Finding out what earthquakes have happened recently
Subscribe to an email alert system

Hosted by the United States Geological Survey
http://earthquake.usgs.gov/eqcenter/ens/

Earthquake Notification Service

This system provides automated free email notification for worldwide earthquakes.

Introduction to ENS - What you need to know

Questions or Problems?

To Unsubscribe, Please Login.

©USGS

Subscribe to ENS

Manage Your Account
Username:
Password:
Login

I forgot my username or password

2006-12-17 12:51 (Mw 5.9) TONGA -21.2 -174.4 Inbox

USGS ENS <ens@usgs.gov> to me More options 17-Dec (3 days ago)

== PRELIMINARY EARTHQUAKE REPORT ==

Region: TONGA
Geographic coordinates: 21.229S, 174.444W
Magnitude: 5.9 Mw
Depth: 31 km
Universal Time (UTC): 17 Dec 2006 12:51:11
Time near the Epicenter: 17 Dec 2006 12:51:11
Local time in your area: 17 Dec 2006 12:51:11

Location with respect to nearby cities:
82 km (51 miles) E (96 degrees) of NUKU'ALOFA, Tonga
291 km (181 miles) S (189 degrees) of Neiafu, Tonga
2639 km (1640 miles) WSW (257 degrees) of PAPEETE, Tahiti, French Polynesia

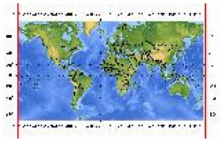
Earthquake Information Email Parameters

Addresses:

☑ paul.in.leicester@gmail.com (long format)
Active: ◉ Yes ○ No

©USGS

Pick a Predefined Profile
Help



Currently selected	
Click to see preview of selected area	
Continent:	World
Country:	Currently Unavailable
Region:	Currently Unavailable
Name for this Profile:	Default World Profile
Day Magnitude:	5.500
Night Magnitude:	5.500

SUBMIT BACK TO PROFILES DELETE PROFILE

Once registered you can select which earthquakes you would like to be notified of. Selecting global earthquakes greater than magnitude 5.5 will usually result in one or two messages per day.

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UK Earthquakes on the Web

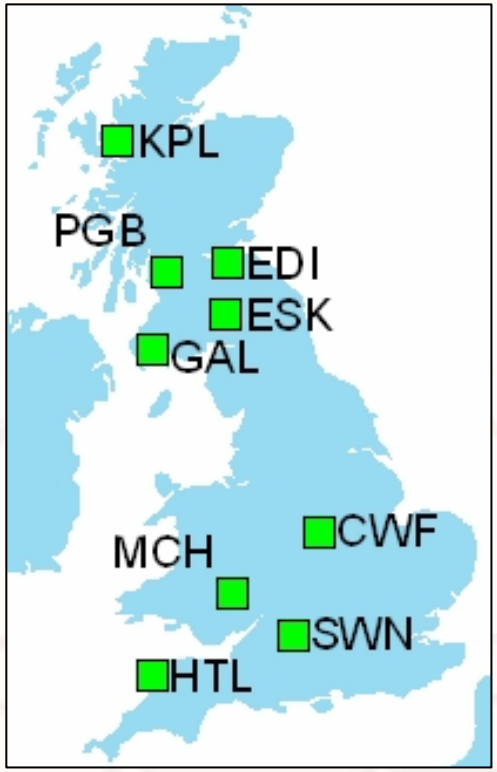
The British Geological Survey (BGS) record about 200 earthquakes per year in the UK, although only one or two each year are large enough to be felt by people (> M4.0). Information about UK earthquakes can be found viewed at the BGS website http://www.earthquakes.bgs.ac.uk .

Recent Earthquakes Reported by BGS

UK earthquakes for the last 30 days (generated on Wed May 9 11:30:06 GMT 2007)

