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2019.07.04 - M6.4 Searles Valley, California and 2019.07.05-M7.1 Indian Wells Valley, CA

The July 4th, 2019 Mw 6.4 earthquake in eastern California, southwest of Searles Valley, occurred as the result of shallow strike slip faulting in the crust of the North America plate. Focal mechanism solutions for the earthquake indicate rupture occurred on a steeply dipping fault as the result of either right lateral slip on a plane striking NW-SE, or as left lateral slip on a plane striking SW-NE. The earthquake was located approximately 150 km northeast of San Andreas Fault - the major plate boundary in the region. At this latitude, the Pacific plate is moving to the northwest with respect to the North America plate at a rate of approximately 48 mm/yr. The location of the earthquake falls within the Eastern California shear zone, a region of distributed faulting associated with motion across the Pacific:North America plate boundary, and an area of high seismic hazard. More detailed studies will be required to precisely identify the causative fault associated with this event.

This region of eastern California has hosted numerous moderate sized earthquakes. Over the past 40 years, 8 other M5+ earthquakes have occurred within 50 km of the July 4th, 2019 earthquake. The largest of these was a M 5.8 event on September 20, 1995, about 13 km to the west-northwest of today's event, which was felt strongly in the China Lake-Ridgecrest area, and more broadly from Los Angeles to Las Vegas. As of 1 hour after the event the July 4th, 2019 earthquake has been followed by numerous aftershocks, the largest of which was a M 4.7 earthquake 2 minutes after the M 6.4 event. Most aftershocks align in a SW-NE trend around the M 6.4 earthquake, though some also align on a NW-SE trend. The M 6.4 event was also preceded by a series of very small earthquakes (foreshocks) over the previous hour, including a M 4.0 event about 30 mins earlier.

Update 2019/07/05 - 11:17am Pacific Time

The aftershocks sequence of the July 4 Mw 6.4 earthquake appears so far standard for that region, with event productivity that is somewhat higher than average for California. The aftershocks delineate two structures that are nearly orthogonal and include so far several M > 4 events.

The standard expectation is to have in the next few weeks, as part of the aftershocks sequence, 1 event with a magnitude of about 5.4, 10 events with a magnitude of about 4.4, 100 events with a magnitude of about 3.4, etc. It is also possible, although not likely, that the July 4 Mw 6.4 earthquake will be followed by a larger event in the area in the next few weeks.

Several teams from the USGS, CGS, EERI GEER, SCEC and other institutions are currently conducting various studies in the field. Given the size of the July 4 event, location, and good regional coverage of seismic stations, there is no strong reason at present for rapid deployment of additional sensors in the area. We continue to monitor the situation and will adapt the response as needed.

Update 2019/07/05 - 03:14pm Pacific Time

Photographs from social media showed left lateral offset of CA 178 at a location approximately four miles east of Ridgecrest. Surface rupture mapping teams from the USGS, CGS, and various academic institutions converged on Ridgecrest on the evening of the 4th. Highway repairs, conducted within an hour after the event, show no evidence for afterslip. Most of the surface rupture apparently lies to the NE of the highway, within the China Lake Naval Weapons Center. Access to the base is under negotiation.

Update 2019/07/05 - 11:51pm Pacific Time

An earthquake with magnitude 7.1 occurred around 8:25pm in the same area as part of the sequence of seismicity following the July 4 M 6.4 earthquake. The M 7.1 July 5 event is now followed by its own aftershock sequence. The seismicity of the last 2 days delineates two nearly orthogonal fault zone structures, one trending NW-SE with right lateral slip and the other trending NE-SW with left-lateral slip. Several surface ruptures have been documented including a scarp with ~1m vertical offset on highway 178. The seismicity associated with this sequence of events will continue in the coming days to weeks with numerous additional felt earthquakes.

We continue to monitor the situation and will post more updates tomorrow.

Update 2019/07/06 - 11:59pm Pacific Time

The aftershock sequences of the M6.4 and M7.1 events continue following approximately generic evolution of aftershocks for the region. Plots of locations and preliminary focal mechanisms of many events are available. There are now also preliminary finite source models.

