

IRIS

Active Earth Display

Cascadia and

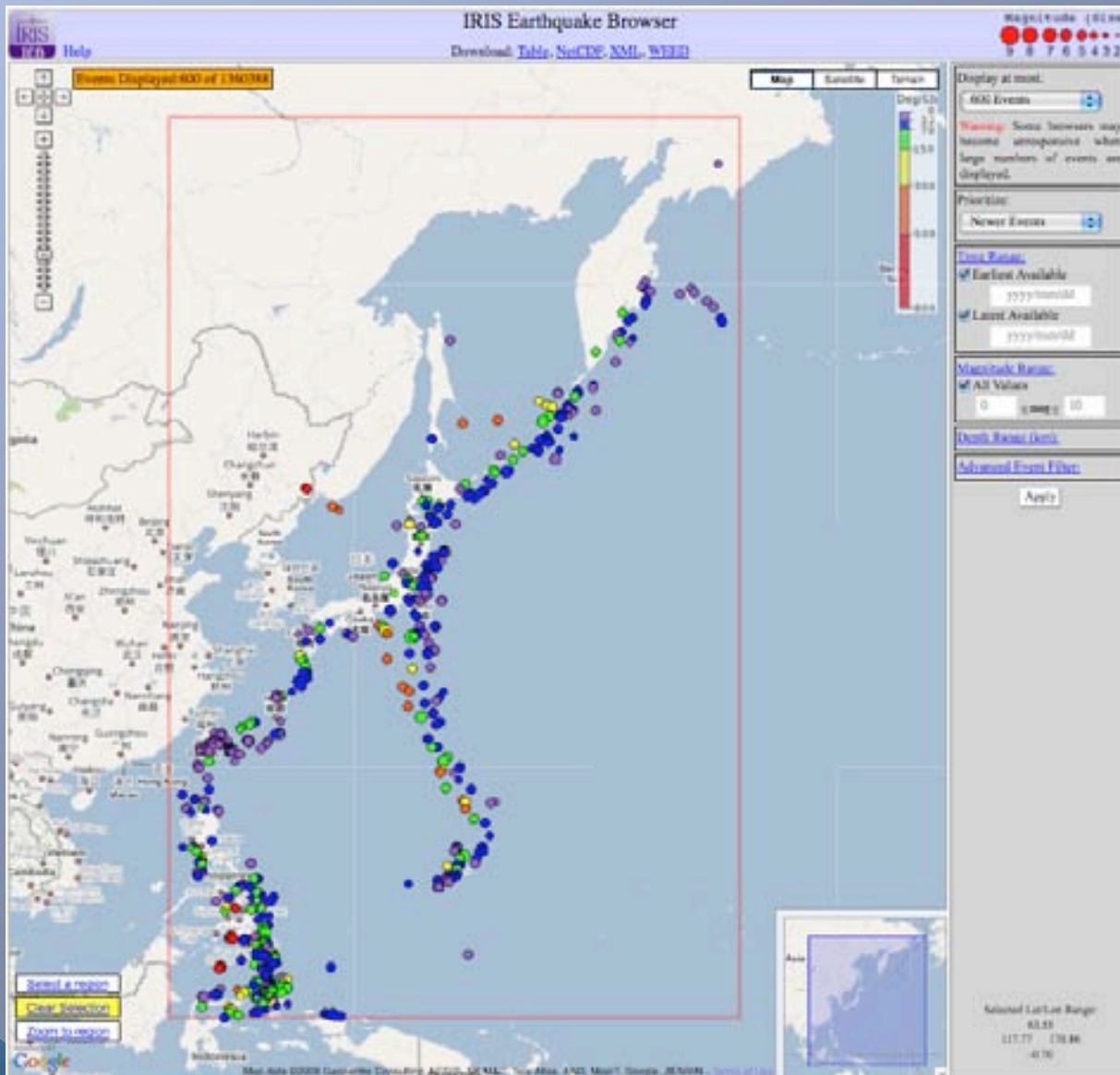
Basin and Range

Content Modules



Patrick McQuillan
Education and Outreach Specialist
IRIS

IRIS Earthquake Browser



Explore regional
Seismicity

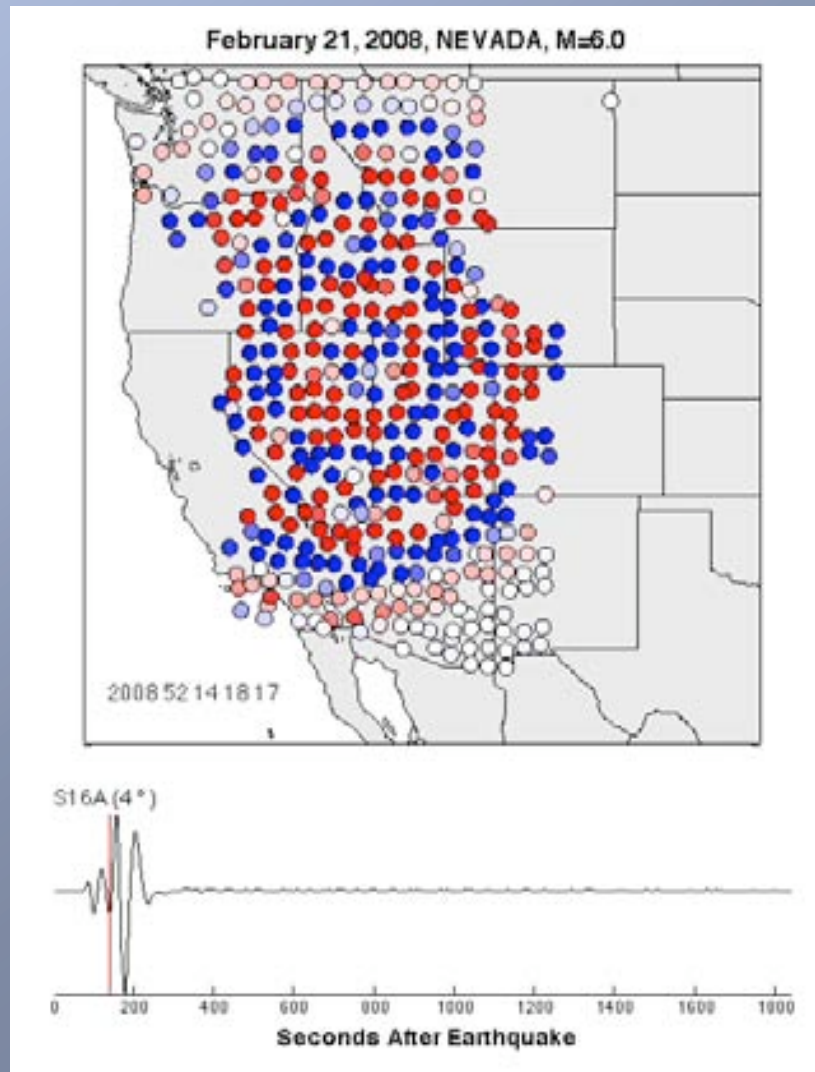
Discover Plate
Boundaries

Examine earthquake
databases

www.iris.edu/ieb



USArray Earthquake Wave Visualizations



Watch actual earthquake waves move across the USArray.

New animations available
Within hours of every large
Earthquake occurrence.

http://www.iris.edu/hq/programs/education_and_outreach/visualizations



The Active Earth Display is:

An interactive, customizable, real-time earth science display and educational tool for National Parks, Museums, University Lobbies, Libraries, Schools, Planetariums, Aquariums, ...



The Active Earth Display is:

An interactive, customizable, real-time earth science display and educational tool for National Parks, Museums, University Lobbies, Libraries, Schools, Planetariums, Aquariums, ...



