# Download and prepare your data with *rapidown*

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# rapidown, aim and tasks

*rapidown* is a tool devoted to the data preparation for moment tensor inversion

*rapidown* is event-based

The main tasks of *rapidown* are:

1. Access remote repositories (IRIS, GEOFON) and download waveform data and metadata
2. Potentially access local directory for additional data/metadata
3. Process waveform data and produce displacement waveforms
4. Store data in the desired format and proper naming
5. Create text files reporting event and stations information
6. Prepare input file for the following moment tensor inversion

# rapidown, aim and tasks

## 1. Access remote repositories and download waveform data and metadata

Stations are selected in the region of the epicenter, within a given radius

Channels are selected upon the desired sampling rate

## 2. Process waveform data and produce displacement waveforms

Processing include:

- Demean, highpass filter
- Deconvolution of the instrumental response
- Integration to displacements
- Downsampling to the desired sampling rate
- Rotation to vertical, radial, transversal components

# rapidown, how to run

*rapidown* can be run from the playground directory

To get an help on how to run, just type: ./rapidown

Different calling styles are accepted:

```
rapidown [options] -- <YYYY-MM-DD> <HH:MM:SS> <lat> <lon> \
                  <depth_km> <radius_km> <fmin> \
                  <sampling_rate> <eventname>

rapidown [options] -- <YYYY-MM-DD> <HH:MM:SS> <radius_km> \
                  <fmin> <sampling_rate> <eventname>

rapidown [options] -- <catalog-eventname> <radius_km> <fmin> \
                  <sampling_rate> <eventname>
```

*(Note: here the catalog-eventname is the event identificator of GEOFON)*

# rapidown, adding local data

*rapidown* offers the opportunity to process local data and/or metadata.

To get an help on how to run, just type: ./rapidinv -h

Different options are possible:

(1) To include waveform data stored locally:

./rapidown –local-data=<path_to_directory_or_files_with_local_data>

Accepted data formats: miniSEED, SAC

(2) To include stations response information stored locally:

./rapidown –local-responses=<path_to_directory_or_files_with_response_data>

Accepted response formats: SAC polezero files

# rapidown, try yourself

Find required earthquake information to download data (Lat, Lon, Depth, Day and Origin Time).

If you do not have this information, query the GEOFON catalog:

- Enter the GEOFON webpage at GFZ, http://geofon.gfz-potsdam.de/
- Click on 'Rapid Earthquake Information'
- Click on 'Search in earthquake catalog'
- Enter your search criteria and find the desired event

```
./rapidown -- <YYYY-MM-DD> <HH:MM:SS> <lat> <lon> <depth_km> \
             <radius_km> <fmin> <sampling_rate> <eventname>
```

e.g. to get a recent M 5.2 earthquake in Northern Chile:

```
./rapidown -- 2014-10-07 12:33:26 -20.03 -70.81 28 1000 0.01 2 \
             chile-2014-10-07
```