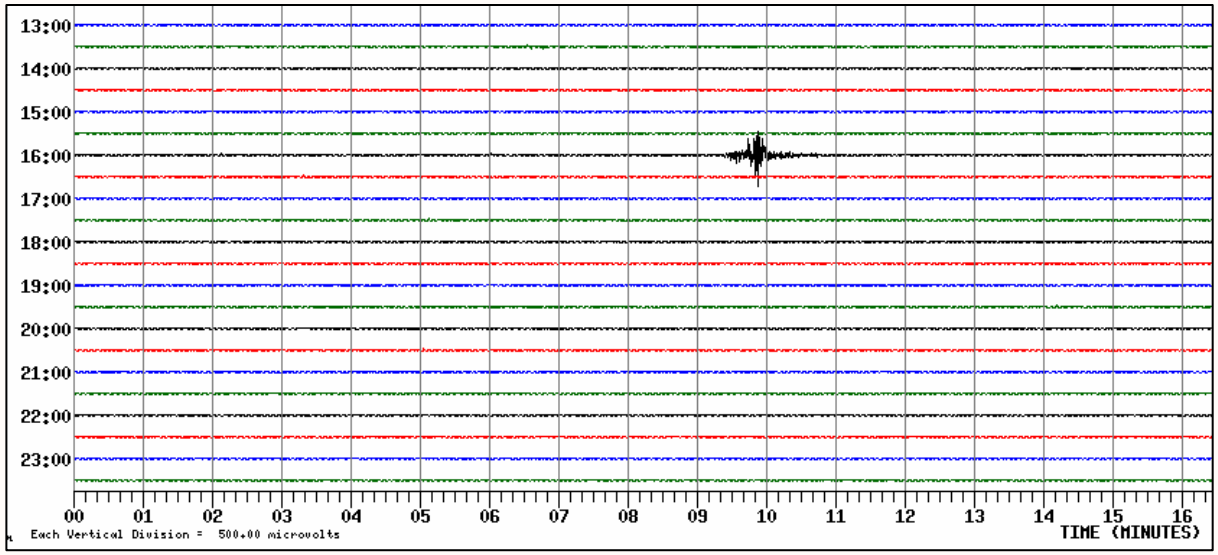
	Year Mo Dy	Hr Mn Secs	Lat	Lon	kmE	kmN	Depth	Mag	Locality
map	2007 04 28	07 18 11.6	51.077	1.187	623.2	135.7	2.0	4.2	FOLKESTONE,KENT
map	2007 04 24	04 08 06.2	54.003	-3.466	303.9	457.3	5.0	1.5	IRISH SEA
map	2007 04 23	09 51 40.2	57.028	-5.790	170.0	799.4	2.6	1.1	MALLAIG,HIGHLAND

The BGS website also lets you look at live seismic data from 9 seismic stations around the UK.



The data is presented as "helicorder plots" where each line of data is a time record of consecutive 30minute time periods. The data can be viewed as

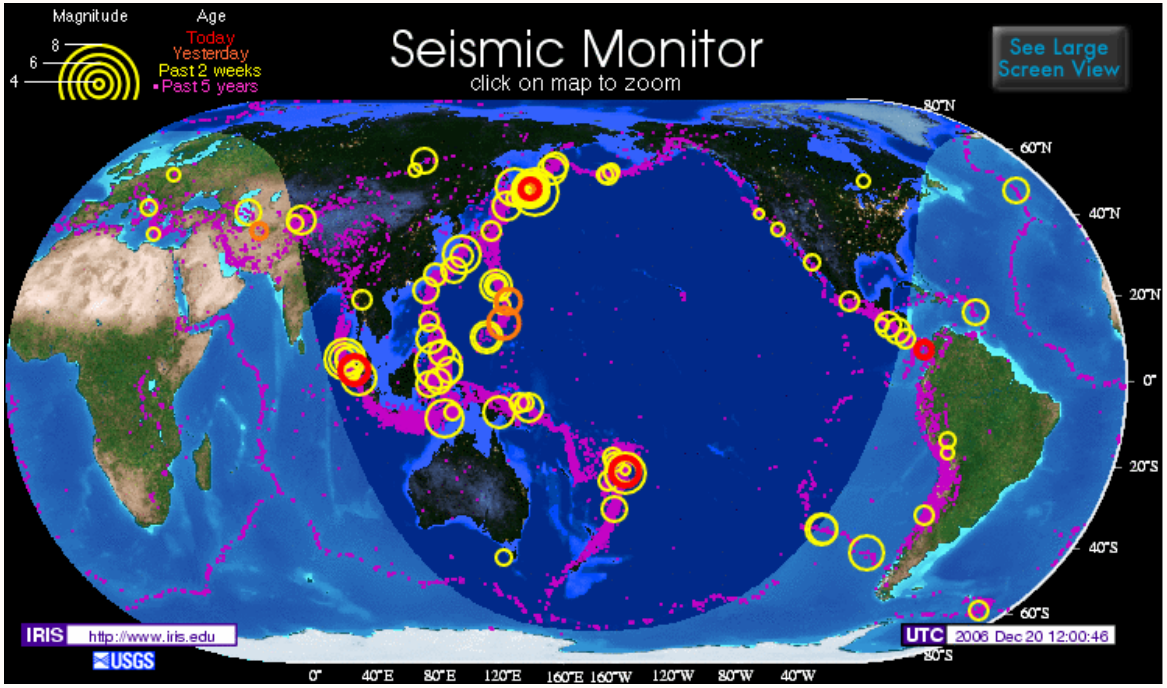
- Short period (3-5Hz) for local events (as shown here)
- Long period (0-1Hz) for regional events
- Very Long period (0-0.1Hz) for distant events



Author Paul Denton

Worldwide earthquakes on the web

Go to www.iris.edu and click on Seismic Monitor , this will give you a graphical presentation of recent earthquakes



To see more details about a particular event you can either click on the event on the map or click on last 30 days earthquakes.

