



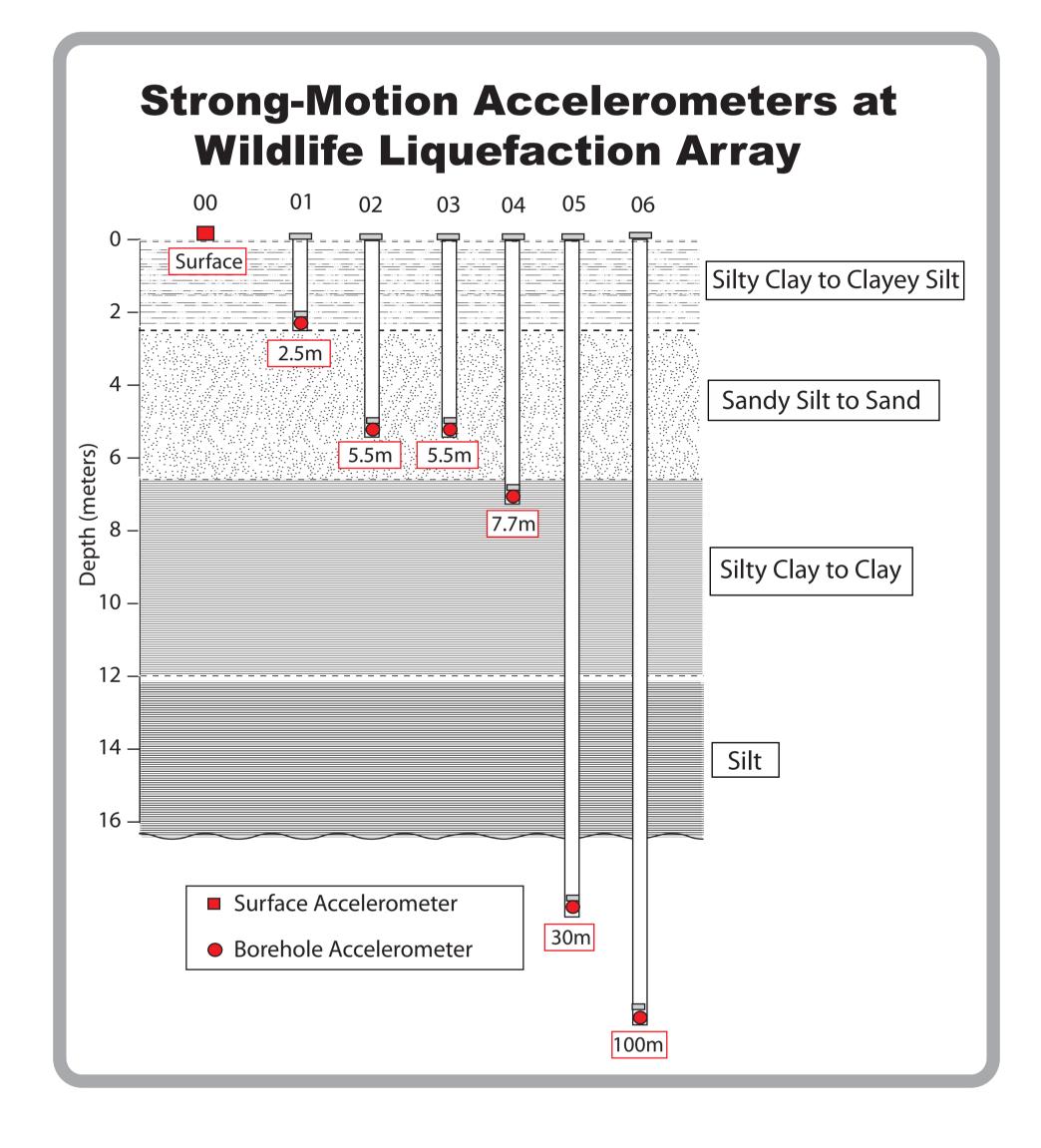
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### ABSTRACT

On 15 June 2010 at 9:26 PM PDT a M, 5.7 event occurred 7.7 km ESE of Ocotillo, CA. This event is considered to be the largest aftershock to date of the 4 April 2010 M 7.2 Sierra el Mayor earthquake. The Ocotillo event generated its own series of local aftershocks. The NEES@UCSB Wildlife Liquefaction Array (WLA) in the Imperial Basin is located 57 km NE of the Ocotillo event. Since June 15th, hundreds of aftershocks have been recorded at WLA. The events were recorded by three-component strong-motion accelerometers at the surface and in boreholes at various depths. A significant number of these events have magnitude 3.0 and above. As of August 15th, 72 aftershocks greater than M 3.0 were recorded at WLA.