Iris Active Earth Displays

- Inspire public interest in the science of seismology and related fields
- Demonstrate that we live on an active planet
- Highlight active research and geophysics data
- Written for general museum audience
- Easily customizable
- Automatically updated
- Over 75 accounts with over 50,000 annual users



The Active Earth Display is:

Free:

Operating System software
IRIS developed content
 -70 pages and growing
Content from users network
Free account through IRIS website
Online forum

You Provide:

Windows or Mac computer
Internet connection
1280 x 1024 touch screen monitor

Optional:

One screen table top kiosk
One screen floor kiosk
Two screen floor kiosk



The Active Earth Display is:



Easily Customized:

- Choose content pages**
- Add links to your web pages**
- Create new content pages**

Interactive or non-interactive:

- Touch screen monitor**
- Monitor and mouse/trackball**
- Monitor behind glass no mouse**
 - auto advance**



Where can you find Iris Museum Displays?

**American Museum of Natural History, New York City
Smithsonian Museum of Natural History, Washington, DC
Franklin Institute, Philadelphia, PA
Birch Aquarium, Scripps Institution of Oceanography, La Jolla, CA
Carnegie Museum of Natural History, Pittsburgh, PA
New Mexico Museum of Natural History, Albuquerque, NM
Maryland Science Center, Baltimore, MD
Sunset Crater National Monument, Flagstaff, AZ
National Science Foundation Headquarters, Washington, DC
Congressman and Senators offices, Capital Hill, Wash, DC
State Geologists Visitor Centers in current USArray states
Amundsen-Scott Station, The South Pole, Antarctica
Your National Park, planetarium, museum, visitor center,
library, school**




Active Earth Software

Entry link: 10

Change image? no - leave as is

Image to upload:

Topic 4

 This is the only topic you can currently delete.

Entry link: 13

Change image? no - leave as is

Image to upload:

LINKS

Select links using the link type and name popup menus on the left. Click on column headers for more information.

#	Link type	Link name	URL	Test	Setup	URL parameters	Timeout min	Timeout action	Err- tiled?
1	Cascadia	1-Cascadia Attractor Screen with	http://www.iris.edu/bed2/content/cascadia/attract_attr_1785.html	T			00	go home	
2	Cascadia	2-8Qs: The Shaking Truth	http://www.iris.edu/bed2/content/cascadia/earthquakes/8qshaking_truth.html	T			00	go home	
3	Cascadia	3-8Qs: Regular Rumbles	http://www.iris.edu/bed2/content/cascadia/earthquakes/8qshaking_rumbles.html	T			00	go home	
4	Cascadia	4-8Qs: Three Ways to Get Shocked	http://www.iris.edu/bed2/content/cascadia/earthquakes/8qshaking_three_ways_shockup.html	T			00	go home	
5	Cascadia	5-Volcs: Why Active?	http://www.iris.edu/bed2/content/cascadia/volcanoes/5volcs_active.html	T			00	go home	
6	Cascadia	7-Volcs: Historic 1980 Eruptions	http://www.iris.edu/bed2/content/cascadia/volcanoes/7volcs_eruptions.html	T			00	go home	
7	Cascadia	8-Volcs: Monitoring the 12 Hazards	http://www.iris.edu/bed2/content/cascadia/volcanoes/8volcs_look.html	T			00	go home	
8	Cascadia	9-Volcs: Realtime Seismic Activity	http://www.iris.edu/bed2/content/cascadia/volcanoes/9volcs_record.html	T			00	go home	
9	Cascadia	10-Volcs: GPS Measuring of Mt St	http://www.iris.edu/bed2/content/cascadia/volcanoes/10volcs_measure.html	T			00	go home	
10	Cascadia	11-Tsunamis: In the United States	http://www.iris.edu/bed2/content/cascadia/tsunamis/11tsunamis_states.html	T			00	go home	
11	Cascadia	12-Tsunamis: Comparing Sumatra	http://www.iris.edu/bed2/content/cascadia/tsunamis/12tsunamis_sumatra.html	T			00	go home	
12	Cascadia	13-Tsunamis: Fast ones Underwater	http://www.iris.edu/bed2/content/cascadia/tsunamis/13tsunamis_underwater.html	T			00	go home	
13	Cascadia	15-Tectonics: Cloning to	http://www.iris.edu/bed2/content/cascadia/plates/15tectonics_cloning.html	T			00	go home	
14	Cascadia	16-Tectonics: Measuring with GPS	http://www.iris.edu/bed2/content/cascadia/plates/16tectonics_measuring.html	T			00	go home	
15	Cascadia	17-Tectonics: EarthScope Measures	http://www.iris.edu/bed2/content/cascadia/plates/17tectonics_earthscope.html	T			00	go home	