Geologic mapping of the rupture has been limited by access to the Naval Weapons Center. Teams from the USGS and CGS were able to access to the base and conduct helicopter overflights. Stereo photographs were taken yesterday of the M6.4 rupture traces. Teams from the USGS and CGS conducted overflights of the M7.1 rupture today, starting from the epicenter and moving north and south. Some parts of the base cannot be accessed due to damage. Right lateral slip of 2m and up to 4m of vertical was reported at one point on the M7.1 rupture trace.

Endpoints of rupture are not yet completely known. CGS team was not able to reach the northern extent of seismicity and surface rupture, but did trace rupture to within 15 km of the end of seismicity. USGS team did cover the entire aftershock zone but have not yet compiled information. Teams did not observe rupture north of the base boundary. Southern ends of rupture are better defined. Left lateral strand that slipped in M6.4 shows surface rupture to the power line road. M7.1 right lateral strand shows evidence of slip almost to Searles Valley road, within 6 km of the trace of the Garlock fault.

Initial rapid deployments of seismic sensors and campaign GPS are underway by USGS and SCEC teams, and plans are in progress to follow up in a few days with more extensive deployments of seismic nodes.

Update 2019/07/07 - 08:27pm Pacific Time

The aftershock sequences of the M6.4 and M7.1 events continue following approximately generic evolution of aftershocks for the region. Plots of locations and preliminary focal mechanisms of many events are available. Preliminary finite source models show large slip to the northwest of the fault intersection.

Drone footage showed complex left-lateral rupture. Mapping by the GEER team on the southern part of the rupture found 1.5 to 3 meters of rupture that was very widely distributed - in places up to 1000'. The USGS team worked to constrain the northern extent of the rupture, but had not reported back by the time of the 7:00 pm clearinghouse call, so the northern extent of the surface rupture is still not completely mapped. JPL is flying UAVSAR to map rupture and monitor post seismic deformation. Drones on the base are prohibited, and they would like to be advised if anyone is flying drones near the base. USGS aftershock forecasts are highly appreciated. They are being updated daily and are available at: <https://earthquake.usgs.gov/earthquakes/eventpage/ci38457511/oaf/commentary>, (<https://earthquake.usgs.gov/earthquakes/eventpage/ci38457511/oaf/commentary>).

Initial deployments of seismic sensors and campaign GPS are underway by USGS and SCEC teams, and plans are in progress to follow up later this week with more extensive deployments of seismic nodes.

Please use this page to coordinate earthquake response.

Issues with this site? Please email web@scec.org (<mailto:web@scec.org?subject=response.scec.org>).

Comments

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[Please use this thread for response discussions \(/node/395#comment-1103\)](#)

Submitted by [egadmin \(/user/1\)](#) on July 4, 2019 - 10:59am.

USGS event page: <https://earthquake.usgs.gov/earthquakes/eventpage/ci38443183/executive> (<https://earthquake.usgs.gov/earthquakes/eventpage/ci38443183/executive>)

[Planning GPS response \(/node/395#comment-1107\)](#)

Submitted by [gareth \(/user/120\)](#) on July 4, 2019 - 11:27am.

Site is near several that Rachel Terry and I occupied in March as part of our SCEC project. Seeing if we can get hold of vehicles to redeploy some of those stations near Ridgecrest. Possible targets:

PNCL, name: Pinnacles, Latitude: 35.6008, Longitude: -117.3936

PASO, name: EL PASO MTNS, Latitude: 35.513, Longitude: -117.7063

ATOL, name: FT0559, Latitude: 35.31313, Longitude: -117.60938

BWTR, name: Blackwater, Latitude: 35.361, Longitude: -117.3444

H701 RM2, name: FT0647, Latitude: 35.60906, Longitude: -117.80036

F48, name: FT0655, Latitude: 35.55972, Longitude: -117.77417

J701, name: FT0653, Latitude: 35.57444, Longitude: -117.78389

[1Hz and 5Hz data from UNAVCO + Materials for SDBM stations \(/node/395#comment-1123\)](#)

Submitted by [walls \(/user/105\)](#) on July 4, 2019 - 2:04pm.

