# COSMOS VIRTUAL STRONG MOTION DATA CENTER

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## ABSTRACT

The COSMOS virtual data center http://db.cosmos-eq.org/ is a web accessible relational database for strong motion data. This database was designed to make it simple for a user to retrieve strong motion data that are most relevant to the needs of the user. At the same time it gives primary responsibility for quality control of the original data to the agencies that collected and processed the data. The virtual data center has information on 95 earthquakes, 3180 accelerograms, and 570 station descriptions. For each earthquake the data center has tried to include all the available accelerograms.

## INTRODUCTION

As the number of strong motion accelerograms increases with each major earthquake, it has become imperative that the data be organized such that the user can easily access the data most relevant to his/her needs. When the number of significant accelerograms could be counted on two hands, each engineer or scientist could easily find the most appropriate data for his/her needs. That situation has changed dramatically in the past decade with more instruments recording strong motion. The COSMOS virtual strong motion data center has been designed to allow the user to find the data most appropriate to the problem at hand.

The COSMOS virtual data center was organized around three basic principles. First, the user must be able to search the database easily on the worldwide web. Second, the user must be able to retrieve the data without difficulty. Third, the agencies collecting the data would be the primary source of the data. These basic principles defined the basic construct. Thus the COSMOS virtual data center is the relational database with the tables and parameters to be searched; the agencies are the data repositories holding the accelerograms at their respective institutions.

The virtual data center was organized with a typical www shopping cart approach. Based on a wide range of search parameters, the user can specify criteria that will be used to select the appropriate strong motion acceleration time histories. Once selected the user can preview the acceleration time histories and their relevant attributes, such as peak acceleration, closest

distance to the fault, geological conditions at the site, etc. If the records are acceptable, the user puts them into his shopping bin. Multiple searches can be done. When all the searches are finished, the user can download the data (using ftp) directly from the agency that collected the data. This download is completely transparent to the user. The data are in the format of the agency that collected the data.

At present the virtual data center has information on 95 earthquakes, 3180 accelerograms, and 894 station descriptions. For each earthquake the data center has tried to include all the available accelerograms. The data center will soon expand to 159 earthquakes, 5287 accelerograms and 1387 station descriptions.

The database has fields in seven parameter tables related to the earthquake, station, local geology, region, instrument, owner, network and acceleration time histories. This allows the user to search for records based on many different combinations of criteria. In addition to the general search on basic parameters, the user can use an advanced search or a point-and-click search using a map of the earthquake and recording stations. In addition there is a bibliography associated with the parameters such that a user can find the reference for a magnitude or for the processing of the data—a useful feature when writing papers or reports.

## USING THE COSMOS DATABASE

The COSMOS virtual data center is accessed through the web either by going to the COSMOS home page http://www.cosmos-eq.org/ and clicking on the COSMOS virtual data center or by addressing it through http://db.cosmos-eq.org. A user will find the home page that allows one to logon/logoff with his/her email address. The user will then find a heading and the primary networks that have made available their data to the database. The user will see headings that can serve as starting points for the search.

The basic search page illustrates the operation with the most common search parameters (Figure 1). A critical feature of the database is that only the field(s) the user wants to search have to be specified. The user can leave the other fields blank and the database will supply the values based on the search. For example, suppose a user wants all the records that have peak acceleration between 500 and 600 cm/s/s recorded at a distance closest to the fault between 15 and 20 km. These values are input into the search and the following results are returned (Figure 2). At this point the user can look the list of stations or the list of earthquakes that satisfied the criteria. For each record the user can 1) click on a description of the earthquake to see its magnitude, location and other source parameters, 2) examine the station to see its local geology, site conditions, and other records recorded at this station, 3) look at a map to see the epicenters of the earthquake and the locations of the station, 4) view the accelerograms. Note that the results indicate the location of the sensor within structures or in an instrument shelter at ground level (free field). Such descriptions are possible when using the advanced search.

The search routine is versatile. Each record is associated with a station. By simply clicking on the station name the database will return information about that station, and it will

show all other records that have been recorded at the site (Figure 3). In Figure 3, the Castaic Old Ridge Route site is described. The records include those obtained with the search criteria—1971 San Fernando CA earthquake—but it also includes five other earthquakes (only two are shown in Figure 3). By clicking on the "View Plot of Data" the user will immediately see plots of the accelerograms (Figure 4) that include relevant information about the earthquake, the site and the time histories.

