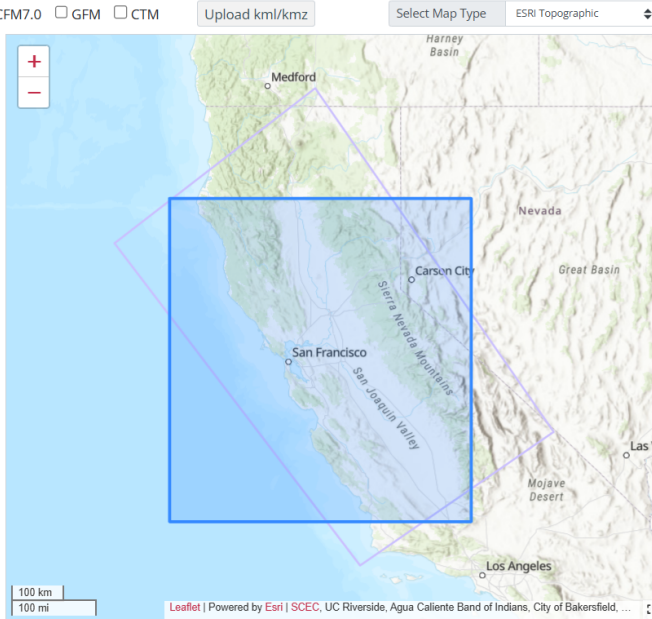
CFM7.0    GFM    CTM        

CS 248   ⓘ  
 2D Horizontal Slice   ⓘ  
 Depth (m)   ⓘ

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



**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.

	CVM_1757031048875	<input type="button" value="Download data (.csv format)"/> <input type="button" value="Plot data"/> Extraction time: 17.91 sec	Horizontal Slice(vs) by Depth with CS 248
--	-------------------	--	---

# 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!



# Community Earth Model Collaboration

## SCEC CEM Developers

...and contributors!



Photo  
Not  
Found

\*Apologies  
if I missed  
anyone

## SCEC Software & Web Team



Tran  
Huynh



Scott  
Callaghan

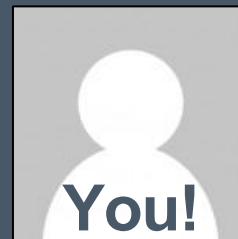


Mei-Hui  
Su



Edric  
Pauk

## CEM Users





# Mockups

## How Do We Build SCEC CEM Tools?

### SCEC Scientists (us!):

- Organize and build data
- Write code to quality check and visualize data
- Create mockups of web tools
- Write documentation

### SCEC IT/Web Team:

- Build web tool
- Build homepage with input from scientists
- Post Zenodo archive with SCEC products

Each box should not pop up until the previous selection is made

CVM Explorer  
 Select Model: San Francisco Bay Area Model  
 Profile Type: 2D Horizontal Slice  
 Z Mode: Depth (km)

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

Begin Longitude	Begin Latitude
End Longitude	End Latitude
Depth (km)	Data Type

**Model Selected:** San Francisco Bay Area Model

**Description:** This is a geology-based model that has details that we can fill in here once we get some help from the CVM team.

**Model Construction Method:** This is a geology-based model that has details that we can fill in here once we get some help from the CVM team.

**Model Resolution:** This model has a non-uniform spacing that varies from xx.xx degrees to x degrees.

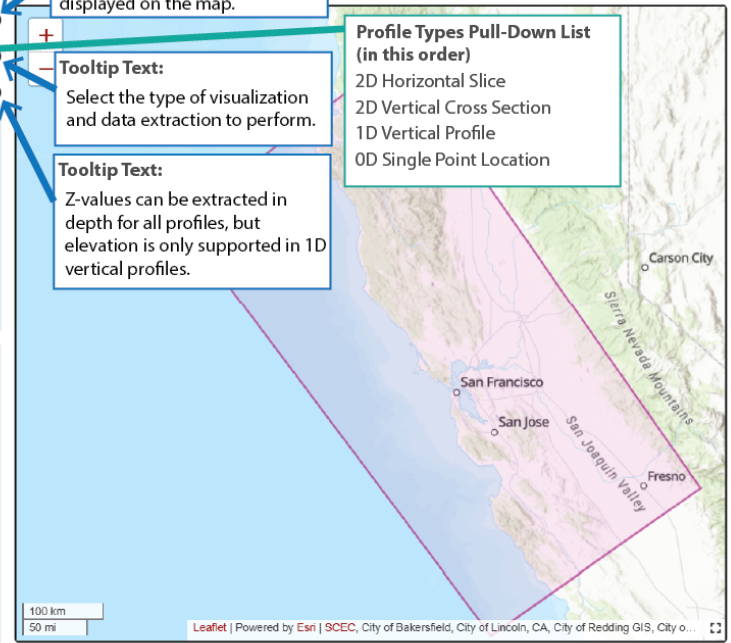
The text above is just an example. In general, we should model details here, like what the model is based on, but I think we will need to meet with the CVM team to get suggestions as to what is most appropriate and helpful.

**Tooltip Text:**  
The CVM Explorer hosts multiple models. Select the model you wish to query or visualize in this list. The model bounds will be displayed on the map.

**Tooltip Text:**  
Select the type of visualization and data extraction to perform.

**Tooltip Text:**  
Z-values can be extracted in depth for all profiles, but elevation is only supported in 1D vertical profiles.

**Profile Types Pull-Down List (in this order)**  
 2D Horizontal Slice  
 2D Vertical Cross Section  
 1D Vertical Profile  
 0D Single Point Location



UID	Links	Description
CVM_1733803043027	<a href="#">plot metadata file</a> <a href="#">csv data file</a> <a href="#">PDF plot</a> elapsed time: 0.58(sec)	Horizontal Slice(vs) by Depth with CVM-H LA Basin

Change to: Plot data

Change to: Download data (.csv format)

Change to: Extraction time: 6.58 sec.

I don't think these are needed now.

Do we need to provide the json file? It has no data, so I don't think it is useful.