From this unique set of recordings, we have selected 60 events with good signal-to-noise ratio for our study. Of these 60, 25 have M 3.5 and above. Our study examines data recorded by the surface instrument and instruments located in the boreholes. We present a spectral analysis of the main shock compared with the average spectrum of the suite of 60 aftershocks and the average spectrum of the subset of 25 larger aftershocks. Consistency of source mechanism is clearly evident in the various spectra plotted for the three components of motion. We also present spectral ratios of surface to downhole recordings for the main shock and the aftershock data. The influence of the soil layers at WLA is clearly evident in these spectral ratios. Our study is ongoing and will incorporate future aftershocks of the Ocotillo event

## THE SITE AND INSTRUMENTATION

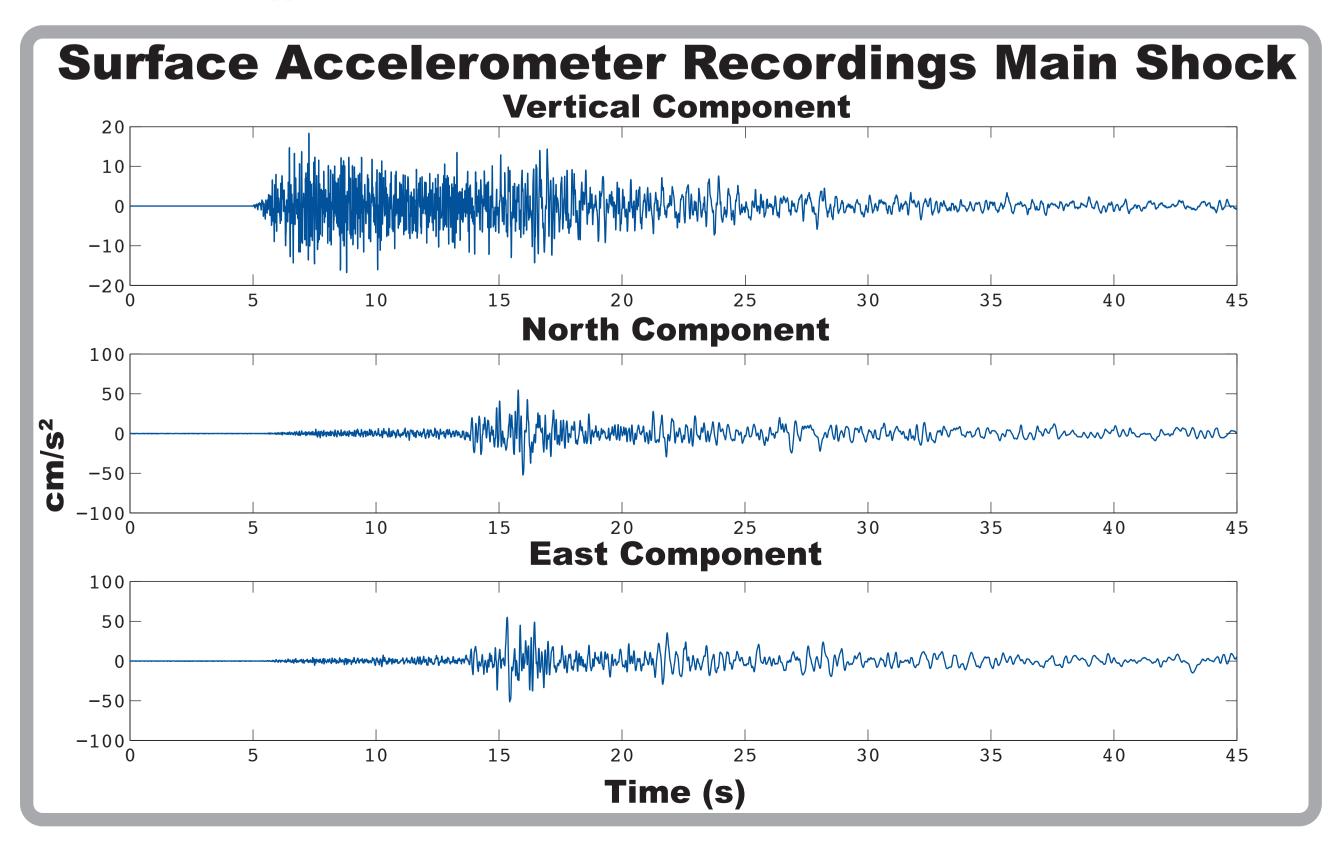


WLA is located approximately 150 km east of San Diego and 15 km north of Brawley near the Salton Sea. The instruments at WLA were installed in 2004-2005 when the site became part of NEES. The image to the left is a cross-section of WLA and shows the depths of seven of the three-component strong-motion accelerometers at the site. Accelerometers 00 to 05 are Kinemetrics **Borehole EpiSensor (SBEPI) instruments.** Shallow Accelerometer 06 is a Kinemetrics FBA ES-DH instrument. The data is recorded using 6-channel 24-bit Quanterra Q330 data loggers at 200 samples per second. The data is transmitted back to NEES@UCSB via the High **Performance Wireless Research and Education Network** (HPWREN).

**Once the data is transmitted back to UCSB it is looked at** by staff and researchers to verify that it is clean and accurate. When the data is determined to be 'good', it is processed and transformed into a useable format (MATLAB, Excel) and made available to the public on the NEES@UCSB website.

For more information on the site, instrumentation or installation procedures please refer to "Instrumentation of the Wildlife Liquefaction Array" by Youd, et al. 2007.

