Title
Seismic Deployments and Experiments: PeruNet, GeoNet, and SeismoPhone.

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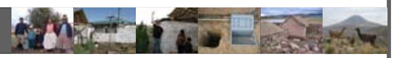
PeruNet: Installing a UCLA seismic line in Latin America



Peru Network

•49 sensors installed from the coast to the Lake Titicaca covering approximately 300 km.

•Multihop wireless 802.11b network controlled from UCLA using Disruption Tolerant Shell (DTS) providing semi-real time data delivery.

A map of the 50 wireless UCLA sites.

•Developed and implemented a new web application to monitor incoming data and provide a means to evaluate data quality

•Getting help and collaborating with engineers and students from the National University of Saint Augustin in Arequipa.

Scientific Goals

•Improved DTS and implemented logging system to provide data quality controll

•Seismic tomography to reveal slab structure and relation to earthquakes.

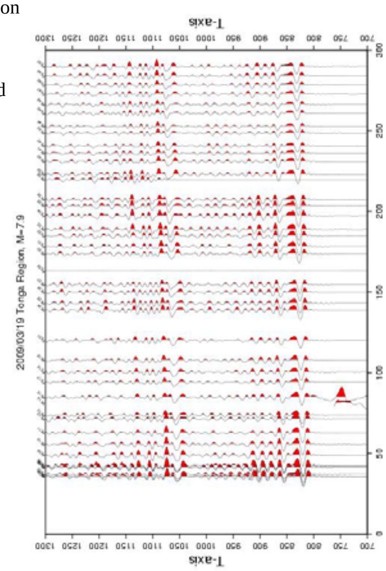
•Location of strong asperities on the subducting plate and distribution of earthquakes. Mountain building caused by plate movement (see photo).

•Stresses and earthquakes associated with mountain building.

•The role of water in the generation of volcanoes and deep events.

•Comparing a flat slab subduction and volcanism in Peru and Mexico.

•Effect of the climate on the movement of continental plates.



GeoNet: Next generation system for rapid deployment for aftershock collection

GeoNet: Building a Prototype

•Technical objective - collaborate with Reftek to construct a new generation digital acquisition system (DAS) based on the CENS developed LEAP (low-power energy aware processing) hardware.

•Very efficient 24-bit ADC with built-in GPS receiver and storage. Ability for sleep scheduling allows using much smaller batteries.

•Prototype ready for testing within two months

Geonet prototype

Science Objectives

•Frequency of aftershocks determined by size of initial shock (Omori's Law).

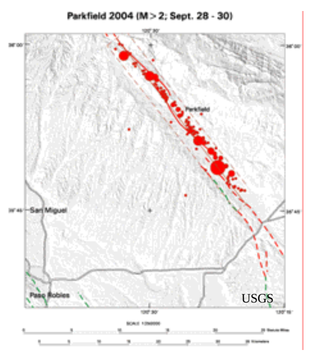
•Small quakes -> aftershocks for a few weeks. Large quakes -> aftershocks for a few years.

•Light weight instruments allow for a rapid deployment.

•Opportunity to study earthquake propagation (branching) in the near field and separation of a source from path effects.

•Measuring strong shaking from the largest aftershock for both science and engineering objectives.

•Deployment on erupting volcanoes where early access to data and analysis is important.

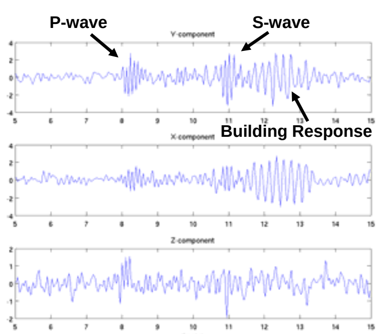


M>2 aftershocks following the 09/28/2004 M6.0 earthquake in Parkfield, CA.

SeismoPhone: Can cell phones be used as seismic sensors?

Cell phones as seismometers

- The new observation suggests that networks of cell phones in an earthquake zone could be used to detect events with fine resolution and take advantage of the telemetry to actively locate them in near real time.
- Can immediately generate shake maps.
- Worked with 'Quake-Catcher Network' researchers and NEES to evaluate accelerometers in phones.



Phone accelerometer records EQ

- January 23rd, 2009
- 7:42 PM PST
- Magnitude 3.4
- 7.4 Km below Venice, CA
- Event ID: ci10373093
- Student's 3rd floor apartment
  5 miles from epicenter
- Phone: Nokia N95
- 8-bit ~ 40Hz
  2G accelerometer