One of the more useful features of the database is to find data using "Map." As one searches the database, the user will often find the ability to create a simplified map of the station locations and the earthquake epicenter. In Figure 5 a map is drawn after selecting the 1979 Imperial Valley earthquake. The epicenter is shown as a diamond (orange on color monitors) and the stations are shown as white squares. By simply pointing and clicking on a station, the user can find the accelerograms for that station. Or by pointing and clicking on an epicenter, the information about the earthquake will appear and all of the data associated with that event (Figure 6). Thus one can interactively move between stations and earthquakes to find data.

Naturally all of the data are listed in tables so that the user can find either stations or earthquakes grouped by region. A partial listing of the earthquakes is shown in Figure 7. The station list, 570, is too large to show. However, what the user will find in the database are scroll bars that allow the user to easily find a station for different regions. Both the earthquake and station lists have clickable scroll bars that allow the user to jump into a particular region without having to scroll through unwanted data.

All of the searchable parameters can be viewed by clicking on the advanced search option (Figure 8). The user first selects those parameters that will be part of the criteria in finding the appropriate data. Once the parameters are selected, the user proceeds to the search page. In Figure 9 there are six parameters that could be searched in this example. However, only two are actually used, instrument location and peak ground acceleration. The database can search on both numerical values and text strings and the types are clearly labeled. Also Figure 9 illustrates that the user does not have to fill in all the boxes. The data found using this search are shown in Figure 10. A point to note is that if any one of the three components satisfy the search criteria, all three components of acceleration are returned.

All during the search of the COSMOS database the user has the opportunity to add the data to his shopping bin. At some point the user will proceed to the download bin with a list of accelerograms that the user would like to retrieve (Figure 11). In doing so the user will finally reach the point where the data can be downloaded to the user's computer. By simply clicking on the "Download" the data are transferred to the user's computer in a format supplied by the agency that processed the data. It is also possible to delete items from the bin. Each user will have had to log in by giving an email address to reach this point. The database keeps track of previous shopping bins for the user. So that a user could go back and retrieve data that was previously downloaded and then discarded. With the COSMOS database the user will not have to store countless records on his/her own computer; the user can simply retrieve them whenever they are needed.

## LOOKING TO THE FUTURE

The COSMOS database is evolving. There are simple features that can be improved such as showing closest distance to the fault instead of epicentral distance. More substantial improvements are nearly ready for implementation. In the near future the database will have the ability to search for acceleration records that have response spectral ordinates at particular periods, e.g., 0.1, 0.3, 1.0, 3.0 s. At the same time the database will show plots of response spectra similar to its presentation of the three components of acceleration. All of these features are being considered so that the user will be able to select the most appropriate data and download what is necessary. At present the data are downloaded in the format determined by the agency that collected the data. In the future, there will be a standard format for all the strong motion data that are downloaded so that the user does not have to keep several different translators working.

The amount of strong motion data is rapidly increasing. The usefulness of the data depends on its accessibility to the user. The COSMOS virtual data center was created to insure that all users have equal access to the data. Moreover it increases the efficiency of the users by allowing each one to select the data most appropriate to his/her needs. By trying to be complete in that all records for the significant earthquakes are included, the database eliminates biases that might arise because a user was unaware of some critical data that are relevant to the study being done. One of the major efforts will be to update the database. The data center will soon expand to 159 earthquakes, 5287 accelerograms and 1387 station descriptions not including recent earthquakes.

## ACKNOWLEDGMENTS

The COSMOS virtual data center was built on the foundation of the Southern California Earthquake Center strong motion database. That database and the COSMOS virtual data center were crafted by the superior computer expertise of Dr. Grant Lindley. The contents of this report were developed under Contract No. 1098-716 from the California Department of Conservation, Division of Mines and Geology, Strong Motion Instrumentation Program. However, these contents do not necessarily represent the policy of that agency nor endorsement by the State Government. This report was also supported by the U.S. Geological Survey Cooperative Agreement No. 99WRAG0016.

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# Database Search

To search on database parameters not found on this page, use the advanced search.