Last 30 Days Earthquakes

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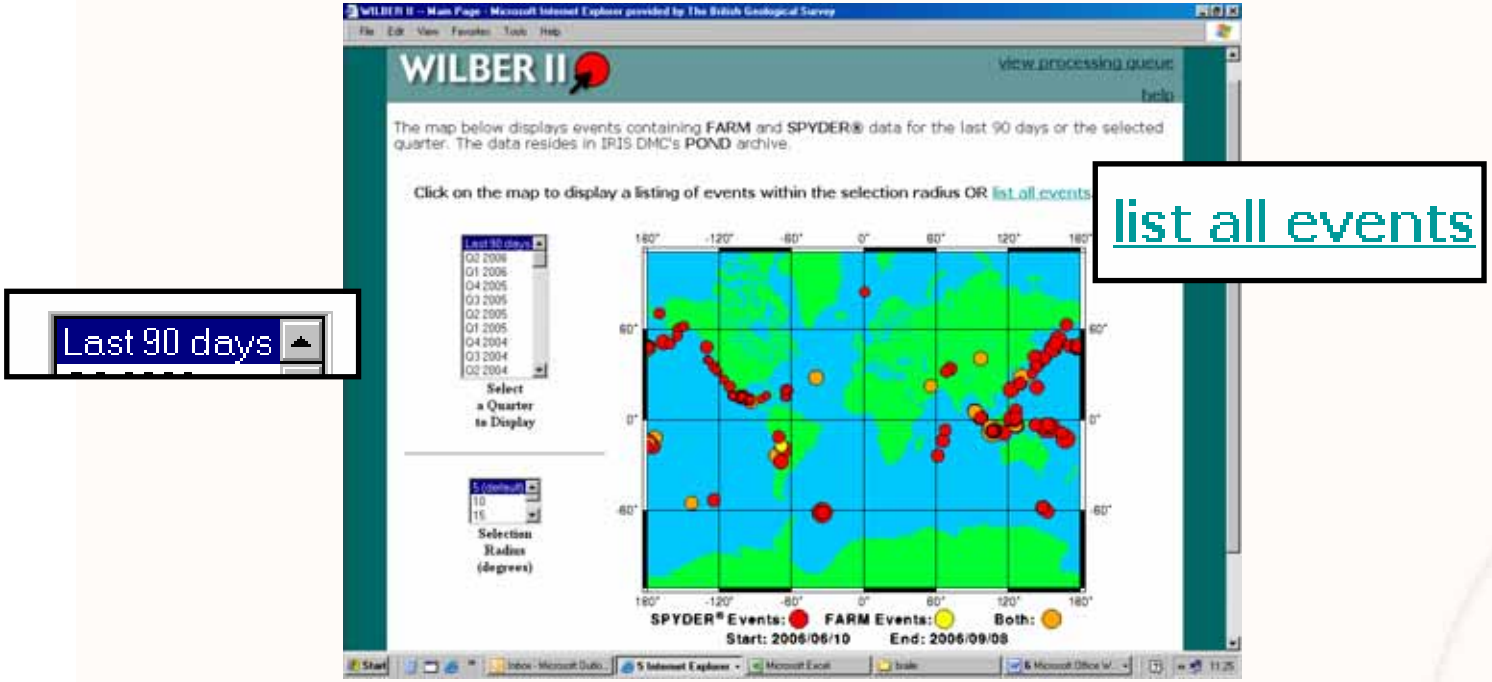
Other internet sites for earthquakes

earthquake.usgs.gov	United States Geological Survey worldwide earthquake monitoring site
www.orfeus-eu.org	European centre for archiving broadband seismic data
www.emsc-csem.org	European centre for locating earthquakes
www.isc.ac.uk	International Seismological Commission, the definitive archive of earthquake locations (not realtime)

Looking at real data from a recent event

IRIS maintains an online database of seismic data from over 8000 seismic stations around the world. In 2006 this database held 55 terrabytes of data and was growing at about 12 terrabytes per year. Realtime data for recent large earthquakes from hundreds of seismic stations is easily available through their website . Go to the **WilberII** interface directly at http://www.iris.edu/cgi-bin/wilberII_page1.pl



