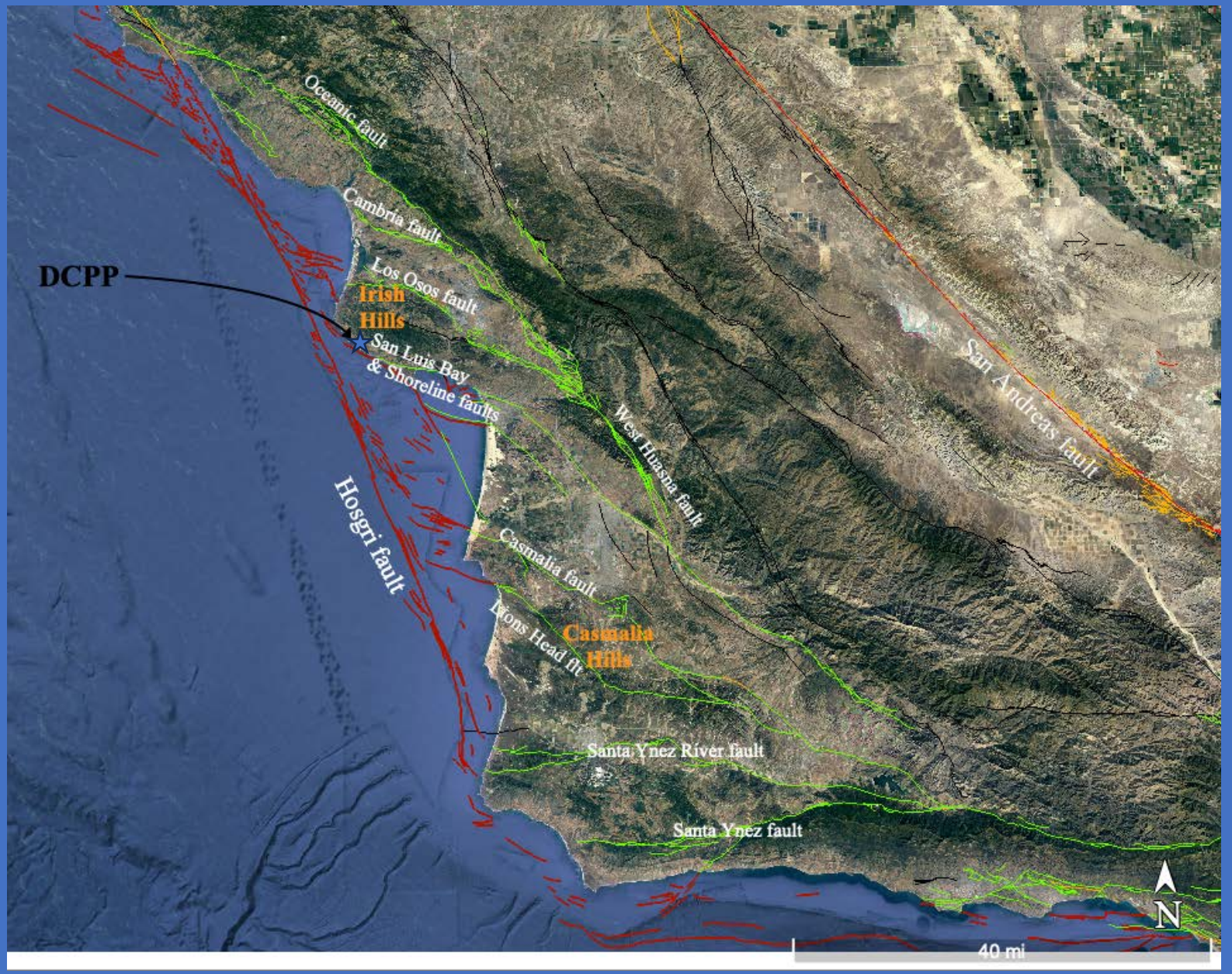