**Note:** Leave blank any fields that do not apply to your search.

**Event Name:** [ ] (e.g. North Palm Springs)

**Station Identifier:** [ ] (Station location or number assigned by the station owner.)

Enter minimum and/or maximum values:

| | |
|---|---|
| **Earthquake Magnitude:** | from [ ] to [ ] |
| **Peak Ground Accel. (cm/s/s):** | from [300] to [350] |
| **Closest Distance to Fault (km):** | from [20] to [25] |
| **Epicentral Distance (km):** | from [ ] to [ ] |

(•) Return earthquake, station, and accelerogram information
( ) Return station information only
( ) Return earthquake information only

**Station Owner:**
(•) Any
( ) Army Corps of Engineers
( ) California Strong Motion Instrumentation Program
( ) California Institute of Technology
( ) Private owner of building or structure
( ) United States Bureau of Reclamation
( ) United States Geological Survey
( ) Department of Veterans Affairs

**Region:**
(•) Any
( ) Alaska
( ) Central and Eastern United States
( ) Mexico
( ) Northern California
( ) Pacific Northwest
( ) Southern California

[Search] [Reset Form]

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Figure 1. COSMOS basic search page. Here only the peak acceleration and closest distance to the fault are specified in a rather narrow range. Any parameter can be specified. Note one can restrict the region of the earthquake.

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# Search Results

**Event Name:** Any
**Magnitude:** Any
**Region:** Any
**PGA:** 300 to 350 cm/s/s

**Station Identifier:** Any
**Epicentral Distance:** Any
**Closest Distance to Fault:** 20 to 25 km
**Station Owner:** Any

**Jump within page to:**
[ Choose an earthquake ]

**Jump within page to:**
[ Choose a station ]

☐ Add all data on this page to the download bin

Go to Download Bin  View Map

NORTHRIDGE CA 1994 01 17 0430 PST
**14.9 km:** TOPANGA - FIRE STATION
**USGS station 5081**
**Structure:** 1-STORY BLDG
**Instrument:** GROUND
Summary Page for this Station  View Plot of Data

☐ Add all of this station's data to the download bin  Go to Bin

| | | | | |
|---|---|---|---|---|
| **Component:** | 360 | **PGA (cm/s/s):** | 326.9 | ☐ Add this trace to download bin |
| **Component:** | 270 | **PGA (cm/s/s):** | 191.7 | ☐ Add this trace to download bin |
| **Component:** | Up | **PGA (cm/s/s):** | 188.7 | ☐ Add this trace to download bin |

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NORTHRIDGE CA 1994 01 17 0430 PST
**19.1 km:** LOS ANGELES - 10751 WILSHIRE BLVD
**USGS station 0663**
**Structure:** 12-STORY BLDG
**Instrument:** ROOF 12TH LEVEL
Summary Page for this Station  View Plot of Data

☐ Add all of this station's data to the download bin  Go to Bin

| | | | | |
|---|---|---|---|---|
| **Component:** | 252 | **PGA (cm/s/s):** | 385.3 | ☐ Add this trace to download bin |
| **Component:** | 162 | **PGA (cm/s/s):** | 320.0 | ☐ Add this trace to download bin |
| **Component:** | Up | **PGA (cm/s/s):** | 377.0 | ☐ Add this trace to download bin |

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Figure 2. Search results (partial listing) for parameters specified in Figure 1.

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## CSMIP: CASTAIC
## OLD RIDGE ROUTE

**Agency Number:** 24278 **Structure:** 1-STORY BLDG
**Network:** Unknown
**Site Geology:** SANDSTONE T
**Owner:** California Strong Motion Instrumentation Program (external link)
References

☐ Add all data on this page to the download bin

Go to Download Bin View Map

**14.0 km:** SOUTHERN CALIFORNIA 1965 07 15 2346 PST
Summary page for this earthquake View Plot of Data
☐ Add this station record to the download bin

| | | | | |
|---|---|---|---|---|
| **Component:** | Down | **PGA (cm/s/s):** | 29.8 | ☐ Add this trace to download bin |
| **Component:** | 90 | **PGA (cm/s/s):** | 42.6 | ☐ Add this trace to download bin |
| **Component:** | 180 | **PGA (cm/s/s):** | 49.2 | ☐ Add this trace to download bin |