Add a trash can icon to remove from list

# The Community Fault Model (CFM)

## What is the CFM?

The CFM is an object-oriented, **fully 3D** geometric representation of active faults in California, adjacent offshore basins, and beyond

## Who develops the CFM?



Andreas  
Plesch

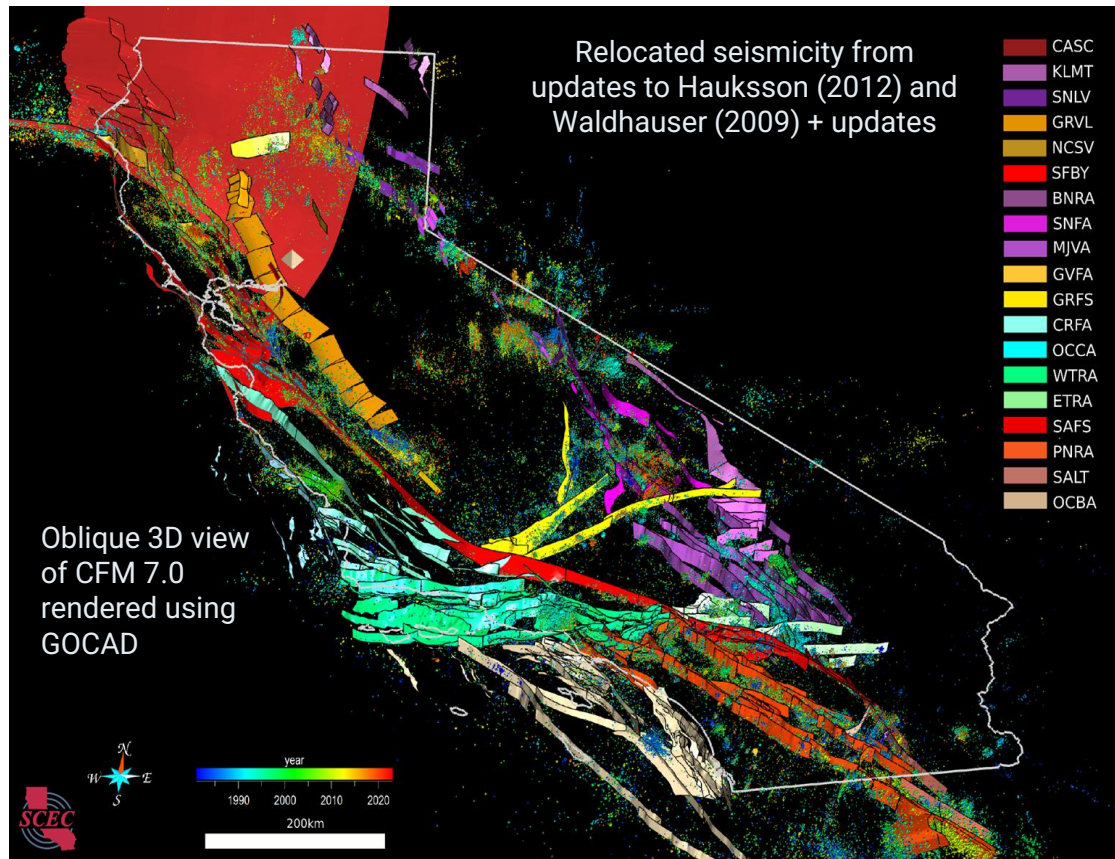
*Harvard University*



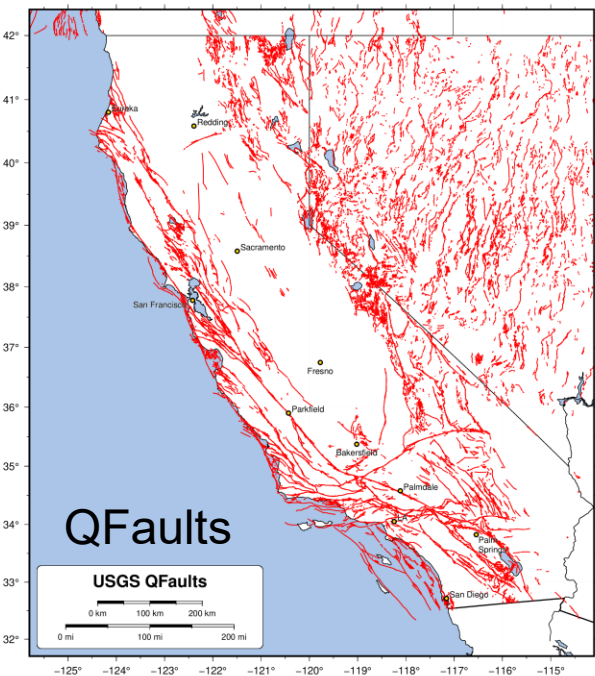
John  
Shaw



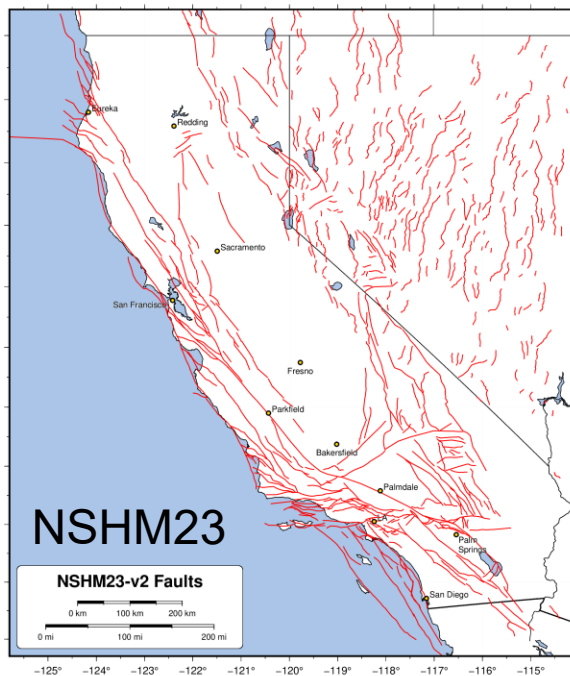
Scott  
Marshall  
*Appalachian  
State University*



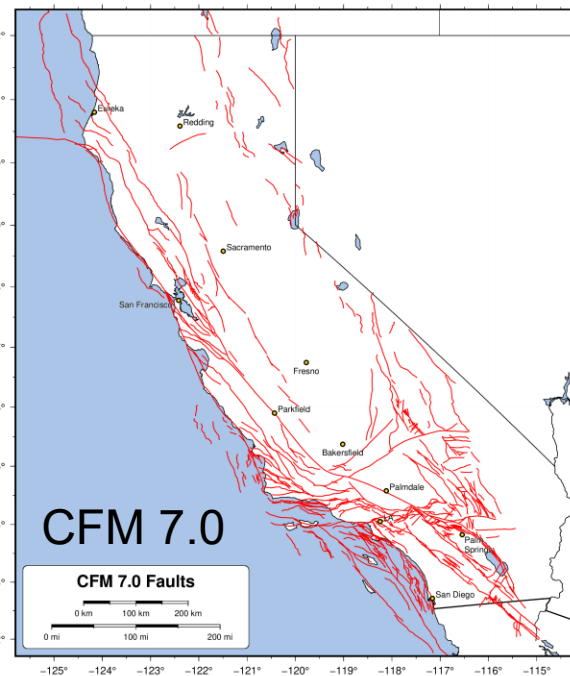
# Fault Models Comparison



- 2D Model (traces)
- Geometrically complex
  - Defined mainly by mapping
- Identifies activity of faulting



- 2.5D Model
  - Builds on UCERF3/CFM
- Geometrically smooth
- Developed for hazard analyses



- Full 3D Model
- Geometrically complex
  - Defined by source data
- Serves a variety of SCEC initiatives



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.