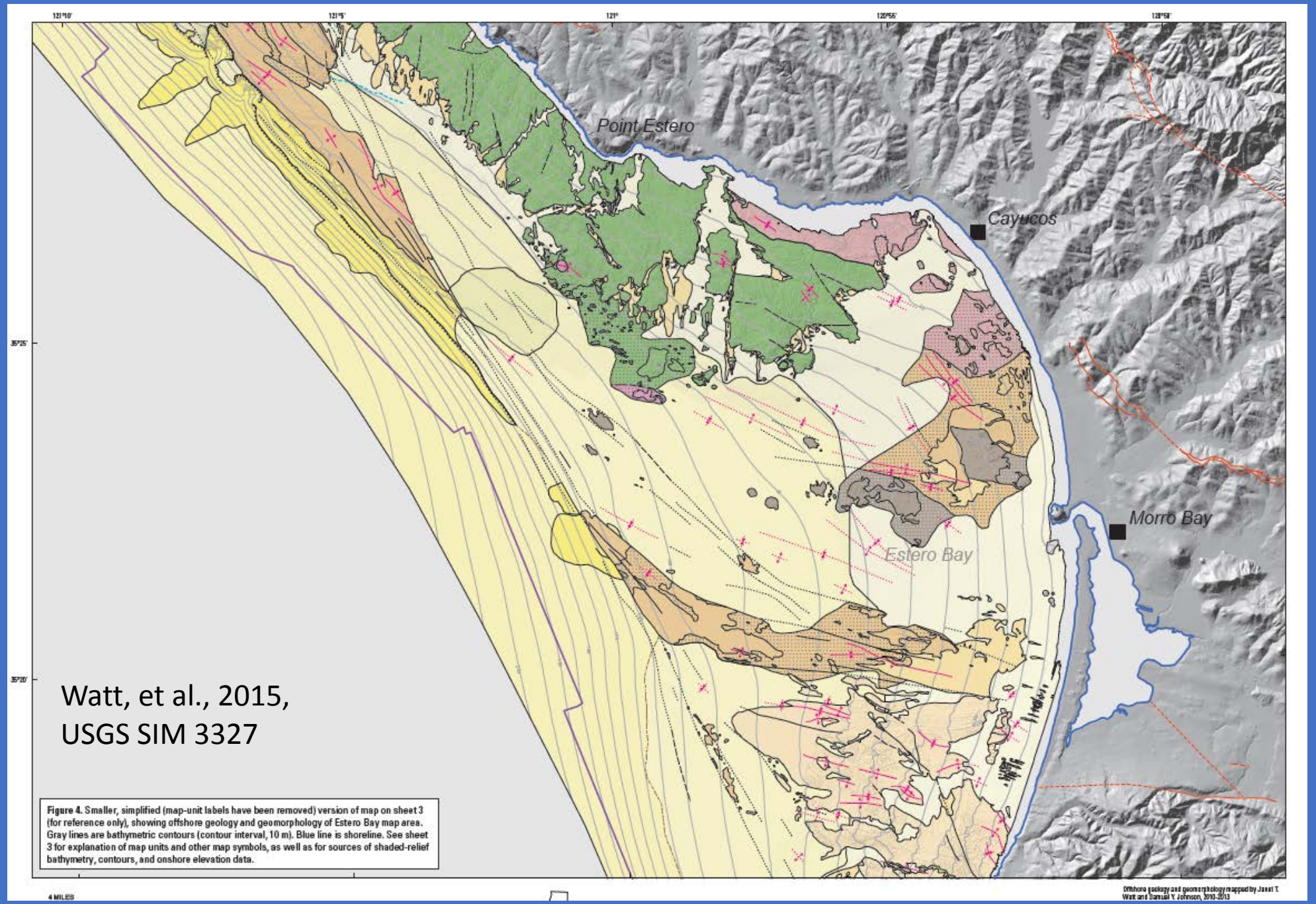
Regional Tectonic Framework