Return to top Go to Bin

**27.6 km:** SAN FERNANDO CA 1971 02 09 0601 PST
Summary page for this earthquake View Plot of Data
☐ Add this station record to the download bin

| | | | | |
|---|---|---|---|---|
| **Component:** | Down | **PGA (cm/s/s):** | 173.7 | ☐ Add this trace to download bin |
| **Component:** | 21 | **PGA (cm/s/s):** | 327.6 | ☐ Add this trace to download bin |
| **Component:** | 291 | **PGA (cm/s/s):** | 280.9 | ☐ Add this trace to download bin |

Return to top Go to Bin

**40.1 km:** NORTHRIDGE CA 1994 01 17 0430 PST
Summary page for this earthquake View Plot of Data
☐ Add this station record to the download bin

| | | | | |
|---|---|---|---|---|
| **Component:** | Up | **PGA (cm/s/s):** | 213.0 | ☐ Add this trace to download bin |
| **Component:** | 90 | **PGA (cm/s/s):** | 557.1 | ☐ Add this trace to download bin |
| **Component:** | 360 | **PGA (cm/s/s):** | 504.2 | ☐ Add this trace to download bin |

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Figure 3. Clicking on the station summary for Castaic Ridge leads to this page (partial) showing the site characteristics as well as other accelerograms recorded at this station. These additional accelerograms will probably not satisfy the original search criteria.

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**Data Plot**

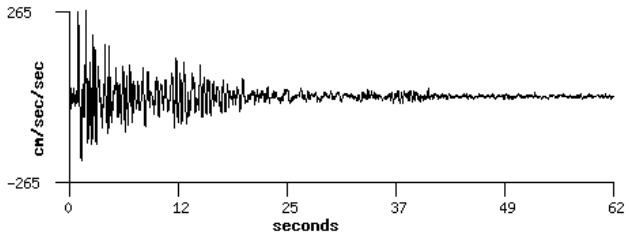
**Station:** CASTAIC - OLD RIDGE ROUTE
**Station Owner:** California Strong Motion Instrumentation Program
**Station Latitude & Longitude:** 34.5600, -118.6400

**Earthquake:** SAN FERNANDO CA 1971 02 09 0601 PST

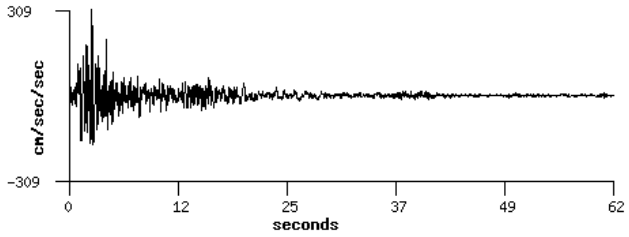
**Epicentral Distance:** 27.6 km

(Use the back button on your browser to return to the previous page)

**Component:** 291 GROUND LEVEL




**Component:** 21 GROUND LEVEL




**Component:** Down GROUND LEVEL

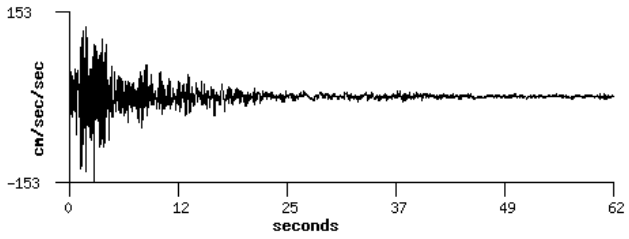



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Figure 4. Having clicked on the View Plot of Data the user sees the 3 components for the 1971 San Fernando earthquake recorded at Castaic Old Ridge Route.

