

# HPWREN: An Aid to Geophysical Strain Monitoring

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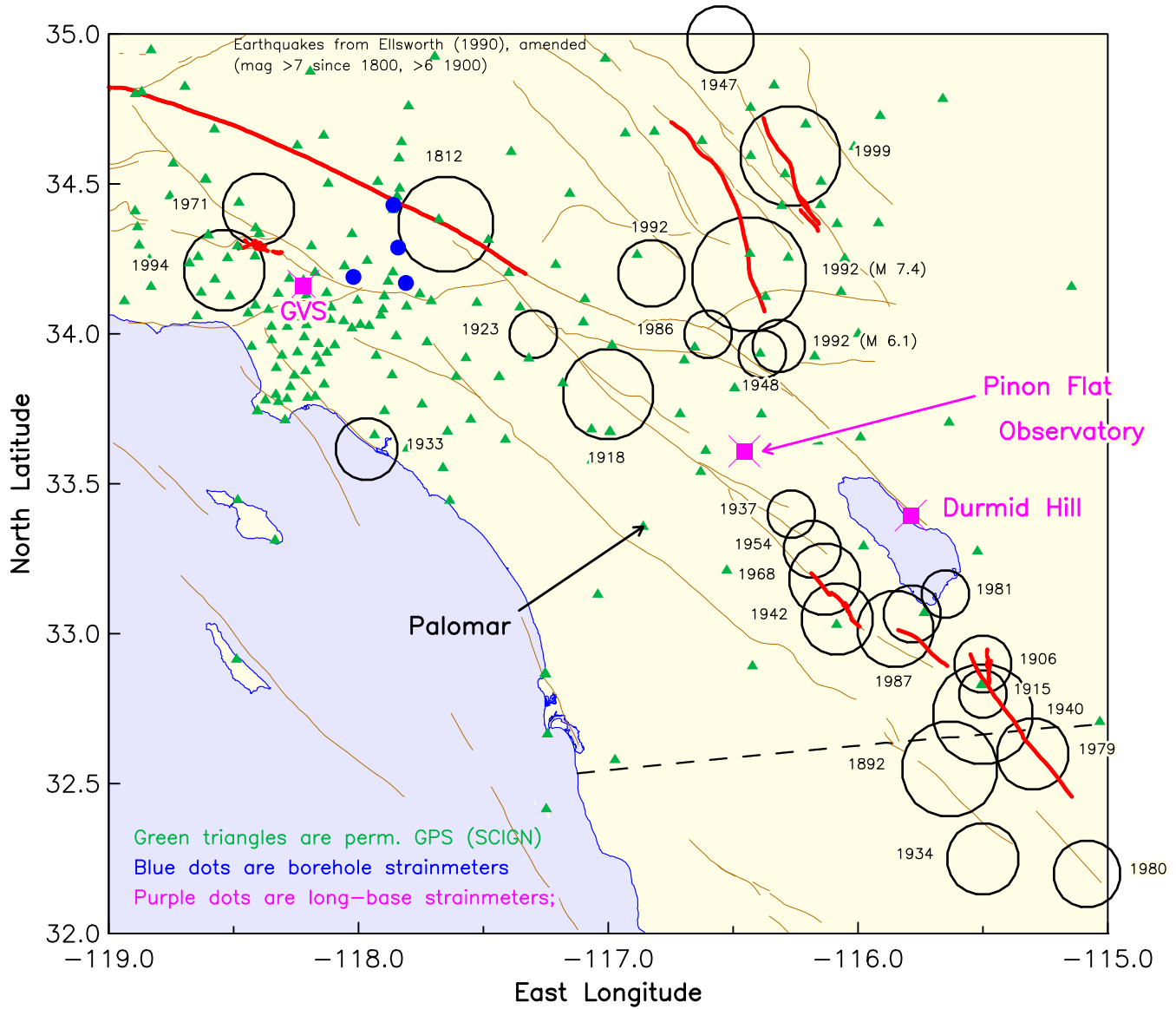
We operate instruments called “strainmeters” at two locations in the HPWREN area:

**Piñon Flat**, where we run these instruments and many others—a location for collaborative measurements of many geophysical parameters.