About SCEC About CEM

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(2000) [Load relocated seismicity] [Upload kml/kmz] [Select Map Type] [ESRI Imagery]

### Search Recent Earthquakes

Data from USGS ComCat. Results are limited to 20K events

**Magnitude**

2.5+  
 4.5+  
 custom

2  
-

**Date & Time**

Past 7 Days  
 Past 30 Days  
 custom

2024-08-14T21:38:37.659Z  
2025-08-14T21:38:37.659Z

**Geographic Region**

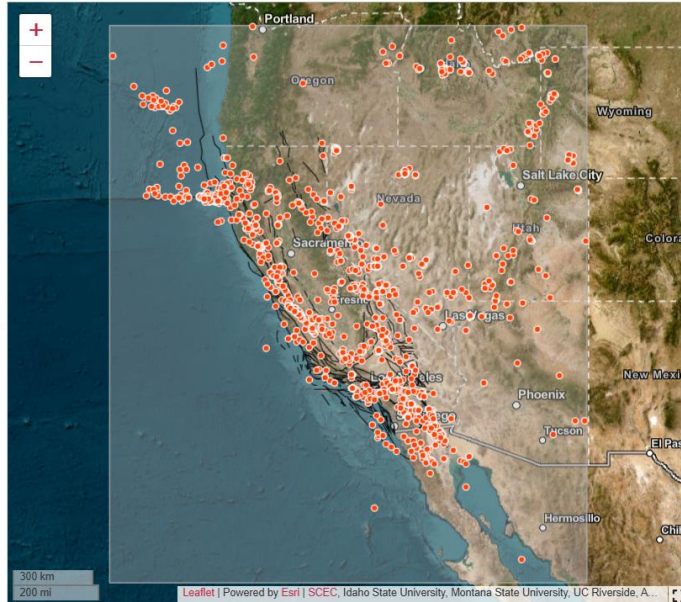
Draw a rectangle (click and drag) on the map or enter coordinates below

-129.0751 27.0518  
-109.1346 45.639  
0 30000

[Reset All] [Extract Data]

Extracted data will be visible on the 2D and Plot3D options.

Data courtesy of: U.S. Geological Survey, Earthquake Hazards Program, 2017. Advanced National Seismic System (ANSS) Comprehensive Catalog of Earthquake Events and Products: Various, <https://doi.org/10.5066/F7MS3QZH>



Fault	Area	Zone	Section	Last Update	Avg Strike	Avg Dip	Area (km <sup>2</sup> )	PLOT3D	DOWNLOAD
Metadata for selected faults will appear here.									

# CFM Explorer

## Web-based tools for the Community Fault Model

### What does the Explorer do?

- Search/Query/Download
  - CFM 7.0, 6.1, and 5.3
- Several basemaps
- Search recent USGS EQs!
- Display relocated EQs
  - Red circles: >M6 since 1900
  - Hauksson et al. (2012+updates)
  - Waldhauser (2009+updates)
- Upload/Display kml files
- View faults in 3D!!
  - Includes relocated seismicity in 3D





Published September 4, 2024 | Version 7.0

Dataset

Open

## SCEC Community Fault Model (CFM)

Plesch, Andreas<sup>1</sup> ; Marshall, Scott<sup>2</sup> ; Shaw, John<sup>1</sup>

Show affiliations

### Introduction

The Statewide California Earthquake Center (SCEC) Community Fault Model (CFM) is an object-oriented, fully three-dimensional geometric representation of active faults in California and adjacent offshore basins. For each fault object, the CFM provides triangulated surface representations (t-surfs) in several resolutions, fault traces in several different file formats (shape files, GMT plain text, and GoogleEarth kml), and complete metadata including references used to constrain the surfaces. The CFM faults are defined based on available data including surface traces, seismicity, seismic reflection profiles, well data, geologic cross sections, and various other types of data and models. The CFM serves SCEC as a unified resource for physics-based fault systems modeling, strong ground-motion prediction, probabilistic seismic hazards assessment (e.g., the USGS National Seismic Hazard Model), and many other uses. Together with the Community Velocity Model (CVM-H 15.1.0), the CFM comprises SCEC's Unified Structural Representation of the Southern California crust and upper mantle (Shaw et al., 2015).

### Current Model Version: CFM 7.0

The current version of the SCEC CFM is version 7.0 (CFM 7.0), which builds on the previous CFM releases and serves as the latest update to Plesch et al. (2007). CFM 7.0 is a significant update as this is the first CFM to cover the entire state of California, spanning the Pacific-North American plate boundary from northern Mexico to the southern Cascadia subduction zone. This latest version has no changes to the southern California portion of the model, but now includes 113 new fault representations in central and northern California in the preferred model. These new central and northern California fault representations will undergo a community evaluation in 2024-2025, therefore, the central and northern California faults should be considered preliminary representations.

CFM 7.0 contains three fully-documented sub models: preferred, ruptures, and alternatives. In total, CFM 7.0 comprises the following components:

- CFM 7.0 Preferred:** A set of 556 fault objects that constitute the preferred set of active faults. These faults have attained preferred status based on past community evaluations or are new representations.
- CFM 7.0 Ruptures:** A set of 13 fault objects assembled from the CFM 7.0 preferred model that ruptured during selected significant historic events. These are not earthquake source models, but are representations of the entire fault surfaces where a significant historic rupture occurred. This model is intended to indicate which CFM fault objects were involved with selected significant historic ruptures.
- CFM 7.0 Alternatives:** A set of 39 alternative representations where structural differences have been proposed that could

4K  
VIEWS575  
DOWNLOADS

▶ Show more details

#### Versions

Version 7.0 Sep 4, 2024

10.5281/zenodo.13685611

Version 6.1 Sep 7, 2023

10.5281/zenodo.8327463

Version 6.0 Apr 1, 2023

10.5281/zenodo.7809330

Version 5.3.2 Jan 24, 2022

10.5281/zenodo.5899364

Version 5.3.1 Apr 2, 2021

10.5281/zenodo.4660239

[View all 6 versions](#)

**Cite all versions?** You can cite all versions by using the DOI [10.5281/zenodo.4651667](https://doi.org/10.5281/zenodo.4651667). This DOI represents all versions, and will always resolve to the latest one. [Read more.](#)

#### External resources

Indexed in

# The CFM Archive

**Available at Zenodo**

## Complete CFM Archive

- .zip archives of CFM versions back to v5.3
- Contains data not available in the CFM Explorer
- What is in the archive?

