Software Development
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OpenSRA
https://peer.berkeley.edu/openSRA

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Task Description/Goals/Outcomes

The development of the *OpenSRA* software can be divided into two parts: (1) the graphical user interface that the user interacts with, and (2) the backend module that performs the analysis. Overall, *OpenSRA* is completely open-source for the public to use, and is built such that future means and methods can be easily implemented.

Graphical User Interface (GUI)

The GUI for *OpenSRA* is modeled after SimCenter's open-source Regional Resilience Determination (R2D) Tool, a tool that assesses the performance of assets against natural hazards. *OpenSRA* shares many of the features used in the R2D Tool, including its implementation of QGIS, an open-source software for geospatial visualization and manipulation. Below are two sets of results visualized through QGIS directly on the *OpenSRA* GUI.

Backend (Analysis)

The backend (analysis) module of *OpenSRA* is developed in Python. Python is an open-source language that is user-friendly, easy to develop in, and has one of the most active userbase among young programmers. The language contains many useful libraries for purposes such as: (1) (geo)spatial (network) analysis, (2) numerical computation, and (3) visualization, all of which help reduce the effort in development and testing.
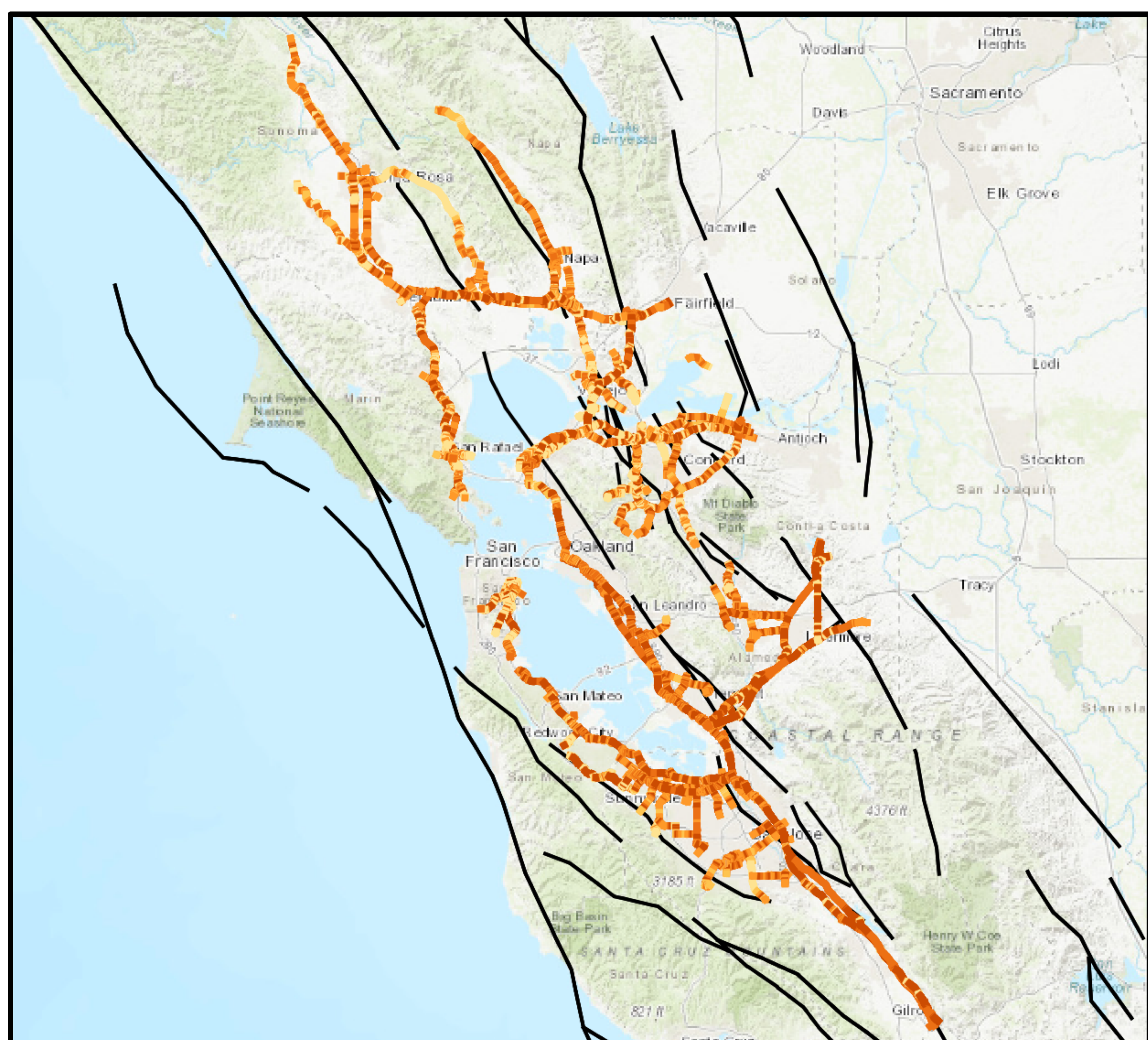

