Developing Web-based Visualization and Query Tools for the SCEC CFM, GFM, CTM, and CVM Community Models

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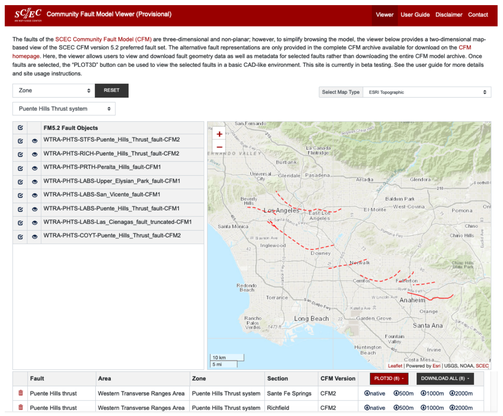


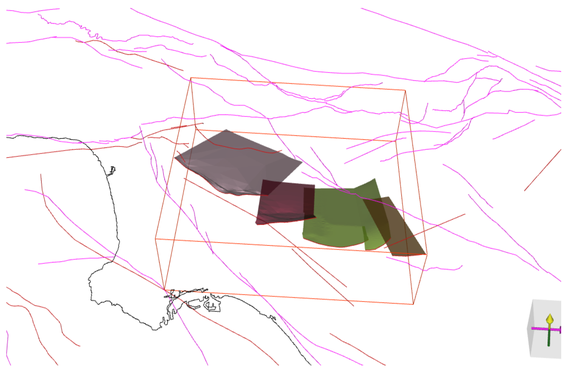


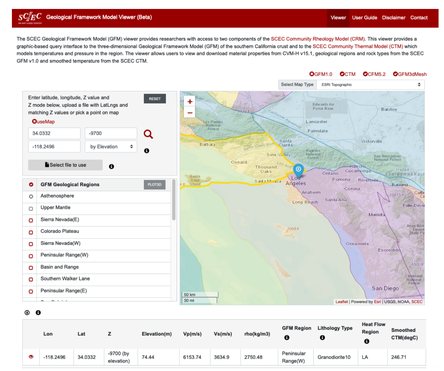
Fig. 1 (a) (left) SCEC Community Fault Model (CFM) viewer showing fault selection table, mapview of CFM v5.2 faults, and table of downloadable geometry resolutions. (b) (right) CFM fault geometries for Puente Hills Faults using CFM viewer 3D plotting capabilities. See posters #182 and #184 for more about the SCEC CFM.

SCEC Community Fault Model (CFM) Viewer

Important features of the SCEC CFM viewer include:

(1.1) Users can search CFM v5.2 database for faults by keyword, lat/lon, area, section, name
(1.2) Users can specify search region using lat/lon, or by drawing a bounding box.
(1.3) In mapview, surficial faults upper edges are shown as solid lines, and buried faults upper edges are shown as dashed lines.
(1.4) Faults can be viewed using Plot3D button which displays a rotatable 3D geometry of faults in pop-up window.
(1.5) Fault geometries can be download as tsurf geometry files in multiple resolutions for import and viewing into external programs.
(1.6) Fault metadata can be downloaded in comma separated values (csv) format.

