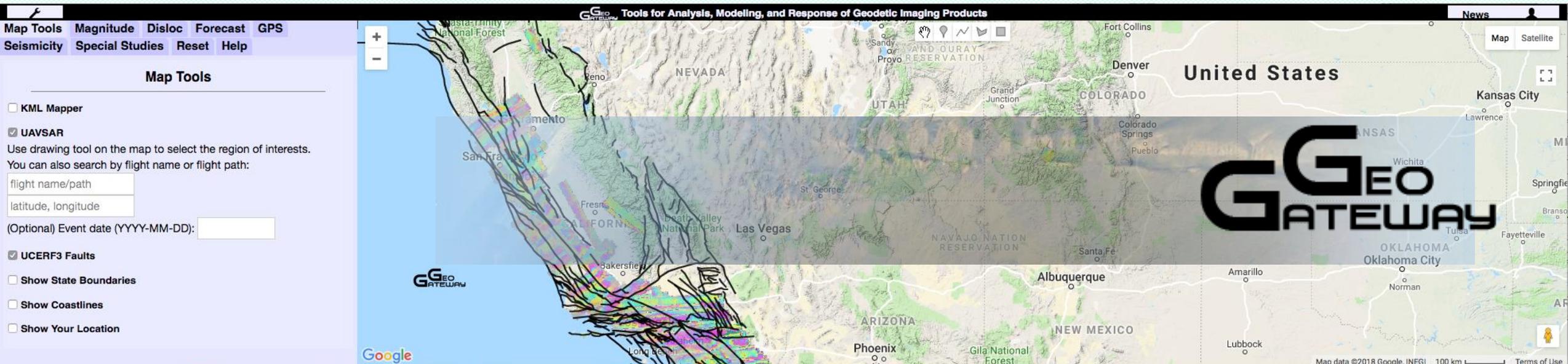




Comparing Surface Features, Slip and Seismicity at Multiple Time and Space Scales After the South Napa Earthquake with the GeoGateway Data Portal and Toolset



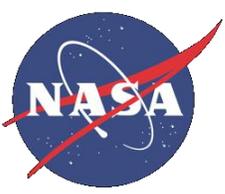
Jay Parker, Andrea Donnellan, Michael Heflin, Robert Granat

Jet Propulsion Laboratory/California Institute of Technology

Marlon Pierce, Jun Wang

Indiana University

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Topics

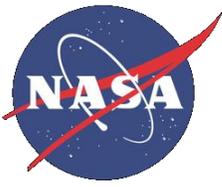
- GeoGateway displays and tools
- UAVSAR for displacement and other imaging
- Multiple tools for fast investigation
- Napa earthquake: GNSS scales, seismicity, interferograms