the

Active Earth

display

Use CONFIG and then RESTART the display.

CONFIG

RESTART

— Configures the display. Be sure to save your settings!

— Restarts the display, reloading settings from IRIS server.

Cascadia Module

ACTIVE EARTH



Touch a scene to explore how it can be linked to danger.



EARTHQUAKES



Earthquakes can shake up cities without warning, reminding us that we are living on an active Earth.



VOLCANOES



The majestic Cascades volcanoes formed by one tectonic plate sinking under another.

ANGER BENEATH THE PACIFIC NORTHWEST



TSUNAMIS



Tsunami waves from undersea earthquakes have drowned the coast of the Pacific Northwest in the past.



PLATE TECTONICS



The Coast Ranges would not exist if two tectonic plates were not smashing together beneath them.

4 Chapters

16 pages

Live data

Animations



Cascadia Module

EARTHQUAKES

Touch the circles on the map to learn more

Regular Rumbles

Earthquakes in the past two weeks

The map displays real-time data showing the locations of earthquakes that have happened in the past two months.

Stop back later to see if any new earthquakes have occurred.

Are you surprised how many earthquakes happened in the last two weeks?

We don't feel most of them because they are too small.

Real-time Earthquakes

MAGNITUDE: 2, 3, 4, 5, 6

AGE: TODAY, YESTERDAY, PAST 2 WEEKS, PAST 2 MONTHS

MTG DIVISION OF THE STATE

How do we measure all these earthquakes?

Seismograph

Distant earthquake occurs

This movie shows an old style seismometer recording an earthquake. As P-waves and S-waves from the earthquake pass by, they are recorded on a seismogram using a pen.


A modern EarthScope seismometer is digital and the size of a gallon paint can. It is usually buried several feet below ground and can record earthquakes from around the world. The seismogram is recorded as a digital computer file.

credits

BACK TO START PREV NEXT


Chapters highlight live data

Cascadia Module


 **Tsunamis**


Touch the map legend or the Answer to learn more

Sumatra








Pacific N.W., U.S.



**Sumatra location**

Touch icons below to learn about the tectonic similarities between the regions

-  = Great earthquakes
-  = Rupture zone—area between plates that slipped during the earthquake
-  = Direction of plate movement
-  = Subduction zone; red barbs point in direction the oceanic plate dives
-  = Volcanoes

Two of a Kind: Sumatra and The Pacific Northwest

These two regions of the world are similar. Tsunamis often occur near Sumatra. What do you think that tells us about the risk of natural disasters in the Pacific Northwest?

Question:
The December 26, 2004 tsunami was spawned by a magnitude 9.3 earthquake located where the oceanic Indian Plate slides under the Eurasian Plate near Sumatra. Could an earthquake/tsunami pair of this magnitude occur in the Pacific Northwest?