- The current data set is not adequate to distinguish between competing fault geometry models for the Irish Hills and the Los Osos fault.

- Additional offshore seismic reflection data focusing in detail on the Los Osos and Casmalia faults may identify piercing features that could yield rates of lateral slip.

- Additional onshore investigation is needed to better characterize the Los Osos fault and evaluate competing geologic models.


Point Estero
Cayucos
Morro Bay
Estero Bay
Watt, et al., 2015,
USGS SIM 3327
Figure 4. Smaller, simplified (map-unit labels have been removed) version of map on sheet 3 (for reference only), showing offshore geology and geomorphology of Estero Bay map area. Gray lines are bathymetric contours (contour interval, 10 m). Blue line is shoreline. See sheet 3 for explanation of map units and other map symbols, as well as for sources of shaded-relief bathymetry, contours, and onshore elevation data.

- Results of a preliminary investigation by the U.S. Geological Survey indicate that the offshore Los Osos fault is a broad zone characterized by vertical strike slip faults.

- Detailed offshore seismic reflection data could better characterize this fault zone and potentially quantify rates of lateral slip.

- **The Irish Hills uplift rate is approximately 0.1 to 0.2 mm/yr, indicating low vertical slip rates on the bounding faults. However, if detailed offshore investigation shows that the Los Osos fault has a higher lateral slip rate, the overall slip rate on this fault could be higher. Conversely, if the lateral slip rate is low, then the overall slip rate for the Los Osos fault could be relatively low.**

Data Not Included in the PG&E 2024 Report:

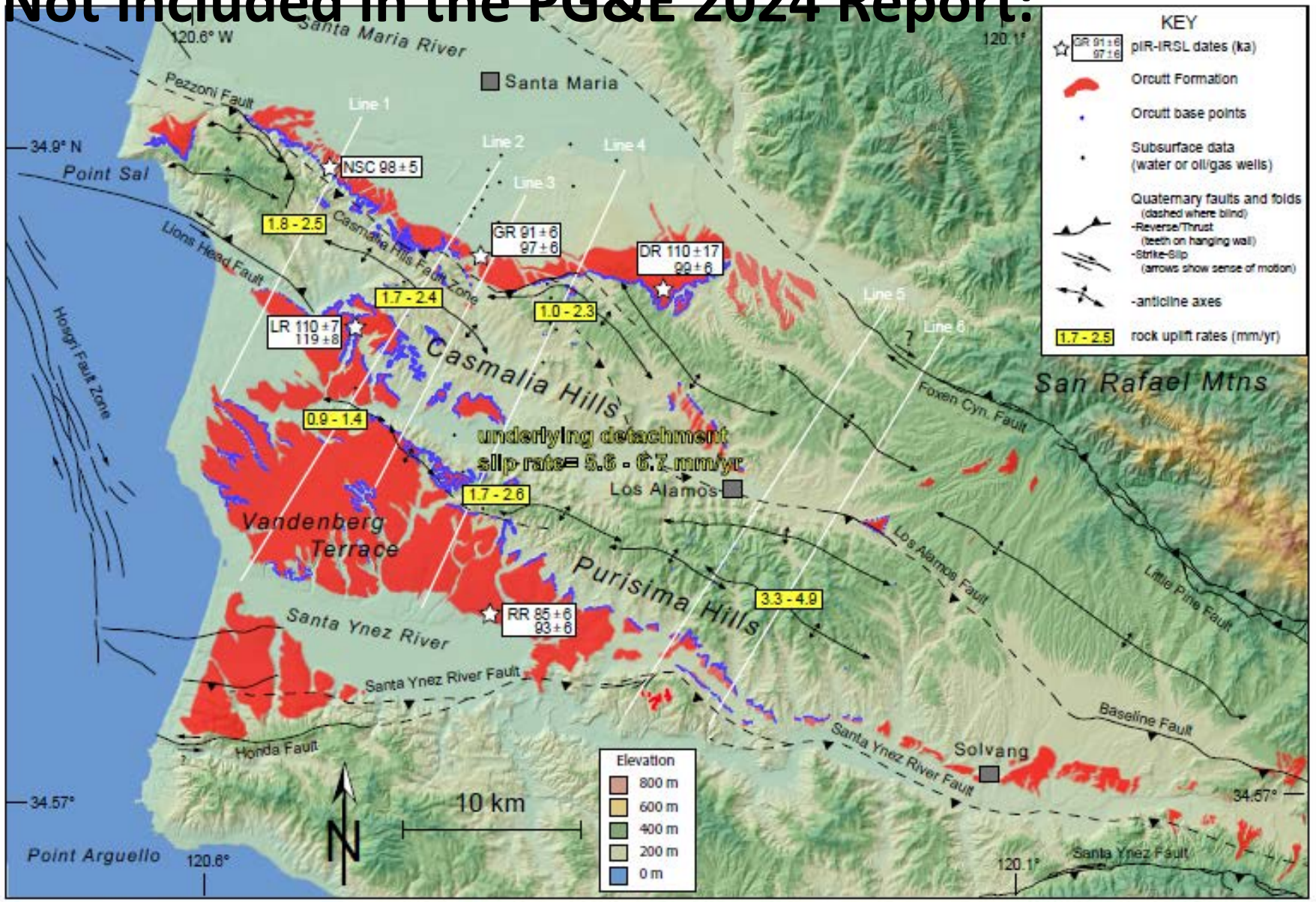


Figure 2. Map of the Santa Maria Basin showing faults, anticline axes, the extent of the mapped Orcutt Formation at the surface, the Orcutt basal surface control points, cross sections, post-infrared–infrared-stimulated luminescence (pIR-IRSL) sample sites, and rock uplift rates mapped on a 5-m-resolution digital elevation model.