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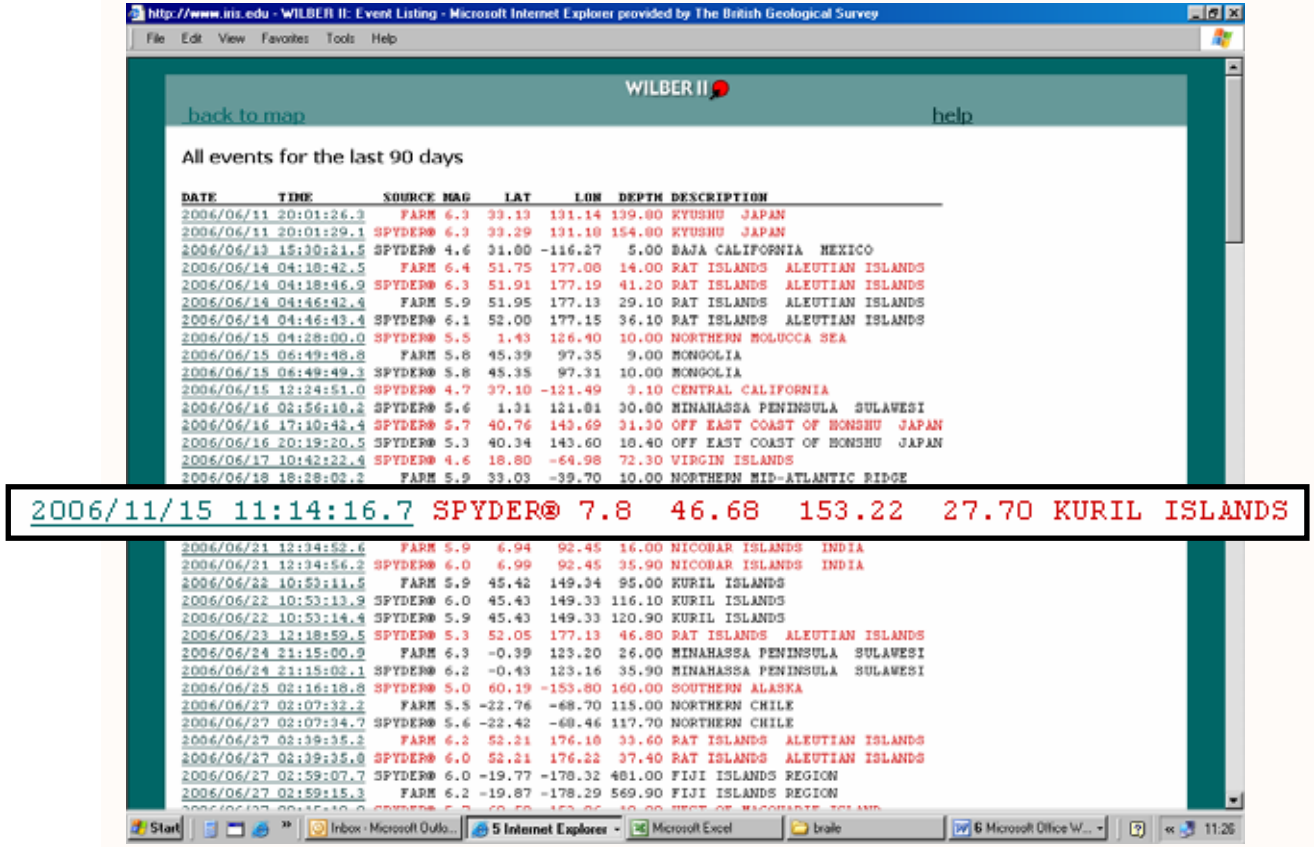
Get a list of events by choosing the relevant time period (e.g. last 90 days) and clicking on **list all events** (You can also choose an event by clicking on the map)

GLOSSARY and ACRONYMNS

Amaseis *software for recording and analysing seismic data*
FARM ***F****ast* ***A****rchive* ***R****ecovery* ***M****ethod*
IRIS *US organisation that manages seismic data (**I**ncorporated **R**esearch **I**nstitutes in **S**eismology)*
Network *A collection of seismic stations grouped together geographically or by the agency responsible for looking at the data*
POND *(**P**ool **O**f **N**etworked **D**ata)*
Record Section *A way of plotting many seismograms together on one page such that position on the page relates to distance from the event*
SAC *Originally a software package (**S**eismic **A**nalysis **C**ode) for analysing seismic data, now the de-facto standard data format for exchanging seismic event data*
SPYDER *System to **P**rovide **Y**ou with **D**ata from **E**arthquakes **R**apidly*
Station name *A 3 or 4 letter code assigned to a seismic recording site (eg ESK is Eskdalemuir in Scotland)*
WILBER *Web **I**nterface to **L**ookup **B**ig **E**vents for **R**etrieval*



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Select the event you are interested in *and click on the underlined date (some events are listed with two entries FARM and SPYDER, either will allow you to access the data although FARM should be quicker*)

Nearby seismic stations

ESK in the **II** network is a station at Eskdalemuir in Scotland that forms part of the Global Seismic Network and produces high quality data

STED in the **UK** network is the first UK school to be able to relay live data from their own seismic station to IRIS, St Edwards School in Poole has a Guralp Instruments vertical component broadband seismometer.