# THE M. 5.7 OCOTILLO EARTHQUAKE

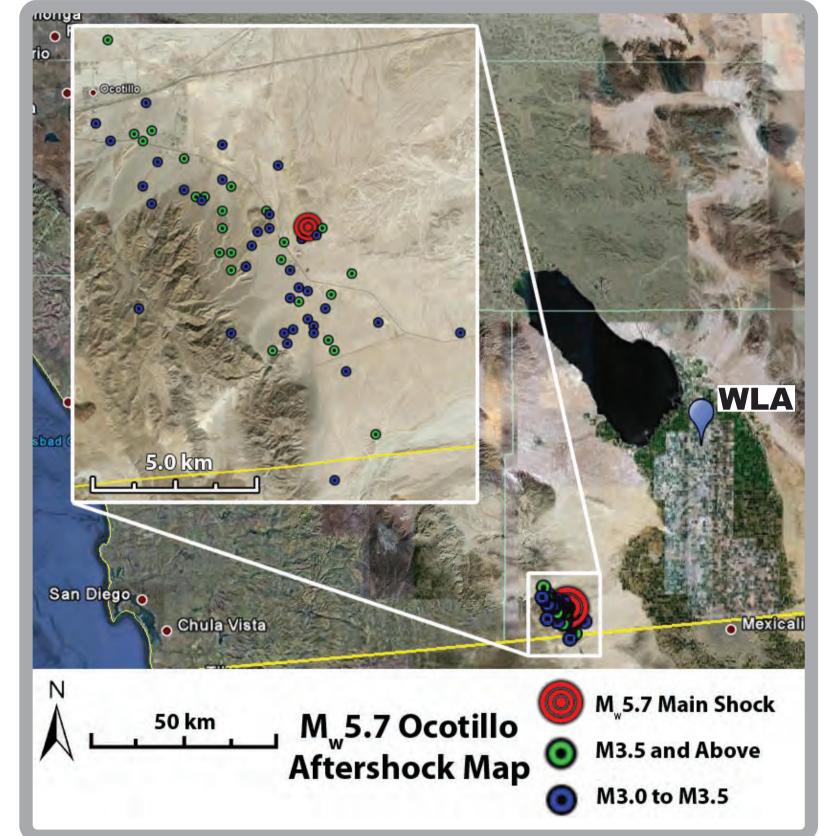


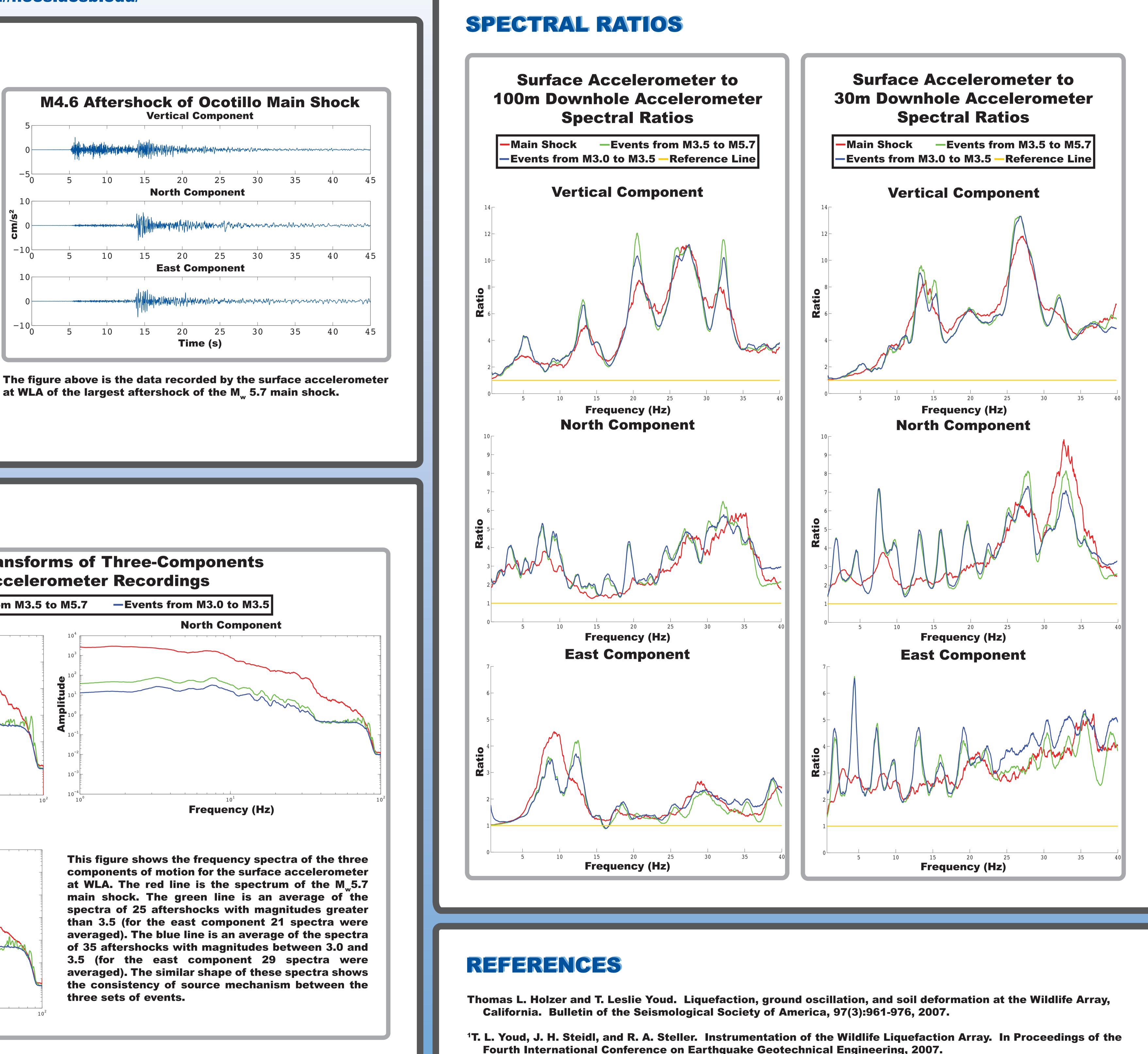
The Mw 5.7 Ocotillo Earthquake occurred on 15 June 2010 at 9:26 PM **PDT** and is considered the largest aftershock to date of the M7.2 Sierra el Mayor earthquake. To the left is an image of the data recorded by the surface accelerometer at WLA from the Ocotillo main shock.

The main shock epicenter was located approximately 60 km SW of WLA. It was of significant size to generate its own local aftershocks that are the focus of this unique dataset.

## THE 2010 OCOTILLO SWARM: RELIMINARY RESULTS FROM DATA RECORDED AT THE NEES@UCSB WILDLIFE LIQUEFACTION ARRAY Daniel Huthsing\*, Sandra W. H. Seale\*, Jamison H. Steidl\*, Hank Ratzesberger\*, and Paul Hegarty\*

\*Earth Reseach Institute, UC Santa Barbara http://nees.ucsb.edu/





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