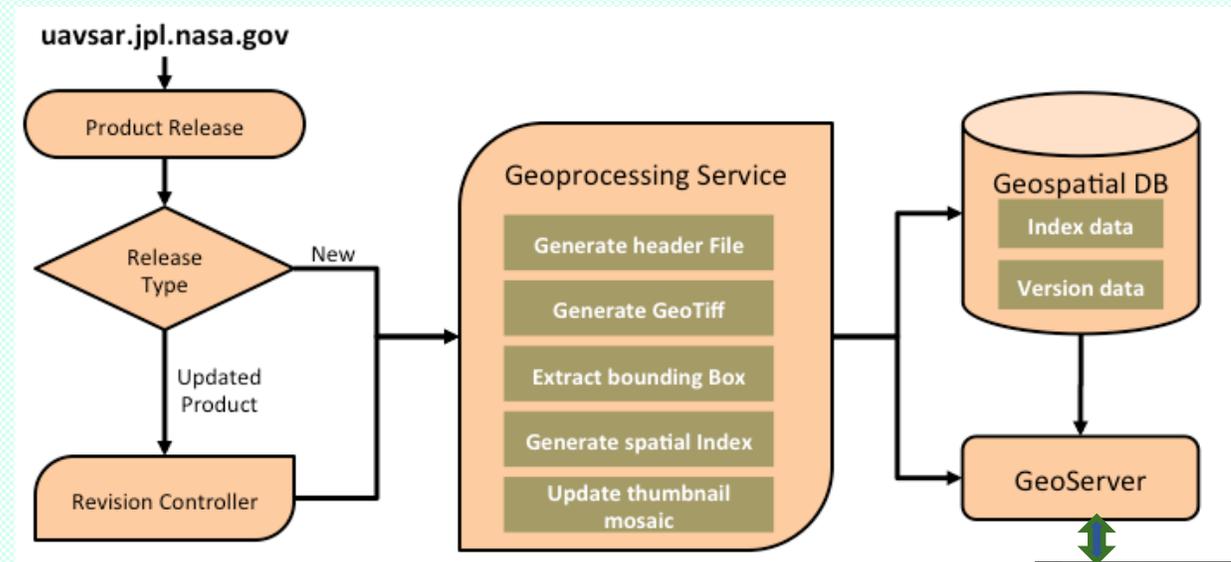
GeoGateway.org Interface

The screenshot displays the GeoGateway.org interface, which is titled "Tools for Analysis, Modeling, and Response of Geodetic Imaging Products". The interface is divided into several sections:

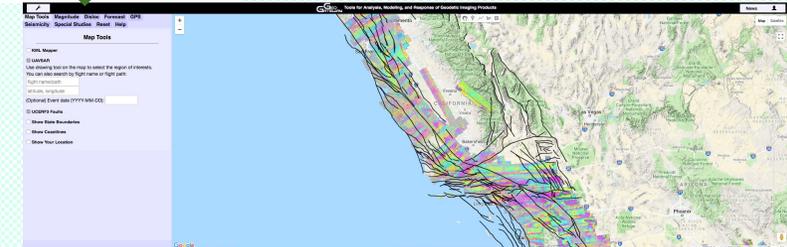
- Navigation and Search:** Includes "Map Tools", "Magnitude", "Disloc", "Forecast", "GPS", "Seismicity", "Special Studies", "Reset", and "Help". There are also "News" and user profile icons in the top right.
- Map Tools Panel:** Located on the left, it contains several checkboxes:
 - KML Mapper
 - UAVSAR: Includes a text input for "flight name/path", "latitude, longitude", and "(Optional) Event date (YYYY-MM-DD):".
 - UCERF3 Faults
 - Show State Boundaries
 - Show Coastlines
 - Show Your Location
- Map:** A satellite-style map of California and Arizona. It features numerous colored lines representing geodetic data, primarily concentrated in the western and central parts of the state. Major cities like Sacramento, San Francisco, Fresno, Las Vegas, and Phoenix are labeled. National parks and forests such as Yosemite, Sequoia, and Grand Canyon are also visible.
- Map Controls:** Includes a zoom in (+) and zoom out (-) button, a "Map" button, a "Satellite" button, and a "Google" logo at the bottom left.
- Footer:** At the bottom right, it says "Map data ©2018 Google, INEGI 50 km Terms of Use".



The GeoGateway-UAVSAR product workflow.



- **Geoprocessing Service:** detect and download new products (eg from `uavasar.jpl.nasa.gov`)
- **Geospatial Database:** producing GeoTIFF value-added entries
- **GeoServer:** an open source server for sharing geospatial data (see `geoserver.org`)
- **GeoGateway.org:** map-based public interface to this GeoServer instance



