

Annual Report, 1999: **SCEC Strong-Motion Database SMDB**

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SMDB (Figure 1; <http://smdb.crustal.ucsb.edu/>) continues to see significant use from both the seismological and earthquake engineering communities. In 1999, more than 139,000 Web pages were accessed from the site; 3.7 GB of strong motion data were downloaded from SMDB; and 9,760 files were downloaded from off-site FTP and Web sites maintained by other agencies.

These numbers translate to an average daily access of 380 Web pages, download of 10 MB of strong-motion data from SMDB, and download of 27 files from external sites, representing increases of 83%, 23%, and 63% percent, respectively, over 1998 numbers (Figure 2).

Improvements to SMDB in 1999 include:

- Data from thirty-four new earthquakes have been added with 440 station records. This is an increase of 32% for the number of station records over the beginning of the year. The new data includes records from the 10/16/99 Hector Mine earthquake (Figure 3), as well as from earthquakes in Alaska, Chile, Mexico, and Japan. Links to external FTP sites have been added from the University of Nevada Reno (for Guerrero Gap records) and from K-NET (for Japanese records). The database now contains 143 earthquakes and 1,796 site records.
- Quality assessment has been conducted to improve the accuracy of important parameters in the database. All database values for epicentral distance, hypocentral distance, peak ground acceleration, response spectral amplitudes, and filter frequencies have been compared to values determined from the data and updated where discrepancies were found.
- Query times have been reduced by up to 50% by optimizing code. For example, a query returning all data from the 1994 Northridge CA earthquake has been reduced from thirteen to seven seconds.

- A new map access method has been added to the database (<http://smdb.crustal.ucsb.edu/ows-bin/mapcode.cgi?title=World+Map>). This access method produces a map based on a user query showing all earthquakes and stations that resulted from that query. Clicking on an earthquake or station on the map produces a page showing a summary of data for that earthquake or station. The user can also zoom in or out on the map. An example is shown in Figure 3.
- Navigation of the Web site has been improved by adding the major Web site links to the top of each page produced by the site.
- Following requests from users, data summary pages now show sensor locations and component angles for each trace. These parameters are shown along with the station name, station owner, peak ground acceleration, and epicentral distance.
- A new page has been added to the site listing all agencies that have contributed data to the database: (<http://smdb.crustal.ucsb.edu/www/sources.html>). This new page makes it easier for the user to identify the agency from which data has been collected and gives additional credit to the agencies involved.
- A program to convert strong-motion data to the Seismic Analysis Code (SAC) format has been written. This program reads fourteen different ASCII strong-motion formats and converts them to one single format. The program is available from <http://smdb.crustal.ucsb.edu/www/sm2sac.pl>
- To increase outreach to the engineering community, the database was presented at the EERI annual meeting in San Diego on February 5-7, 1999.