Others

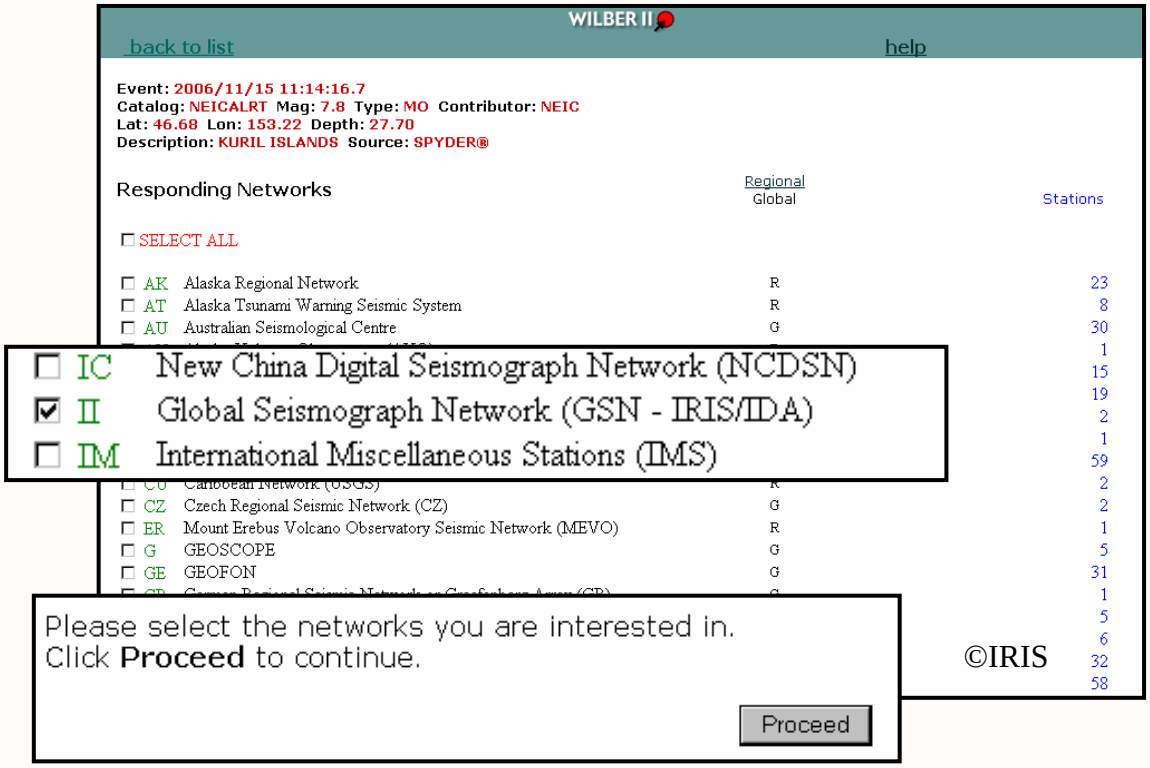
QSPA in network **IU** is at the South Pole and has very low noise.

Network PN has data from 7 high schools in Indiana

Other data centres.

There is a European equivalent of IRIS called ORFEUS www.orfeus-eu.org which archives data from many European stations (including another 5–6 stations in the UK) ORFEUS also operate a WILBER system for retrieving data.

Choose the seismic network you want to see data from. *You will see a list of all the regional networks of seismometers that have recorded this event. One good seismic station to start with is at Eskdalemuir in Scotland (called station **ESK** in network **II** the Global Seismic Network.)*



Once you have chosen the network or networks you want scroll down to the bottom of the page and click proceed