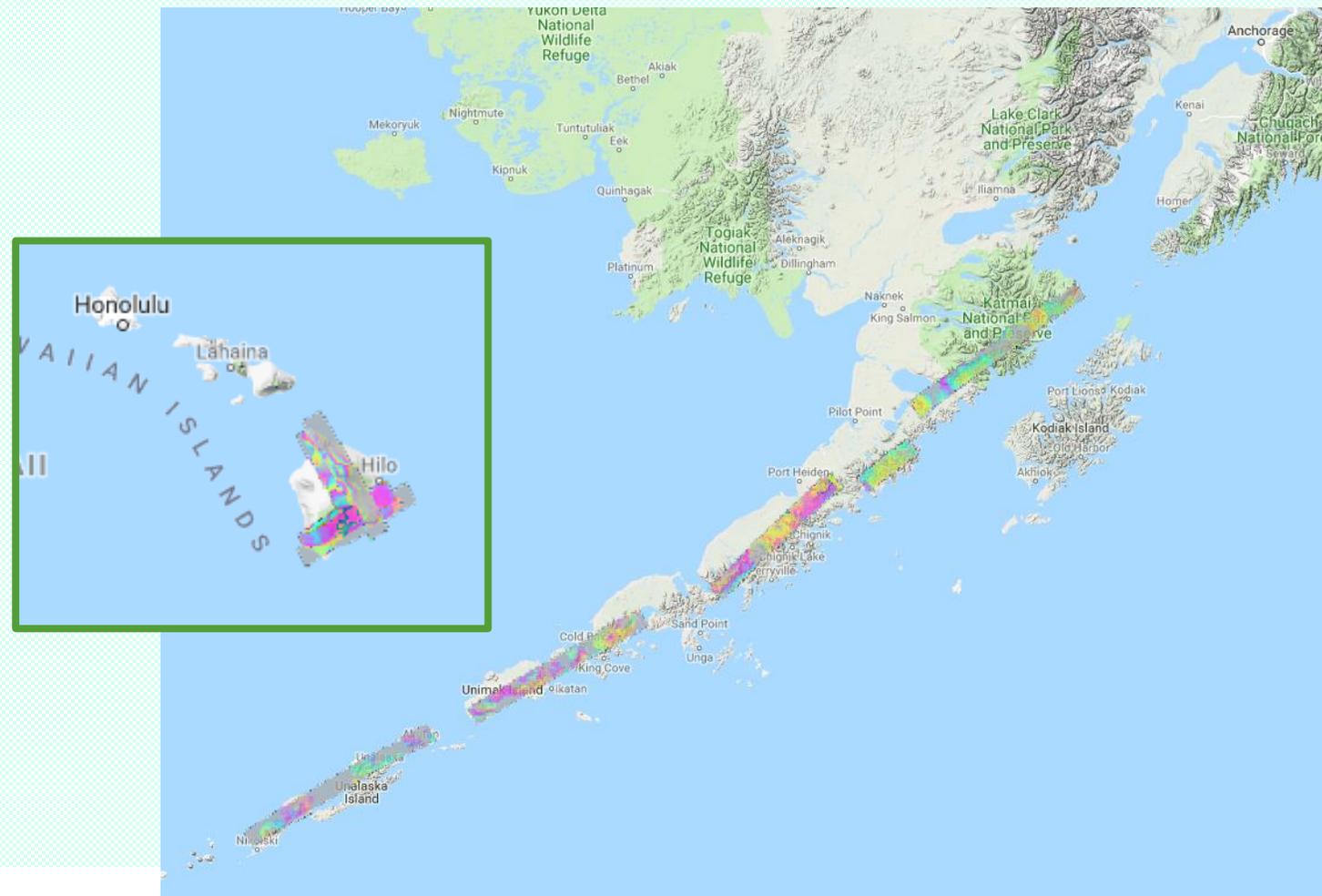
