

Strainmeter-Seismometer Combinations as Point Seismic Arrays

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Using a well calibrated GTSM and co-located seismometer we can, theoretically, create a partial “gradient tensor” instrument that can serve as a “point” seismic array. This combination of instruments can be used to observe the wave strain gradients and can, in principle, find wave attributes such as azimuth and slowness using wave gradiometry. This is a new and exciting use for GTSM instruments installed along the west coast of the United States and around the world. The PBO network of seismometers and strainmeters can form a network of “point” arrays, which can then be used to study how the wave field changes throughout the network. We will be applying these ideas to well calibrated GTSMs within the ANZA seismic array to investigate source parameters and wave scattering in southern California. These PBO instruments have been augmented with collocated broadband instruments by UNAVCO that will be used to check calibration of the high frequency seismic channels associated with each borehole strainmeter. In addition, we will be using data from a small aperture seismic array within Pinyon Flat observatory as a gradiometer to compare with gradiometry results using GTSM B084 and collocated seismometer PFO.