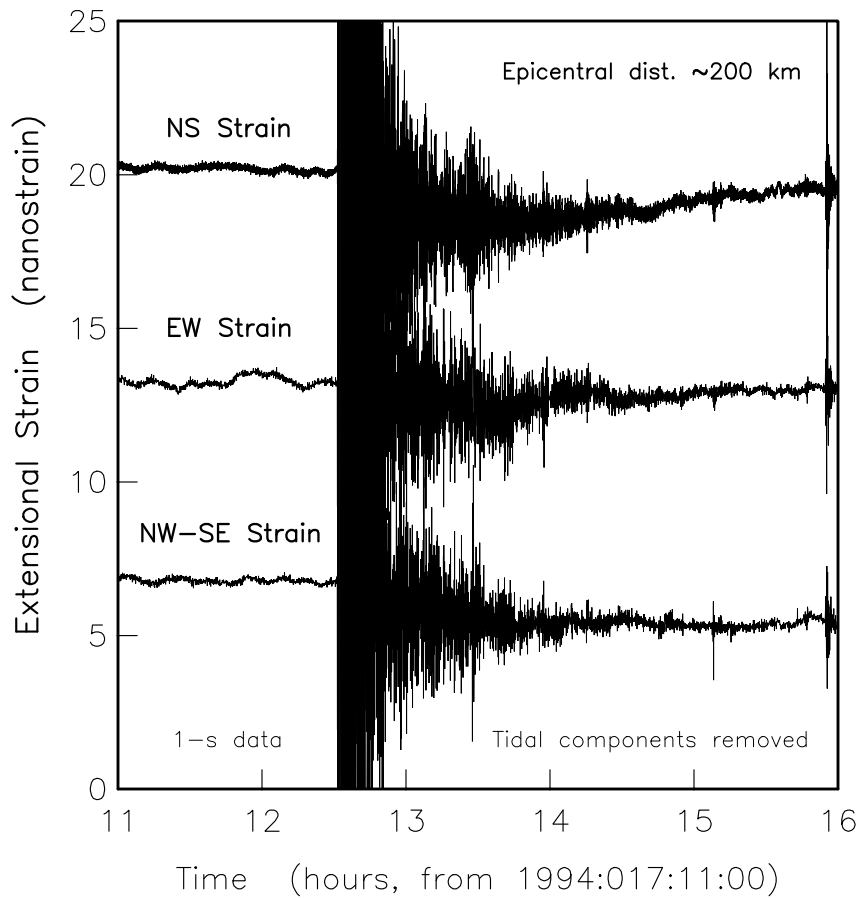
**Durmid Hill**, where we run one strainmeter close to the San Andreas fault.

The purpose of these measurements is to measure how the Earth deforms over time—especially before and after earthquakes. Reliable realtime data helps us to do this, and provides, when there is an earthquake, very important public-safety information.

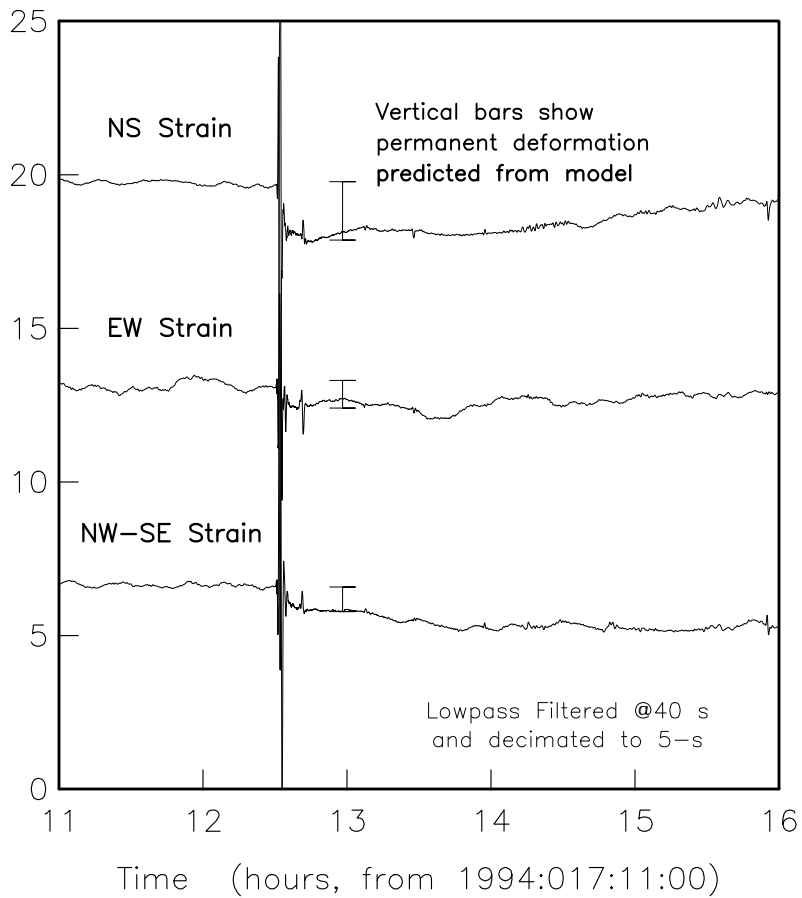
# Historical Earthquakes and Current Deformation Monitoring



Strainmeters – PFO – Northridge 1994



Strainmeters – PFO – Lowpass Filtered



## **Realtime Strain Data After Earthquakes**

On two occasions we have had urgent requests for what the strainmeters were doing:

**1992 Landers Earthquake:** concern that it might have caused the San Andreas to start moving and would trigger an earthquake there. Our data (collected via phone-line download) showed that things were slowing down—and caused the California Office of Emergency Services to downgrade its hazard warning.

**1999 Hector Mine Earthquake:** the same sequence of events.

In both cases an increased “telepresence” to check the instruments, and view the data, in real time, would have been beneficial.

We also get other requests whenever anything “unusual” happens. So far, we’ve never seen any signals.

## **Benefits of HPWREN to Strain Monitoring**

- Realtime data, reliably delivered on a high-capacity channel, seamlessly attached to the Internet (so we can use standard computer software for transfer).
- Available experts and operators, who:
  - Understand the needs and difficulties of research, and are prepared to work with researchers.
  - Are knowledgeable about telemetry and radio communications—much more efficient than us (and every other group) having to learn about this (and, in the current situation, keep relearning).