Latest CFM Viewer: https://www.scec.org/research/cfm-viewer/



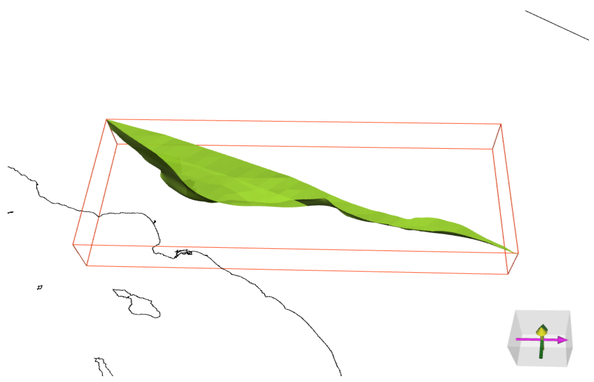


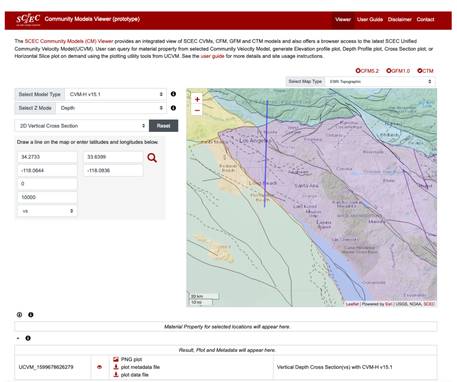
Fig. 2 (a) (left) SCEC Geological Framework Model (GFM) and SCEC Community Temperature Model (CTM) viewer showing mapview of geological regions defined for southern California and query results for a selected point in the Los Angeleas area. (b) (right) 3D representation of the surfaces that define the San Gabriel geological region in the GFM. The GFM/CTM are components of the SCEC CRM. See poster #180 for more about the SCEC CTM, and see posters #178 and #179 for more about the SCEC CRM.

SCEC Geological Framework Model/Community Thermal Model (GFM/CTM) Viewer

Important features of the SCEC GFM/CTM viewer include:

(2.1) Users can display mapview of geological regions defined in SCEC GFM v1.0 and heat flow regions defined in SCEC CTM v1.0 (Thurber model).
(2.2) Users can display gridded version of GFM using GFM3dMesh display.
(2.3) Users can select geological regions from table by name, or by clicking on the map.
(2.4) Users can specify query location by clicking on map, or by uploading a file of lat/lon/Z values.
(2.5) Users can display bounding surfaces of selected geological regions using Plot3D button.
(2.6) Properties returned by query for selected points include Vp, Vs, density (from CVM-H v15.1), geological region name (from GFM v1.0), lithology type (from GFM v1.0), and heatflow region name and temperature (from smoothed CTM v1.0 (Thurber model)).
(2.7) Users can download CVM, GFM, and CTM data in zip file using interactive or batch mode.

Latest GFM/CTM Viewer: http://moho.scec.org/GFM_web/web/viewer.php



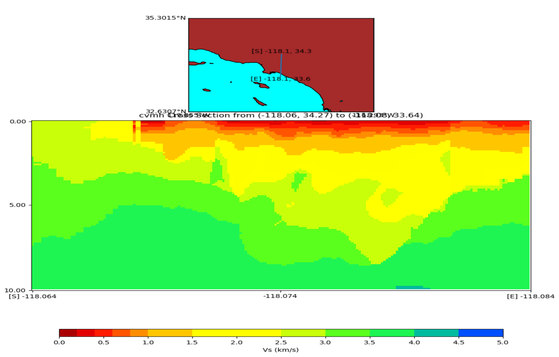


Fig. 3 (a) (left) SCEC Community Models (CM) viewer query interface showing CFM v5.2 faults (solid and dashed black lines), GFM regions (colored irregular polygons), and a line defining the location for a vertical cross section (vertical blue line). (b) (right) The resulting vertical cross section showing Vs values from 0km to 10km depth extracted from CVM-H v15.1.

SCEC Community Models (CM) Viewer

Important features of the SCEC CM viewer include:

(3.1) Mapview displays (a) coverage regions for SCEC Community Velocity Models (CVMs), (b) faults defined in the SCEC Community Fault Model (CFM v5.2), (c) geological regions defined in the Geological Framework Model (GFM v1.0), and (d) heat flow regions defined in the Community Thermal Model (CTM v1.0 (Thurber model)).
(3.2) Users can use a web browser to query multiple CVM's without installing and compiling the SCEC UCVM software on their own Linux computer.
(3.2) Users can query SCEC CVMs by depth below earth surface (positive depth in meters) or query by elevation (positive above / negative below sea level in m.) for selected models.
(3.3) Users can query CVMs for material properties at a single point, for a 1D vertical profile, for a 2D vertical cross section, and for a 2D horizontal slice.
(3.4) Users can specify query location by clicking on map, or by uploading a file of lat/lon/Z values.
(3.5) Query results are returned as PNG images, metadata files, and in csv format data files.

Latest CM Viewer: http://moho.scec.org/UCVM_web/web/viewer.php

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