McGregor and Onderdonk, 2021, Geosphere

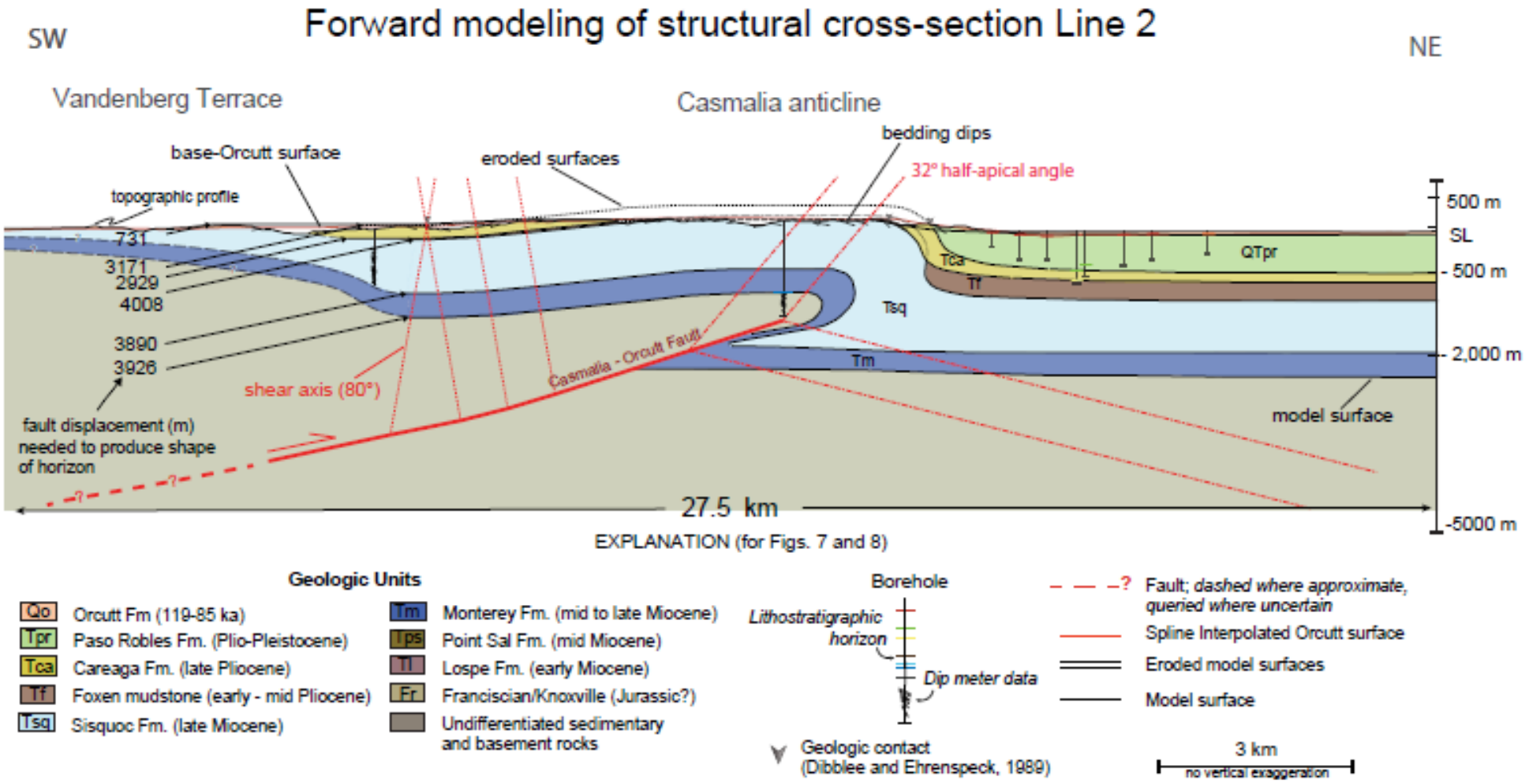


Figure 7. Area-balanced, fault-related fold model solution for the western Casmalia Hills. Shear axes, trishear parameters, and horizons depths were adjusted to fit the shown geometric constraints and produce fault displacements. The fault displacement arrows show the direction (fault parallel) and magnitude (m) of displacement along the fault that produces the above fold shape of a particular horizon in our preferred geometric models. For some horizons, there is a greater amount of displacement in younger units relative to older units beneath, which is the result of an earlier episode of normal slip along the fault. Note that geologic and subsurface data indicate very steep, and in some places overturned, bedding dips on the north side of the Casmalia Hills anticline, showing that a significant amount of folding occurred prior to planation and deposition of the Orcutt Formation. SL—sea level.

McGregor and Onderdonk, 2021, Geosphere

- Recent work by McGregor and Onderdonk (2021) indicates a slip rate of 5.6 to 6.7 mm/yr for the Casmalia fault. This is more than 10 times the slip rate used for this fault in the PG&E (2015) seismic hazard assessment.