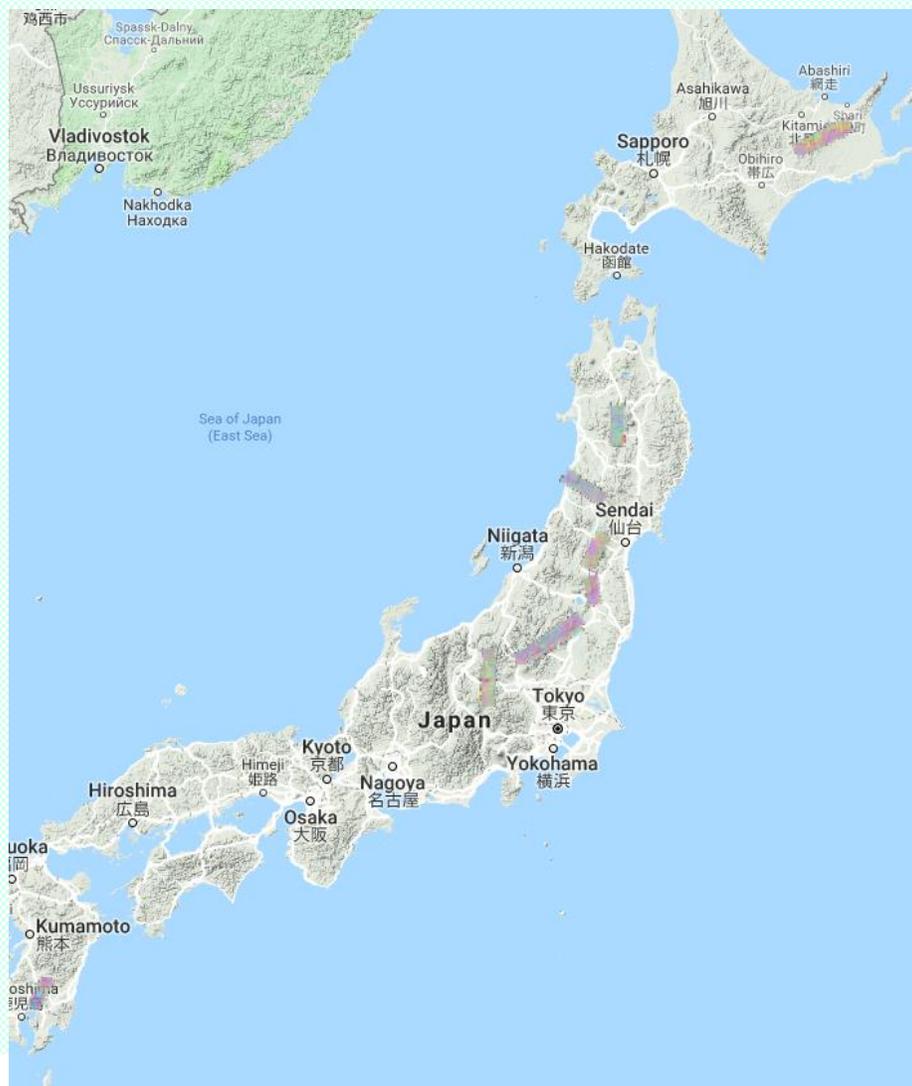