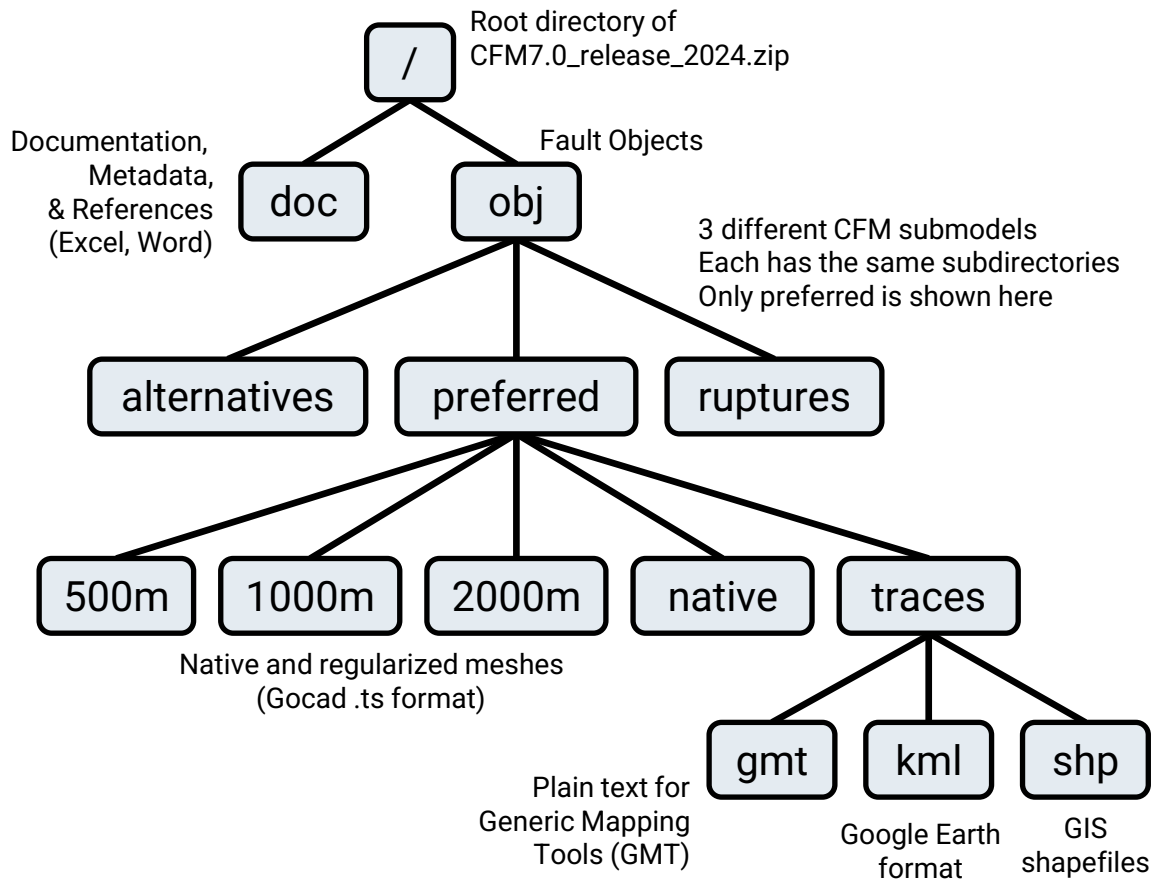


# CFM Directory Structure

The Zenodo archive has data not available in the web tools

Screenshot of CFM Metadata spreadsheet

CFM #	Fault Object Name	Fault Area/Major Fault System	Code	Fault Zone/Region	Code
<b>BNRA: BASIN AND RANGE AREA</b>					
3	BNRA-BM7-MNT-Black_Mountain_fault-CFM7	Basin and Range Area	BNRA	Black Mountain fault zone	BM7
4	BNRA-NDV-MNT-Northern_Death_Valley_fault-CFM8	Basin and Range Area	BNRA	Northern Death Valley fault zone	NDV
5	BNRA-SDV-MNT-Southern_Death_Valley_fault-CFM8	Basin and Range Area	BNRA	Southern Death Valley fault zone	SDV
<b>CASC: CASCADIA AREA</b>					
7	CASC-BMIR-RLM-Sud_Mountain_Big_Lagoon-CFM7	Cascadia Fault Area	CASC	Basin Mountain-Big Lagoon-Mad River fault zone	BMIR
8	CASC-BMIR-MDV-Mad_River-CFM7	Cascadia Fault Area	CASC	Basin Mountain-Big Lagoon-Mad River fault zone	BMIR
9	CASC-CASC-FRST-Cascadia_Subduction_Megathrust-CFM7	Cascadia Fault Area	CASC	Cascadia Subduction	FRST
10	CASC-LSLM-EROF-Lake_Salmon_offshore-CFM7	Cascadia Fault Area	CASC	Libby Salmon fault zone	LSLM
11	CASC-LSLM-MNT-Lake_Salmon_onshore-CFM7	Cascadia Fault Area	CASC	Libby Salmon fault zone	LSLM
12	CASC-MNDC-1992-Patrola_sequence-CFM7	Cascadia Fault Area	CASC	Patrola 1992 rupture	MNDC
13	CASC-MNDC-PPC-Mandocovo-CFM7	Cascadia Fault Area	CASC	Mandocovo Transform fault zone	MNDC
14	CASC-ROSI-ELLIS-Basic-CFM7	Cascadia Fault Area	CASC	Rossi Fennelle fault zone	ROSI
<b>CRFA: COAST RANGES FAULT AREA</b>					
16	CRFA-BPFM-EAST-Big_Pine_fault-CFM4	Coast Ranges Fault Area	CRFA	Big Pine-Pine Mountain fault zone	BPFM
17	CRFA-BPFM-LWVY-Lockwood_Valley_fault-CFM2	Coast Ranges Fault Area	CRFA	Big Pine-Pine Mountain fault zone	BPFM
18	CRFA-BPFM-WEST-Big_Pine_fault-CFM2	Coast Ranges Fault Area	CRFA	Big Pine-Pine Mountain fault zone	BPFM
19	CRFA-CBSL-CBSL-Caswell_fault-CFM4	Coast Ranges Fault Area	CRFA	Caswell Baseline fault system	CBSL
20	CRFA-CBSL-LALM-Lake_Alamogordo_fault-CFM5	Coast Ranges Fault Area	CRFA	Caswell Baseline fault system	CBSL
21	CRFA-CBSL-ORCT-Orcutt_Mead_fault-CFM5	Coast Ranges Fault Area	CRFA	Caswell Baseline fault system	CBSL
22	CRFA-CBSL-PEZM-Pezoma_Caswell_fault-CFM5	Coast Ranges Fault Area	CRFA	Caswell Baseline fault system	CBSL
23	CRFA-CBSL-ZACA-Zaca_Mead_fault-CFM5	Coast Ranges Fault Area	CRFA	Caswell Baseline fault system	CBSL