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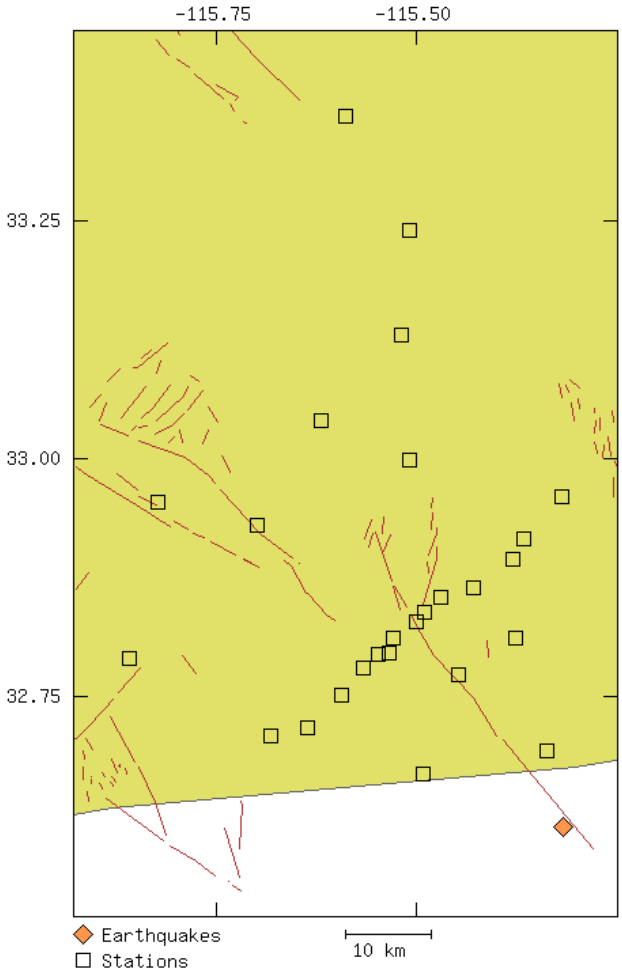
**IMPERIAL VALLEY CA 1979 10 15 2316**




Click on the map to zoom in or to select a station or earthquake.

Zoom Out

Enter new latitude and longitude ranges:

| | | | |
|---|---|---|---|
| Latitude: | 32.52 | to | 33.45 |
| Longitude: | -115.93 | to | -115.25 |

Create New Map  Reset Coordinates

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Figure 5. Using the map option for seeing the epicenter, station locations and nearby faults for the 1979 Imperial Valley earthquake. By pointing either to the epicenter (diamond) or the stations (squares) one can immediately retrieve information about the earthquake or the station.

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## IMPERIAL VALLEY CA 1979 10 15 2316

**Region:** Southern California
**Event Latitude (North):** 32.6140
**Event Longitude (West):** -115.3180
**Event Depth (km):** 12.10
**Preferred Magnitude:** 6.4
**Moment Magnitude:** 6.5
**Surface Magnitude:** 6.9
**Local Magnitude:** 6.6
**Other Magnitude:** 6.5
**Seismic Moment (dyne-cm):** 3.0E+25
**Strike:** 132
**Dip:** 90
**Rake:** 180
References

**Jump within page to:**
[ Choose a Station ]

☐ Add all data on this page to the download bin

Go to Download Bin View Map

**9.0 km:** BONDS CORNER - HWYS 115 & 98

**USGS station 5054**
**Site Geology:** ALLUVIUM
Summary Page for this Station

**Structure:** 1-STORY BLDG
**Instrument:** GROUND LEVEL
View Plot of Data

☐ Add all of this station's data to the download bin

Go to Bin

| | | |
|---|---|---|
| **Component:** 230 | **PGA (cm/s/s):** 763.2 | ☐ Add this trace to download bin |
| **Component:** 140 | **PGA (cm/s/s):** 582.5 | ☐ Add this trace to download bin |
| **Component:** Up | **PGA (cm/s/s):** 434.9 | ☐ Add this trace to download bin |

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Figure 6. Having clicked on the epicenter of the 1979 Impeiral Valley earthquake (diamond, Figure 5) the database retrieves the information about the earthquake and all of the records for that earthquake. Only Bonds Corner is shown here on this single page, but all records are retrieved and sorted by epicentral distance.

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# Earthquakes within each Region

**Jump within page to:**
[ Choose a Region ]

## Alaska

| Earthquake (most recent event is first) | Magnitude | Stations | Owners |
|---|---|---|---|
| SOUTHEASTERN ALASKA 1979 02 28 2127 UTC | 7.1 | 3 | USGS |
| ANCHORAGE ALASKA 1975 01 01 0355 UTC | 5.9 | 4 | USGS |
| ADAK ALASKA 1971 05 02 0608 UTC | 7.1 | 1 | USGS |

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## Central and Eastern United States

| Earthquake (most recent event is first) | Magnitude | Stations | Owners |
|---|---|---|---|
| ENOLA ARKANSAS 1982 07 05 0413 UTC | 3.8 | 4 | USGS |
| ENOLA ARKANSAS 1982 06 26 1556 UTC | 3.0 | 7 | USGS |
| NEW HAMPSHIRE USA 1982 01 19 0014 | 4.5 | 6 | ACOE USGS |