GeoGateway InSAR tools

- Thumbnail and intermediate display
- Interferogram Selection (time, location, line number)
- Selectable color scale
- Profiles
- KML Mapper: Fault Slip Maps



Asia-Oceania UAVSAR interferograms



Map Tools Magnitude Disloc Forecast GPS Seismicity Special Studies Reset Help

Select your bounding box and time interval and then click "Fetch Catalog".

This service harvests data from the USGS FDSN API

Min Lat: 35.0
 Min Lon: -120.0
 Max Lat: 40
 Max Lon: -117.0
 Starting Date: 2010-01-01
 Starting Time: 00:00:00
 Ending Date: 2018-05-23
 Ending Time: 00:00:00
 Minimum Magnitude: 2.
 Maximum Magnitude: 10.0
 Icon display scale: 1.0

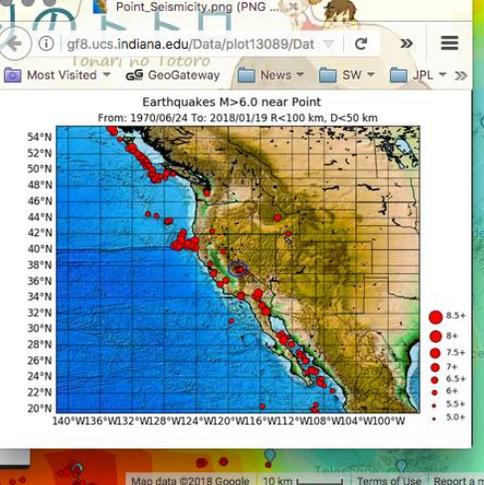
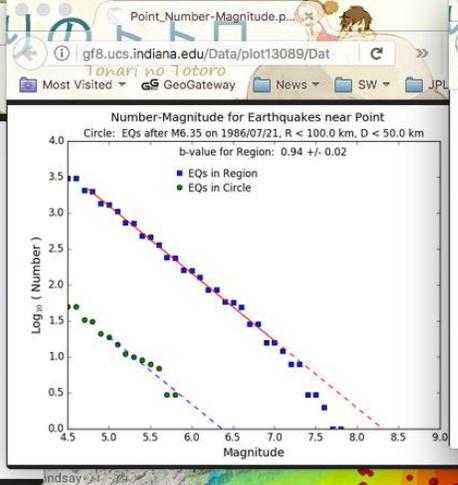
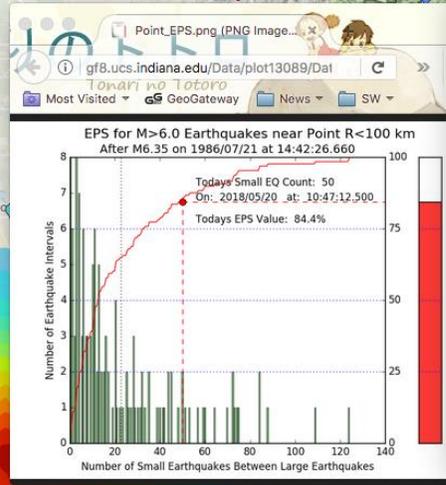
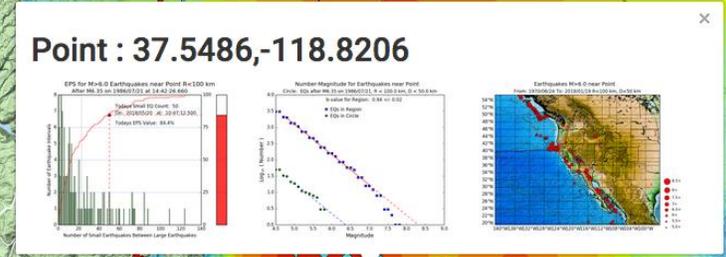
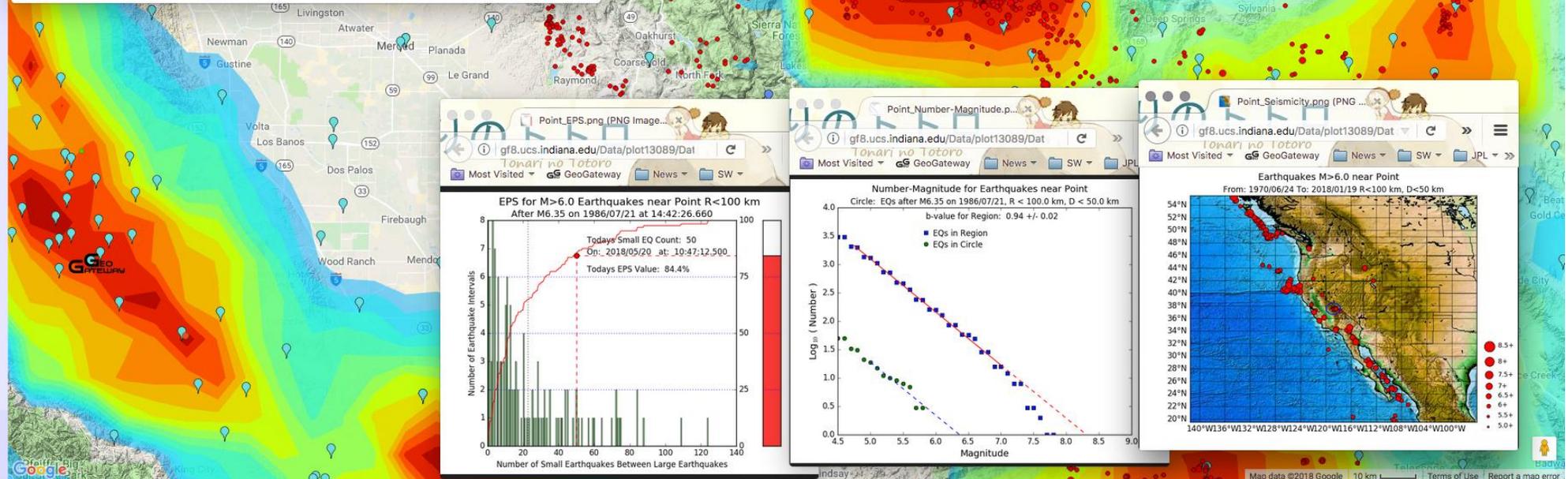
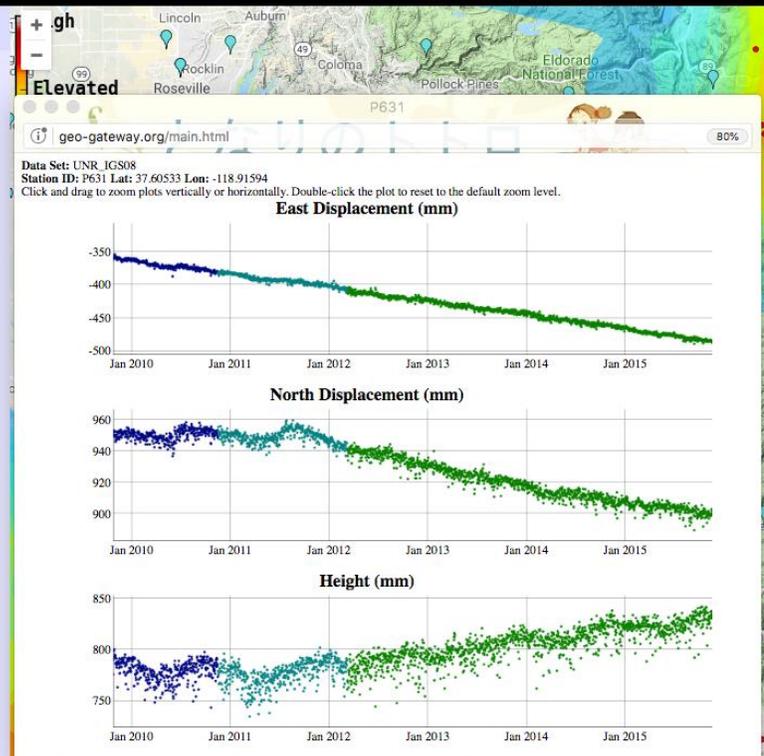
Fetch Seismic Catalog Clear Seismic data Download GeoJSON Download USGS KML