Figure 1. Regional analysis of lateral spread induced rupture for the Bay Area using a reduced set of UCERF3 events (black).
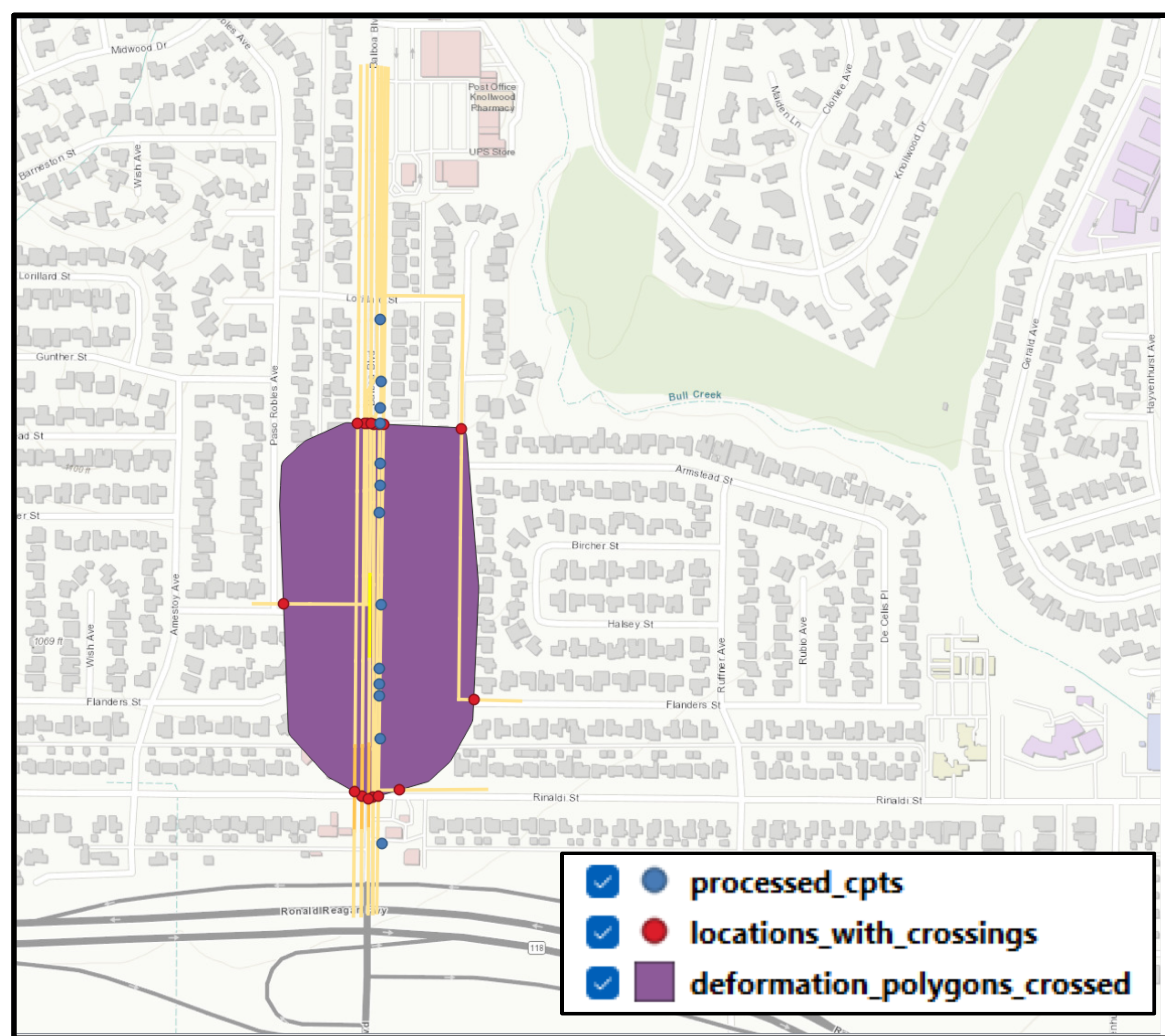

Figure 2. Analysis at Balboa Blvd. using CPTs (blue) to inform the zone of lateral spread deformation (purple) and crossing locations (red).

Workshop Poster Session
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