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## Mexico

| Earthquake (most recent event is first) | Magnitude | Stations | Owners |
|---|---|---|---|
| BAJA CALIFORNIA MEXICO 1934 12 30 0552 PST | 6.4 | 1 | USGS |

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## Northern California

| Earthquake (most recent event is first) | Magnitude | Stations | Owners |
|---|---|---|---|
| PARKFIELD CA 94 12 20 | 5.0 | 2 | CSMIP |
| SOUTH LAKE TAHOE CA 94 09 12 | 6.1 | 1 | CSMIP |
| EUREKA CA 94 09 01 | 6.8 | 3 | CSMIP |
| CAPE MENDOCINO/PETROLIA CA 1992 04 26 1118 | 6.6 | 8 | USGS |
| CAPE MENDOCINO/PETROLIA CA 1992 04 | 6.6 | 8 | USGS |

| | | | |
|---|---|---|---|
| 26 0741 | | | |
| CAPE MENDOCINO/PETROLIA CA 1992 04 25 1106 PDT | 7.0 | 14 | USGS CSMIP |
| LOMA PRIETA CA (SANTA CRUZ MOUNTAINS) 1989 10 18 0004 | 7.0 | 87 | USGS CSMIP |
| MORGAN HILL CA 1984 04 24 2115 | 6.1 | 31 | CSMIP USBR USGS |
| COALINGA CA AFTERSHOCK 1983 09 09 0916 | 5.3 | 2 | CSMIP |
| COALINGA CA AFTERSHOCK 1983 07 25 2231 | 5.3 | 2 | CSMIP |
| COALINGA CA AFTERSHOCK 1983 07 22 0343 | 5.0 | 2 | CSMIP |
| COALINGA CA AFTERSHOCK 1983 07 22 0239 | 6.0 | 9 | USGS CSMIP USBR |
| COALINGA CA AFTERSHOCK 1983 07 09 0740 | 5.4 | 9 | USGS CSMIP |
| COALINGA CA AFTERSHOCK 1983 06 11 0309 | 5.2 | 3 | USGS CSMIP |
| COALINGA CA AFTERSHOCK 1983 05 09 0249 | 5.3 | 20 | USGS CSMIP USBR |
| COALINGA CA 1983 05 02 2342 | 6.5 | 48 | CSMIP USBR |
| MAMMOTH LAKES CA 1980 05 27 0751 PDT | 6.2 | 4 | CSMIP |
| MAMMOTH LAKES CA 1980 05 26 1158 PDT | 5.7 | 2 | CSMIP |
| MAMMOTH LAKES CA 1980 05 25 1336 PDT | 5.7 | 2 | CSMIP |
| MAMMOTH LAKES CA 1980 05 25 1245 PDT | 6.1 | 2 | CSMIP |
| MAMMOTH LAKES CA 1980 05 25 0949 PDT | 6.0 | 3 | CSMIP |
| MAMMOTH LAKES CA 1980 05 25 0934 PDT | 6.1 | 3 | CSMIP |
| LIVERMORE CA 1980 01 27 0233 | 5.8 | 2 | USGS |
| LIVERMORE CA 1980 01 24 1900 | 5.5 | 2 | USGS |
| COYOTE LAKE CA 1979 08 06 1705 | 5.7 | 8 | CSMIP |
| COYOTE DAM CA 1978 03 25 1627 PST | 4.5 | 1 | USGS |
| PARKFIELD CA 1966 06 27 2026 PST | 6.1 | 7 | USGS CSMIP |
| SAN FRANCISCO CA 1957 03 22 1144 PST | 5.3 | 5 | USGS CSMIP |
| SAN LUIS OBISPO CA 1952 11 21 2346 PST | 6.0 | 1 | USGS |

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Figure 7. A complete listing of all earthquakes in the database showing magnitude, number of recording stations and owner can be easily seen by clicking on the word "Earthquakes" at the top of any search page. From here all one has to do is click once more any earthquake to reach the accelerograms for that event. Shown in this figure is only a partial listing of all the events currently in the database.

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# Advanced Search: Choose Parameters

Select the database parameters that you wish to search on.