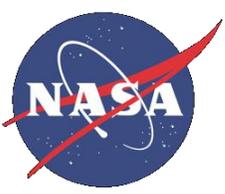
Seismicity Plots

Magnitude-Frequency relations and Nowcast

Place Name
 Latitude 37.5486
 Longitude -118.8206
 Location Picker

Plot

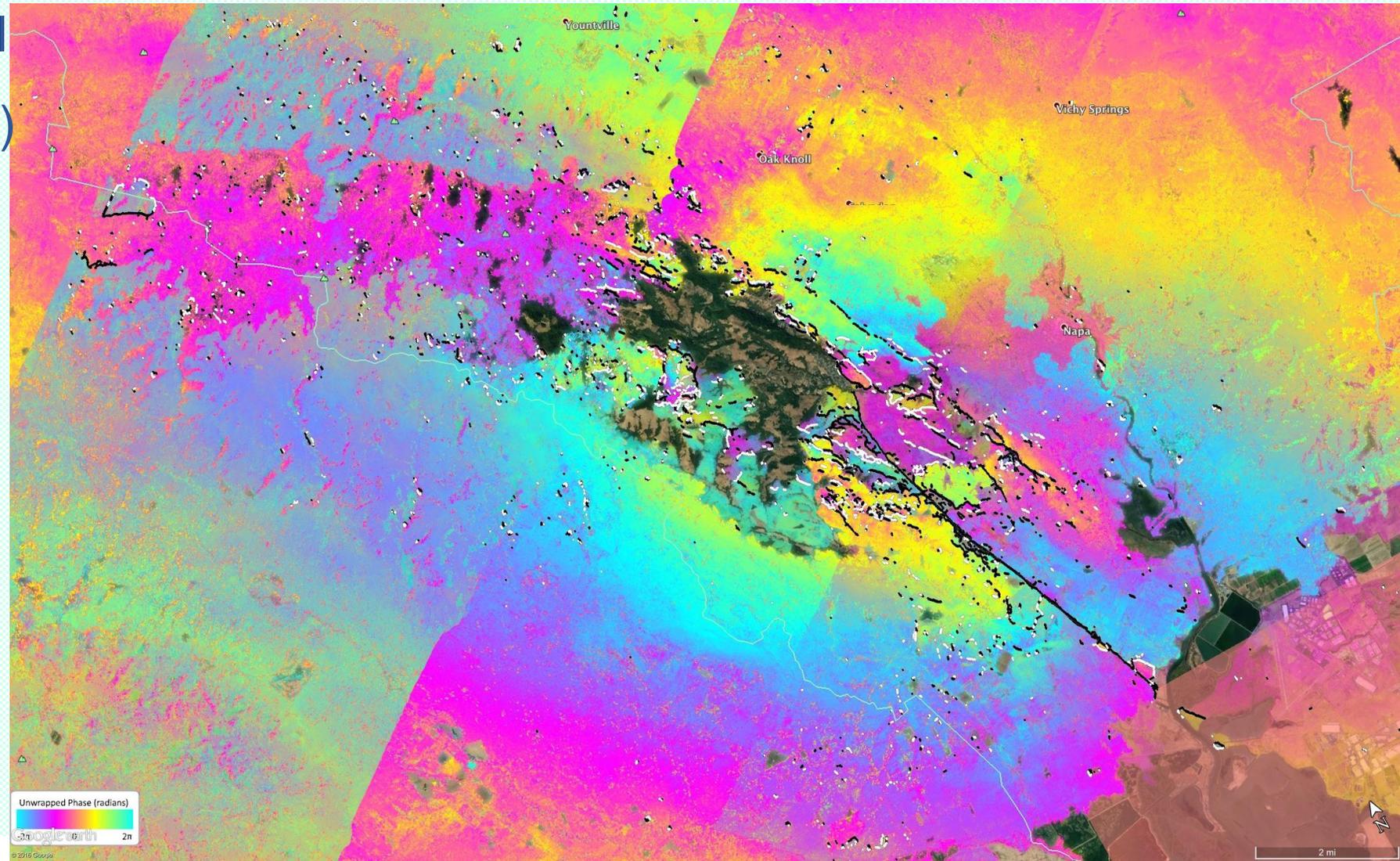


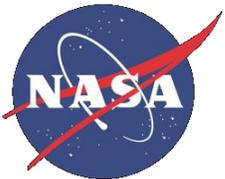


Napa Coseismic, 92 day visit span

UAVSAR lines 05510, 05512, 23511, 23513

- Black: likely right lateral (right side toward radar)
- White: left lateral
- >40mm detected slip

