

# The New SCEC Community Velocity Model Explorer

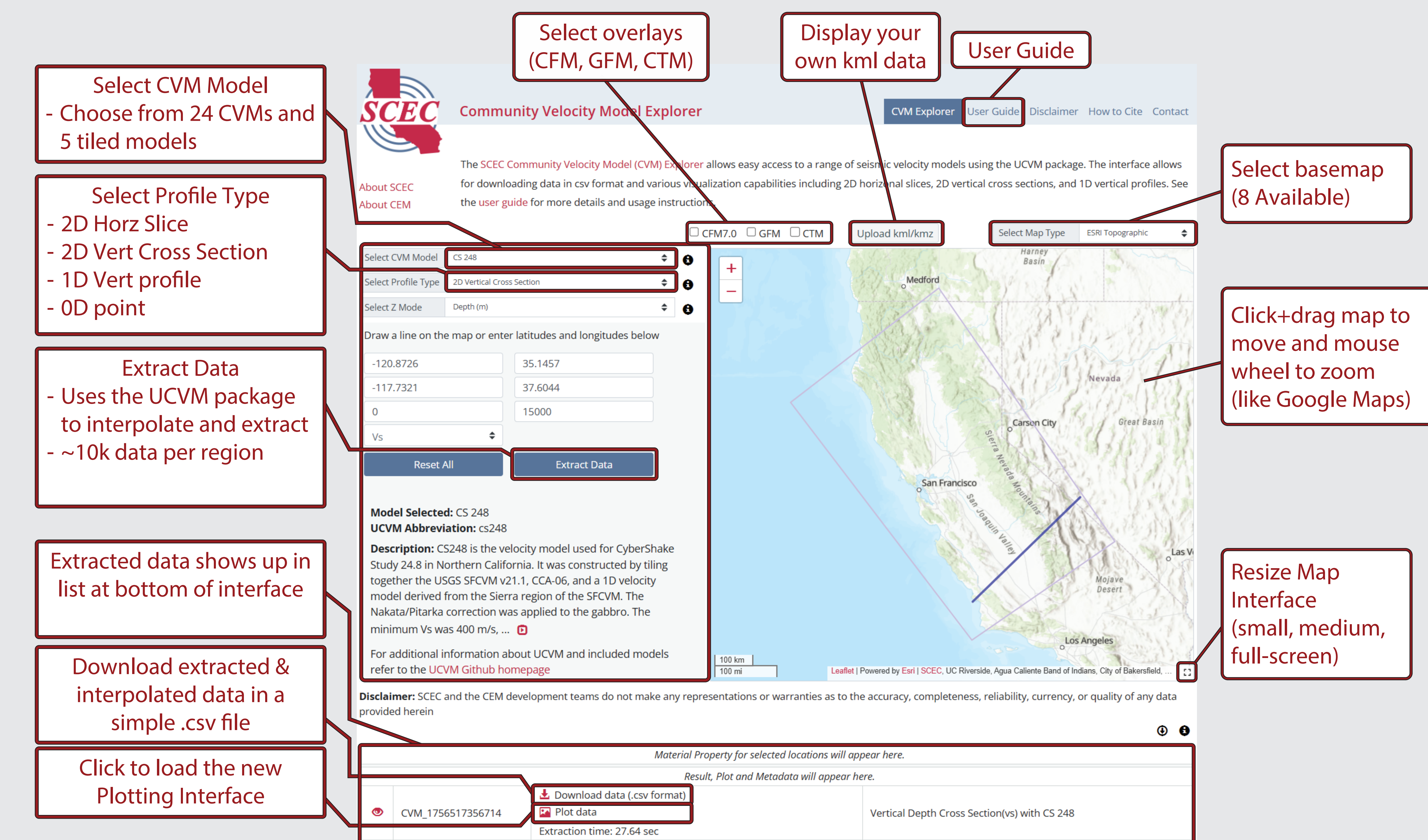
Scott T. Marshall<sup>1</sup>, Mei-Hui Su<sup>2</sup>, Philip J. Maechling<sup>2</sup>, Patricia Persaud<sup>3</sup>