## Event Parameters

| | |
|---|---|
| ☐ Event Code | ☐ Earthquake Name |
| ☐ Event Date (e.g. 15-JAN-2000) | ☐ Event Latitude (North) |
| ☐ Event Longitude (West) | ☐ Event Depth (km) |
| ☐ Preferred Magnitude | ☐ Moment Magnitude |
| ☐ Surface Magnitude | ☐ Local Magnitude |
| ☐ Other Magnitude | ☐ Seismic Moment (dyne-cm) |
| ☐ Strike | ☐ Dip |
| ☐ Rake | |

## Region Parameters

| |
|---|
| ☐ Region |

## Station Parameters

| | |
|---|---|
| ☐ Station Name | ☐ Agency Number |
| ☐ Location | ☐ Auxillary Location |
| ☐ Address | ☐ Geology |
| ☐ Los Angeles Basin Geology | ☐ California Geology |
| ☐ S-wave Velocity Top 30m (m/s) | ☐ Structure |
| ☐ Status | ☐ Outside Web Address |

## Station Owner Parameters

| | |
|---|---|
| ☐ Owner Name | ☐ Web site |
| ☐ FTP site | ☐ Address |
| ☐ Contact Person | ☐ Contact E-mail |
| ☐ Parent Agency | ☐ Parent Agency Web Site |
| ☐ Owner Acronym | ☐ Data in COSMOS Data Center? |

Figure 8. Searchable parameters in the COSMOS database.

### Network Parameters

| | |
|---|---|
| ☐ Network Name | ☐ Owner |
| ☐ Network Web Site | ☐ Network Acronym |

### Instrument Parameters

| | |
|---|---|
| ☐ Location | ☐ Instrument Type |
| ☐ Instrument Agency Number | ☐ Latitude (North) |
| ☐ Longitude (East) | ☐ Outside Web Address |

### Accelerogram (Trace) Parameters

| | |
|---|---|
| ☐ Uncorrected Acceleration Download | ☐ Corrected Acceleration Download |
| ☐ Epicentral Distance (km) | ☐ Hypocentral Distance (km) |
| ☐ Closest Distance to Fault (km) | ☐ Component Offset from Vertical |
| ☐ Component Azimuth | ☐ Peak Ground Acceleration |

Proceed to Search Page  Reset Form

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Figure 8 (continued). Searchable parameters in the database. There are plans to increase the parameter list to include others such as response spectral ordinates at selected periods.

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# Advanced Search: Parameter Input

Enter search values into the text boxes below. You may leave boxes empty.

## Text input fields:

| Type | Parameter | Value |
|---|---|---|
| Instrument | Location | Ground |
| Station | Geology | |
| Station | Structure | |

## Numerical input fields:

| Type | Parameter | Min/Max Values | |
|---|---|---|---|
| Station | S-wave Velocity Top 30m (m/s) | | |
| Trace | Closest Distance to Fault (km) | | |
| Trace | Peak Ground Acceleration | 900 | |

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Figure 9. The parameters taken from the advanced search to find records with peak acceleration greater than 900 cm/s/s. Note that in the advanced search text can be used in descriptions, such as instrument location. Here "Ground" is used so that records from buildings at any floor level other than ground or from dams are not considered in the search.

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# Advanced Search: Results

**Location:** Contains the string **'Ground'**
**Geology:** No condition
**Structure:** No condition
**S-wave Velocity Top 30m (m/s) Max.:** No condition
**S-wave Velocity Top 30m (m/s) Min.:** No condition
**Closest Distance to Fault (km) Max.:** No condition
**Closest Distance to Fault (km) Min.:** No condition
**Peak Ground Acceleration Max.:** No condition
**Peak Ground Acceleration Min.:** 900

**Jump within page to:**
[ Choose an earthquake ]

**Jump within page to:**
[ Choose a station ]

☐ Add all data on this page to the download bin

Go to Download Bin View Map

NORTHRIDGE CA 1994 01 17 0430 PST

**5.5 km:** TARZANA - CEDAR HILL NURSERY

**CSMIP station 24436**
**Site Geology:** ALLUVIUM;9M;SILTSTONE
Summary Page for this Station

**Structure:** 1-STORY BLDG
**Instrument:** GROUND LEVEL
View Plot of Data

☐ Add all of this station's data to the download bin  Go to Bin

| | | |
|---|---|---|
| **Component:** 360 | **PGA (cm/s/s):** 970.7 | ☐ Add this trace to download bin |
| **Component:** 90 | **PGA (cm/s/s):** 1744.5 | ☐ Add this trace to download bin |
| **Component:** Up | **PGA (cm/s/s):** 1027.5 | ☐ Add this trace to download bin |

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Figure 10. Records that satisfy the parameters in the advanced search. Note that text strings can be used in searching records that describe the station or instrument.

