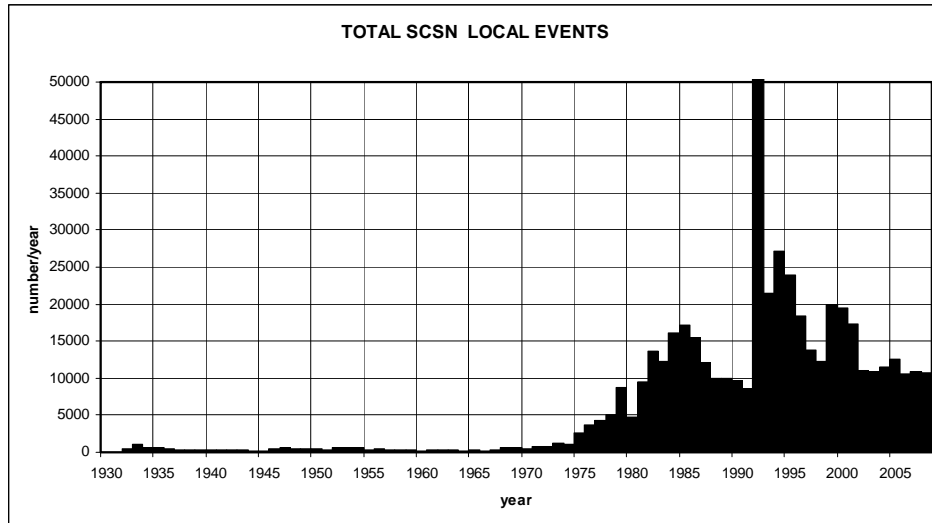


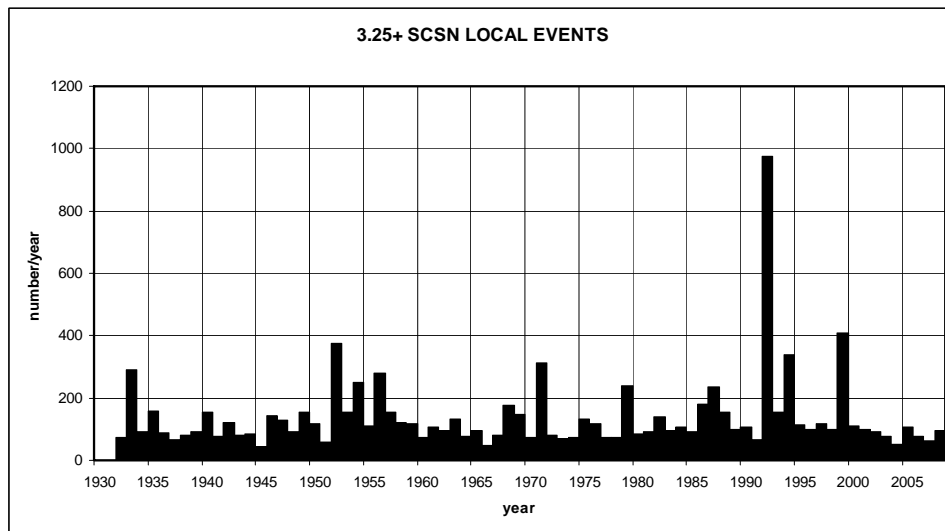
NEWS FLASH!! SCSN Earthquake Catalog Completed!!

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The SCSN and SCEDC groups have some very good news. Data processing for all the “backlogs”, notably the years 1978-81, has been completed. This means that the entire earthquake catalog from January 1932 to the present (more than 76 years) is searchable.



Note that the apparent increase in seismic activity shown here is entirely due to improvement in the SCSN station density and capabilities. A similar histogram including only M3.25+ earthquakes (approximately the completeness level for the early time period), shows a remarkably steady seismicity rate, if the major aftershock sequences are disregarded.



The quality of the waveforms, phase picks, hypocentral locations, and magnitudes vary considerably. The most recently recorded events, of course, have the best determined parameters. As illustrated above, the magnitude of catalog completeness (M_c) is also lower for the more recent events.

Digital data analysis began in 1977; there are no digital waveforms prior to that date. Earlier phases were read by hand from photographic or ink (“helicorder”) drum recordings, or microfilm “Develocorder” machines, with time accuracies varying from 0.05s to about 0.2s. Amplitudes for M_L were read by hand from Wood-Anderson recordings. M_d from event durations on the Develocorders were also used.

A brief summary of the various “eras” in the history of the catalog can be found in the following table:

SCSN DATA PROCESSING TIME PERIODS
1932 - 1951: "Early" Network
very sparse network
photographic drum records
phases & amps typed from "phase cards" & relocated
ML or Mh from Wood-Anderson or Benioff
some 2-station locations based on "best guess"
assumed locations (no phases) for some early aftershocks
1952 - 1972: "Middle" Network
sparse network
photographic & "Helicorder" visible drum records
data processing similar to 1932 - 1951
1973 - 1976: "Develocorder" Network
enhanced station density due to USGS/Caltech collaboration
"Develocorder" microfilm recording, also photo & helicorder drums
ML, Md, or Mh magnitudes
data processing similar to earlier periods
1977 - March 1981: "CEDAR" Network
first on-line detection & recording, digital processing
some event times may be wrong due to bad WWVB time code
ML, Mca, or Mh magnitudes
some waveforms missing due to bad magnetic tapes
missing events timed from "prescan" printouts or helicorders

April 1981 - 2001: "CUSP" Network
second-generation real-time detection, recording & processing
some event times may be wrong due to bad WWVB time code
ML, Mca, or Mh magnitudes, some Md
may include some spuriously large Mca's
similar processing to previous period; fewer problems
synthetic ML off by 0.13
2001 - present: "Trinet/CISN" Network
third-generation real-time detection, recording & processing
ML, Mca, or Mh magnitudes
similar processing; even fewer problems
Landers & Northridge temporary stations have bad times

Most events after 1977 originally had digital waveform files, exceptions being those where the real-time system failed to detect the event, or the system was out of magnetic tape, or for some other reason was not operating. Due to deterioration of the magnetic media, however, an unfortunately large number of waveforms were not recoverable. In addition, none of the Develocorder films were still readable, and the helicorder and photographic records are not accessible. All of the computer phase data (since the beginning of digital recording in 1977) for which digital waveforms still exist, were reviewed and/or re-picked by a seismic analyst, using an interactive software package (TIMIT or Jiggle). The events fall into the following categories:

- Best: digital waveforms are present, so we could verify the P and S picks and estimate magnitude if there was previously none.
- Good: no waveforms, but a large number of accurate P and S picks exist from previous analysis of digital or Develocorder records.
- Not very good: no waveforms, and only a limited number of P and S picks exist, either from helicorder and photographic records, or from printouts ("prescans") of the digital recordings.
- Poor: we have picks, but they are not very consistent with each other.
- Arbitrary:
 - Some earthquakes are considered important due to their magnitude, but are not individually locatable. In most cases they are members of sequences, and the hypocenter was held fixed at a typical location for the sequence.
 - Some events have consistent P and S picks from only two stations, but it is clear from seismicity or the geographic distribution of available amplitudes, which of the two locations is preferred.

Anything unusual encountered in the relocations is indicated in the "Remark" field.

In some cases, the earthquake locations were fine, but the time code was unreadable, leading to a small or large uncertainty in the time of the event.

More details will be found in a technical paper in preparation by Hutton, Hauksson & Woessner.