

s3://ncedc-pds us-east-2

Summary

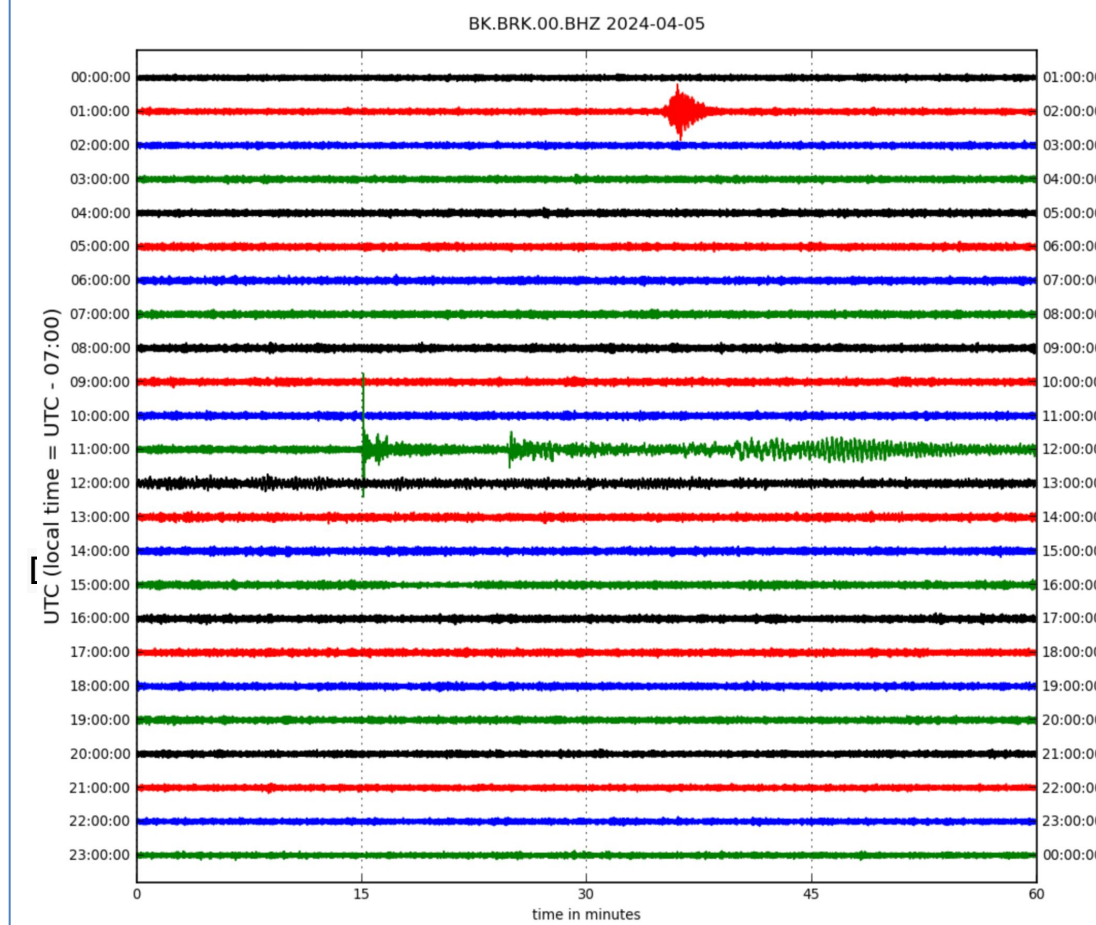
The Northern California Earthquake Data Center (NCEDC) is a permanent archive and distribution center for multiple types of digital data related to earthquakes in central and northern California. The NCEDC is located at the university of California, Berkeley, and has been accessible to users via the Internet since mid-1992.

Time series data mainly come from broadband, short period, and strong motion seismic sensors, as well as from other geophysical instruments. Earthquake catalogs include origin time, hypocenter, magnitude, moment tensor, focal mechanisms, phase arrivals, codas, and amplitude data. Metadata and instrument response for seismic sites are accessible in various formats for all data channels archived at the NCEDC. The NCEDC also provides support for earthquake processing and archiving activities of the Northern California Earthquake Management Center, a component of the California Integrated Seismic Network (CISN). Data holdings currently consist of more than 184 TB of data encompassing 29 networks and 2,640 stations.