Downloads of 5Hz data from the Network of the Americas (NOTA) GNSS stations (formerly Plate Boundary Observatory - PBO) will begin tomorrow morning and be available at <ftp://data-out.unavco.org/pub/highrate/> (<ftp://data-out.unavco.org/pub/highrate/>). Download radius: 250 km 1 Hz window: 3 days (day of event +/- 1 day) 5 Hz window: 3 hours (+/- 1.5 hours) For sites that are streaming 1Hz, which is most of them, the data are already archived in rinex format. An example is P595, the closest NOTA station to the epicenter: <ftp://data-out.unavco.org/pub/highrate/1-Hz/rinex/2019/185/p595/> (<ftp://data-out.unavco.org/pub/highrate/1-Hz/rinex/2019/185/p595/>). About 96% of the stations in the 250km radius are online but a few stations in the vicinity are offline (P462, SHOS, P620). Another way to see which data are available is through the DAI (requires Adobe Flash): <https://www.unavco.org/data/gps-gnss/data-access-methods/dai2/app/dai2.html#4Char=p595;scope=Station;sampleRate=highrate;4CharMod=startsWith;4CharMod=contains;4CharMod=contains> (<https://www.unavco.org/data/gps-gnss/data-access-methods/dai2/app/dai2.html#4Char=p595;scope=Station;sampleRate=highrate;4CharMod=startsWith;4CharMod=contains;4CharMod=contains>)

RT-GPS Map with links to timeseries, completeness, latency and others: <http://gaia.unavco.org/streamStatus/RT-GPS/mapsEquipment.html> (<http://gaia.unavco.org/streamStatus/RT-GPS/mapsEquipment.html>)

The 1Hz caster port for positions is rtgpsout.unavco.org 2110

In San Clemente we have materials, tooling and electronics to build 5+ SDBM stations if there is a community need.

The attachment shows horizontal displacements and predicted magnitude derived from 1Hz data from stations closest to the epicenter. Station P595 had about 113mm PGD (credit Kathleen Hodgkinson).

Attachment	Size
UNAVCO_1Hz_2019_07_04_01_hodgkinson.pdf (https://response.scec.org/sites/default/files/UNAVCO_1Hz_2019_07_04_01_hodgkinson.pdf)	528.55 KB

5Hz downloads underway ([/node/395#comment-1144](#))Submitted by [walls \(/user/105\)](#), on July 5, 2019 - 12:19pm.

5Hz downloads have started for the 225 online NOTA stations within the 255km radius of the epicenter (see attached map of sites by Christine Puskas). Red dots = sites to be downloaded, White dots = either out of radius or offline (data comm issue).

UNAVCO's Twitter feed: <https://twitter.com/UNAVCO>

Attachment	Size
255kmRadius.jpg (https://response.scec.org/sites/default/files/255kmRadius.jpg)	556.91 KB

UNAVCO Highlight plus Borehole Strainmeter Results ([/node/395#comment-1146](#))Submitted by [walls \(/user/105\)](#), on July 5, 2019 - 4:08pm.

UNAVCO Data Response highlight: <https://www.unavco.org/highlights/2019/ridgecrest.html> (<https://www.unavco.org/highlights/2019/ridgecrest.html>)

From Kathleen Hodgkinson for Borehole Strainmeter data:

Recording of shear strains by NOTA borehole tensor strainmeters from the Mojave, Parkfield and Anza strainmeter networks. The dashed vertical red line indicates the event origin time. The B921 and B916 traces are shown in blue to distinguish them. Green dots on map show the strainmeter locations, labelled dots refer to the strain traces plotted. The star denotes the earthquake epicenter. Strain data for this event are available from [https://www.unavco.org/projects/project-support/geophysical-event-response/geophysical-event-data.html](https://www.unavco.org/projects/project-support/geophysical-event-response/geophysical-event-data/geophysical-event-data.html) (<https://www.unavco.org/projects/project-support/geophysical-event-response/geophysical-event-data.html>)

Attachment	Size
BSM_SearlesValleyCalifornia_Hodgkinson.pdf (https://response.scec.org/sites/default/files/BSM_SearlesValleyCalifornia_Hodgkinson.pdf)	741.45 KB

Ground displacement at P595 from M6.9 ([/node/395#comment-1155](#))Submitted by [walls \(/user/105\)](#), on July 5, 2019 - 9:14pm.

