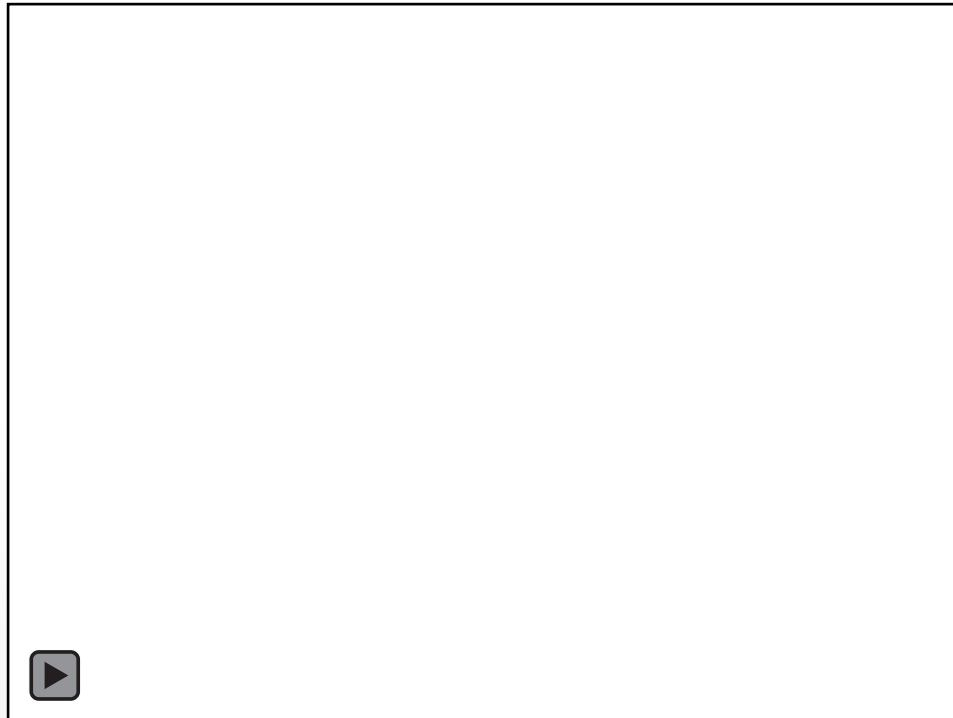


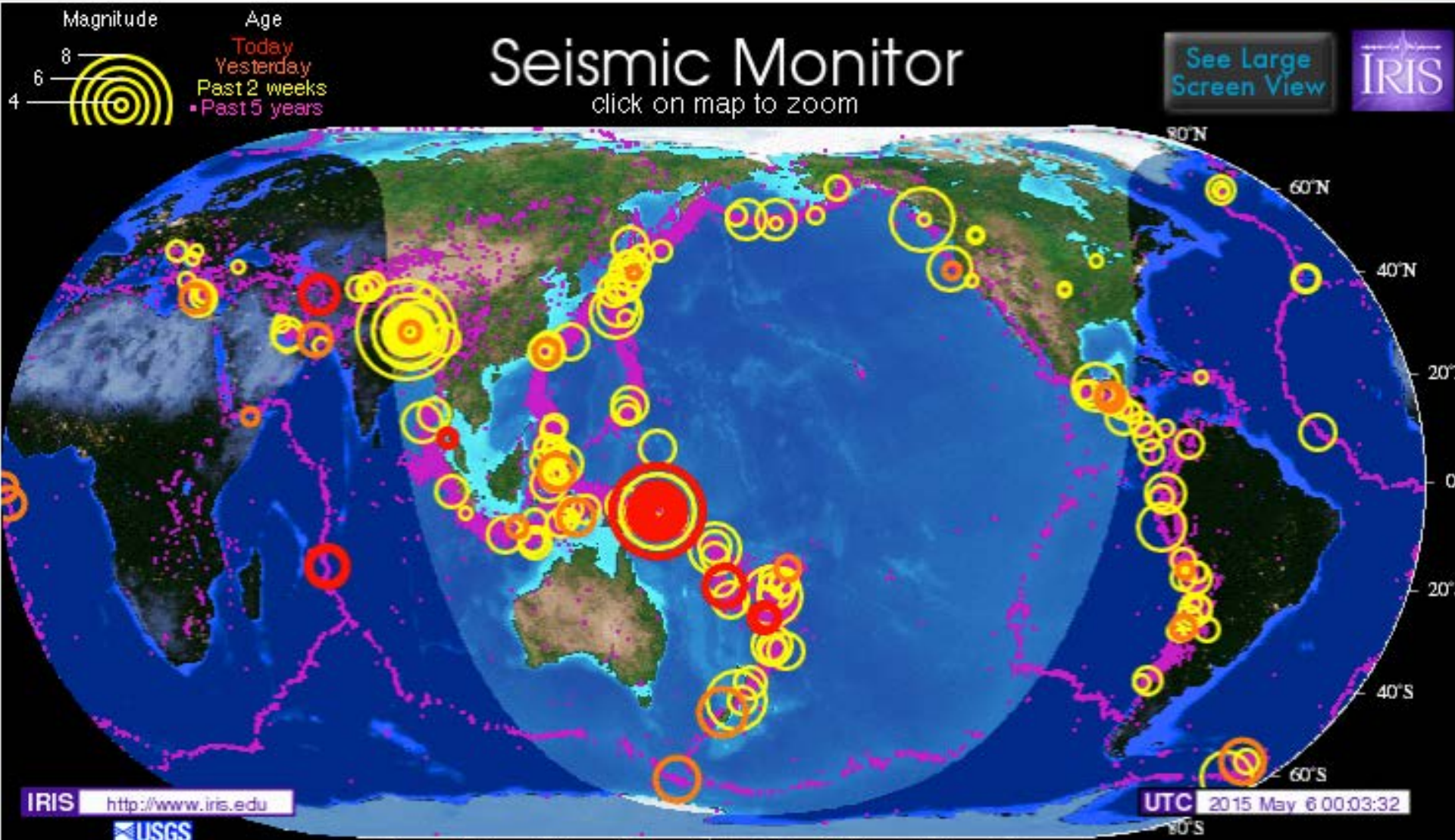
IRIS Data Tools and Other Resources



John Taber, IRIS

- How to engage students with real data and recent newsworthy earthquakes
- Tools for student activities and research
- Supporting resources





Magnitude 7.1 PUEBLA, MEXICO Tuesday, September 19, 2017 at 18:14:39 UTC

A magnitude 7.1 earthquake has occurred 120 km SE of Mexico City collapsing buildings, homes, and bridges across hundreds of miles. Nearly 140 people had been reported killed across the country, but that figure was expected to climb as rescue and recovery proceeds.