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Global datasets

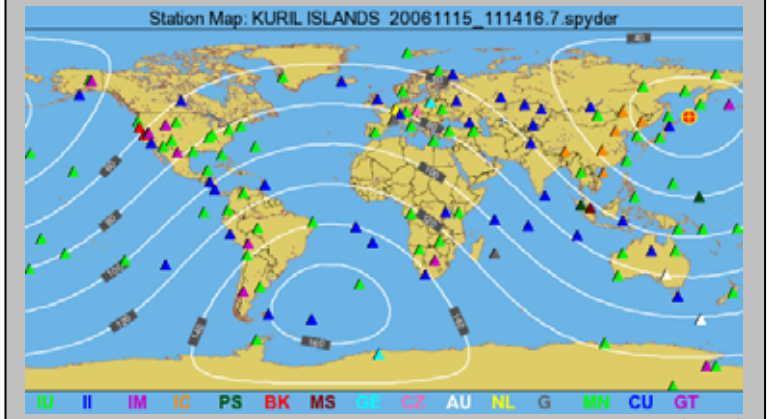
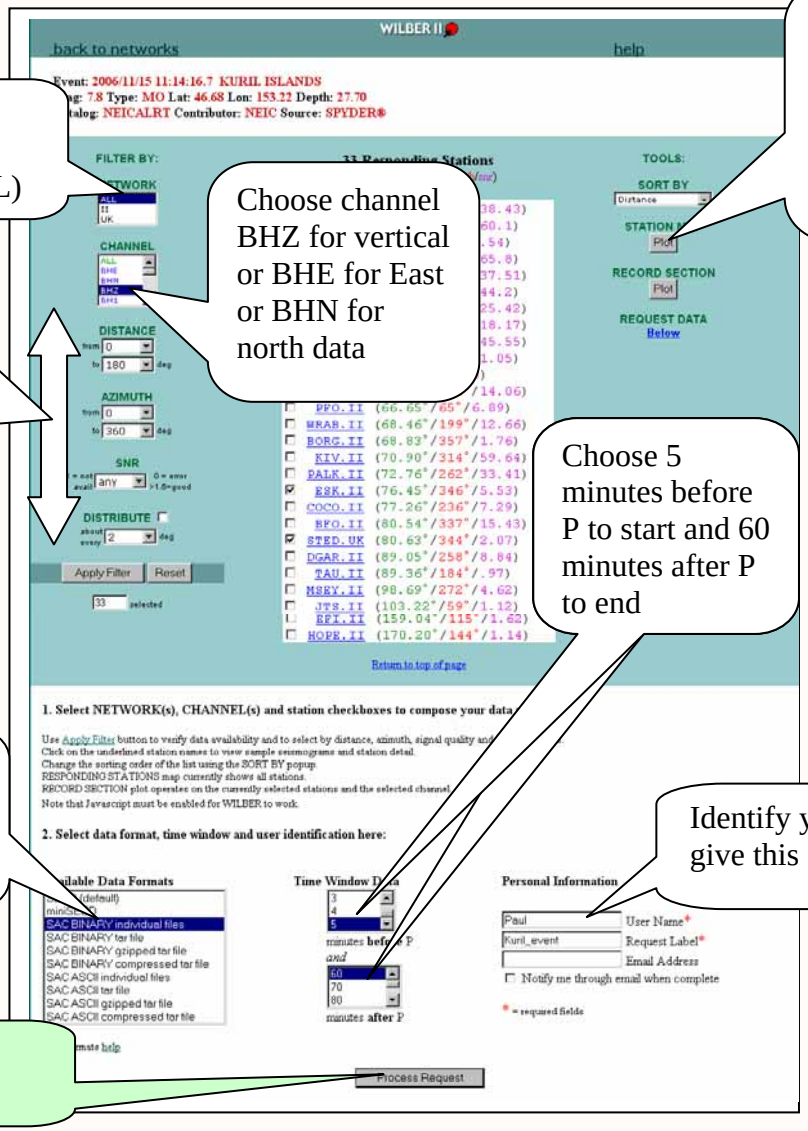


Image © IRIS

A large event will be recorded by thousands of seismic stations worldwide. Each seismogram from each station is a record that can never be repeated and contains unique information about both the event and the nature of the Earth in between the event and the recording station. Scientists studying the structure of the earth use data from as many different stations and events as they can in order to build up a detailed 3D view of the interior of the earth using a technique called tomography.

For this reason wherever possible seismic data is permanently archived in databases at large data centres. It might be analysed several times years or even decades after it was recorded.



Choose network code (ALL)

Choose channel BHZ for vertical or BHE for East or BHN for north data

You can automatic ally select (filter) only some data sets

You can produce simple record sections from this point (see box) . *Only for advanced users*

Choose 5 minutes before P to start and 60 minutes after P to end

Choose SAC Binary individual files

Identify yourself here and give this dataset a name

Click Proceed when ready

Downloading data files, *to download data files from any of these stations for a direct comparison with your own data recorded in Amaseis. Your data request will be processed and made available for download. If you selected all components then you will see a number of different files for the same event.*

The requested dataset can then be retrieved from the database.