Attached are some quick plots of the 1Hz positions for nearby stations provided by D. Mencin. P595 had ~490mm of ground displacement during the second event (~113mm in the M6.4 foreshock).

Attachment	Size
Second event M6.9 ground displacements.pdf (https://response.scec.org/sites/default/files/Second event M6.9 ground displacements.pdf)	444.17 KB

Magnitude estimate from 1Hz GNSS data ([/node/395#comment-1159](#))Submitted by [walls \(/user/105\)](#), on July 6, 2019 - 12:23am.

Precise point position measurements of peak ground displacement from streaming 1Hz data at stations near the larger event estimate a ~M7. Credit Kathleen Hodgkinson.

Plans are underway for another round of 5Hz downloads, this time for stations out to ~800km.

Attachment	Size
M7_estimate_1Hz.png (https://response.scec.org/sites/default/files/M7_estimate_1Hz.png)	332.31 KB

UNAVCO Update: Campaign equipment ([/node/395#comment-1184](#)), newSubmitted by [walls \(/user/105\)](#), on July 7, 2019 - 2:13pm.

UNAVCO has 20 campaign GPS systems to loan if needed (<https://med.unavco.org/newproject/supportform.aspx> (<https://med.unavco.org/newproject/supportform.aspx>)).

5Hz data is being downloaded for sites within 1000km (~700 stations).

Staff will manually download/repair communications at 3 offline GNSS stations 90-120 km from epicenter (Shoshone/Death Valley) on Monday/Tuesday. BSM site B918 at the north end of China Lake NAWs (~8 km east of northern rupture) is offline (lightning pre-earthquakes) but recording seismic data. A field visit will be scheduled after the Base grants access to UNAVCO (we're trying to stay out of the way).

Borehole and GPS/GNSS results as well as a discussion geodetically derived magnitude estimates can be viewed at: <https://www.unavco.org/highlights/2019/ridgecrest.html> (<https://www.unavco.org/highlights/2019/ridgecrest.html>). These include BSM and GPS sites on China Lake NAWS.

Let me know if anyone is interested in co-locating geophysical equipment at P595 or other nearby NOTA stations. There may be access/permitting challenges but now is a good time.

Preliminary 5Hz animations for P594, P595, CCCC ([/node/395#comment-1224](#)) **new**

Submitted by [walls](#) ([/user/105](#)) on July 11, 2019 - 6:08pm.

The link below is a Keynote animation by Dave Mencin at UNAVCO for 5Hz ground displacements at the 3 closest NOTA stations to the M7.1 event: P595, P594, CCCC. These use rapid orbits. The grid spacing is 10cm for each plot. P595 shows the most coseismic displacement but P594 appears to have the greatest acceleration (a VSat comm site that managed to stay online but with increased latency after the earthquakes).

https://www.dropbox.com/s/y4kb80pcw50x6q1/Draft_Particle_Motions.key?dl=0 (https://www.dropbox.com/s/y4kb80pcw50x6q1/Draft_Particle_Motions.key?dl=0)

Surface Displacements from 1Hz Data ([/node/395#comment-1236](#)) **new**

Submitted by [walls](#) ([/user/105](#)) on July 12, 2019 - 8:51pm.

See attached animation (14MB) from 1Hz GPS/GNSS NOTA data by Christine Puskas. One can see the surface waves propagating outward. There appears to be some amplification in the Ventura Basin. Note vector for horizontal scale and color for vertical scale.

<https://www.dropbox.com/s/ze86j14cgybp4v0/2019-07-06-M7.1Ridgecrest-realtime.mp4?dl=0> (<https://www.dropbox.com/s/ze86j14cgybp4v0/2019-07-06-M7.1Ridgecrest-realtime.mp4?dl=0>)

Attachment	Size
2019-07-06-M7.1Ridgecrest-realtime.mp4 (https://response.scec.org/sites/default/files/2019-07-06-M7.1Ridgecrest-realtime.mp4)	13.28 MB

UCR campaign GPS update, 7/5 ([/node/395#comment-1147](#))

Submitted by [gareth](#) ([/user/120](#)) on July 5, 2019 - 4:42pm.