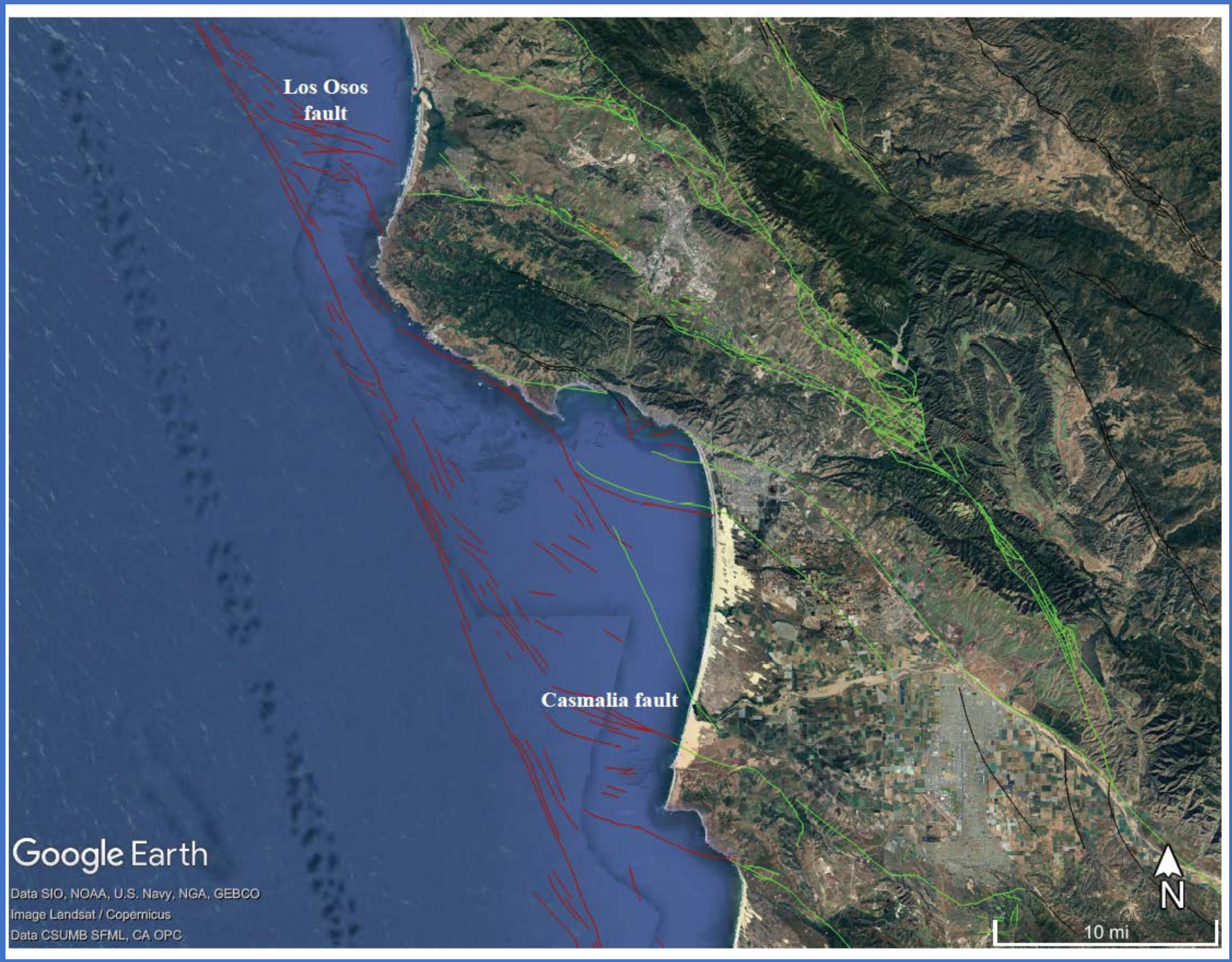
- We recommend that PG&E conduct a comprehensive review of all fault studies in the region surrounding the DCPP within the past 10 years, reference those studies, and evaluate the impacts to the DCPP seismic hazard assessment.

- On September 25, 2024, three members of the IPRP (Dawson, Johnson, and Seitz) met on Teams with personnel from PG&E geosciences group.

- The meeting with PG&E was productive, and it allowed for clarification of the major points of our report.

- We believe that continued discussions with the PG&E geosciences group would be worthwhile.

- PG&E may need more time to prepare their response.


Los Osos fault
Casmalia fault
Google Earth
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat / Copernicus
Data CSUMB SFML, CA OPC
N
10 mi