

Annual Report 1999

Enhancement of TERRAscope

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31 January 2000

INVESTIGATIONS

This project provides support for the operation of the TERRAscope very broad-band seismic network. Earthquake data from TERRAscope contribute to the goals of the master model and the seismicity and source processes groups. In cooperation with the USGS Pasadena Office we have connected 28 TERRAscope stations to real-time telemetry. We have also implemented the IRIS Portable Data Management Software (PDMS) to quality check the data at Caltech. Scientific analysis of the data is being undertaken by both SCEC faculty and graduate students as well as at other institutions around the country. These data are being used by the Southern California Seismographic Network for routine earthquake catalog processing and archived at the SCEC Data Center and at UCSB as part of the Group B Green's Function Library.

RESULTS

We report the following accomplishments:

Station Operation

In 1999 we maintained existing TERRAscope stations. The maintenance work included extensive Y2K upgrades (Figure 1). All of the TERRAscope stations have been transmitting data real-time to Caltech since the end of 1997. During 1999 we replaced GOES time code receivers at six stations with GPS time code receivers to improve the reliability of the timing. At NEE a new vault was placed in the ground at a depth of 8 feet.

Data Quality Checking

During FY 1999 we performed the following work with the support of different sources including this subcontract from SCEC. We presented posters summarizing our work at the 1999 SCEC and AGU Fall meetings. An oral presentation of our progress was also made at the IRIS/Quanterra users meeting in December 1999.

TERRAscope data are archived in two different ways. First, new software retrieves the data from the real-time data acquisition computers at Caltech. This makes it possible to retrieve specific time windows for both local, regional, and teleseismic events. Second, we use the IRIS Portable Data Center Management Software for data quality control. This software has been implemented at Caltech and is also being used to generate SEED volumes of TERRAscope data.

Publications

Hauksson, E., K. Hafner, T. Heaton, K. Hutton, H. Kanamori, P. Maechling, J. Goltz, Jones, L. M., D. Given, D. Wald, Modern, Digital Multi-Functional Real-time Seismographic Network for Southern California, US: TriNet (abstract), 1999 SCEC Annual Meeting, Sept. 26-29, 1999, Palm Springs, CA.

P. Maechling, E. Hauksson, K. Hafner, D. Given, and H. Kanamori, SCSN/TriNet by the Numbers (abstract), *Eos. Trans.* 80, F659, 1999.

Enhanced TERRAscope

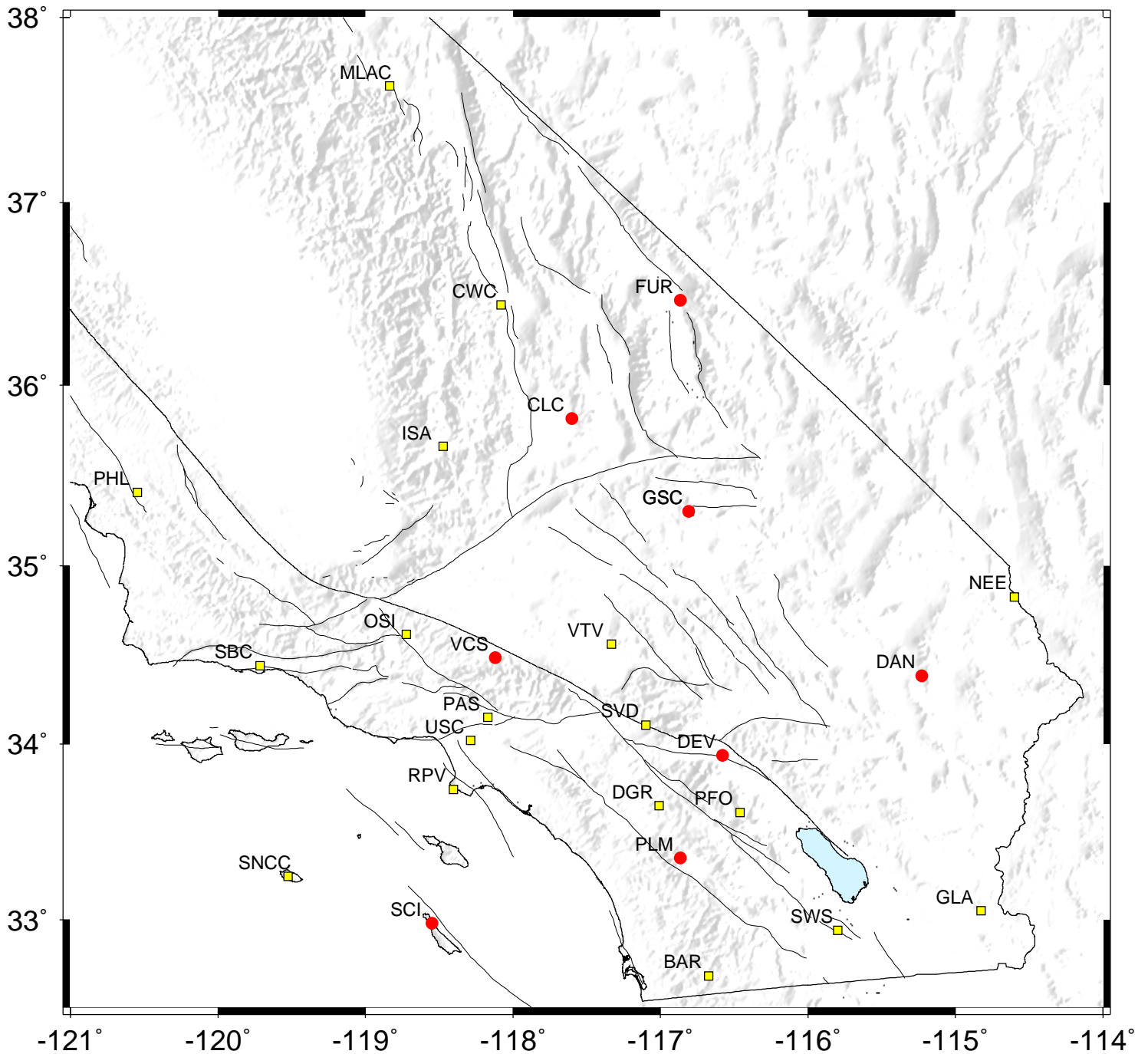


Figure 1. Existing TERRAscope seismic stations (yellow squares) and new NSF/ARI funded TERRAscope stations with broadband and strong motion sensors (red circles). Station GSC was upgraded to latest generation datalogger.