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RECORD SECTION *(advanced users only)*

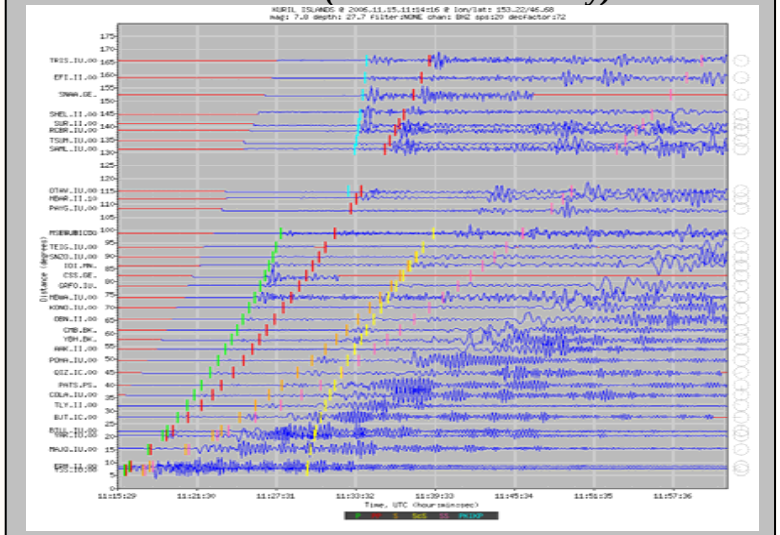

Image ©IRIS

Sometimes it is useful to look at data from lots of different stations at the same time. One way of doing this is by plotting a record section. On a record section the position of each trace up the page (the Y-axis) is governed by the distance of that recording station from the event. The x-axis (time) is common for all traces. On a record section it is easy to see how the arrival of certain seismic phases varies with distance from an event. In this case the direct P arrival (in green) disappears at about 105 degrees distance. Also the direct S arrival (orange) disappears. This is because of interference from the Earth's liquid outer core which sharply bends (or refracts) P waves and does not allow S waves to pass through at all.

WILBER II

- Please Wait -

Your request is being queued into WILBER processing

Depending on the time of day and the amount of data you have requested this will take a minute or two.

WILBER II

WILBER PROCESSING QUEUE

(users requesting more data get lesser priority)

#	ID	USERNAME	LABEL	EVENT	PRODUCT	LINES	MINUTES
1	12058	Paul	Kuril_event	20061115_111416.7.spyder	SAC	2	0

Request Description:
ID Number: 12058
User Name: Paul
Request Label: Kuril_event
Data Format: SAC
Stations: ESK.II STED.UK
Channels: BHZ
Time Window: 5 minutes before P and 60 minutes after P

The processing system will process small data requests first, so if you only want data from a single station your data request will probably be processed first.

WILBER II

Request Completed!

ID Number: 12058
User Name: Paul
Request Label: Kuril_event
Data Format: SAC
File Size: 934804 bytes

Take me to my current FTP directory (/pub/userdata/Paul/Kuril_event) to download my data product.

When your data is ready for download a link will be provided to an ftp site. Click on the ***current FTP directory*** link to access your data.

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Right click on the data file you wish to download

FTP Directory:
ftp://ftp.iris.washington.edu/pub/userdata/Paul/Kuril_event/

Parent Directory				
2006.319.11.20.55.4733.II.ESK.0>	Jan	5	06:12	306K
2006.319.11.21.23.7000.UK.STED.>	Jan	5	06:12	608K
my_processing.log.	Jan	5	06:12	615
my_request	Jan	5	06:11	164

The database will automatically assign a filename to your data file which refers to the contents of the data file.