In 2023, the NCEDC archive became part of the AWS (Amazon Web Services) Open Data Sponsorship Program and all of its data are now mirrored in the cloud (s3://ncedc-pds; us-east-2 region). Tutorials (<https://ncedc.org/db/cloud/getstarted-pds.html>) and data structure (<https://ncedc.org/db/cloud.html>) are available to facilitate user access to this public data set. This allows the NCEDC to leverage AWS cloud infrastructure and provide users the ability to provision gigabit connections to the archive as well as take advantage of the computational resources offered by AWS.

NCEDC Data Holdings

Continuous Waveforms (1974-Present)

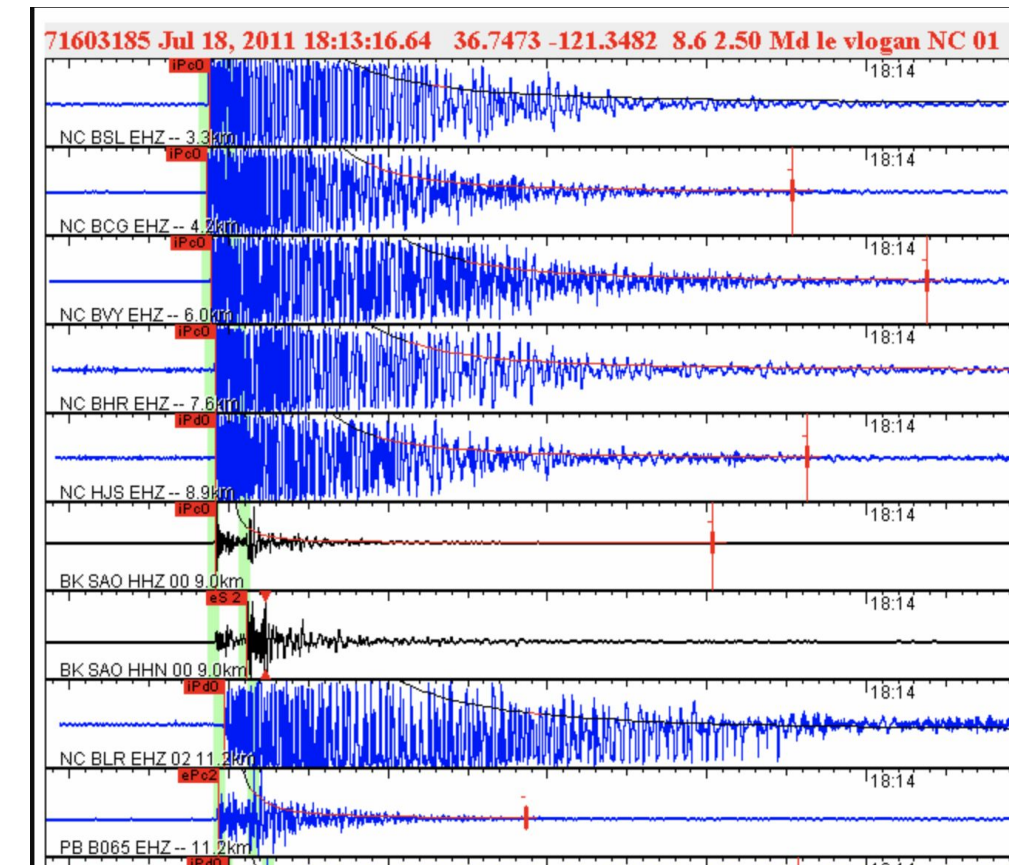


Waveforms continuously recorded by the NCSS (Northern California Seismic System).

Each file is one day, starting 00:00:00 UTC. A single channel is uniquely represented by a network code, station code, channel code and location code.

Data are in MiniSEED format.

Event Waveforms (1984-Present)