Answer

credits

BACK TO START

PREV

NEXT



Global to regional comparisons

IRIS

Basin and Range Module

ACTIVE EARTH **IRIS**


Look for  or [links](#) to learn more



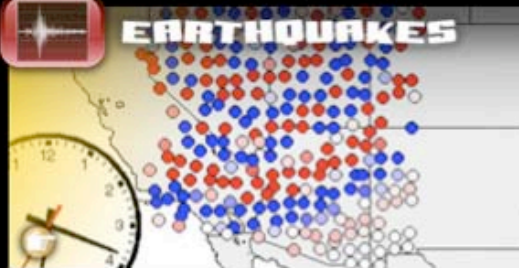
PLATE TECTONICS



Continental rifting results in the development of long, parallel mountain ranges and valleys that have had dramatic impact on the history of the Basin and Range Province.



EARTHQUAKES



As the region rifts, the landscape shifts, sometimes with violent consequences.

EXPLORING THE BASIN AND RANGE



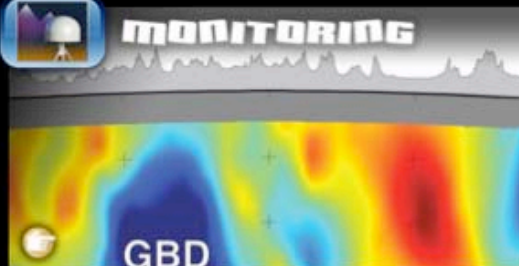
VOLCANOES



As North America rips apart, rising hot mantle melts and spews lava across parts of the Basin and Range.



MONITORING



Scientific programs measure the moving landscape of the Basin and Range Province and help us appreciate how, when and why earthquakes and volcanic eruptions occur.

4 Chapters

16 pages

Live data

Animations



Basin and Range Module

 **PLATE TECTONICS**

Look for  or links to learn more

What is the Basin and Range Province?



The Basin and Range province covers over 800,000 km² of Nevada and parts of Oregon, Idaho, California, Arizona, Utah, New Mexico, and Northern Mexico. The dashed line includes the Snake River Plain considered by some to be Basin & Range.

Earthquakes

EQ faults

EQ hazards

Volcanic fields

Mines

National Parks



Rochester Coeur Mine, Humboldt River Basin



Stella Lake, Great Basin National Park



Aerial view looking west across the Basin and Range

Question 1:
What are the features that look like an army of caterpillars marching north?
 Answer

Question 2:
Why are there a large number of mines in the Basin and Range Province?
 Answer

Question 3:
Which states are the top three for largest number and magnitude of earthquakes per year?
 Answer

 BACK TO START

 PREV

NEXT 



Chapters start with General Overview

Basin and Range Module





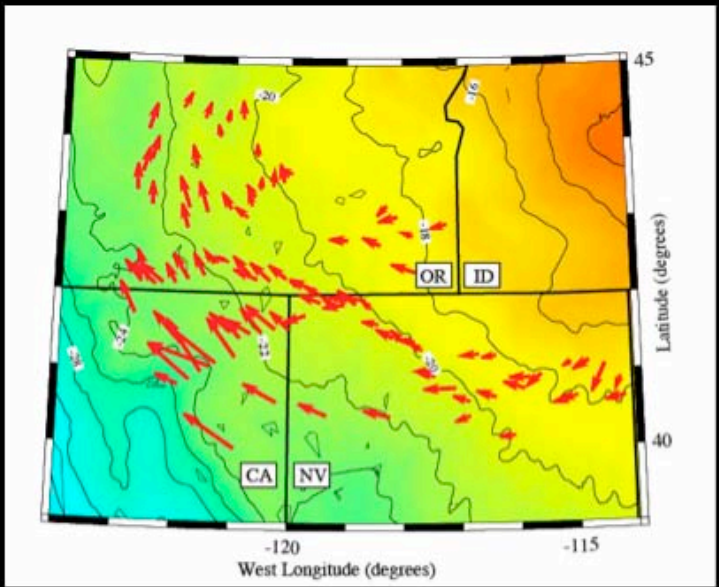
PLATE TECTONICS

Look for  or [links](#) to learn more


Moving to the Beat of a Different Drummer

Volcanoes and Earthquakes Far From a Plate Boundary

EarthScope instruments are measuring the motion of the Basin and Range province. The mountains are rising about 0.3 mm per year, the plates are extending 5 cm per year. Slow, but still moving.