As of 1 pm today (July 5th) the UCR team of me (Gareth Funning), Christos Kyriakopoulos and Baoning Wu have deployed GPS receivers at sites F48, J701, H701, PNCL and ATOL. We will service, and maybe redeploy some of these receivers on Monday.

A team from the USGS including Ben Brooks and Jerry Svarc are also in the area, and are currently trying to capture with GPS any ongoing motion of the fault zone at and south of Hwy 178.

Site coordinates ([/node/395#comment-1160](#))

Submitted by [fialko](#) ([/user/45](#)) on July 6, 2019 - 7:18am.

Does anyone know which sites are surveyed by the USGS team? I am out of town until Jul 9. Dave Sandwell will be taking several GPS setups to the area tomorrow (Sunday Jul 7).

Yuri

Campaign GPS update, 7/8 ([/node/395#comment-1193](#)) **new**

Submitted by [gareth](#) ([/user/120](#)) on July 9, 2019 - 12:33am.

The UCR group (Gareth Funning and Keith Richards-Dinger) are back from an extended day trip to the Ridgecrest area today. We serviced two sites which we will probably leave for the medium term (PNCL and H701), and took down three receivers from the southwest of the area (F48, J701, ATOL), and shifted them to new locations in the northwest (BM25, GS04, V511). Thus, we have five stations out in total.

David Sandwell reports that his team deployed 4 NETRS receivers (at sites GS17 GS48 GS20 and GS22). These are setup at 5 seconds and with solar panels so could theoretically run for several weeks. They did not gain access to the Navy base. Yuri Flalko plans to visit tomorrow (7/9) with six receivers.

We saw a USGS receiver at FORK, but otherwise do not know where their stations are located.

Locations of surveyed sites and possible targets are included in the attached kmz file.

Attachment	Size
Ridgecrest 2019-07-09.kmz (https://response.scec.org/sites/default/files/Ridgecrest_2019-07-09.kmz)	4.69 KB

Campaign GPS update, 7/9 (/node/395#comment-1207)_newSubmitted by [gareth \(/user/120\)](#) on July 10, 2019 - 7:06am.

KMZ file now includes sites measured by UNR and USGS. No more reports of GPS occupations that I am aware of.

File also contains suggested sites to target both on and off the base. Let me know (gareth@ucr.edu (<mailto:gareth@ucr.edu>)) if you are planning on measuring any of them, so that we can coordinate who goes where, and minimize duplication of effort!

Attachment	Size
Ridgecrest GPS 2019-07-09.kmz (https://response.scec.org/sites/default/files/Ridgecrest GPS 2019-07-09.kmz)	25.62 KB

Campaign GPS update, 7/10 (/node/395#comment-1208)_newSubmitted by [fialko \(/user/45\)](#) on July 10, 2019 - 8:16am.

Yesterday we deployed 3 more "semi-permanent" sites: 0806, GS11, and INYO. An updated KMZ file is attached.

Note: Benchmark TRN1 (Trona airport) seems to be gone. I took it off from the "suggested targets" list.

Yuri

Attachment	Size
Ridgecrest GPS 2019-07-10.kmz (https://response.scec.org/sites/default/files/Ridgecrest GPS 2019-07-10.kmz)	26.8 KB

Campaign GPS update, 7/12 (/node/395#comment-1237)_newSubmitted by [gareth \(/user/120\)](#) on July 13, 2019 - 12:48am.

The UCR team revisited the Ridgecrest area today, and set out three additional sites (PASO, 0914, GS25), took down one (V511) and serviced their remaining four stations (H701, PNCL, BM25, GS04). A group from Scripps was in the area, also, servicing their stations.

The updated kmz file posted here reflects the new deployments that I know of.

Attachment	Size
Ridgecrest GPS 2019-07-12.kmz (https://response.scec.org/sites/default/files/Ridgecrest GPS 2019-07-12.kmz)	26.28 KB

Surface displacement and rupture map (/node/395#comment-1162)Submitted by [milliner \(/user/324\)](#) on July 6, 2019 - 8:21am.

I have received before and after Planet Scope satellite imagery (3 m resolution) for the Mw 6.4 event. I am in process of applying standard image correlation analysis to measure the surface deformation field.

Preliminary results indicate first-order features can be resolved including, surface displacement, fault trace and fault slip. I will share these measurements once processed (a few hours from now).