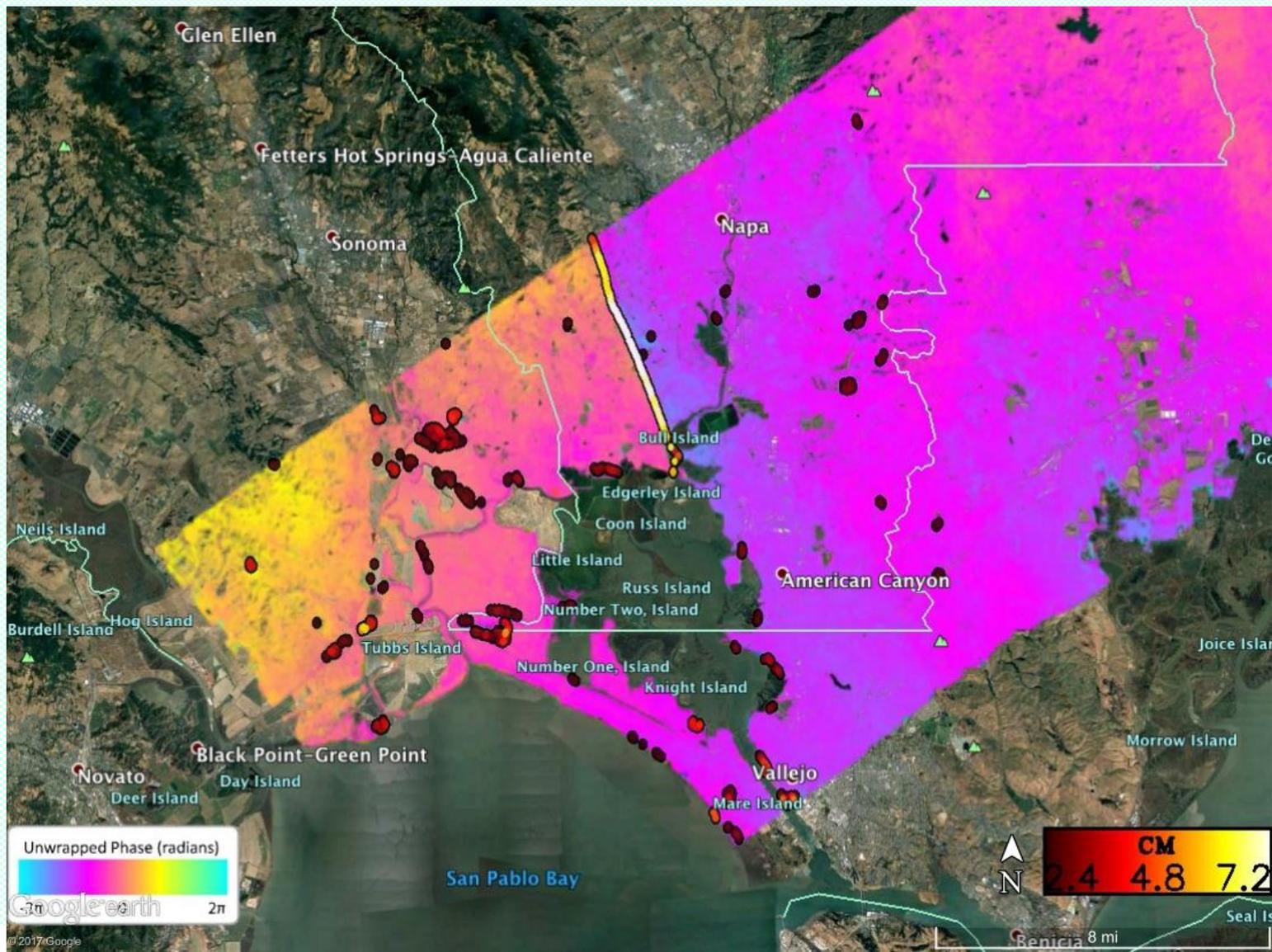




Postseismic: 52 days, line 05510

(NapaPost2R05510.jpg)

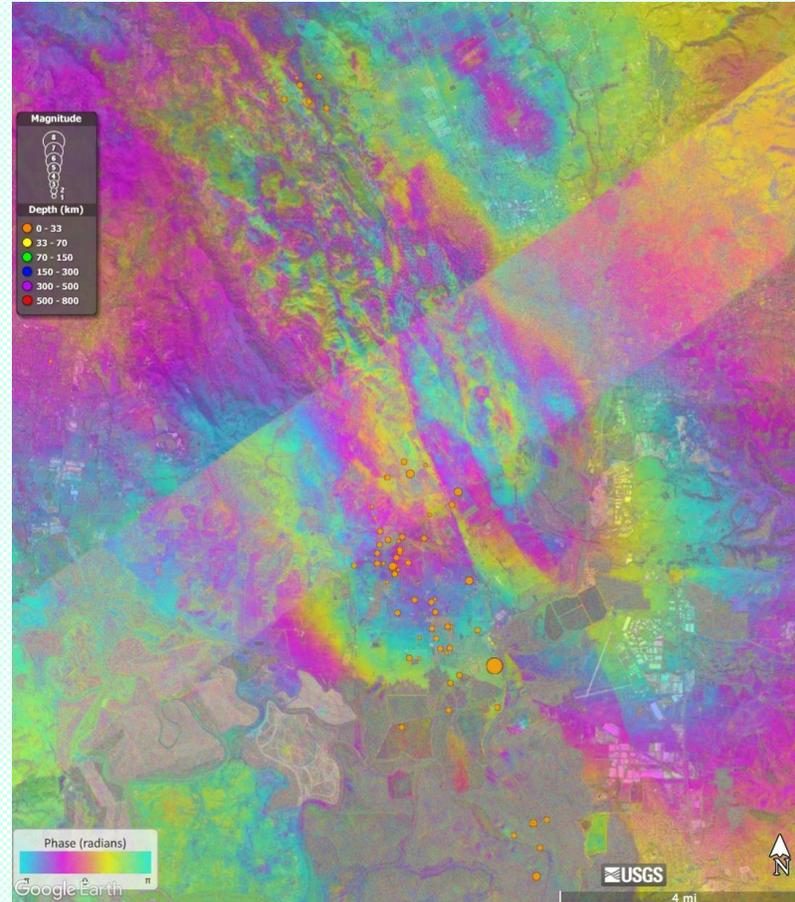
- Quantified slip (projected)
- True slip is ~2x greater

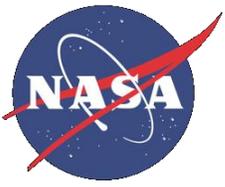




So. Napa 2014 M6 EQ

Coseismic Interferograms+Seismicity





Conclusions and next steps

- Thumbnail and intermediate display
- Interferogram Selection (time, location, line number)
- Selectable color scale
- Profiles
- KML Mapper: Fault Slip Maps