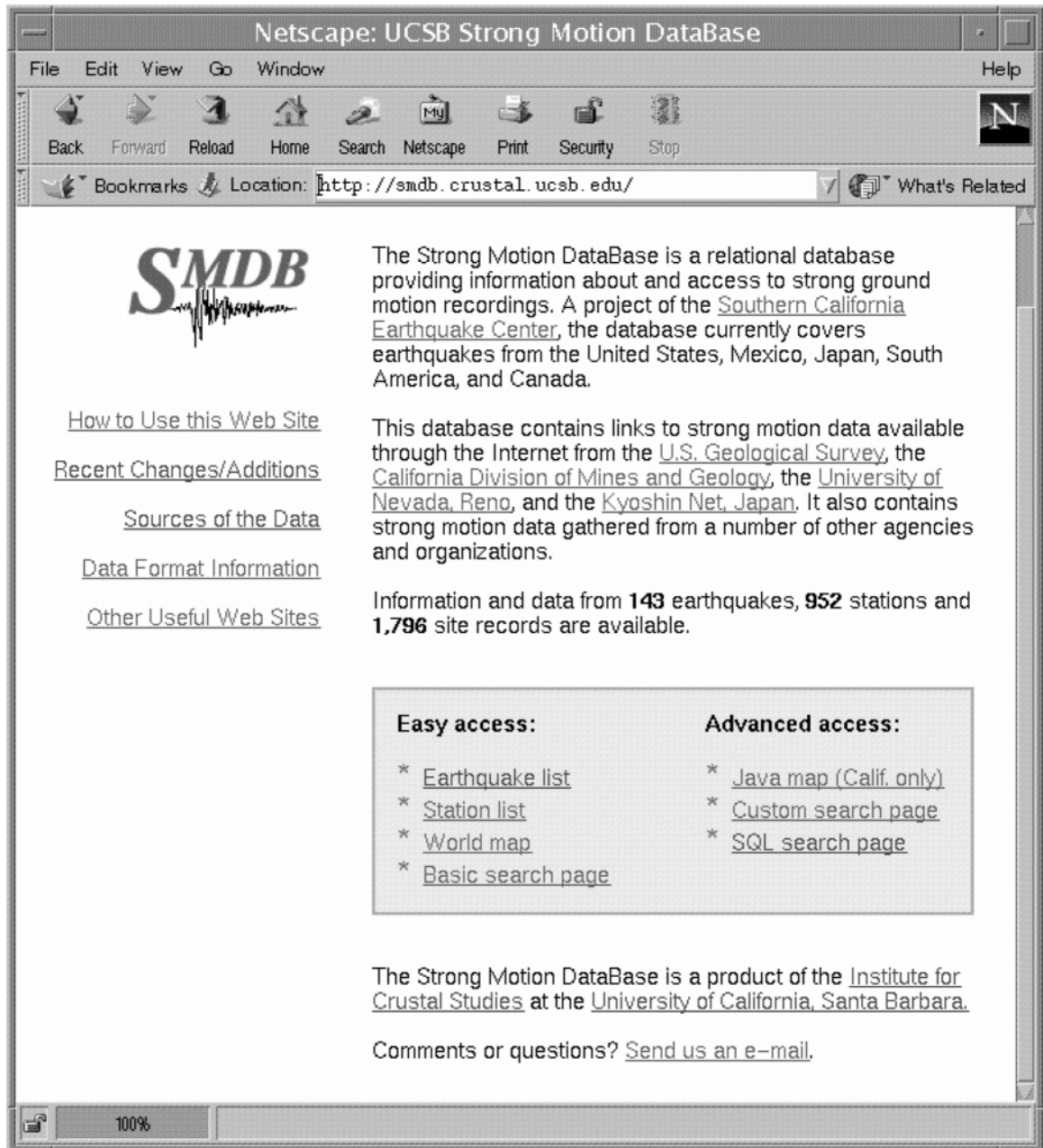
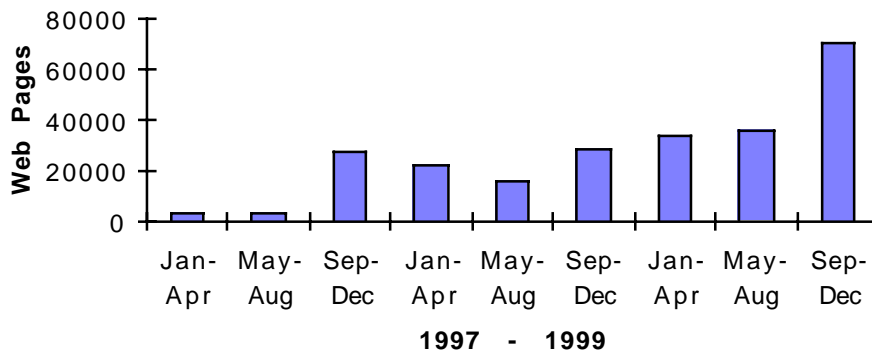
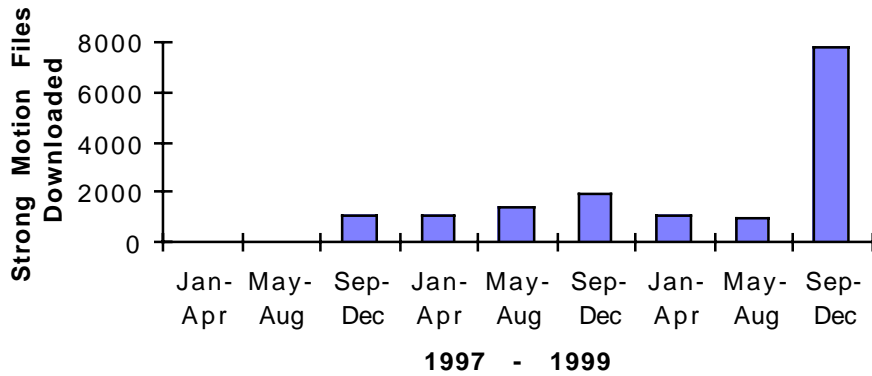


Figure 1. SMDb Home page.