I am in discussions with Planetlabs to see if I can also share the original images (which are licensed), and not just the derivative products listed above.

Chris Milliner

I now have an optical image (/node/395#comment-1174)Submitted by [milliner \(/user/324\)](#) on July 6, 2019 - 9:08pm.

I now have an optical image correlaiton result for the northern 16 km of the rupture. Attached file is very preliminary so I'm hoping at the moment it gives a first-orer overview of rupture extent, but I am working to improve resolution and noise to have something useable. I will uplod improved correlaiton in a couple of hours as well as slip distribution.

Unfortunately there are no optical images south of this area, will have to wait until 1.00 pm ish tomorrow.

Chris

Attachment	Size
Initial_result.png (https://response.scec.org/sites/default/files/Initial_result.png)	292.64 KB

Here is .kml and .kmz of (/node/395#comment-1175)Submitted by [milliner \(/user/324\)](#) on July 6, 2019 - 10:46pm.

Here is .kml and .kmz of northern rupture trace mapped from image correlaiton. Might be handy.

Attachment	Size
Northern_rupture.kml.kml (https://response.scec.org/sites/default/files/Northern_rupture_kml.kml)	1.42 KB
Northern_rupture.kmz (https://response.scec.org/sites/default/files/Northern_rupture.kmz)	698 bytes

Image correlation rupture map of Mw 6.4 + 7.1 (/node/395#comment-1176)_new

Submitted by [milliner \(/user/324\)](#) on July 6, 2019 - 11:33pm.

I now have rupture map and surface displacement field for the Mw 6.4 and 7.1 events (only the northern 16 km). please email if you want the geotiffs, which can't be attached due to the file type.

christopher.milliner@jpl.nasa.gov (mailto:christopher.milliner@jpl.nasa.gov)

This is simply a figure (/node/395#comment-1178)_new

Submitted by [milliner \(/user/324\)](#) on July 7, 2019 - 4:40am.

This is simply a figure (.png) for viewing, of the northern 16 km of rupture. I have sent geotiffs to Ryan Gold. But cannot upload geotiffs as they are not accepted format here.

Data have had median filter applied. Result is from Planet Scope imagery (3 m), pixel resolution of correlation result is 27 m.

There is clear multi-stran transtensional splay at lower right of image.

This is the result used to create the slip distribution attached in another message.

Chris

Attachment	Size
Best_corr.png (https://response.scec.org/sites/default/files/Best_corr.png)	572.08 KB

Slip distribution for northern 16 km of 7.1 rupture (/node/395#comment-1177)_new

Submitted by [milliner \(/user/324\)](#) on July 7, 2019 - 4:34am.

Here is a slip distribution measured from image correlation of planetlabs data.

I have attached a figure and a data table.

Error is 1 sigma uncertainty.

Values are measured on the major primary strand and dont account for the secondary strand that splays at around 35.8 deg. Latitude.

I will driving up to the clearinghouse today with Julian Lozos

Chris Milliner

Attachment	Size
Slip_prof_north_rupture_long_lat_disp_err_azi.txt (https://response.scec.org/sites/default/files/Slip_prof_north_rupture_long_lat_disp_err_azi.txt)	1.13 KB
Slip_prof.png (https://response.scec.org/sites/default/files/Slip_prof.png)	38.98 KB

South? (/node/395#comment-1180)_new

Submitted by [dreger \(/user/281\)](#) on July 7, 2019 - 12:15pm.

Hi Chris

Do you see slip south of your southern most point that is trending in the NW direction?

Best

Doug

I haven't checked yet as (/node/395#comment-1185)_new

Submitted by [milliner \(user/324\)](#) on July 7, 2019 - 9:59pm.

I haven't checked yet as there wasn't imagery available at the time. But I'm pretty confident there must be, as there is ~3 m of displacement at the southernmost part of what I could resolve. I should be able to get a result tomorrow to obtain surface measurements.

Chris

Rupture map of 7.1 from optical correlation (/node/395#comment-1191)_new

Submitted by [milliner \(user/324\)](#) on July 8, 2019 - 10:51pm.

Attached are the geotiffs for the 7.1 and part of 6.4 rupture. Others at Clearinghouse should already have received this same result the morning of July 8th.