24	CRFA-LMPZ-EAST-Lompoc_fault-CFM5	Coast Ranges Fault Area	CRFA	Lompoc Fault Zone	LMPZ
25	CRFA-LMPZ-WEST-Lompoc_Mead_fault-CFM5	Coast Ranges Fault Area	CRFA	Lompoc Fault Zone	LMPZ
26	CRFA-LNHZ-MULT-Loma_Head_fault-CFM4	Coast Ranges Fault Area	CRFA	Loma Head fault zone	LNHZ
27	CRFA-LOSS-LOSS-Los_Ocos_fault-CFM4	Coast Ranges Fault Area	CRFA	Los Ocos fault system	LOSS
28	CRFA-LPNZ-MNT-Lake_Paniza_fault-CFM4	Coast Ranges Fault Area	CRFA	La Paniza fault zone	LPNZ
29	CRFA-NWZ-MNT-Nacimiento_fault-CFM2	Coast Ranges Fault Area	CRFA	Nacimiento fault zone	NWZ
30	CRFA-OCNZ-HSNV-Huastec_fault-CFM5	Coast Ranges Fault Area	CRFA	Oceanic fault zone	OCNZ
31	CRFA-OCNZ-MNT-Oceanic_fault-CFM5	Coast Ranges Fault Area	CRFA	Oceanic fault zone	OCNZ
32	CRFA-OCNZ-SUB-Oceanic_Subduction-CFM4	Coast Ranges Fault Area	CRFA	Oceanic fault zone	OCNZ
33	CRFA-REHZ-EHSA-East_Huasteca_fault-CFM4	Coast Ranges Fault Area	CRFA	Reconada East Huasteca fault system	REHZ
34	CRFA-REHZ-MULT-Reconada_fault-CFM4	Coast Ranges Fault Area	CRFA	Reconada East Huasteca fault system	REHZ
35	CRFA-SCMZ-SCMZ-South_Coyote_fault-CFM5	Coast Ranges Fault Area	CRFA	South Coyote Ozone fault zone	SCMZ
36	CRFA-SLMZ-CMAN-Big_Spring_fault-CFM5	Coast Ranges Fault Area	CRFA	San Juan Morales fault zone	SLMZ
37	CRFA-SLMZ-MRS-Morales_fault-CFM5	Coast Ranges Fault Area	CRFA	San Juan Morales fault zone	SLMZ
38	CRFA-SLMZ-MULT-San_Juan_fault-CFM5	Coast Ranges Fault Area	CRFA	San Juan Morales fault zone	SLMZ
39	CRFA-SLRS-LPNS-Lake_Pine_fault-CFM5	Coast Ranges Fault Area	CRFA	San Luis Range fault system	SLRS
40	CRFA-SLRS-MNT-San_Luis_Range_fault_System-CFM4	Coast Ranges Fault Area	CRFA	San Luis Range fault system	SLRS
41	CRFA-SLRS-SHRL-Shoreline_fault-CFM4	Coast Ranges Fault Area	CRFA	San Luis Range fault system	SLRS
42	CRFA-SLRS-SL-San_Luis_fault-CFM4	Coast Ranges Fault Area	CRFA	San Luis Range fault system	SLRS
43	CRFA-SLRS-SYNS-Santa_Ynez_Valley_fault-CFM5	Coast Ranges Fault Area	CRFA	San Luis Range fault system	SLRS





# The SCEC Geologic Slip Rate Database (GSRD)

## SCEC Geologic Slip Rate Database

<https://www.scec.org/research/gsrđ>

New GSRD Explorer (not publicly released yet)

<https://moho.scec.org/gsrđ-explorer/>

## Geologic field-based estimates of fault slip rates

A subset of the NSHM23 and UCERF3

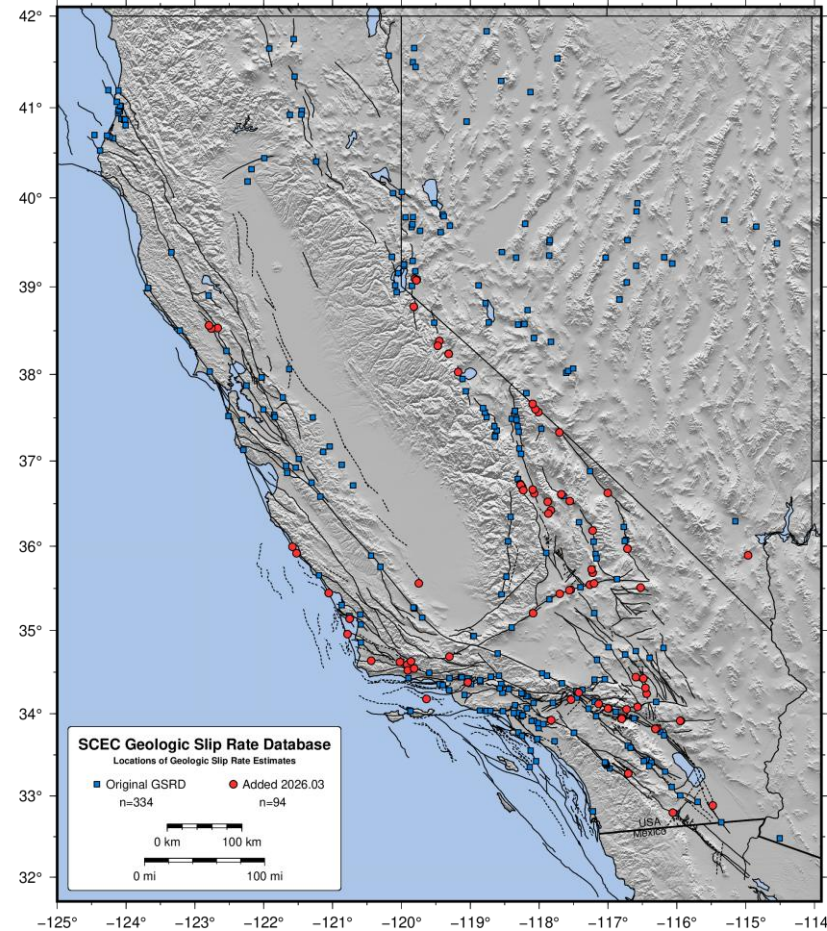
Direct hyperlinked references (where available)