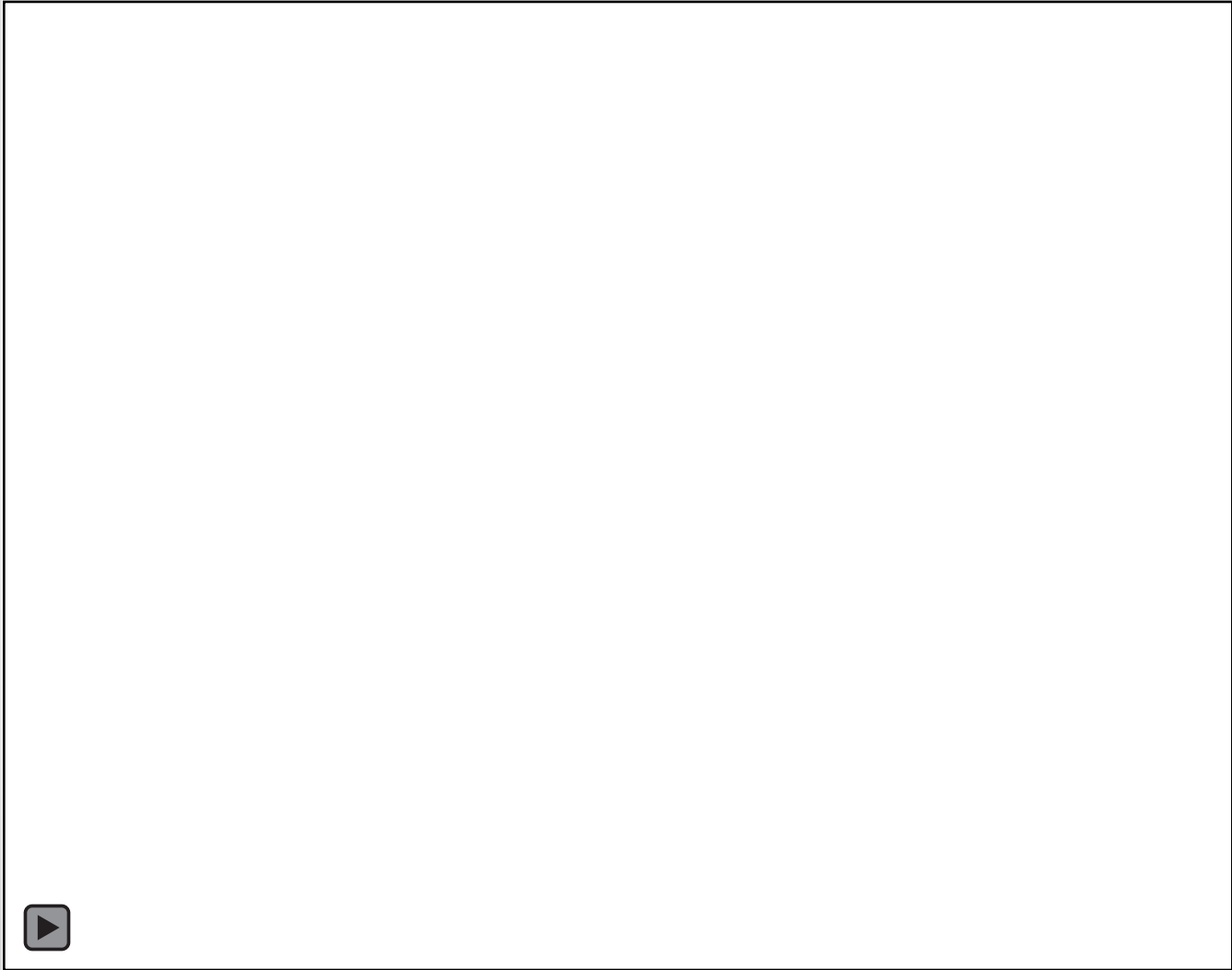


This earthquake occurred on the 32nd anniversary of the devastating 1985 M8.0 Michoacan earthquake, which caused extensive damage to Mexico City and the surrounding region.

A car sits crushed, engulfed in a pile of rubble from a building felled by a 7.1 earthquake, in Jojutla, Morelos state, Mexico. The earthquake stunned central Mexico, killing at least 139 people as buildings collapsed in plumes of dust. (AP Photo/Carlos Rodriguez)

- Recent Earthquake Teachable Moments slide sets produced within 1 day
- Jointly produced with Univ. of Portland
- Collaborative content from USGS, UNAVCO and others



