

SCEC 2019 Report on  
**San Gabriel and San Bernardino BASIN Nodal Seismic Deployments**  
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## **Introduction**

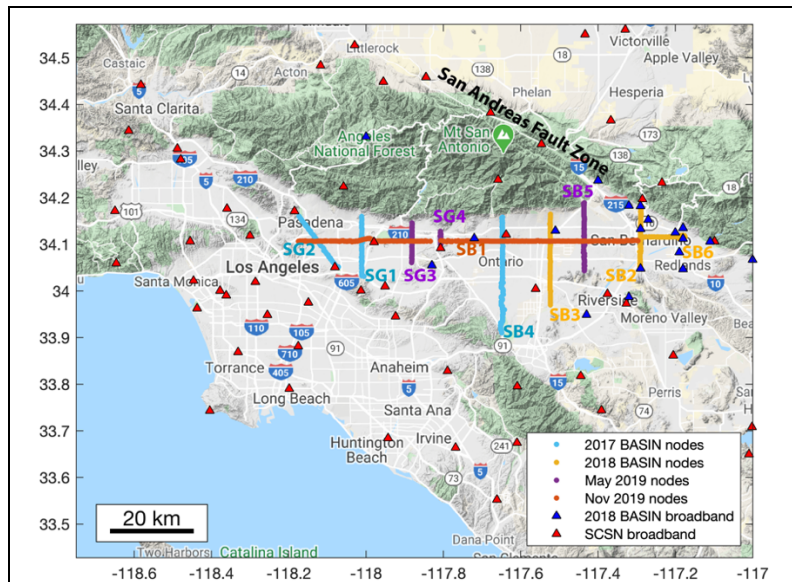
The purpose of the BASIN project is to better determine the velocity and structure of the San Gabriel and San Bernardino Basins. These basins have been proposed as conduits to focus energy from a potential southern San Andreas event into the Los Angeles Basin (Denolle et al, 2014; Clayton et al, 2020, BASIN Web Page).

## **Progress on the Project**

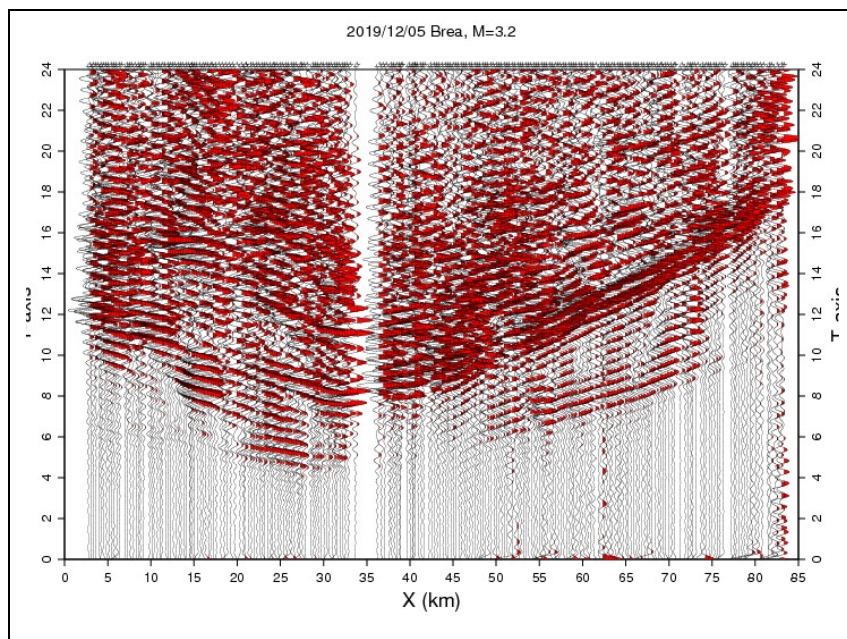
project funded a portion of the deployment costs for 4 node lines that are part of the BASIN project. The lines that were deployed are shown in Figure 1. Lines SG3, SG4 and SB5 were deployed in June-July, 2019 and SB1 was deployed in Nov-Dec, 2019. With these lines, the deployment phase of the BASIN project is now complete. The SB1 line is the longest of the lines (70 km) and has the most sensors (250). It required the participation of 40 volunteers from Caltech, UCLA, CPP, LSU and other institutions. The nodes were deployed for 35 days and it generated about 4 Tbytes of data. An example of the data recorded on SB1 is shown in Figure 2. The noise correlations with the new data appear to be working well as shown by the example in Figure 3. The next step in the project is the analysis of these new data along with the previously recorded data.

## **References**

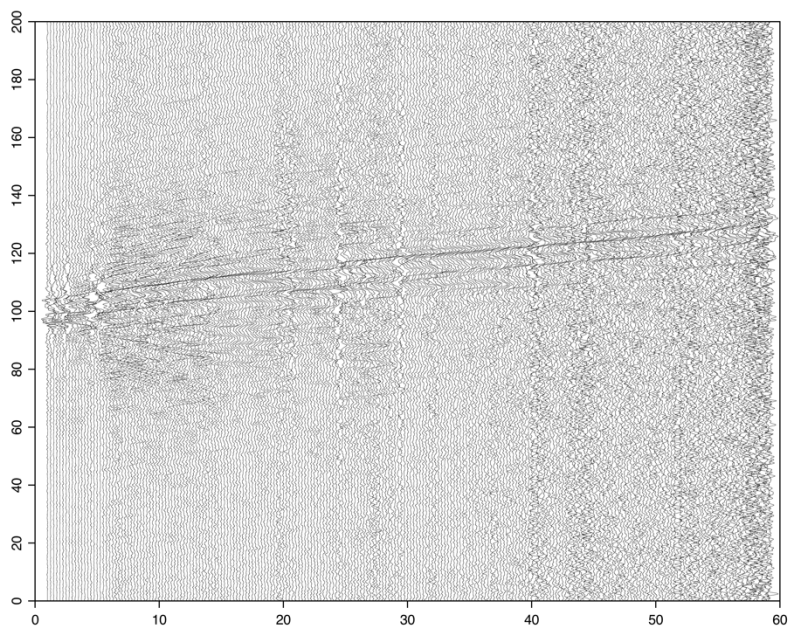
- , R., P. Persaud, M Denolle, J. Polet, (2019), Exposing Los Angeles's shakey geologic underbelly, EOS, 100, Oct 10, 2019, doi:10.1029/2019EO135099
- Denolle, M., E. Dunham, G. Prieto, and G. Beroza, (2014), Strong ground motion prediction using virtual earthquakes, Science, 343, 399-403, doi:10.1126/science.1245678.
- Web Page: <http://web.gps.caltech.edu/~clay/BASIN/BASIN.html>



**Figure 1. Location of Basin Node Lines.** The light blue lines are the 2017 deployments. The yellow lines are 2018, and the purple are the Jun-Jul, 2019 deployment. The red line is the final line done in Nov-Dec, 2019. The red triangles are the SCSN stations and the black triangles are the broadband stations installed in May-Sep, 2018 as part of the BASIN project



**Figure 2. Sample Earthquake Recorded on the Node Line SB1.** The earthquake occurred on Dec 5, 2019 and is a M 3.2 event near Brea, CA. The vertical component of the node recording is shown.



**Figure 3. Noise Correlation Along SB1.** The noise correlation between SB1 line and the SCSN station PASC (located near the western end of SB1). The “zero” lag of the correlation is at 100 sec, and the horizontal axis is distance along the SB1 line (i.e. not distance from PASC).