## Updated in 2025

94 new slip rates; 5 updated rates

## GSRD Developers:

Sally McGill, Scott Marshall, Alex Hatem, and Sinan Akçiz





# The SCEC Geologic Slip Rate Database (GSRD)

## SCEC Geologic Slip Rate Database

<https://www.scec.org/research/gsr/>

**New GSRD Explorer (not publicly released yet)**

<https://moho.scec.org/gsr-explorer/>

## Geologic field-based estimates of fault slip rates

A subset of the NSHM23 and UCERF3

Direct hyperlinked references (where available)

## Updated in 2025

94 new slip rates; 5 updated rates

## GSRD Developers:

Sally McGill, Scott Marshall, Alex Hatem, and Sinan Akçiz

The SCEC Geologic Slip Rate Database Explorer currently consists of a set of georegistered sites where geologic estimates of fault slip rates have been estimated. To simplify browsing and downloading the Slip Rate Database, the explorer below provides a two-dimensional map-based view of the Slip Rate Database. The Slip Rate Database can be queried based on fault or site name, and minimum/maximum slip rate, or by individually clicking on points on the map. Once sites are selected, they are added to the list below the map interface with selected metadata shown. The complete 27 columns of metadata for all selected sites can be downloaded (in .csv format) with the "Download All Data" button. Refer to the user guide for more details and usage instructions.

Choose Dataset : **Slip Rate Data**

High Rate   Select a range on the High Rate slider or enter the two boundaries in mm/yr

CFM6.0  GFM

- Slip Rate Site ( fault | site )
- San Jacinto (Coyote Creek) | per Blisniuk and others
- Elsinore (Glen Ivy) | Wild Rose Ranch
- San Gregorio (north) | Ano Nuevo
- Algodones | Upper Mesa
- Almanor | East Benner Creek
- Anaheim | approx centroid
- Antelope Range | Profile 2&3
- Antelope Valley | per Sarmiento and others. (2011)
- Ash Hill | Ash Hill
- Battle Creek | per Page and Renne (1994)
- Benton Spring (south) | Mina1-BS
- Bettles Well - Petrified Springs | PS
- Big Lagoon | BM1
- Black Rock | Trench 1
- Blackwater | per Oskin and Iriondo (2004)
- Breckenridge | Oak Tree
- Butte Mountains | Profile 1-4 midpoint
- Calaveras (north) | Levden Creek

ID	Fault Name	Site Name	Rate Type	Low Rate (mm/yr)	High Rate (mm/yr)	CFM6 Object	References	<input type="button" value="DOWNLOAD ALL DATA"/>
----	------------	-----------	-----------	------------------	-------------------	-------------	------------	--

The Geologic Slip Rate Database Explorer showing slip rate sites colored by max slip rate (McGill, Marshall, Hatem, and Akçiz)



# GSRD Metadata Format and Content

## SCEC Geologic Slip Rate Database

<https://www.scec.org/research/gsr>

New GSRD Explorer (not publicly released yet)

<https://moho.scec.org/gsr-explorer/>

## The GSRD is built from a metadata spreadsheet

Metadata is just as important as data!

28 Columns

Spreadsheet can be easily maintained/modified by SCEC scientists (or students)

Must be well-planned and consistent

Should be checked by scripts

	A	B	C	D	E	F	G	H
1	Fault Name	NSHM23 Fault ID	Last Update	SCEC ID	NSHM23 Rate ID	State	Site Name	Longitude
2	Algodones	2000	2023.09	S-0258	SR-0571	AZ	Upper Mesa	-114.50498
3	Almanor	2	2023.09	S-0001	SR-0002	CA	East Benner Creek	-121.23849
4	Anaheim	5	2023.09	S-0002	SR-1221	CA	approx centroid	-118.00649
5	Antelope Range	1140	2023.09	S-0269	SR-0768	NV	Profiles 2 and 3	-116.18390
6	Antelope Valley	1000	2023.09	S-0003	SR-0429	CA	per Sarmiento and others. (2011)	-119.52395
7	Antelope Valley / West Walker River	1000	2026.03	S-0423	N/A	CA	Sonora Junction	-119.44900
8	Antelope Valley / West Walker River	1000	2026.03	S-0424	N/A	CA	Sonora Junction	-119.47260
9	Antelope Valley / West Walker River	1000	2026.03	S-0425	N/A	CA	Sonora Junction	-119.47250
10	Ash Hill	6	2023.09	S-0004	SR-0003	CA	Ash Hill	-117.41990
11	Baseline	N/A	2026.03	S-0375	N/A	CA	Santa Cruz Creek (Qt2)	-119.91600
12	Baseline	N/A	2026.03	S-0376	N/A	CA	Santa Cruz Creek (Qt3)	-119.91700
13	Baseline	N/A	2026.03	S-0377	N/A	CA	Santa Agueda Creek (Qt2)	-120.02200
14	Battle Creek	9	2023.09	S-0005	SR-0006	CA	per Page and Renne (1994)	-121.99128
15	Benton Spring (south)	1006	2023.09	S-0223	SR-0438	NV	Mina1-B5	-118.07476
16	Bettles Well - Petrified Springs	1008	2023.09	S-0224	SR-0440	NV	P5	-118.16786
17	Big Lagoon	13	2023.09	S-0006	SR-0010	CA	BM1	-124.10981
18	Big Pine (east)	15	2026.03	S-0379	N/A	CA	Cuyama Valley	-119.30332
19	Black Hills	1009	2026.03	S-0391	N/A	NV	Black Hills (Fosset)	-114.96570
20	Black Rock	1010	2023.09	S-0225	SR-0443	NV	Trench 1	-119.05208
21	Blackwater	17	2023.09	S-0007	SR-0014	CA	per Oskin and Iriondo (2004)	-117.19988
22	Blue Cut	18	2026.03	S-0352	N/A	CA	Hexie Mountains	-115.94020
23	Blue Cut	18	2026.03	S-0353	N/A	CA	Hexie Mountains	-115.95220
24	Brawley	19	2026.03	S-0348	N/A	CA	Harris Road	-115.47800
25	Breckenridge	21	2023.09	S-0008	SR-0017	CA	Oak Tree	-118.54604
26	Butte Mountains	1017	2023.09	S-0226	SR-0450	NV	Profile 1-4 midpoint	-115.31025
27	Calaveras (north)	923	2023.09	S-0009	SR-0425	CA	Welch Creek	-121.84970
28	Calaveras (north)	923	2023.09	S-0010	SR-0426	CA	Welch Creek	-121.84970
29	Calaveras (north)	923	2023.09	S-0011	SR-0427	CA	Leyden Creek	-121.83784
30	Calaveras (south)	921	2023.09	S-0013	SR-0424	CA	San Ysidro Channel 1	-121.48852