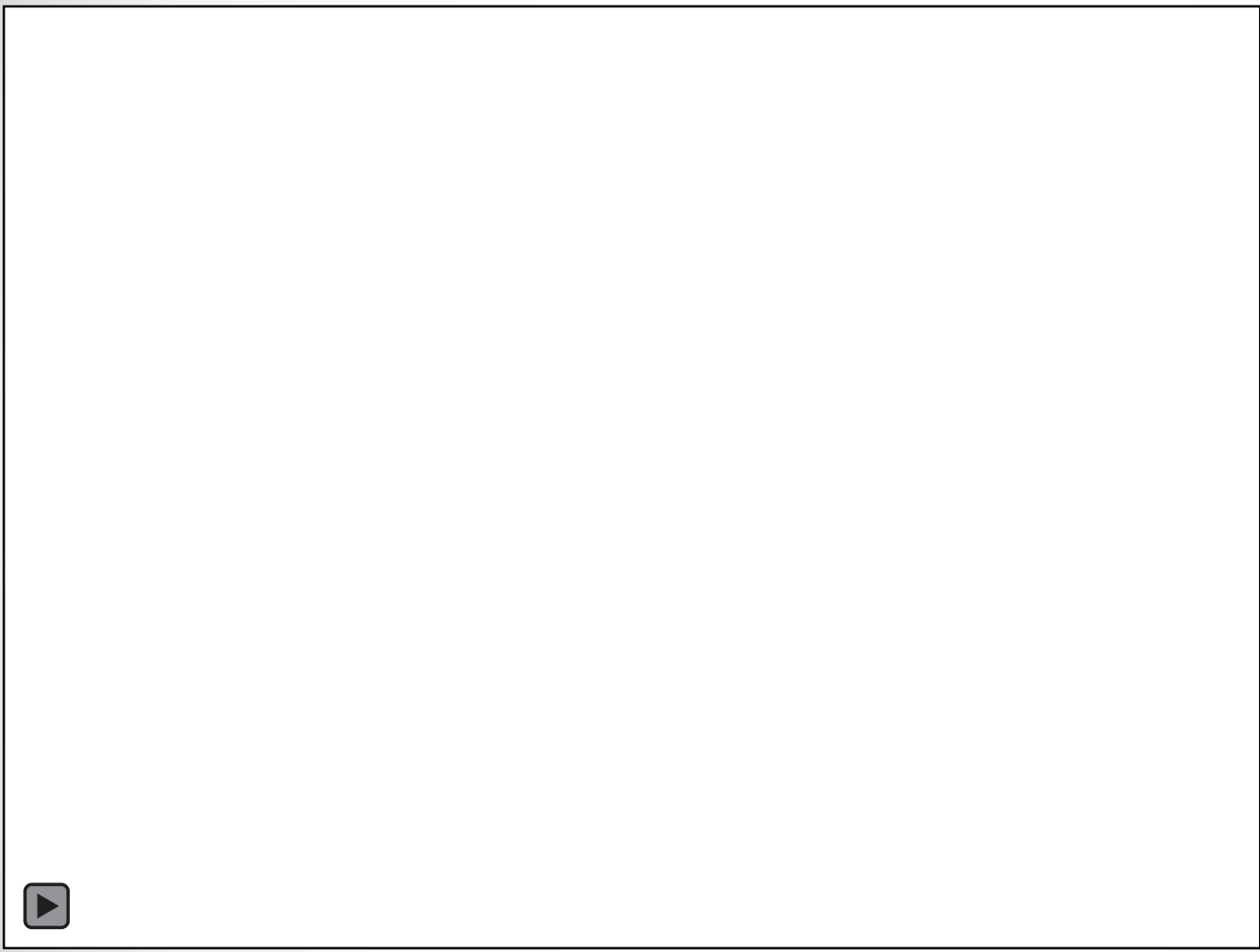


- **Ground motion visualization (GMV)**
- Automatically produced by the IRIS DMC for all earthquakes M5.5+
- Ready after several hours
- Each dot is a seismic station
- Red means up and blue means down
- Scale on the bottom

A short-subject animation
cut from the longer animation,

"Mexico: Earthquakes and Tectonics"