File name: 2006.319.11.20.55.4733.II.ESK.00.BHZ.R.SAC

The first digits are the start time of the data yyyy.ddd.hh.mm.ss.ssss

II is the network code

ESK is the Station Code

00 is a code for the sample rate

BHZ indicates the data is Broadband, High sample rate, Vertical component data

SAC indicates the data format

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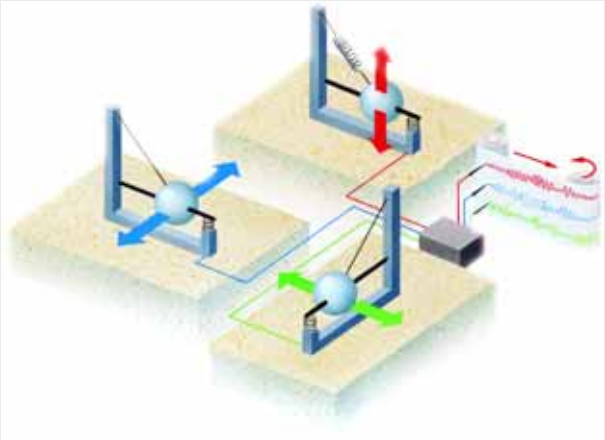
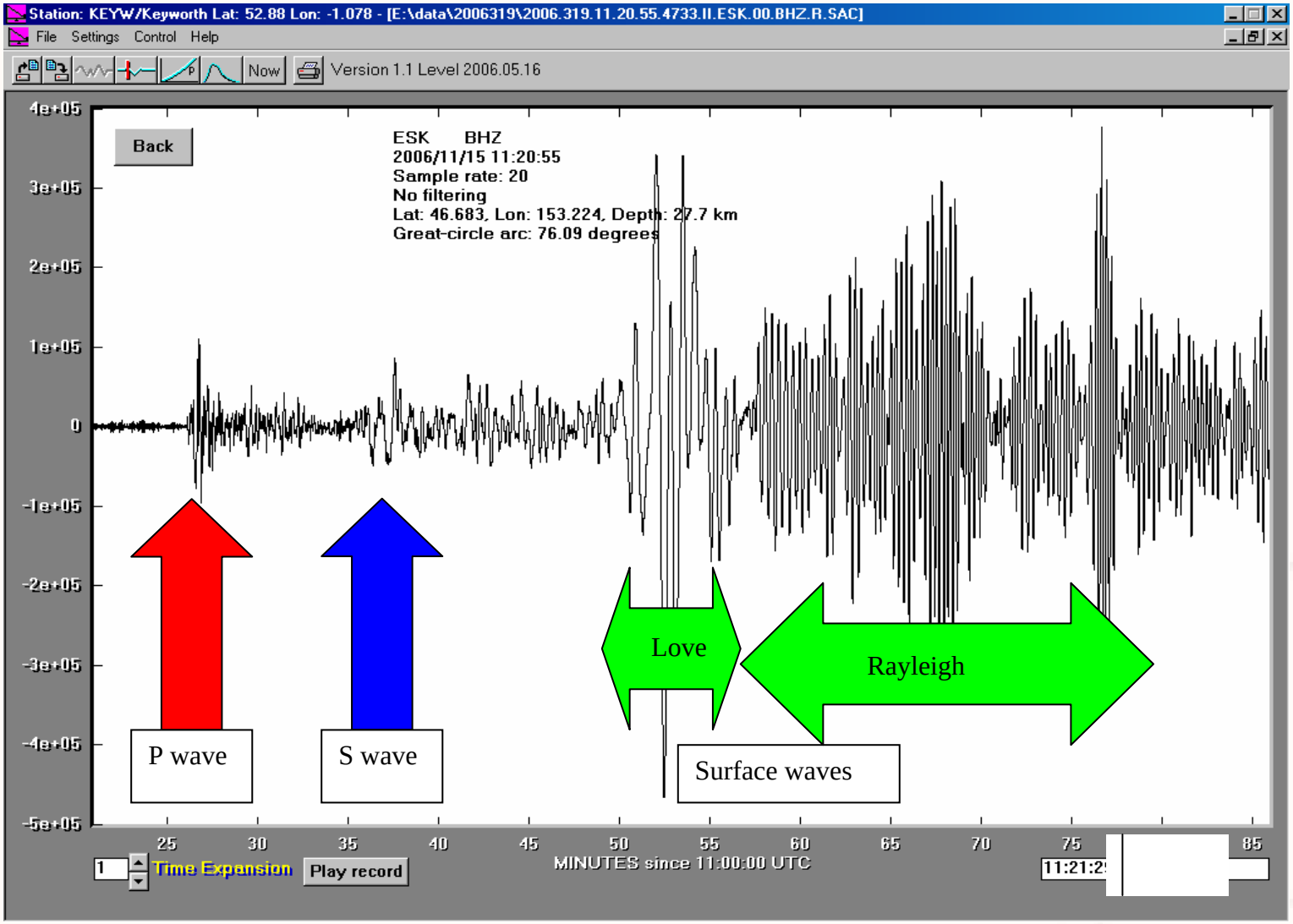
Three component data



In order to faithfully record the actual motion of the ground in 3 D seismologists need to use three separate sensors each recording the vibrations in different direction. These are usually orientated:

Z component measuiring up–down motion
E component measuring east–west motion
N component measuring north–out motion.

Voctor addition of these data streams allows reconstruction of the motion in any direction.



You can now view the data file in Amaseis (Use the **File** ..**Open** option, see the 'Using Amaseis' data sheet)
See resource 'Decoding Seismograms' to find out how to identify when the different wave types (called phases) arrive at your station

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