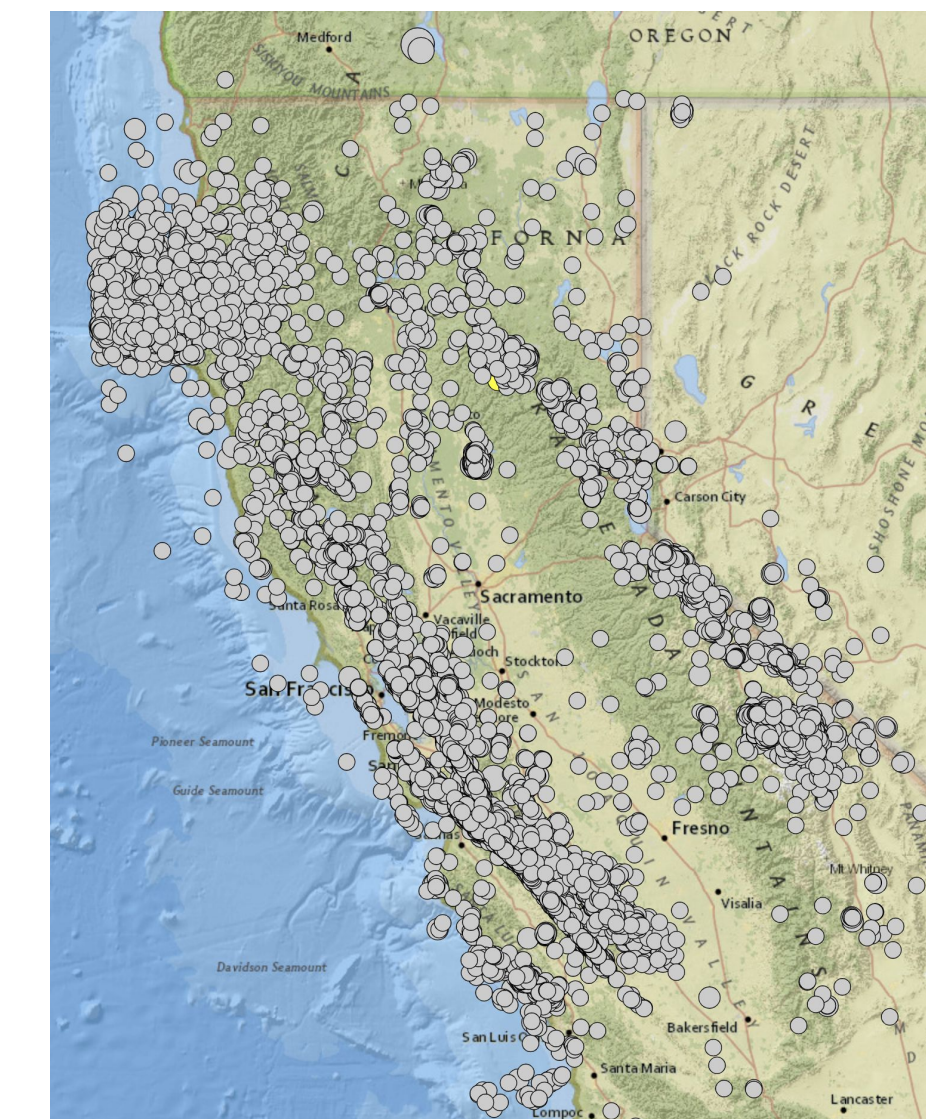


Waveforms whose time windows are centered around a recent event in the NCSS catalog.

Each file is one event, comprising of time series of seismic channels, written out one after another. The window should encompass the arrival of the events energy at the channel.

Data are in MiniSEED format.

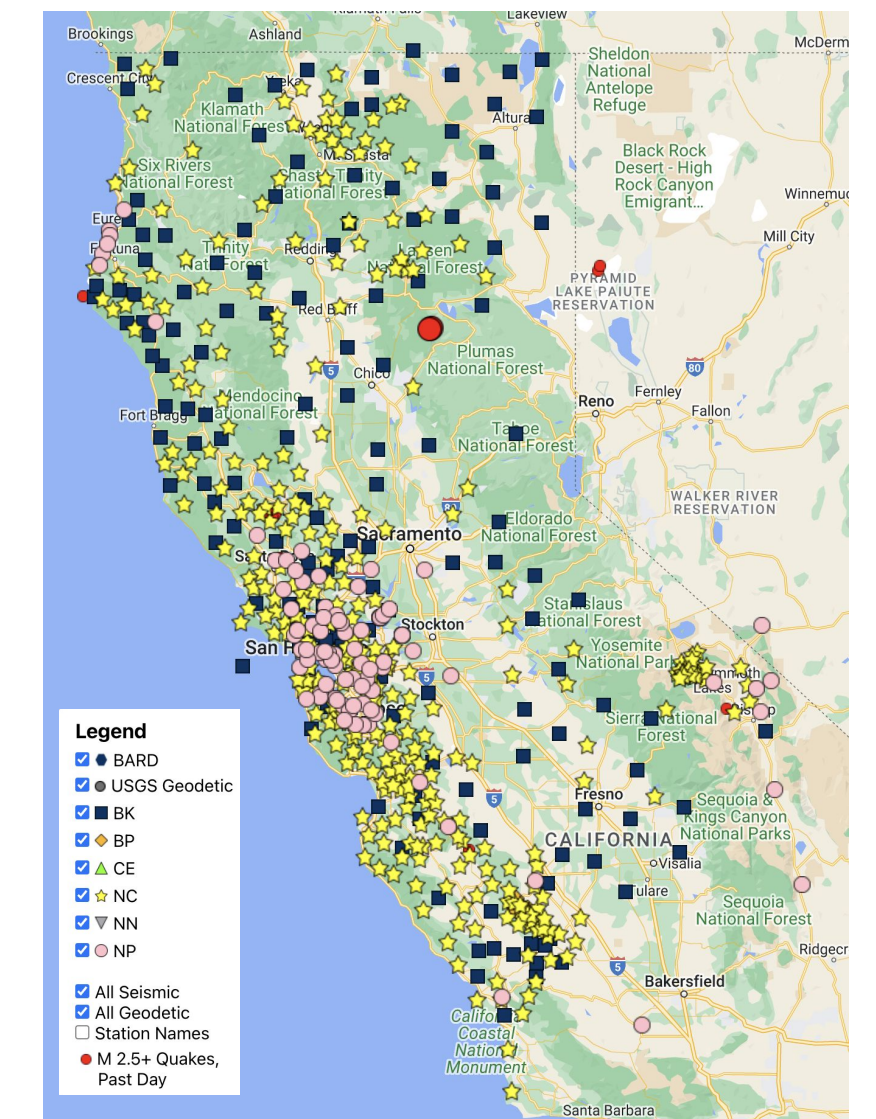
Earthquake Catalog (1966-Present)