<sup>1</sup> Appalachian State University, Boone, NC; <sup>2</sup> University of Southern California, Los Angeles, CA; <sup>3</sup> University of Arizona



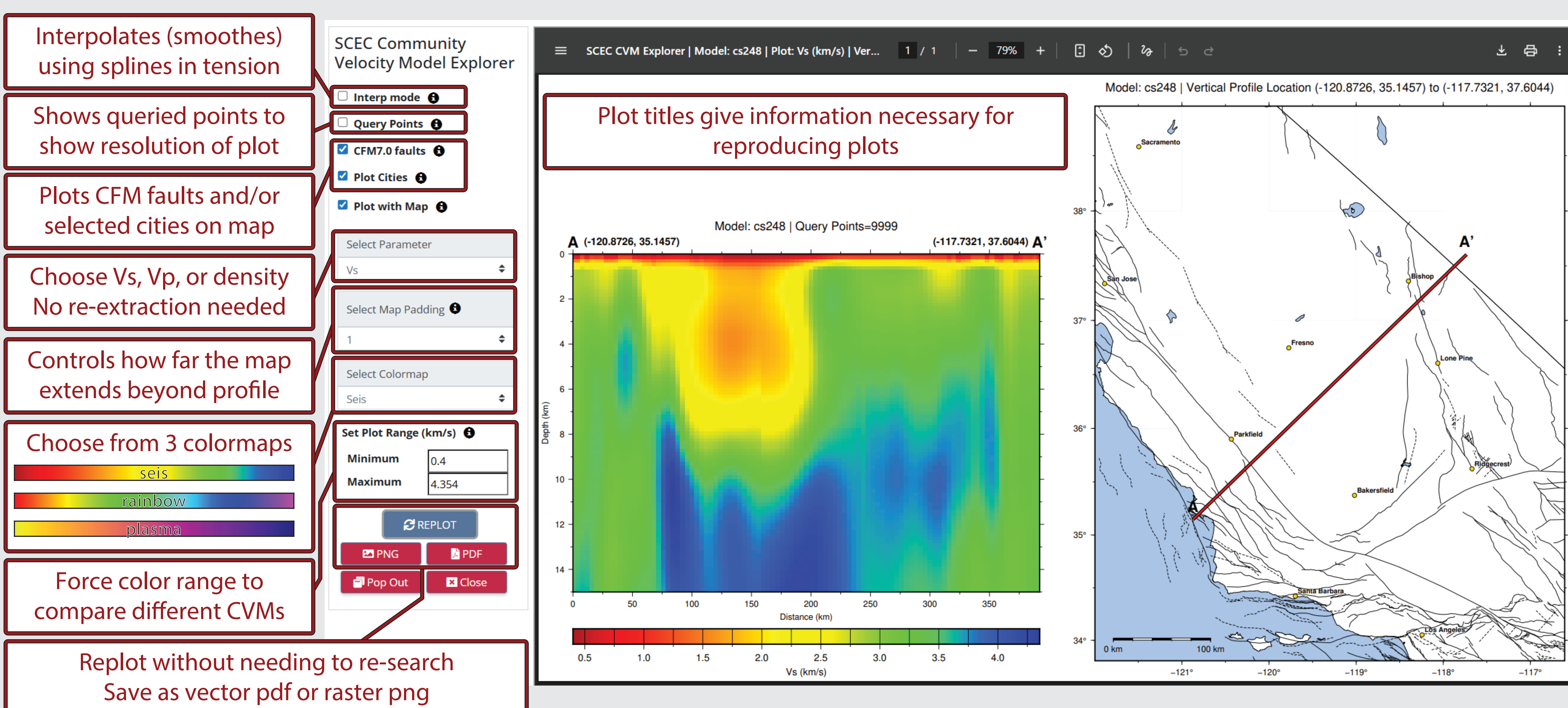
## 1: THE CVM EXPLORER INTERFACE

Seismic velocity models provide critical data for seismic hazard assessments and ground motion predictions, as well as a range of other earthquake science research frontiers. A significant barrier to users is that velocity models are not standardized, and many do not provide a query interface or come in a widely-used data format. This forces users to invest significant research time just to visualize a given model and determine if it is appropriate for their needs. To lower the bar of entry and expand access to these rich data sets we have developed a web-based visualization and query tool, the CVM Explorer, utilizing a mix of existing and new cyberinfrastructure with a visual style similar to the other, existing, SCEC Community Earth Model Explorers.



