

# San Jacinto Fault Zone

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HPWREN User Group  
Meeting

SDG&E Mission Control

13 December 2012





# San Jacinto Fault Zone

Oct 3, 2008 1:57 pm

Hemet

Garner Valley

Anza

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Image © 2010 DigitalGlobe  
Image County of San Bernardino

lat 33.573960 lon -116.642791 elev 4180 ft

©2009 Google™

Eye alt 19475 ft

Imagery Dates: Dec 31, 2005 - Nov 16, 2009

Thursday, December 13, 12

# San Jacinto Fault Zone

Oct 3, 2008 1:57 pm

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Garner Valley

Anza

Data SIO, NOAA, U.S. Navy, NGA, G

Image © 2010 DigitalGlobe  
Image County of San Bernardino

lat 33.573960° lon -116.642791° elev 4180 ft

©2009 Google™

Eye alt 19475 ft

# San Jacinto Fault Zone

Oct 3, 2008 1:57 pm



©2009 Google

Imagery Dates: Dec 31, 2005 - Nov 16, 2009

lat 33.580563° lon -116.661274° elev 4361 ft

Eye alt 6511 ft

Thursday, December 13, 12

# San Jacinto Fault Zone



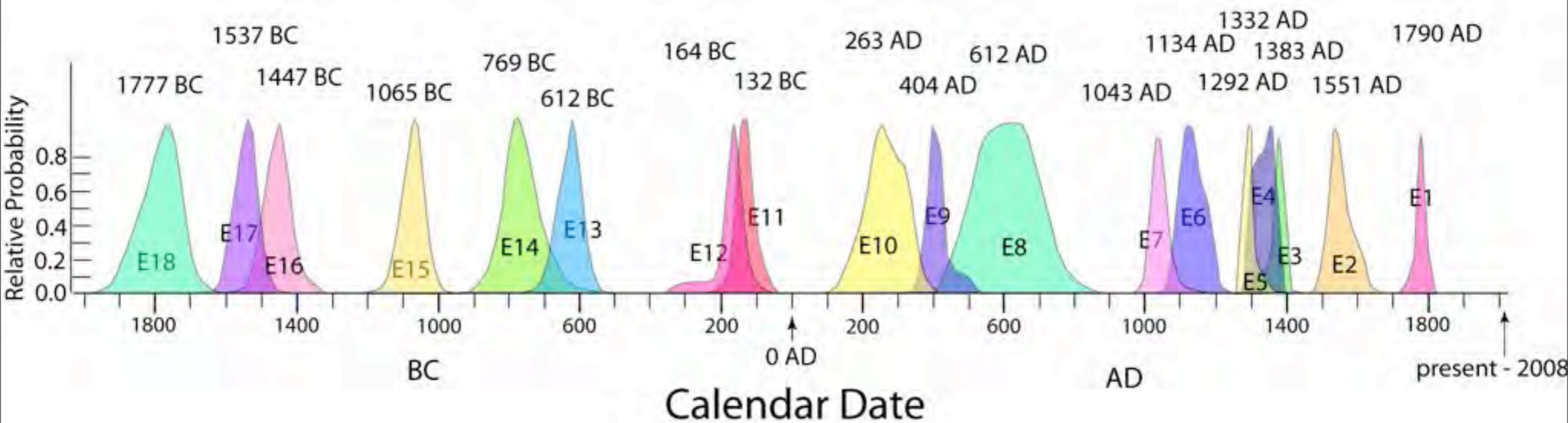
Burnt Valley



Clark Valley

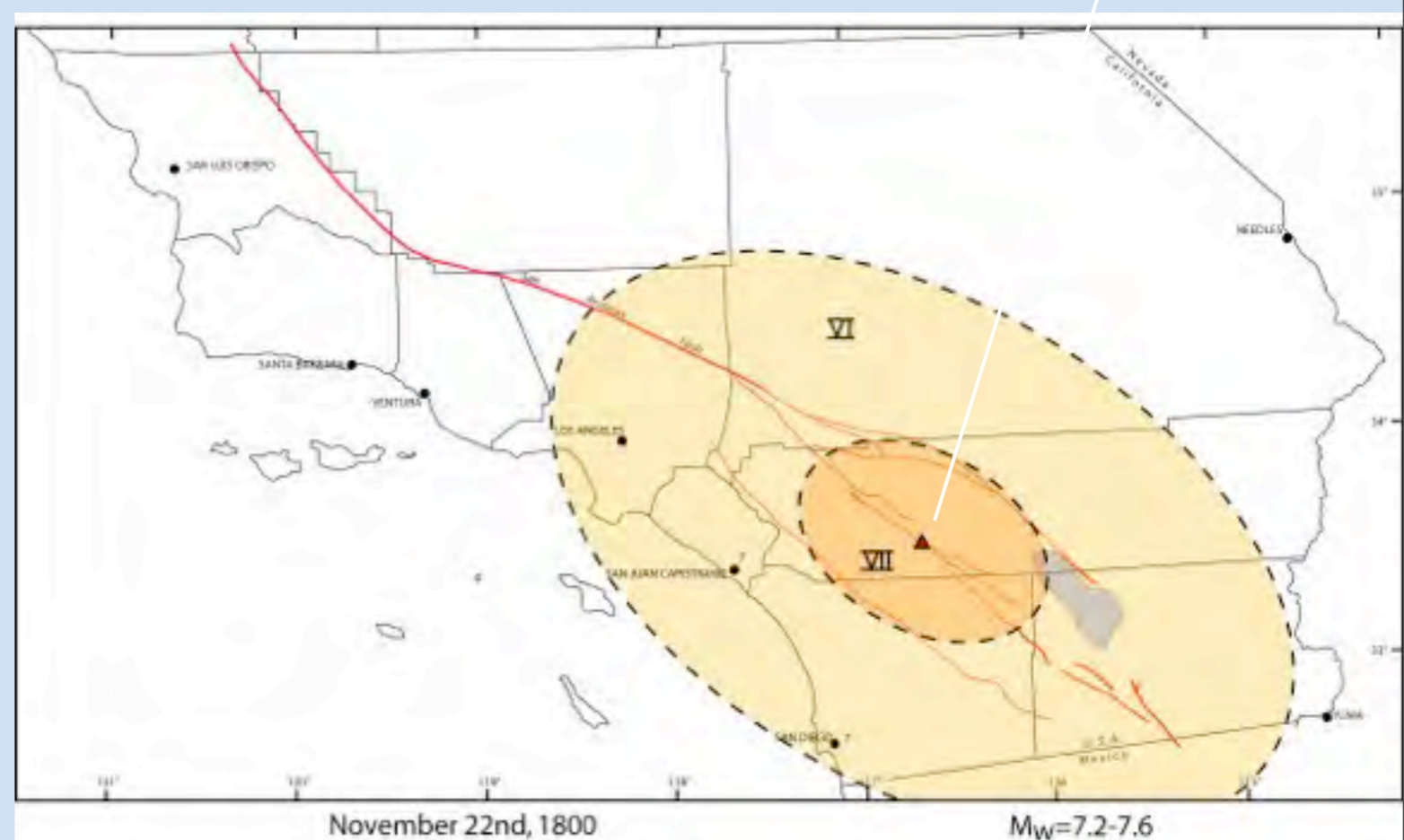


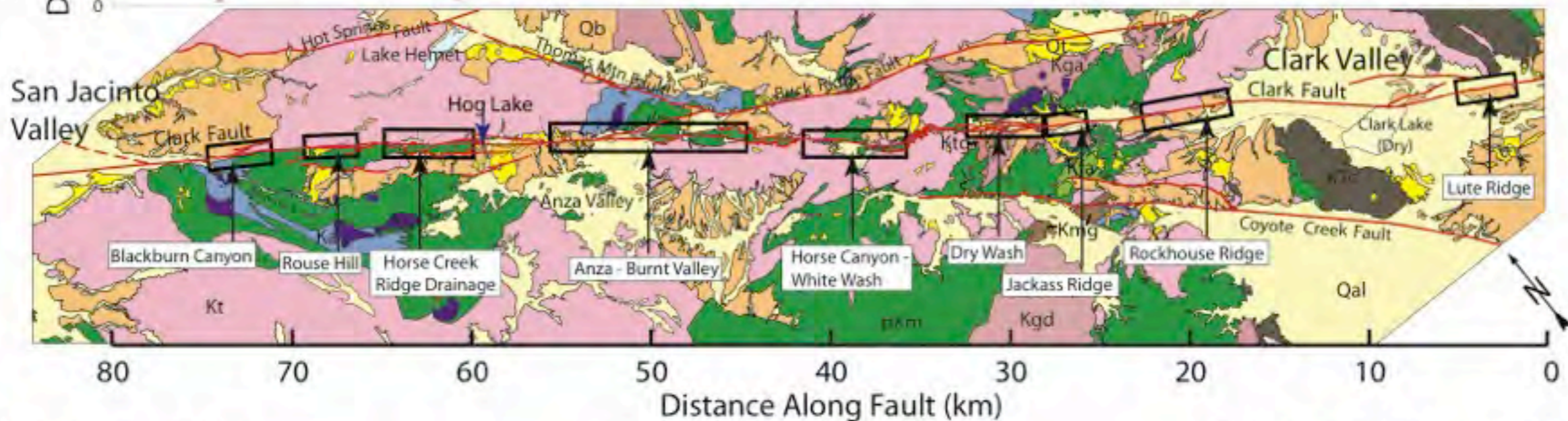
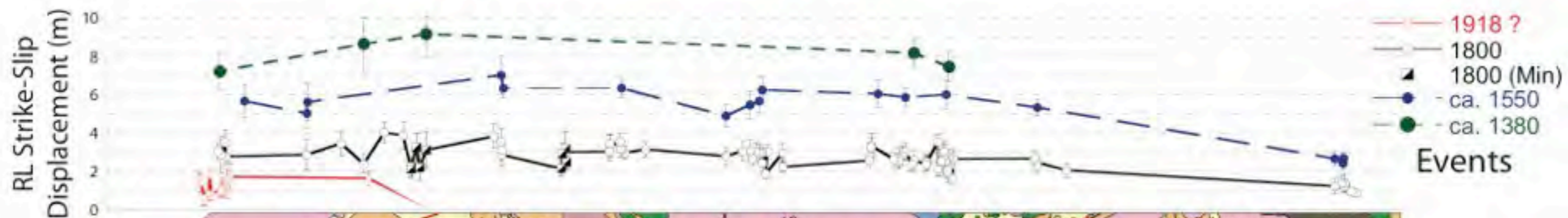
# Surface ruptures at Hog Lake



Probability density functions, with calendar year intercepts.

MRE yields a date of ca 1790, which is almost certainly the historically reported earthquake on November 22, 1800