° NORTHRIDGE CA 1994 01 17 0430 PST °

**7.3 km:** ° SEPULVEDA VA HOSP - BLDG 40

**USGS station 0637**
**Site Geology:** ALLVM;1280M;SHALE
Summary Page for this Station

**Structure:** 1-STORY BLDG
**Instrument:** GROUND LEVEL
View Plot of Data

☐ Add all of this station's data to the download bin — Go to Bin

| | | |
|---|---|---|
| **Component:** ° 360 | **PGA (cm/s/s):** ° 922.7 | ☐ Add this trace to download bin |
| **Component:** ° 270 | **PGA (cm/s/s):** ° 738.2 | ☐ Add this trace to download bin |
| **Component:** ° Up | **PGA (cm/s/s):** ° 466.5 | ☐ Add this trace to download bin |

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° CAPE MENDOCINO/PETROLIA CA 1992 04 25 1106 PDT °

**3.8 km:** ° CAPE MENDOCINO - PETROLIA

**CSMIP station 89005**
**Site Geology:** CRETACEOUS ROCK
Summary Page for this Station

**Structure:** INST SHLTR H
**Instrument:** GROUND LEVEL
View Plot of Data

☐ Add all of this station's data to the download bin — Go to Bin

| | | |
|---|---|---|
| **Component:** ° 90 | **PGA (cm/s/s):** ° 1019.4 | ☐ Add this trace to download bin |
| **Component:** ° Up | **PGA (cm/s/s):** ° 738.9 | ☐ Add this trace to download bin |
| **Component:** ° 0 | **PGA (cm/s/s):** ° 1468.3 | ☐ Add this trace to download bin |

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° IMPERIAL VALLEY CA 1979 10 15 2316 °

**29.8 km:** ° EL CENTRO ARRY STA 6 - 551 HUSTON RD

**USGS station 5158**
**Site Geology:** ALLUVIUM;MORE THAN 300 M
Summary Page for this Station

**Structure:** INST SHLTR H
**Instrument:** GROUND LEVEL
View Plot of Data

☐ Add all of this station's data to the download bin — Go to Bin

| | | |
|---|---|---|
| **Component:** ° 230 | **PGA (cm/s/s):** ° 443.0 | ☐ Add this trace to download bin |
| **Component:** ° 140 | **PGA (cm/s/s):** ° 444.3 | ☐ Add this trace to download bin |
| **Component:** ° Up | **PGA (cm/s/s):** ° 1703.6 | ☐ Add this trace to download bin |

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Figure 10 (continued). Second page of results from the advanced search.

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# Download Bin

Start over with a new bin

| Earthquake | Station | Instrument | Component | Corrected | Uncorrected |
|---|---|---|---|---|---|
| **California Strong Motion Instrumentation Program stations:** | | | | | |
| NORTHRIDGE CA 1994 01 17 0430 PST | TARZANA CEDAR HILL NURSERY | GROUND LEVEL | UP | Download | Not Available |
| | | | 90 | Same As Above | Not Available |
| | | | 360 | Same As Above | Not Available |
| **United States Geological Survey stations:** | | | | | |
| NORTHRIDGE CA 1994 01 17 0430 PST | SEPULVEDA VA HOSP BLDG 40 | GROUND LEVEL | 360 | Download | Download |
| | | | UP | Download | Download |
| | | | 270 | Download | Download |

**Return to an old bin** (bins kept for six months):

1. 2000-09-05 19:14:35.437 - 6 trace(s)
2. 2000-05-26 13:57:15.527 - 3 trace(s)
3. 2000-05-22 11:17:56.100 - 9 trace(s)

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Figure 11. Final stage will be transferring data from the respositories to your own computer. After selecting data that have been added to the bin and proceeding to the download, the user sees something like this. One feature is that the database keeps track of previous searches so the user can return and download data that was taken in the past 6 months.