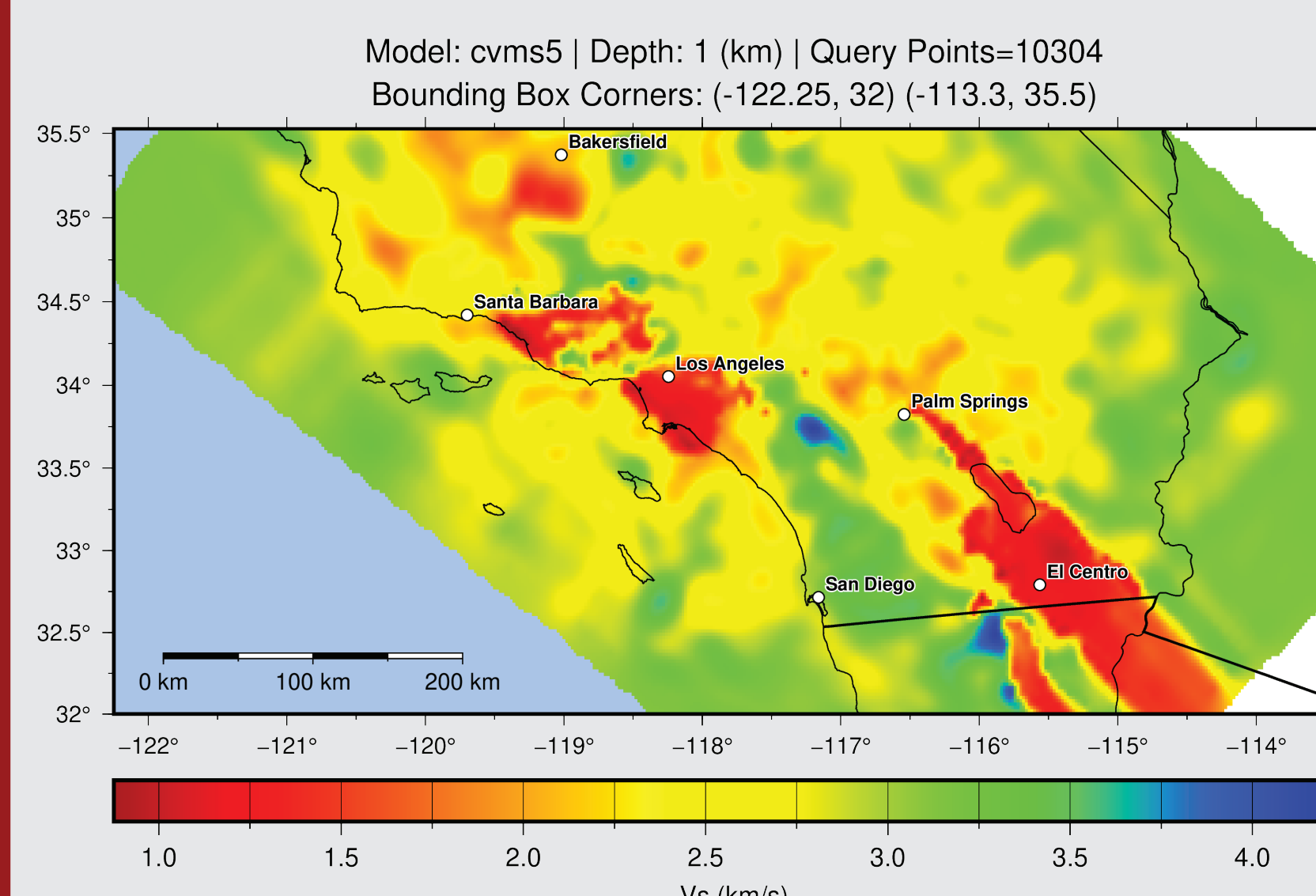
## 2: THE CVM PLOTTING INTERFACE

Once extracted, users can download the interpolated data in .csv format and/or make publication quality visualizations using the integrated plotting interface. The plotting interface provides options for three different colormaps, interpolation (smoothing), labeling of faults and selected cities, and adjusting the plot ranges. Users can force the color ranges, which is useful when comparing two different models that may have different data ranges.