### Metamorphic Rocks

Pre-Mid-Cretaceous

Banded gneisses, gabbros, pegmatites, and other intrusives

Mid-Cretaceous

Inequigranular granodiorite and adamellite

Gabbroic rocks

### Plutonic Rocks

Fine- to medium-grained biotite adamellite

Medium-grained tonalitic rocks

Medium-grained adamellite rocks

Fine- to medium-grained biotite tonalite and granodiorite

Medium- to coarse-grained garnetiferous adamellite

Medium-grained granodioritic rocks

### Cataclastic Rocks

Adamellite/Tonalitic augen gneiss and mylonite

### Sediments

Tertiary Quaternary

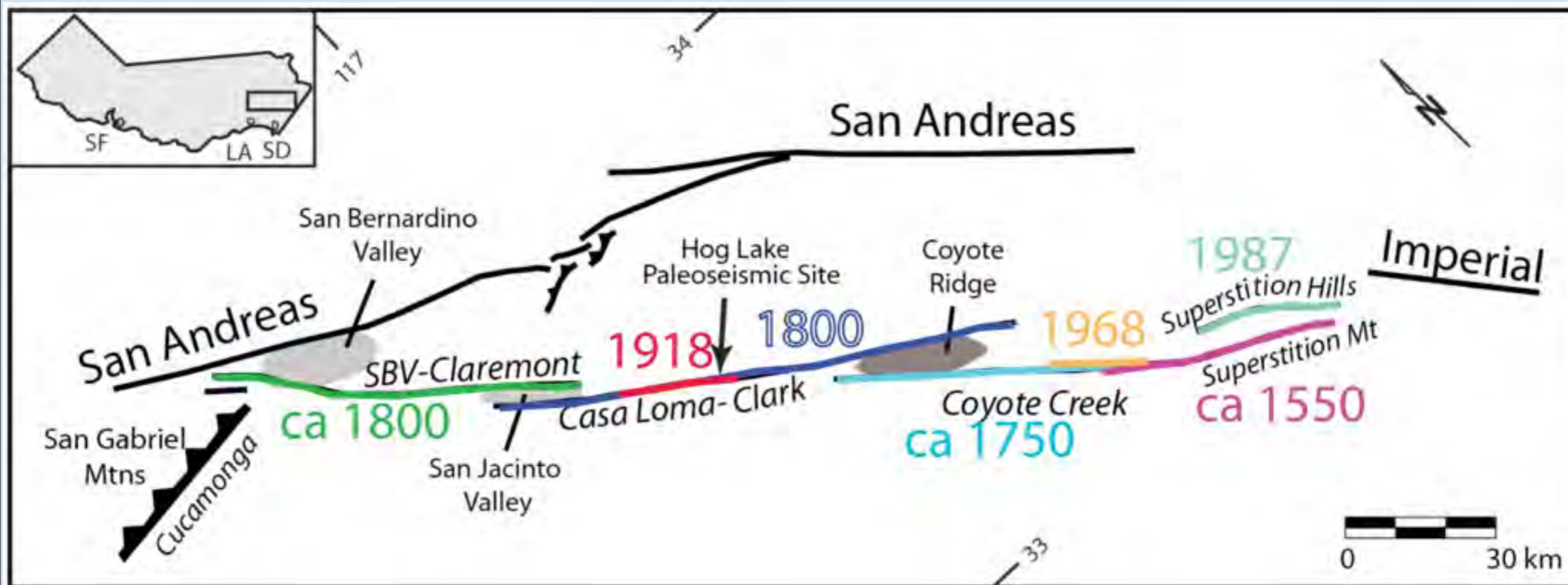
Alluvium

Terrace sands and gravels

Bautista beds

Unconformity

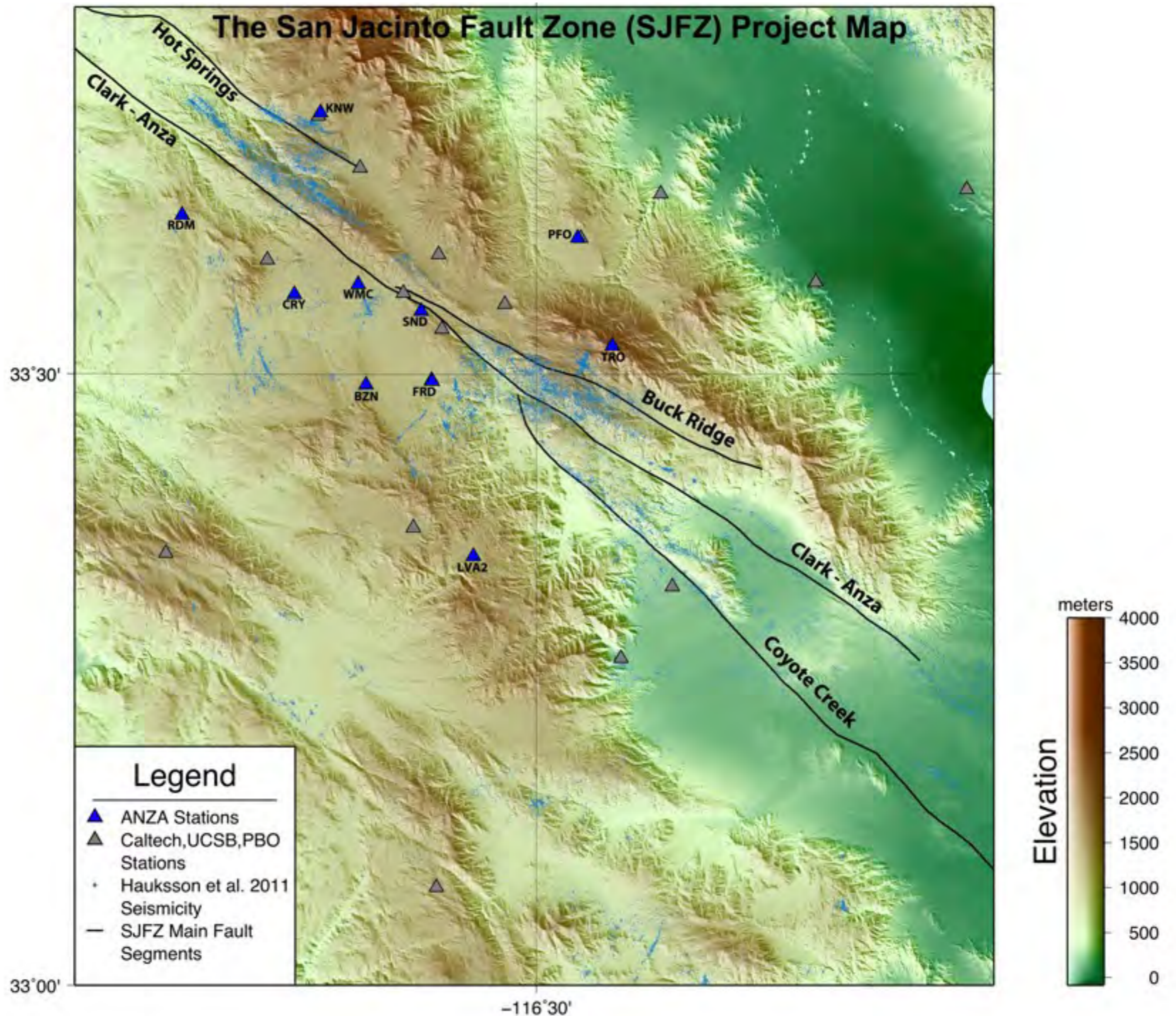
Geology (Simplified from Sharp, 1967)