The GSRD Metadata Spreadsheet. This is what we build the database from



# GSRD Data Automation and Quality Checking

## Scripts Check:

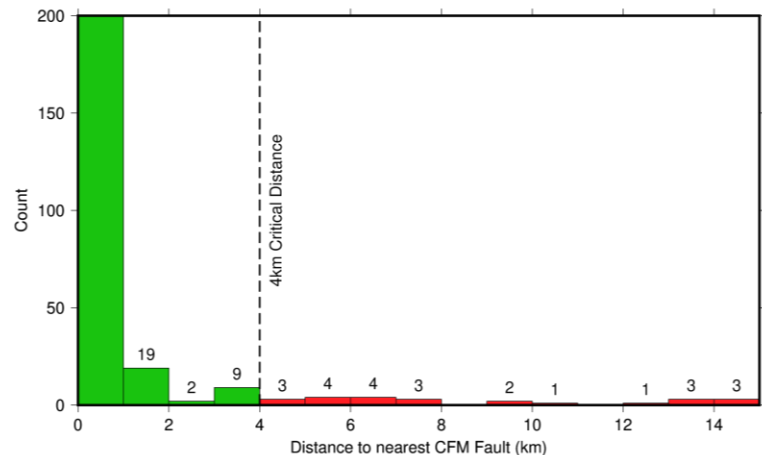
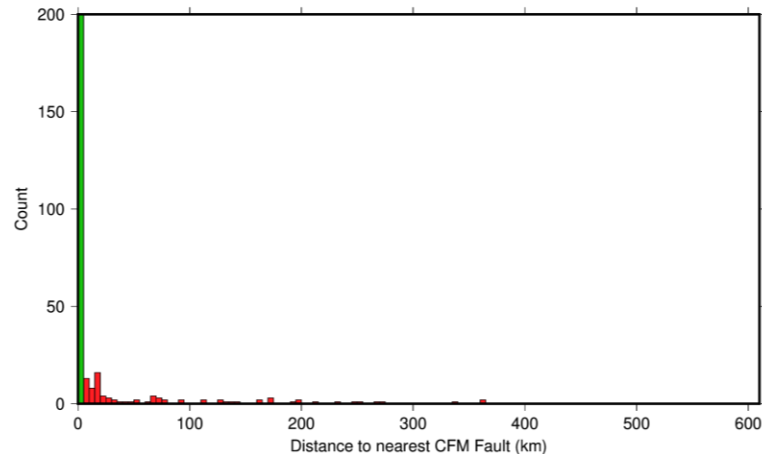
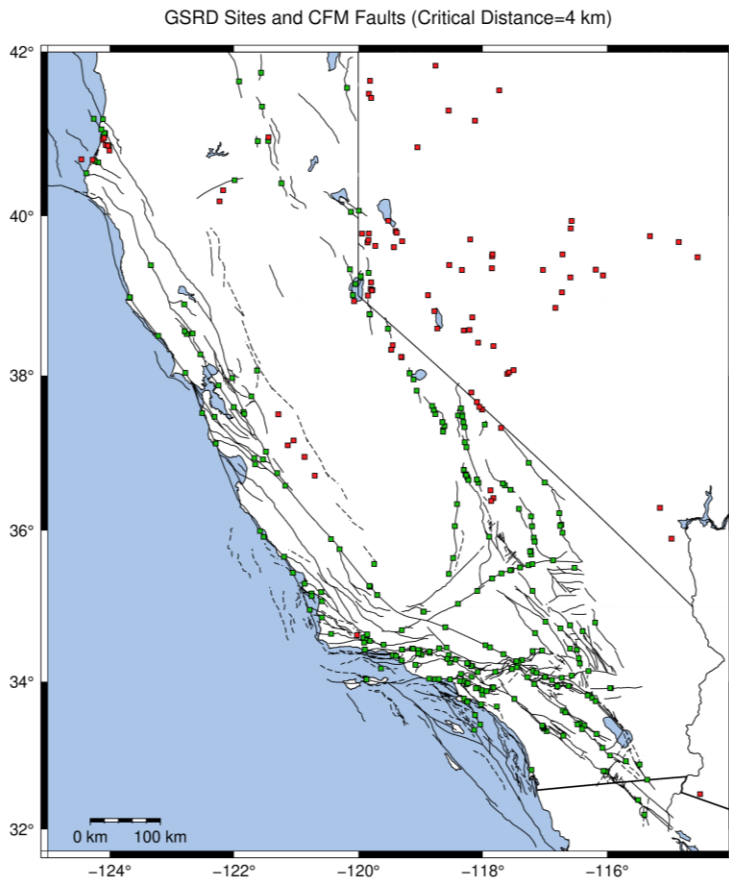
Do all faults have references?

Correct num references?

No non-ASCII chars

Calculates nearest CFM fault to associate sites with the CFM

Generates kml version of GSRD





# GSRD KML Version

Once we have organized data...

We can produce other data products

E.g., kml versions (Google Earth, QGIS)

