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William Prescott, Unavco, Inc, Boulder, CO

### **The Plate Boundary Observatory: The Geodetic Component of Earthscope**

PBO is a geodetic observatory designed to study the three-dimensional strain field resulting from deformation across the active boundary zone between the Pacific and North American plates in the western United States. PBO will investigate plate-boundary deformation, study the space-time pattern of earthquake occurrence, examine magma rise, intrusion, and eruption, and contribute to reducing the hazards of earthquakes and volcanic eruptions?

PBO will consist of three complimentary elements. The first is a backbone network of GPS receivers to provide a long-wavelength, long-period synoptic view of the entire plate boundary zone. The network will extend from Alaska to Mexico and from the west coast to the eastern edge of the North American Cordillera.

The second element consists of focused, dense deployments in areas where active tectonic phenomena occur, such as along the San Andreas Fault system and around young magmatic systems. These regions require the greatest temporal resolution, and thus integrated networks of borehole strainmeters and GPS receivers will be deployed around these features with instrument spacing of 5-10 km.

The third element is a pool of 100 portable GPS receivers for temporary deployment for densifying areas not sufficiently covered by continuous GPS. These systems will provide observations in unmonitored regions and provide a rapid response capability to detect strain transients following earthquakes and volcanic eruptions.