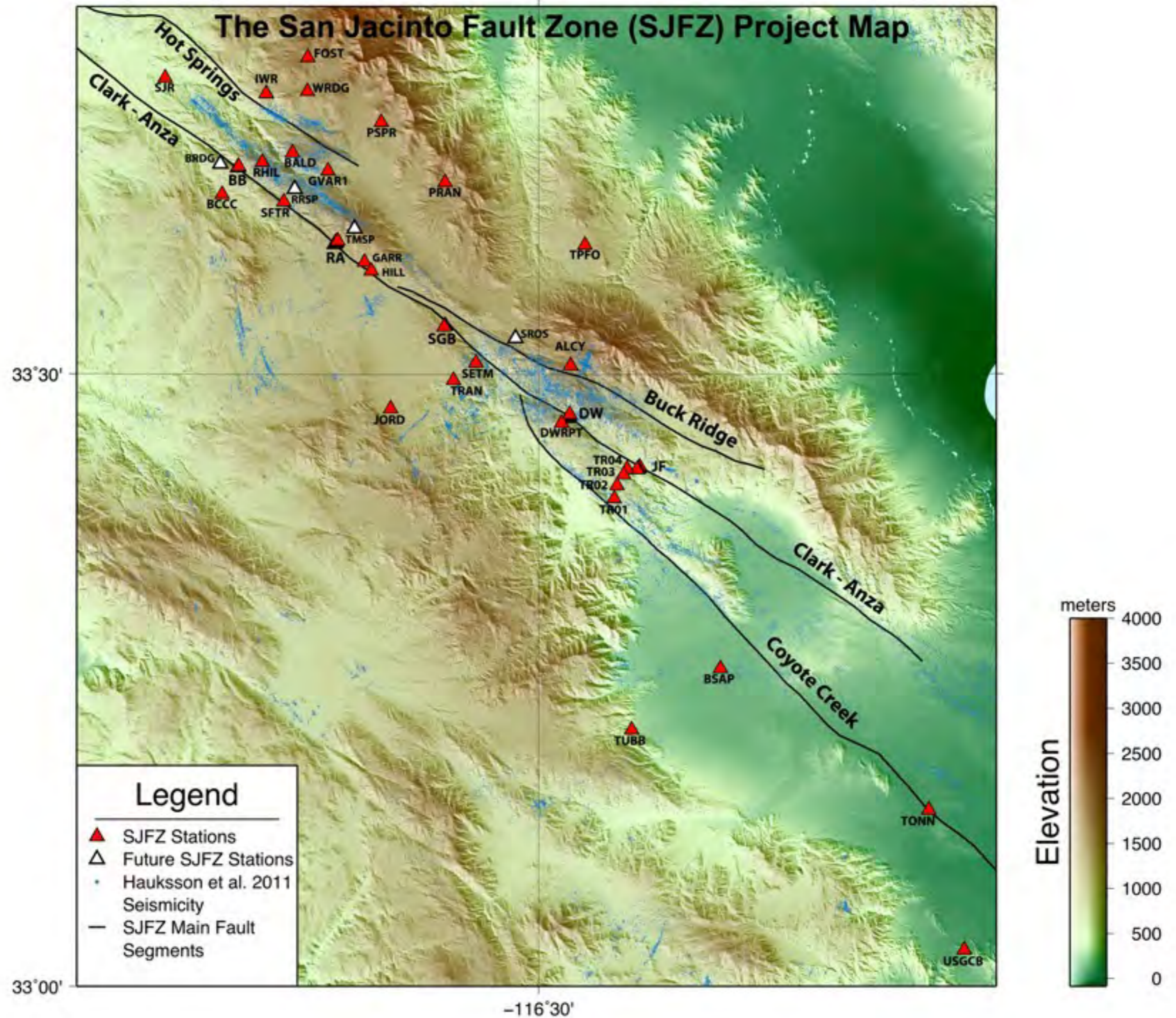


# San Jacinto Fault Zone Experiment

- What is the structure of the fault at depth?
- Why is there not an obvious fault plane?
- Do these earthquakes have a preferred direction of rupture?
- Is there a spatial and/or temporal relationship between these local earthquakes?



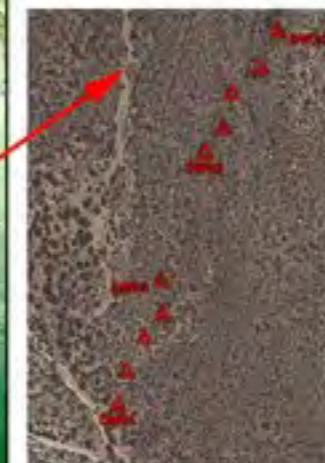




BlackBurn Array



Dry Wash Array



Jackass Flat Array



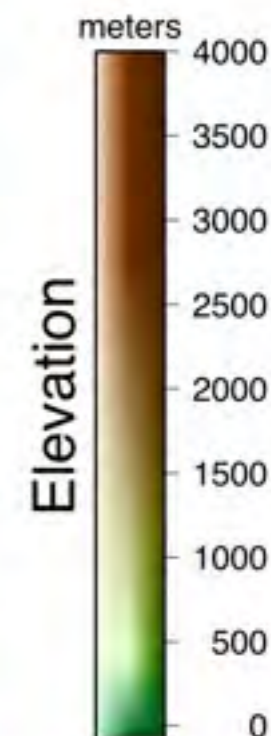
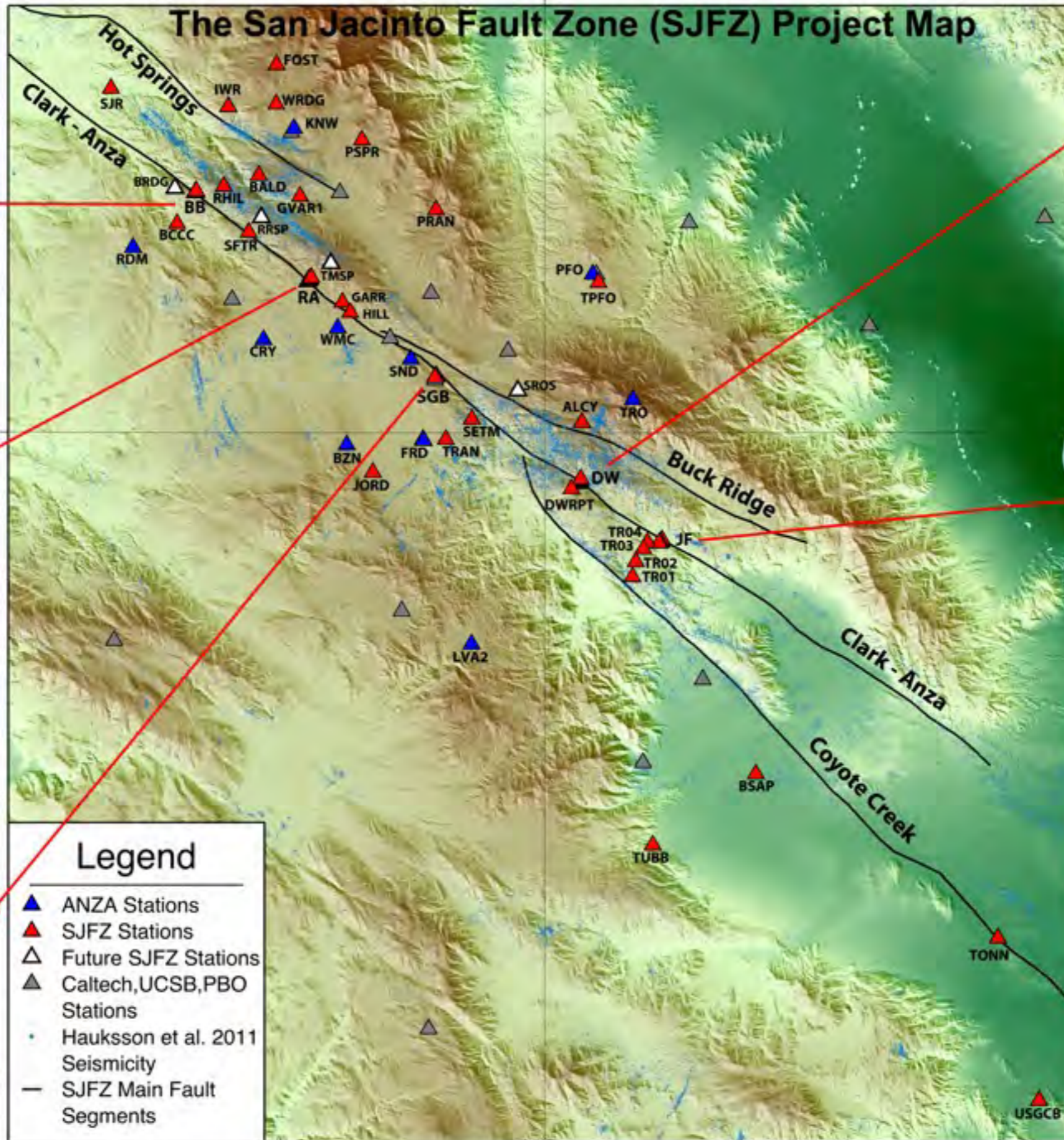
Ramona Array