Each arrow represents a speed (the length of the arrow) and direction (which way the arrow is pointing) that a single scientific GPS station has moved. The base of the arrow is the location of the moving GPS, and the head of the arrow is the direction it is moving.




GPS positions before extension

Fixed edge of plate




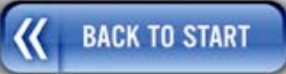
GPS Station

Question

What might this region look like millions of years from now?


 Answer


credits



Chapters continue to specific details

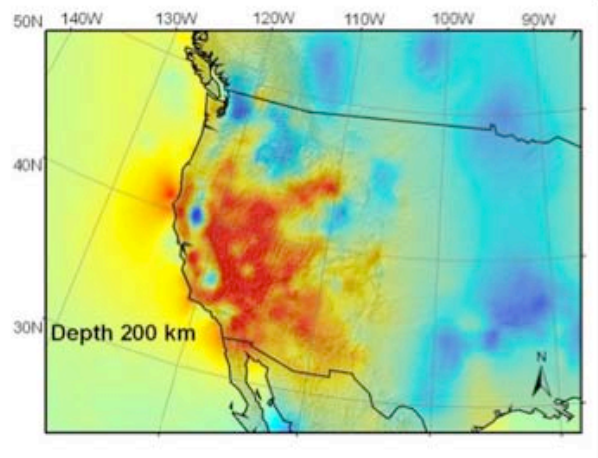
Basin and Range Module

**MONITORING**

Look for  or [links](#) to learn more

Beneath Your Feet

What's Underneath the Basin and Range?

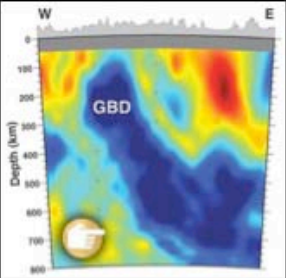
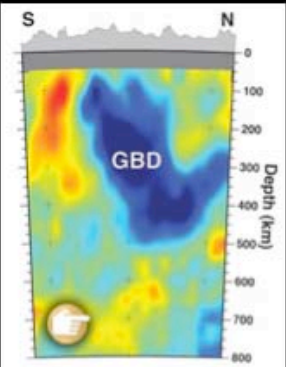


Depth 200 km


This is a low resolution image of what is going on 200 km beneath the surface of the Earth in the mantle, which is a layer of the Earth made up of very hot rock under enormous pressure. Blue colors mean relatively colder and harder rock, and red colors mean relatively warmer and weaker rock.

credits


EarthScope is providing high resolution views of the Basin and Range using seismic tomography.

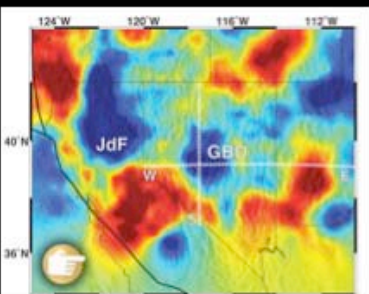








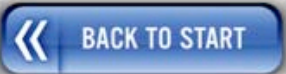
Question 1:
Why are there red colors under the Basin and Range?

 Answer

Question 2:
Why are there blue colors under the eastern United States?