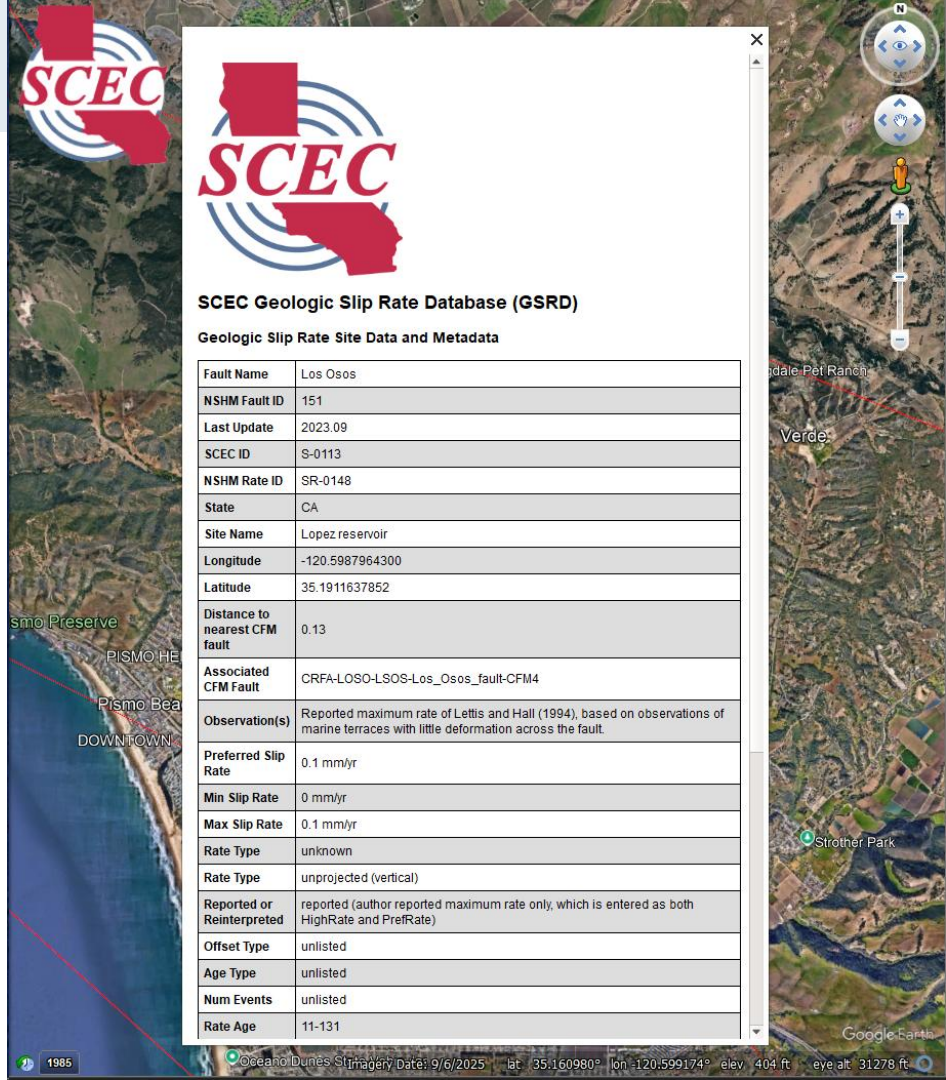
Can embed metadata into kml files



## SCEC Geologic Slip Rate Database (GSRD)

### Geologic Slip Rate Site Data and Metadata

<b>Fault Name</b>	Los Osos
<b>NSHM Fault ID</b>	151
<b>Last Update</b>	2023.09
<b>SCEC ID</b>	S-0113
<b>NSHM Rate ID</b>	SR-0148
<b>State</b>	CA
<b>Site Name</b>	Lopez reservoir
<b>Longitude</b>	-120.5987964300
<b>Latitude</b>	35.1911637852
<b>Distance to nearest CFM fault</b>	0.13
<b>Associated CFM Fault</b>	CRFA-LOSO-LSOS-Los_Osos_fault-CFM4
<b>Observation(s)</b>	Reported maximum rate of Lettis and Hall (1994), based on observations of marine terraces with little deformation across the fault.
<b>Preferred Slip Rate</b>	0.1 mm/yr
<b>Min Slip Rate</b>	0 mm/yr
<b>Max Slip Rate</b>	0.1 mm/yr
<b>Rate Type</b>	unknown
<b>Rate Type</b>	unprojected (vertical)
<b>Reported or Reinterpreted</b>	reported (author reported maximum rate only, which is entered as both HighRate and PrefRate)
<b>Offset Type</b>	unlisted
<b>Age Type</b>	unlisted
<b>Num Events</b>	unlisted
<b>Rate Age</b>	11-131





# SCEC Cyberinfrastructure Take-Aways

## SCEC Provides IT Support

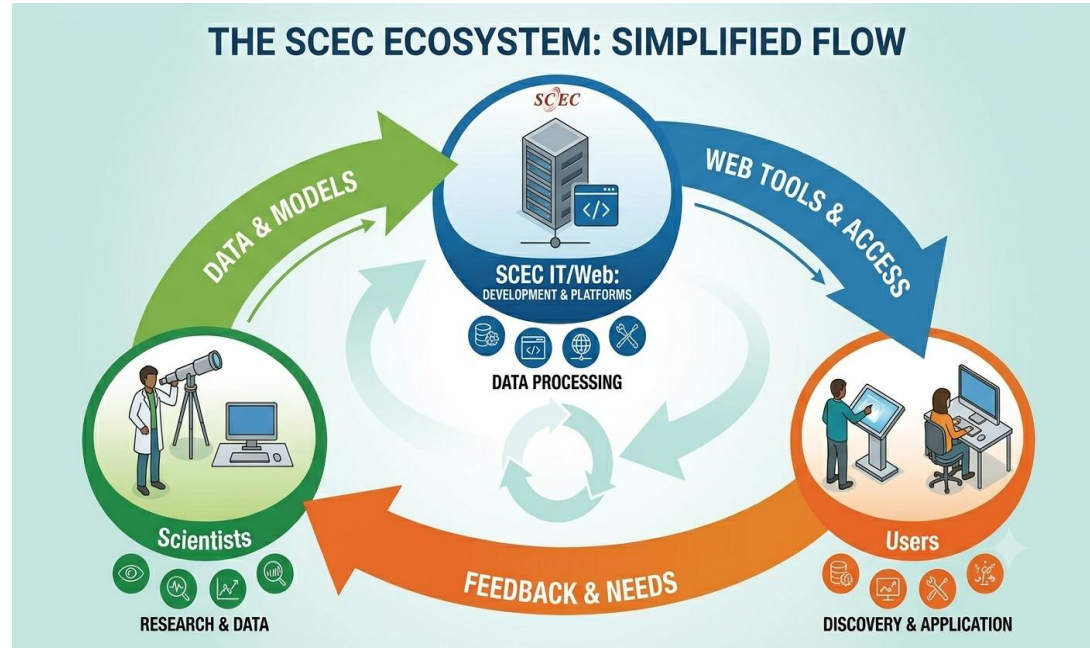
Model data should be created, maintained, and quality checked by SCEC investigators  
IT professionals should focus on web development, not data cleaning

## All SCEC CEMs Have

- A model homepage
- A Zenodo archive (with other SCEC products)
- A web-based interactive Explorer

## IT Development Time is Limited

Developing resources requires time and careful planning/scheduling



**Yes, this is AI-generated, but you get the idea.  
We all need to work together.**