Retrieving Data from the Global Seismic Network

To Use in SWAP or WinQuake

The SPYDER system, part of the IRIS Data Management Center, provides near-real -time earthquake data to the seismological community in much the same way as the PEPP network works for schools. When an event occurs, stations of the Global Seismic Network (GSN) send their data to a central location, operated on behalf of IRIS by the University of Washington. This data comes in from all over the world, and can be accessed from the SPYDER website at:

http://www.iris.washington.edu/SPYDER/spyderdata/data/catalog.html.

I suggest you bookmark this website, or go to the IRIS website at http://www.iris.edu/. At this site, click onto DMS, and then choose WILBER from the menu on the left side of the page. WILBER provides a place where seismograms from many sites around the globe can be viewed. By following the prompts at that site, it is possible to pick stations to download data from. Unfortunately, at this time **SWAP** does not have the capability to read data directly from that site.

There are several advantages of GSN data: 1) it provides information on all 3 components of ground motion: Vertical, North-South, and East-West. This can be used to identify different types of seismic waves and to determine direction from wave motion, 2) the SPYDER data is generally very high quality; the stations are well calibrated, well maintained, and seldom have timing or other major instrumentation problems, 3) the sites are widely distributed around the world, providing data at a wide variety of distances and directions from any earthquake, and 4) the data are often pre-filtered into long-period, broad-band, and short-period components.

From the SPYDER website, the process for downloading data is somewhat like getting data from PEPP. The first step is to select the event you want to download. There is quite an extensive database to select from. Once you decide on an event, click on the date-time label for that event.

A map of the world appears, showing the location of the event and the surface path from the epicenter to the recording stations. There are over 130 possible stations that are part of this network: (http://www.iris.washington.edu/pub/spyder/station.list). The greatest disadvantage of this system is that there is no easy way to preview seismograms before downloading. You can preview some data by clicking on the links 'Broad-band' or 'Long -period' in the sentence, "Show CORAL record section (Based on SEED volume) of Broad-band data or Long-period data."

The stations are listed in order of distance from the event. It is possible to download the bh (Broadband) channel or the lh (Long Period) channel. The bh is a smaller file, much like a triggered file in QUAKES, containing very detailed information about the initial part of the seismogram. The lh file is like the event file in QUAKES, but it contains 20 samples/second, like the files in SCREAM. The lh file generally provides data on the entire earthquake, and is most likely what you will want.

Selecting "z" will get the Vertical component, "e" the East-West component, and "n" the North-South component. You may only download one component at a time.

Once you have decided on which station(s) to get data from, select a component to download. (If you plan to get all three components, it is best to download them in order: vertical first, north-south second, then east-west.) You will get a 'save dialog' box, where you can rename your file. Simply press Return, and the file will carry a name that SWAP can identify. Save the file to a pre selected folder for that event, to avoid confusion. Repeat this process until you have all the files you want to download on your computer.

Putting the files into SWAP

There are probably two types of file sets you will make. One set is of single seismograms from an event from different locations, which can be used to show the time difference in arrival of different seismic wave phases. To do this, it is best to load the closer events into **SWAP** first, then the later ones. When you choose the Display menu in **SWAP**, choose **Absolute Time**, and the seismograms will be ordered on the screen by arrival time. You can then go through the process of selecting P-wave arrivals and use the Locator Window to triangulate the quake location as an exercise.

Once you have loaded the set you want into SWAP, you can save the whole set by using the "**Save File Set As**" choice in the File menu of **SWAP**. It can then be put on the desktop, floppy, etc