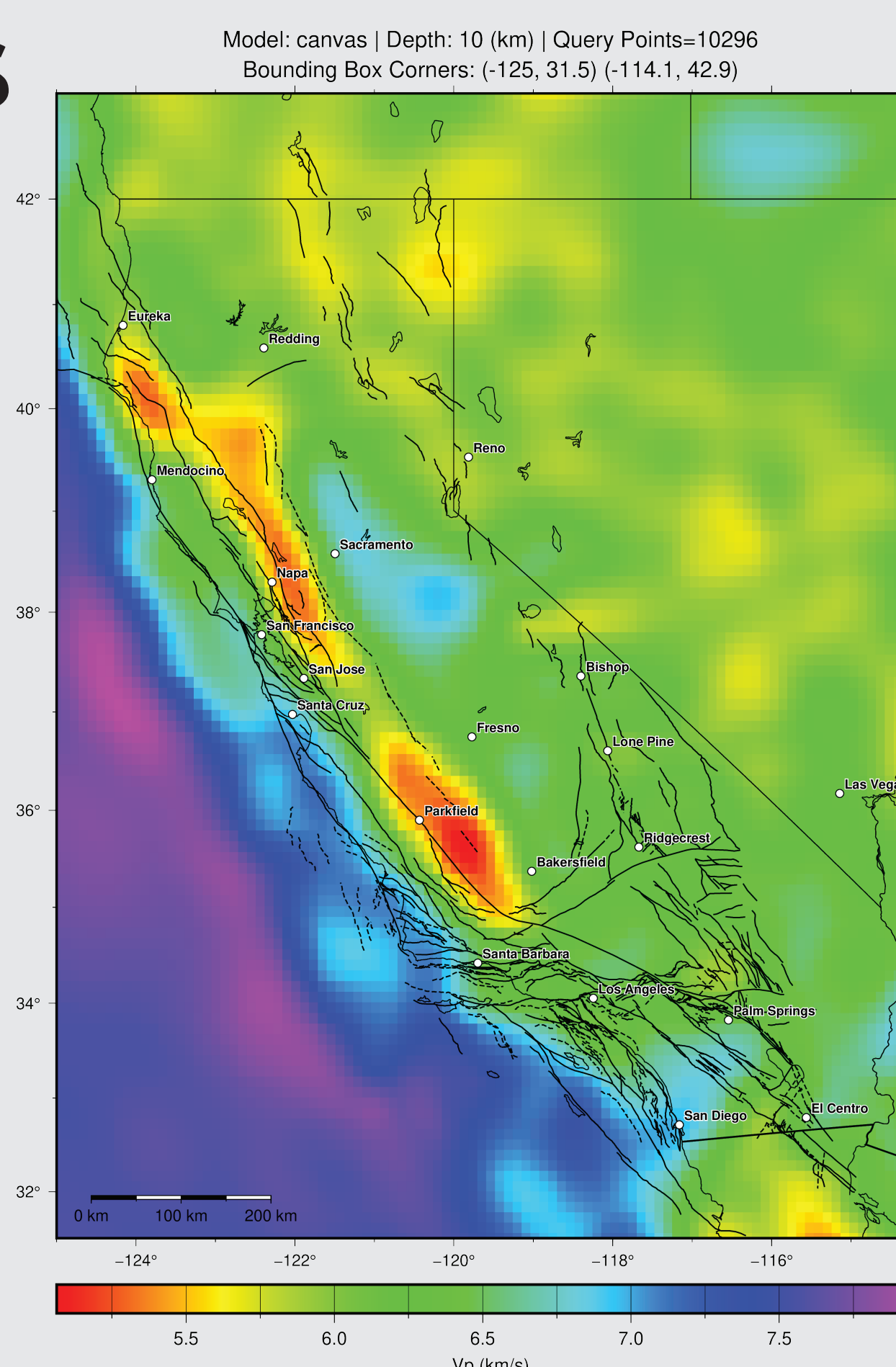


## 3: 2D HORIZONTAL SLICES

(Right) 2D horizontal slice through the CANVAS model at 10km depth (Doody et al., 2023) showing CFM faults, cities, and using the rainbow colormap.