Sage Brush Array



# The San Jacinto Fault Zone (SJFZ) Project Map



# Jackass Flat Linear Array



# Dry Wash Linear Array



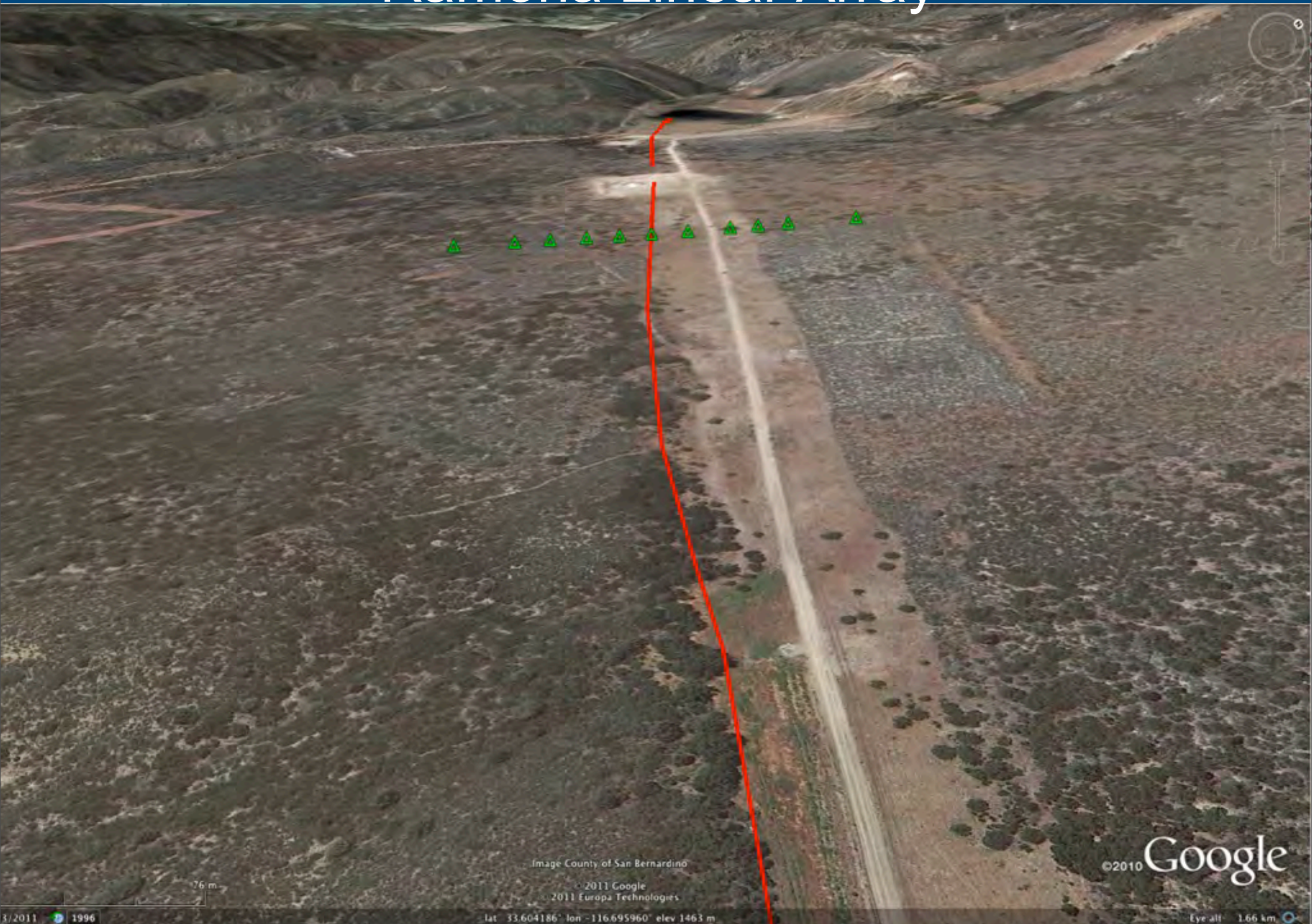
# Sage Brush Linear Array



# Hill Street SBEPI



# Ramona Linear Array



# Blackburn