Web Pages Accessed



Downloads from External FTP Sites



Data Downloaded through SMDB

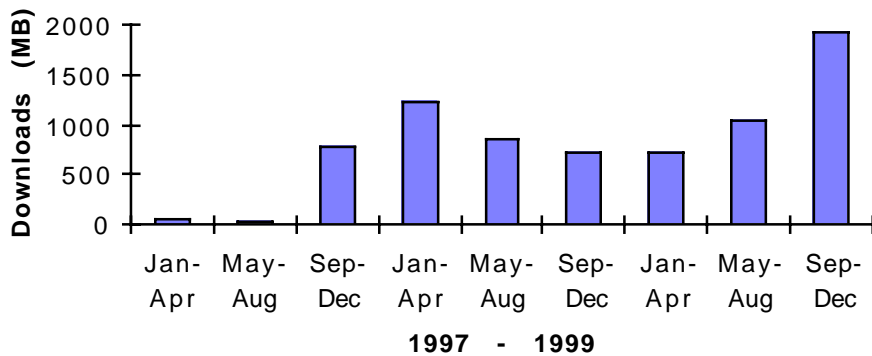


Figure 2. SMDB access statistics.

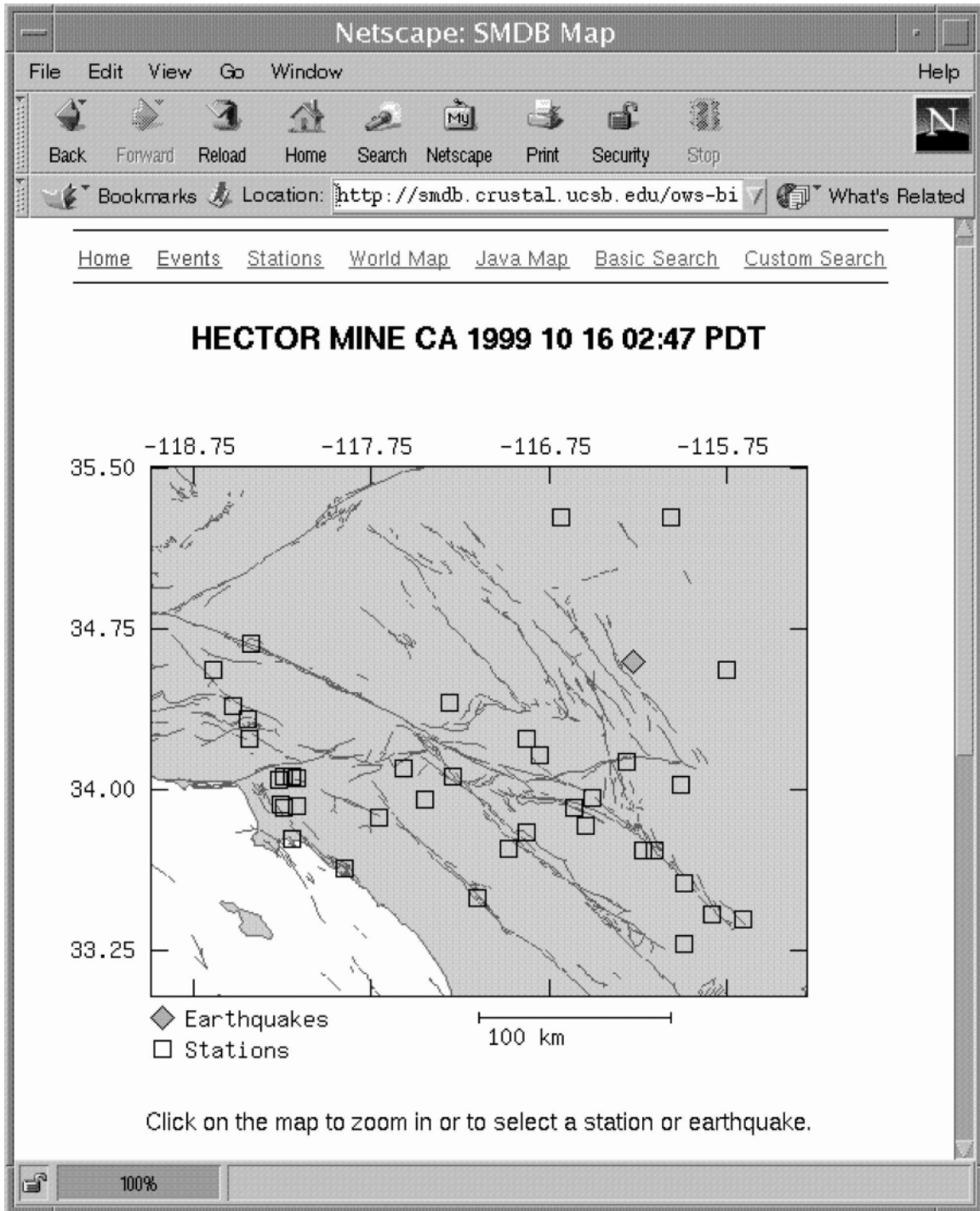


Figure 3. New SMDDB mapping program, showing the 10/16/99 Hector Mine Earthquake.