Hypocenter information and associated products (phases, codas, amplitudes) for events detected by the NCSS.

Data are in USGS Earthquake Hazards Program CSV and Hypoinverse formats.

Networks Metadata



Station metadata and instrument response for seismic sites in the NCSS networks.

Data are in FDSN StationXML format.

AWS Public Dataset

The Amazon Web Services (AWS) Open Data Sponsorship Program covers the cost of storage for publicly available high-value cloud-optimized datasets.

This means that there is no cost for users to download data from the NCEDC AWS Cloud.

With the NCEDC data in AWS Cloud, users do not have to download and store large amounts of data locally anymore. It allows them to spend more time actually analyzing the data.

Amazon's cloud infrastructure offers higher processing power and download rates. It provides the users with increased performance and scalability.

AWS provides a comprehensive set of Software Development Kits (SDKs) and programming toolkits for various programming languages. These tools allow developers to build, manage, and interact with AWS services programmatically.

NCEDC AWS Data Access

The **AWS CLI** is a powerful command-line tool that enables users to interact with AWS services directly from their terminal or command prompt. It allows users to navigate and retrieve files similar to a UNIX file system.

For example, the following command can be used to see the contents of the NCEDC Dataset.

```
>aws s3 ls --no-sign-request s3://ncedc-pds/
PRE FDSNstationXML/
PRE continuous_waveforms/
PRE earthquake_catalogs/
PRE event_phases/
PRE event_waveforms/
>
```

The command below copies the FDSN StationXML file for station BK.MOD, located in the Open Dataset bucket s3://ncedc-pds, to the user's current directory.

```
>aws s3 cp --no-sign-request s3://ncedc-pds/FDSNstationXML/BK/BK.MOD.xml .
download:s3://ncedc-pds/FDSNstationXML/BK/BK.MOD.xml to ./BK.MOD.xml
>
```

NCEDC Standard Data Access

NCEDC Defined Web Services

- sacpz** <https://service.ncedc.org/ncedcws/sacpz/1/>
The sacpz web service provides access to poles and zeros information in SAC ASCII format.
- dataless** <https://service.ncedc.org/ncedcws/dataless/1/>
The dataless web service provides access to channel response information in the Dataless SEED format.
- resp** <https://service.ncedc.org/ncedcws/resp/1/>
The resp web service provides access to channel response information in the SEED RESP format.
- eventdata** <https://service.ncedc.org/ncedcws/eventdata/1/>
The eventdata web service returns time series data from pre-assembled time series for a specified event id.

FDSN-compatible Web Services at the NCEDC

- dataselect** <https://service.ncedc.org/fdsnws/dataselect/1/>
The dataselect service gives access to time series data for specified channels and time ranges. Data are returned in MiniSEED format.
- event** <https://service.ncedc.org/fdsnws/event/1/>
The event service returns event information in the QuakeML format. Events may be selected based on location, time, contributor, catalog and internal identifiers.
- station** <https://service.ncedc.org/fdsnws/station/1/>
The station service provides access to station metadata in the NCEDC database. The results are returned in XML format using the FDSN StationXML schema.