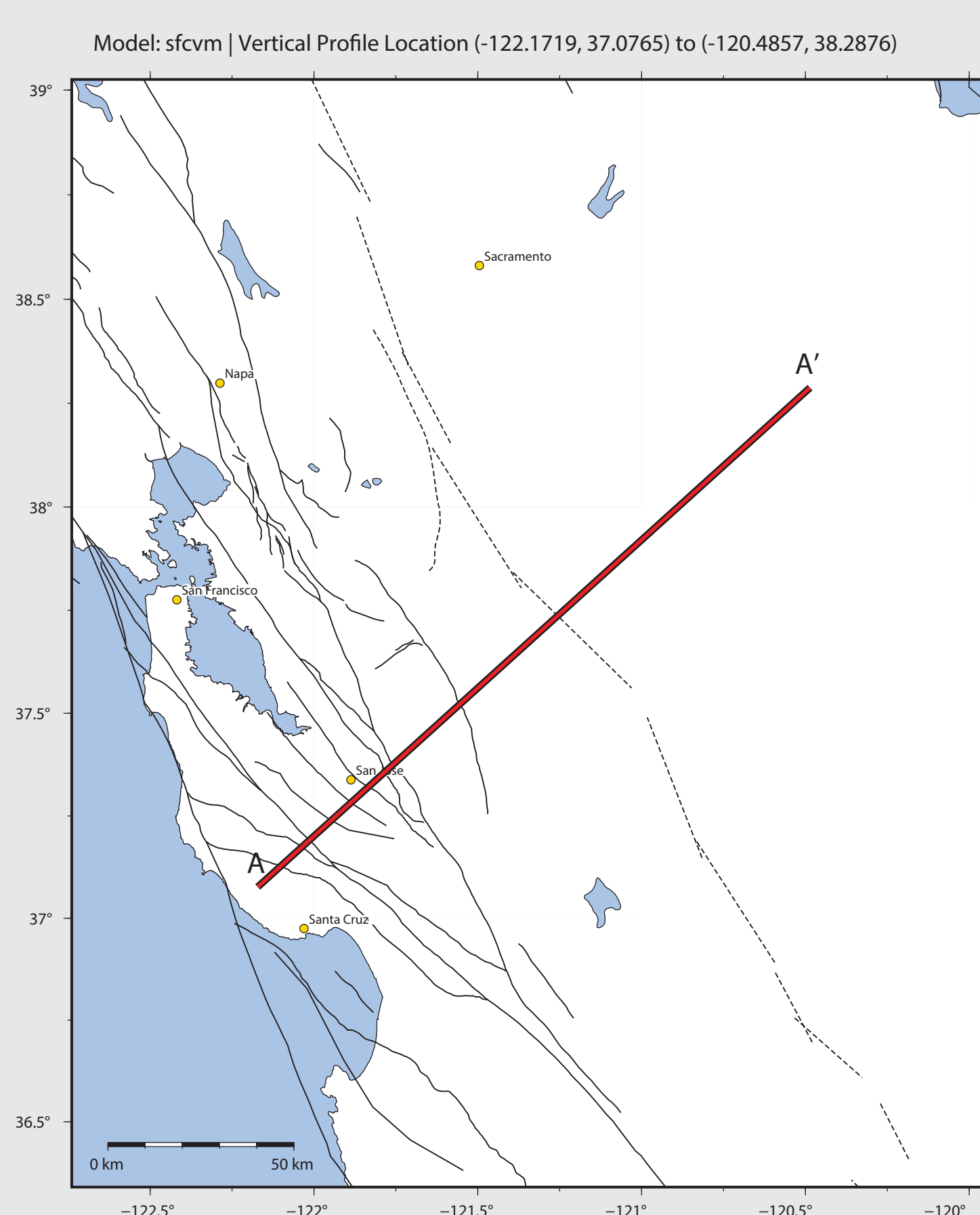