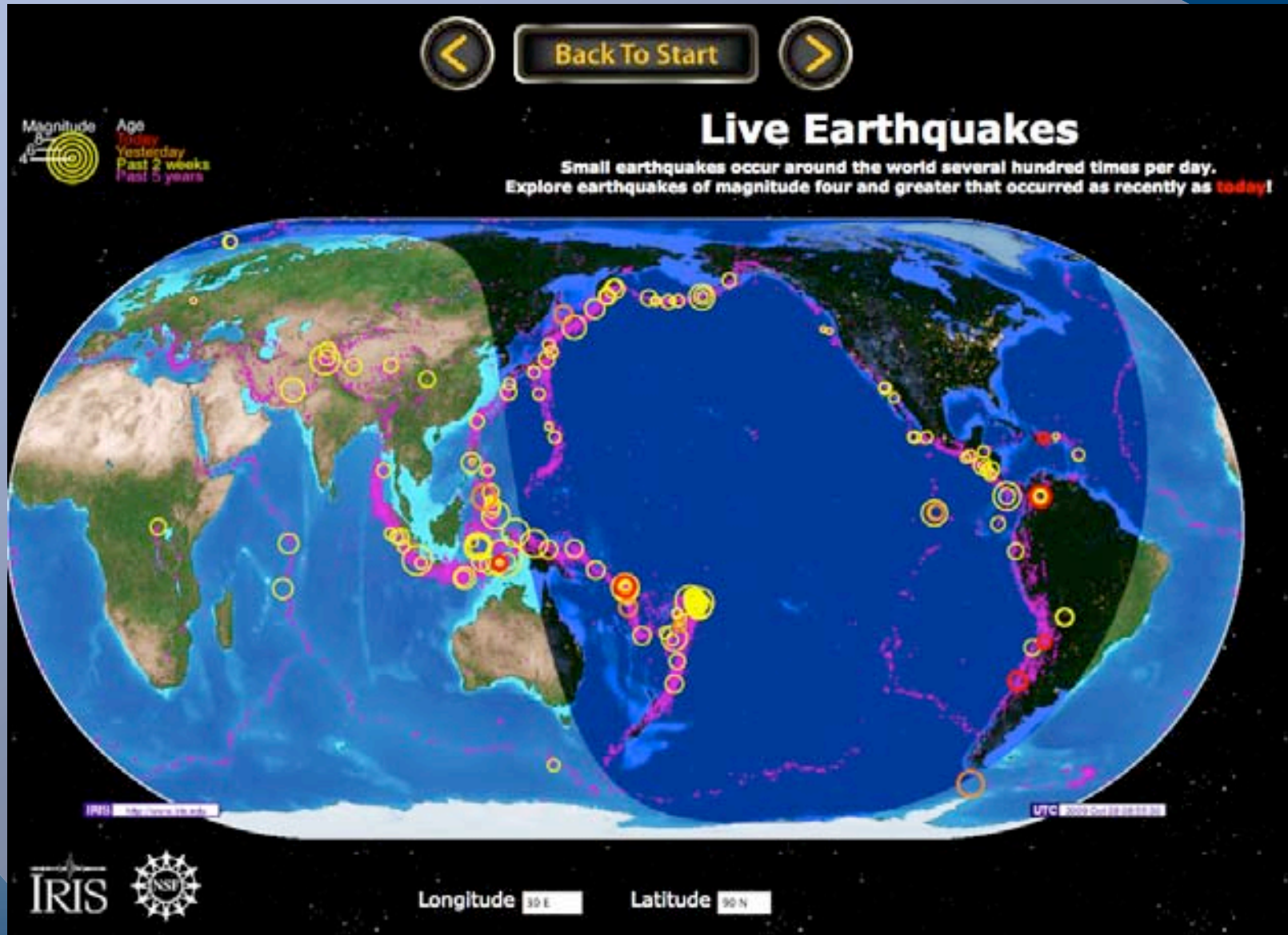
 Answer





Updatable with latest research results!

General Seismology Pages



Updatable with latest live data!

Active Earth Display Content Sets:

General Seismology

Africa Array

Cascadia

Basin & Range Province

EarthScope/USArray

San Andreas

PoleNet

Colorado Plateau

YellowStone

New Madrid

Rapid Response EQ Page

Your Content

Available

Available

Available

December 2009

January 2010

Spring 2010

Spring 2010

Summer 2010

Fall 2010

Spring 2011

December 2009

Tomorrow

