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The PBO Borehole Strainmeter Network: Data Availability, Access And Products

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Earthscope is a U.S. NSF funded program designed to provide seismic, GPS, strainmeter, fault core, LiDAR, and InSAR data to the scientific community to research the evolution and structure of the North American continent. The Plate Boundary Observatory (PBO), operated by UNAVCO, is the geodetic component of the program. PBO consists of over 1100 continuous GPS sites in the western U.S. and Alaska, 6 long baseline laser strainmeters and 75 co-located borehole strainmeters and seismometers distributed in arrays along the western U.S. Pacific-North American plate boundary. In this presentation we describe how UNAVCO makes the borehole data sets available to the community and details the generation of higher-level PBO strainmeter data products.

PBO borehole data flow in either real time or with a few hours delay to the IRIS Data Management Center (DMC) and the Northern California Earthquake Data Center (NCEDC) where they are immediately available in SEED format. Archiving the various data sets using the same, well-known format facilitates the integrated analysis of complementary data sets. Processed strain time-series, earth tide models, barometric pressure response coefficients, long-term borehole trends, data quality information and calibration matrices for each strainmeter are generated by UNAVCO and can accessed in XML format from the DMC and NCEDC or, as ASCII files from UNAVCO. Both formats contain the information required to regenerate the processed time-series from the raw data thus meeting an Earthscope goal of repeatability of processed data sets.

UNAVCO is guided by the scientific community in determining the best data formats, archiving, access methods and data products to generate. Recommendations for future data products made in an October 2012 workshop hosted by UNAVCO include: a noise assessment of each strainmeter site, development of a physical model for long-term trends in strainmeter data and the release of high-rate processed data in a seismic data format. UNAVCO's goal is to provide researchers not only with a strain time-series but also with the data products and metadata required to meet their research goals and enable scientific discovery.