Linear Array





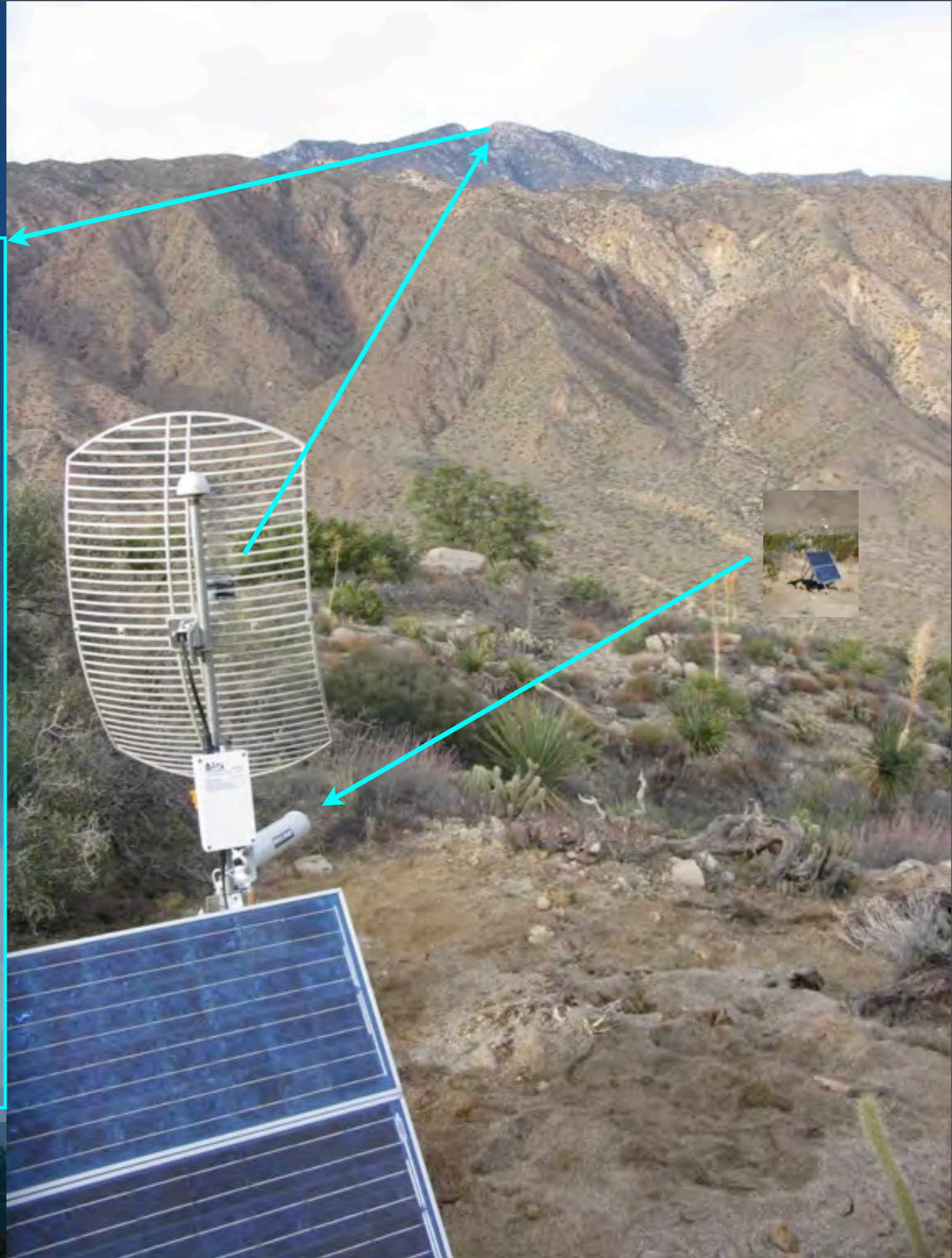


# PASSCAL Ad Hoc Telemetry



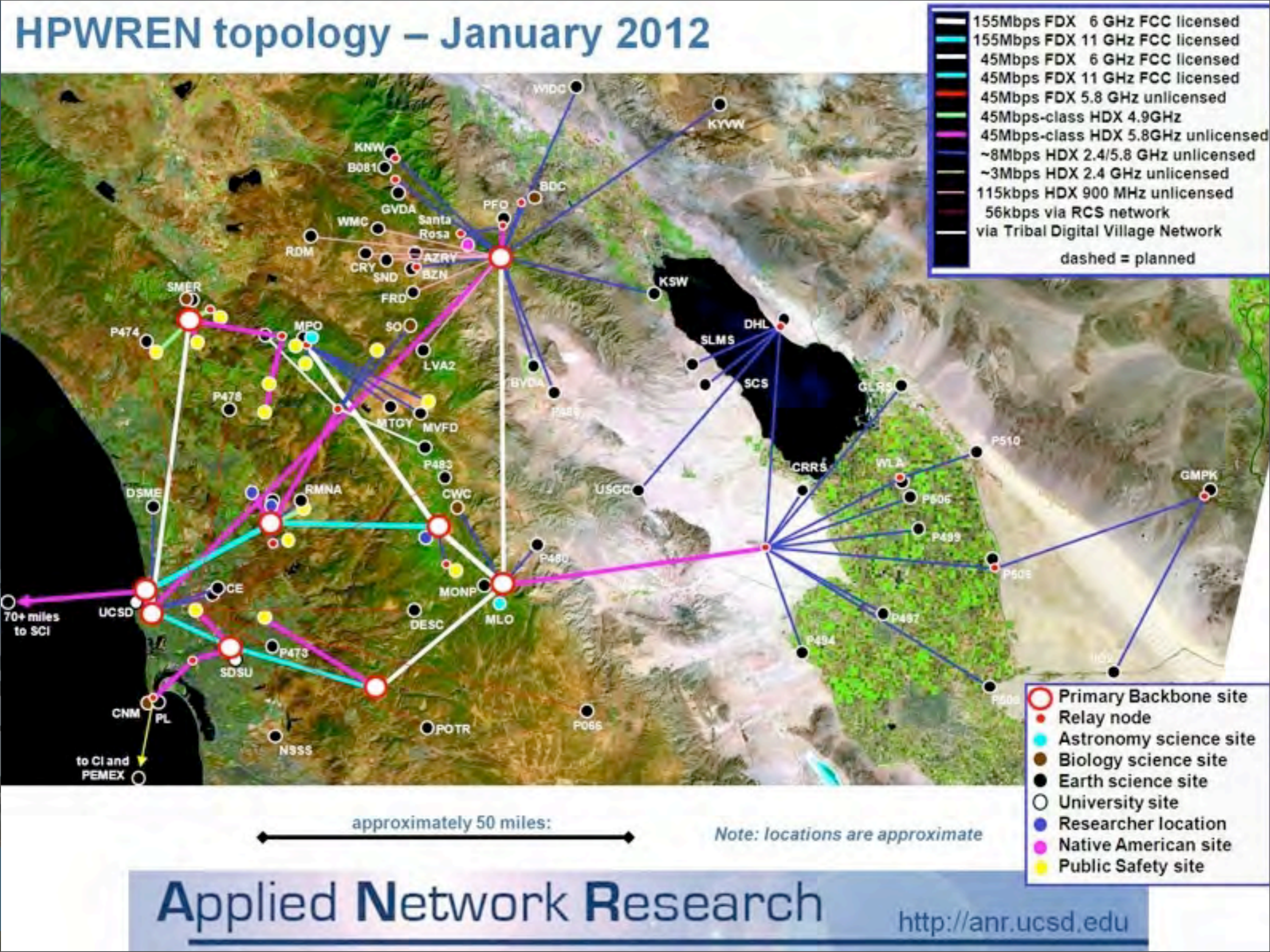
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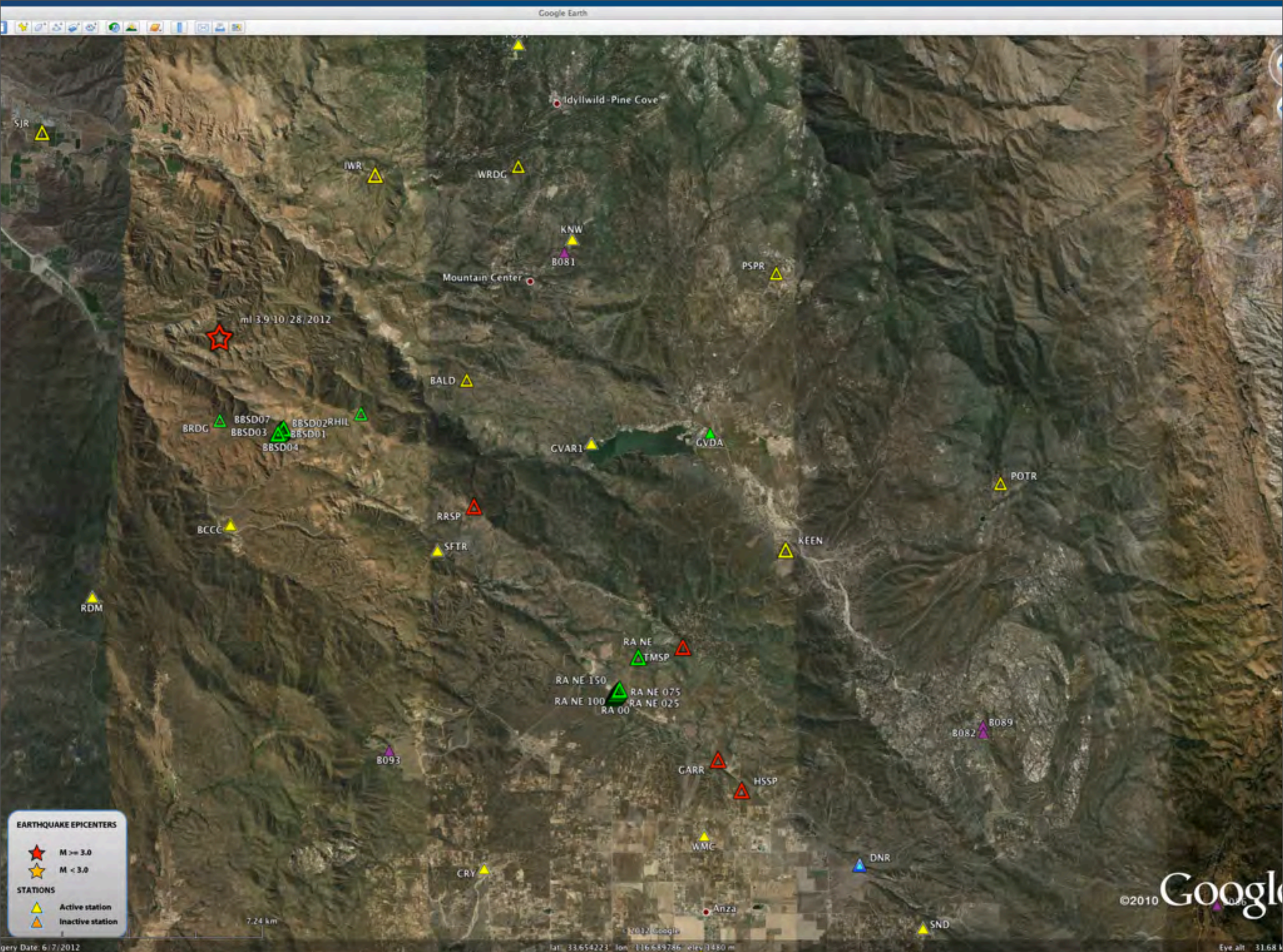
# PASSCAL Ad Hoc Telemetry