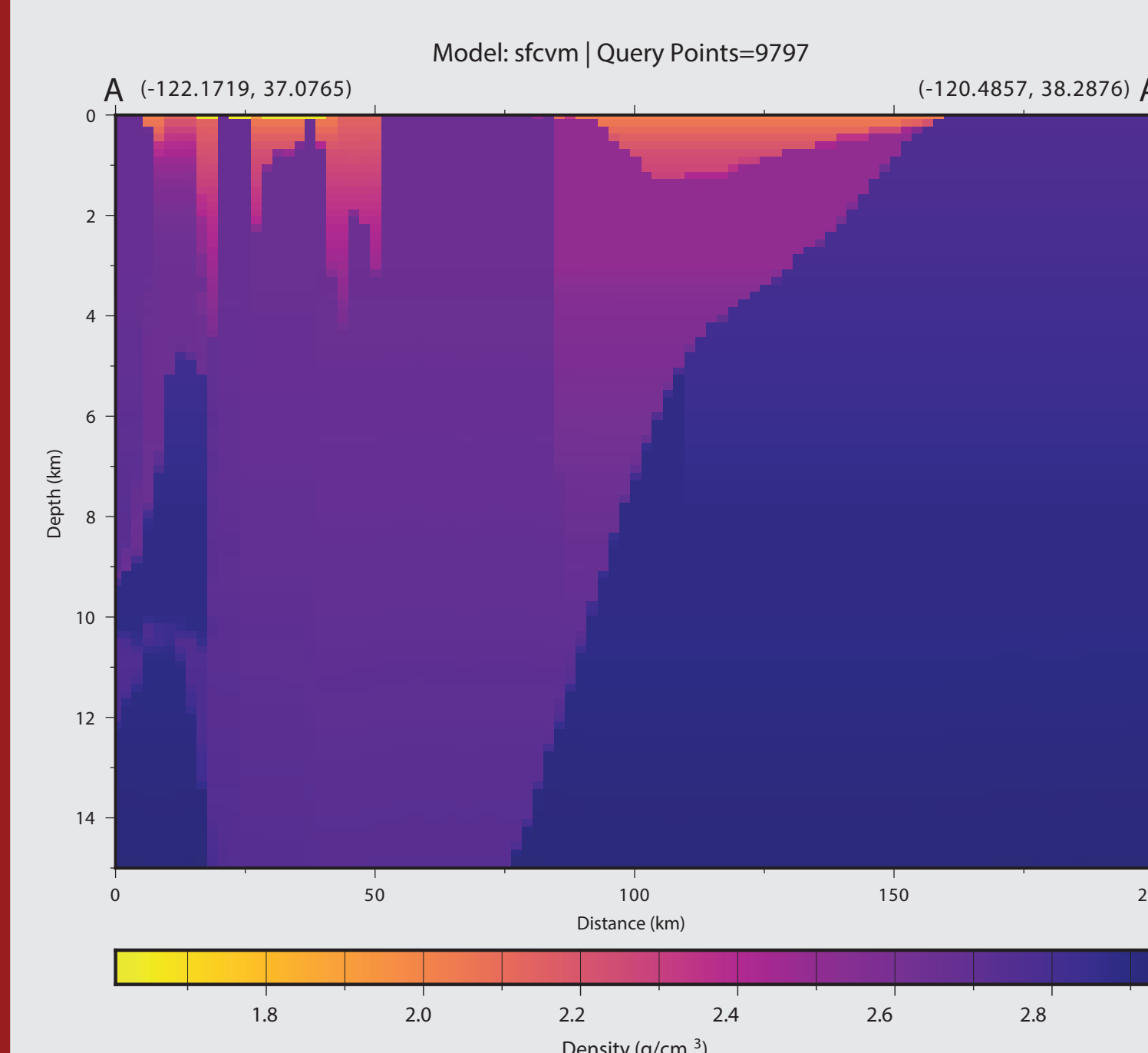