For each area there are two files (east-west, and north-south), which constrain the direction of surface displacement.

Units are in meters.

Projection info:

UTM

WGS 84, Zone 11

Images used: Planet Scope (3 m resolution).

Post images: July 6th

Pre images: stated in filename

Attachment	Size
June_13_corr_northsouth.kmz (https://response.scec.org/sites/default/files/June_13_corr_northsouth.kmz)	62.36 KB
June_13_corr_eastwest.kmz (https://response.scec.org/sites/default/files/June_13_corr_eastwest.kmz)	63.04 KB
June30_central_section_eastwest.kmz (https://response.scec.org/sites/default/files/June30_central_section_eastwest.kmz)	76.27 KB
June30_central_section_northsouth.kmz (https://response.scec.org/sites/default/files/June30_central_section_northsouth.kmz)	83.66 KB
June30_north_section_eastwest.kmz (https://response.scec.org/sites/default/files/June30_north_section_eastwest.kmz)	36.01 KB
June30_north_section_northsouth.kmz (https://response.scec.org/sites/default/files/June30_north_section_northsouth.kmz)	35.31 KB

Fault traces (/node/395#comment-1192)_new

Submitted by [milliner \(user/324\)](#) on July 8, 2019 - 11:07pm.

Attached are kmz files of fault traces drawn from the optical correlation results (attached in previous message above).

Chris

Attachment	Size
Fault_trace.kmz (https://response.scec.org/sites/default/files/Fault_trace.kmz)	1 KB
Fault2.kmz (https://response.scec.org/sites/default/files/Fault2.kmz)	707 bytes
6p4_trace.kmz (https://response.scec.org/sites/default/files/6p4_trace.kmz)	702 bytes
Fault_3.kmz (https://response.scec.org/sites/default/files/Fault_3.kmz)	688 bytes
Fault_4.kmz (https://response.scec.org/sites/default/files/Fault_4.kmz)	689 bytes
Fault_5_low_confidence.kmz (https://response.scec.org/sites/default/files/Fault_5_low_confidence.kmz)	640 bytes

Detailed fault trace mapping from Radar and optical offsets ([/node/395#comment-1222](#)), **new**Submitted by [milliner \(/user/324\)](#) on July 11, 2019 - 1:03pm.

Hi All,

Attached are kmz of detailed fault trace mapping, mapped from the following geodetic data:

- Sentinel 1 unwrapped phase
- Sentinel 1 correlation image
- Planetlabs optical image displacement maps.

Cheers

Chris

Attachment	Size
New_faults3.kmz (https://response.scec.org/sites/default/files/New_faults3.kmz)	20.86 KB
Google_Earth_fault_traces.png (https://response.scec.org/sites/default/files/Google_Earth_fault_traces.png)	1.79 MB

Attached are updated fault ([/node/395#comment-1229](#)), **new**Submitted by [milliner \(/user/324\)](#) on July 12, 2019 - 10:46am.

Attached are updated fault traces mapped from Sentinel-1 wrapped phase and phase gradient, and optical image offsets.

This will likely be my final version

Cheers

Chris

Attachment	Size
New_faults4.kml (https://response.scec.org/sites/default/files/New_faults4.kml)	141.64 KB

Just submitted UCERF3-ETAS ([/node/395#comment-1104](#))Submitted by [kmilner \(/user/143\)](#) on July 4, 2019 - 11:04am.

Just submitted UCERF3-ETAS aftershock simulations, will update in an hour or so when results start to come in

First simulations done, plots here ([/node/395#comment-1109](#))Submitted by [kmilner \(/user/143\)](#) on July 4, 2019 - 11:38am.

First UCERF3-ETAS simulations done, plots are here:

https://github.com/kevinmilner/ucerf3-etras-results/tree/master/2019_07_04-SearlesValleyM64-includeSpont-full_td-10yr (https://github.com/kevinmilner/ucerf3-etras-results/tree/master/2019_07_04-SearlesValleyM64-includeSpont-full_td-10yr)

I will continue to update that page over the next day, and it will take about 6 hours to get to 100k simulations.

Initial results show about a 1 in 400 chance of a M7 aftershock in the next day, probabilities highest on the Tank Canyon and Garlock faults.