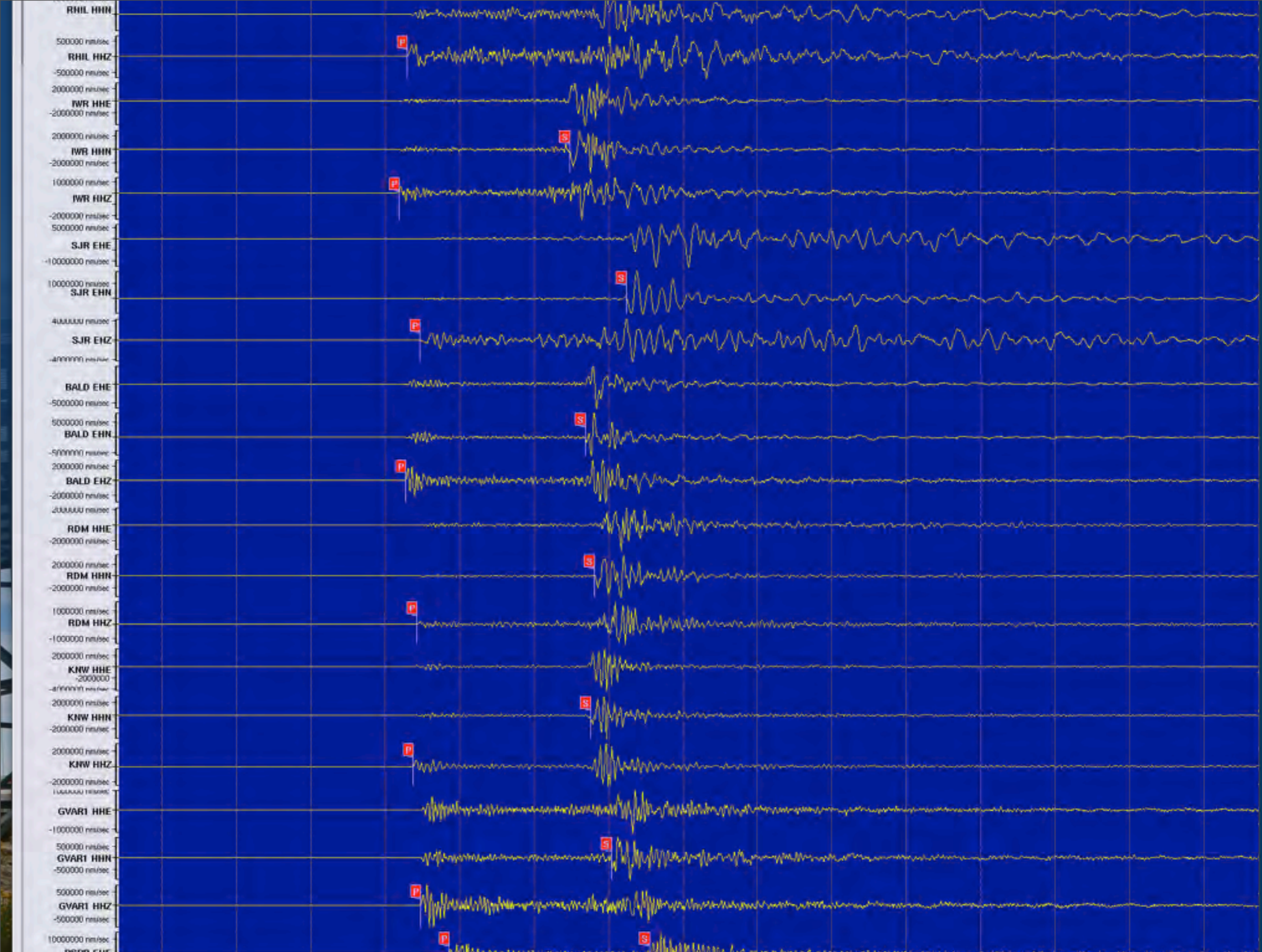


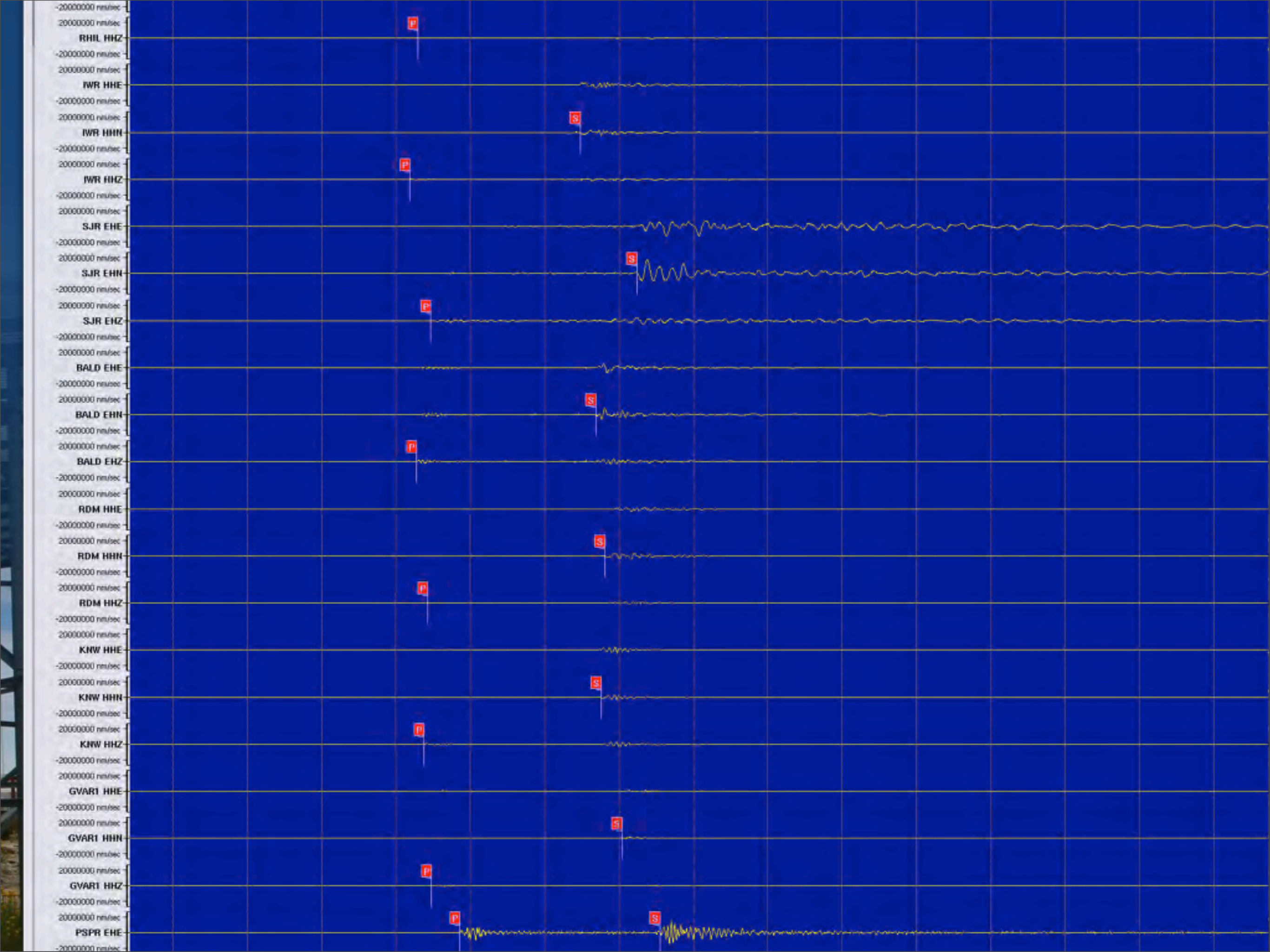
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# HPWREN topology – January 2012

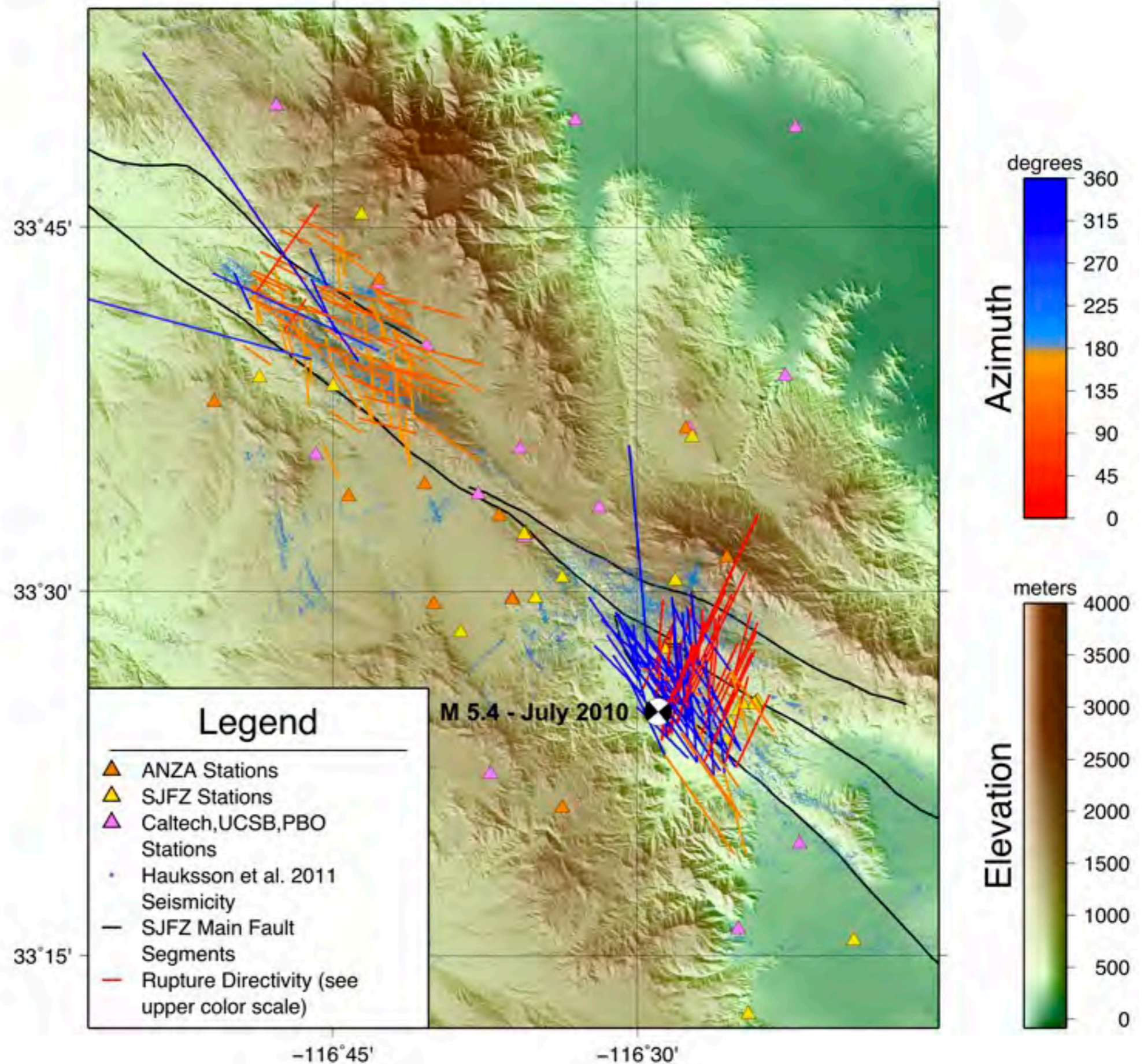








# Revealing the directivity of rupture



# Acknowledgements

Anza-Borrego Desert State Park

San Jacinto Ranger District,  
San Bernardino National Forest

Many local private landowners

National Science Foundation

HPWREN!