(Above) 2D horizontal slice through the CVM-S4.26 model (Lee et al., 2014) at 1km depth using the seis colormap and smoothed using splines in tension. Only cities are shown to avoid cluttering the plot.



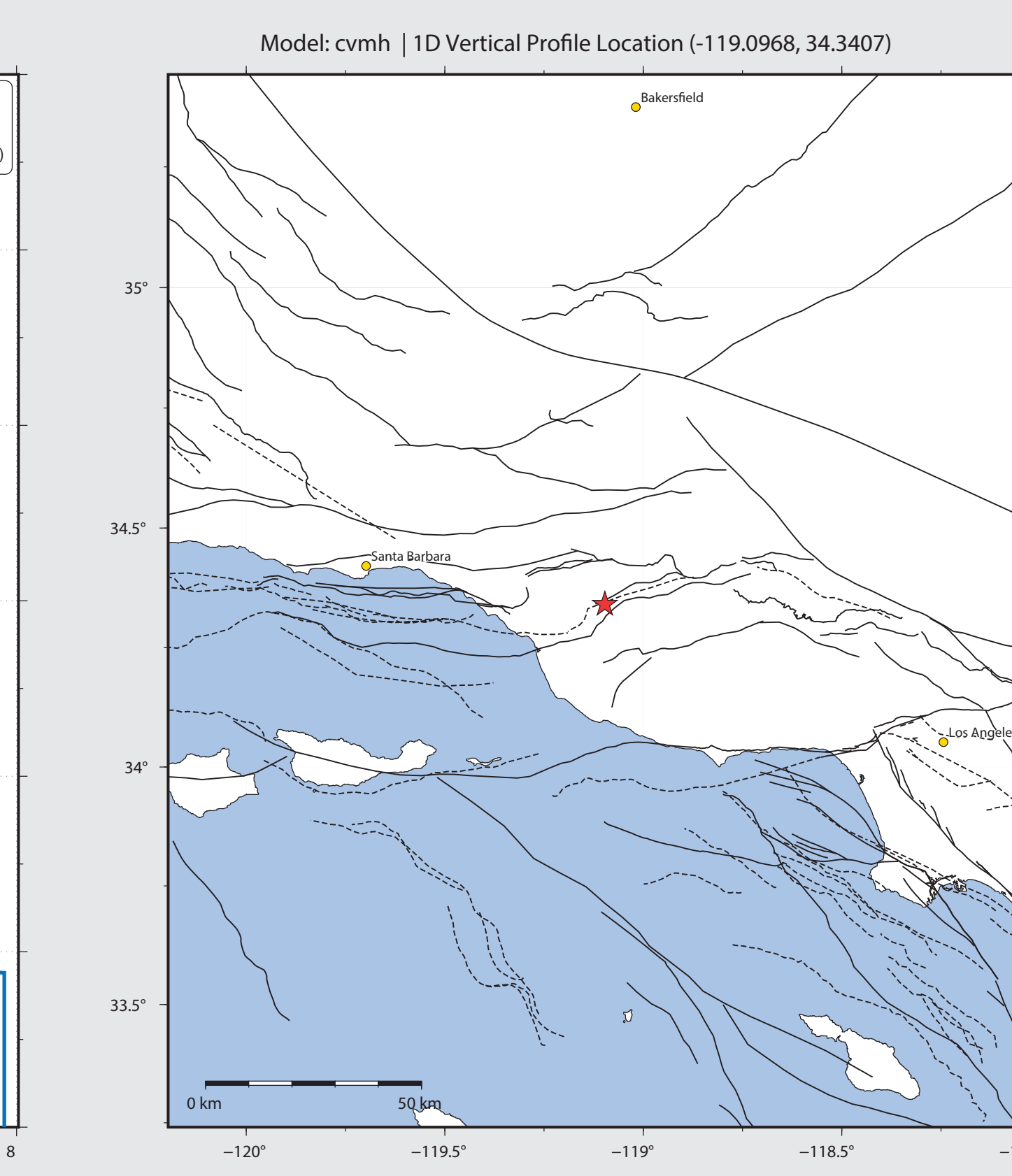
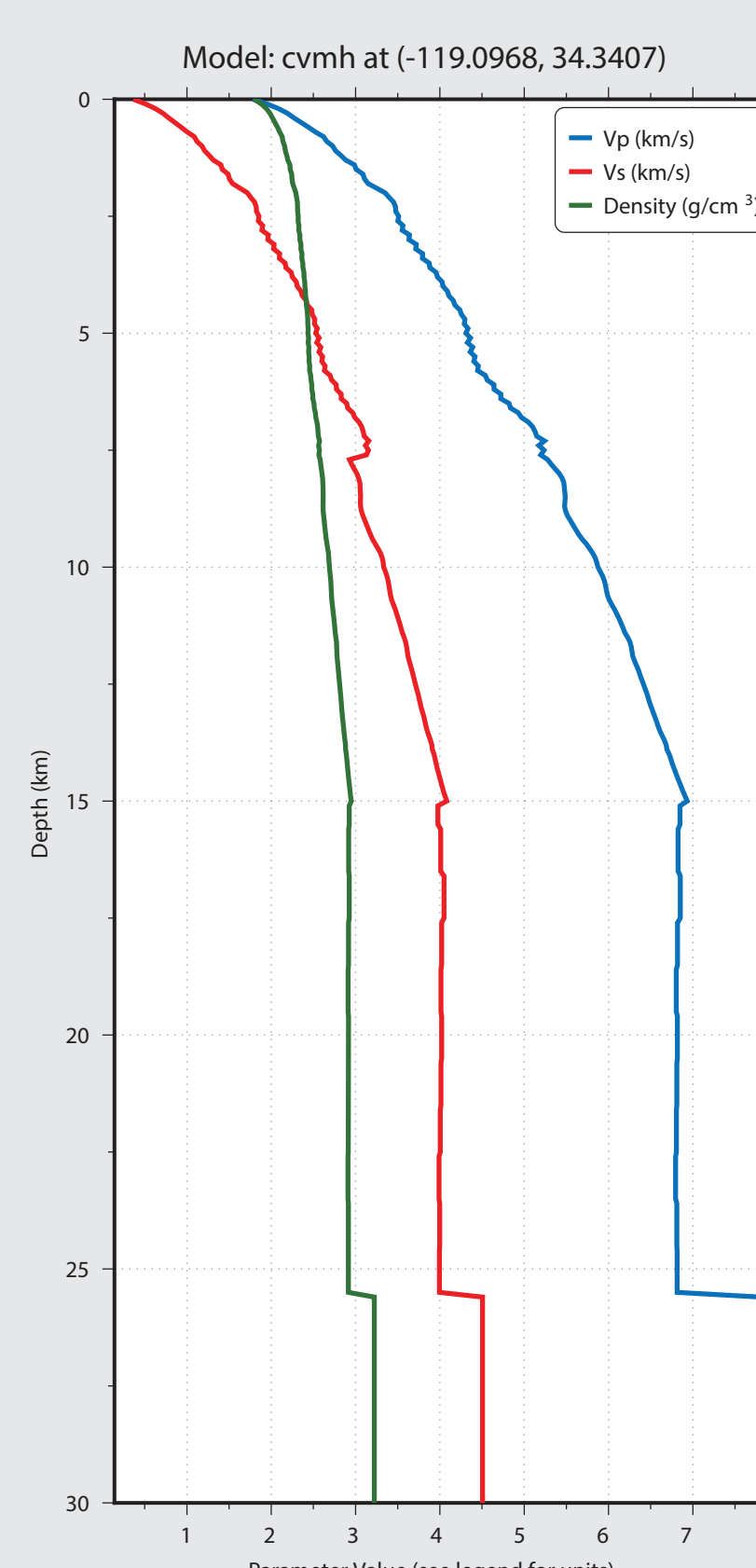
## 4: 2D VERTICAL CROSS SECTIONS

2D vertical cross section through the San Francisco Bay Velocity Model (Aagaard et al., 2021) using the perceptually constant colormap, plasma. Location map uses a 0.5 degree padding



## 5: 1D VERTICAL PROFILES

1D vertical profile through CVM-H15.1 (Shaw et al., 2015) showing Vp, Vs, and density. Location map uses 1 degree of padding and shows CFM faults and selected cities



ACCESS THE CVM EXPLORER

<http://moho.scec.org/cvm-explorer/>

SCEC COMMUNITY EARTH MODELS HOME

<https://www.scec.org/science/community-earth-models/>