Automatically
produced by
IRIS Data
Services



IRIS Aftershock sequence and focal mechanisms



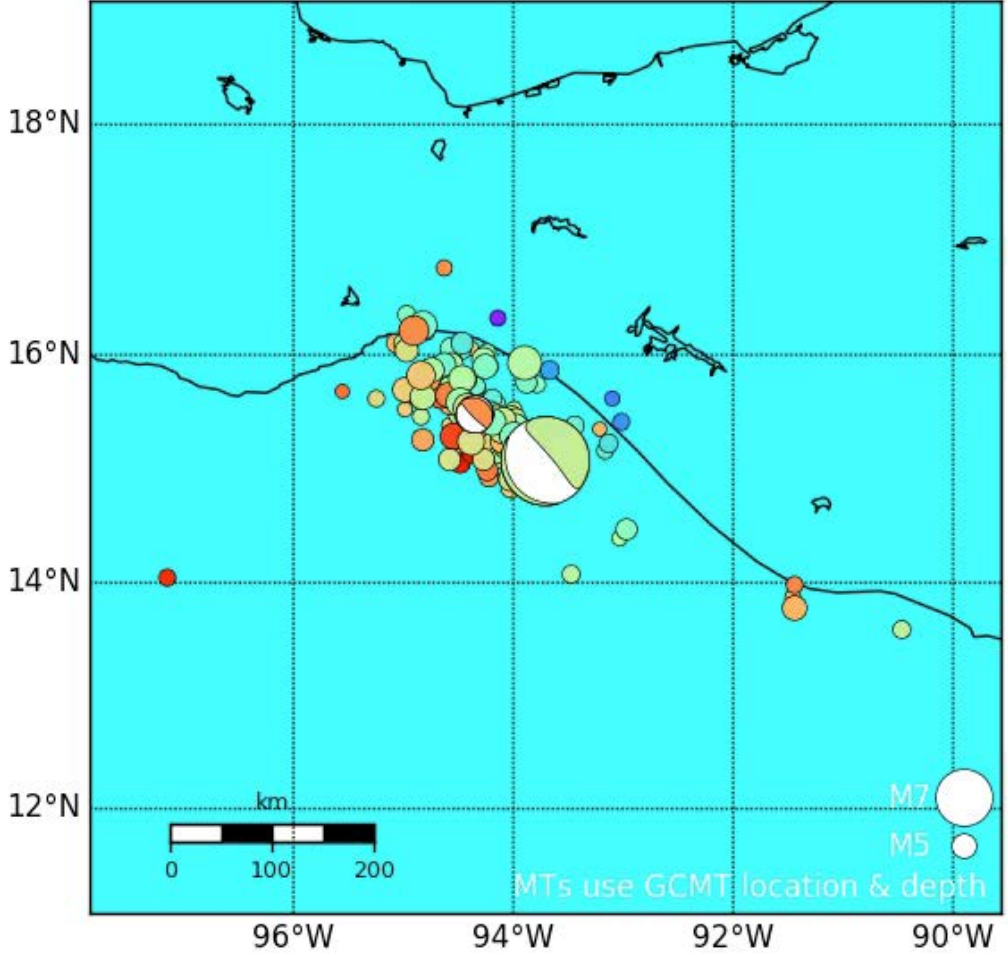
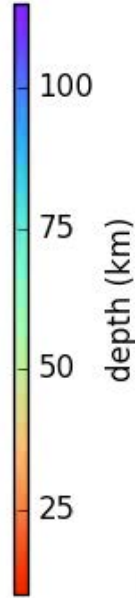
Version: 2017-09-20 05:47

M8.2 NEAR COAST OF CHIAPAS, MEXICO
2017-09-08 04:49:17 Lat= 15.07 Lon= -93.71 z=35.0km

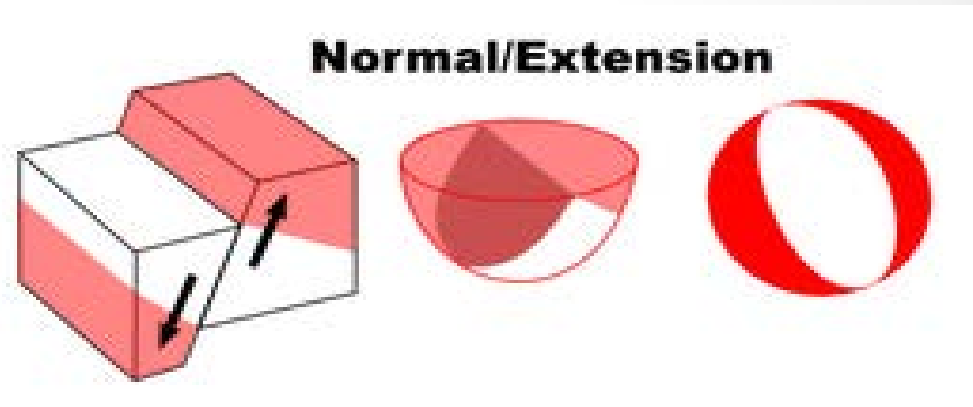
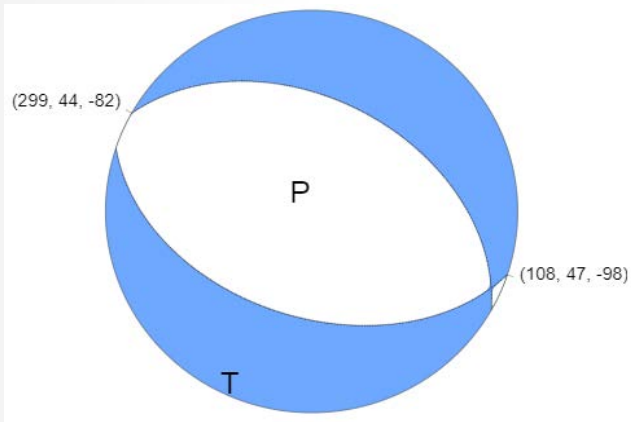
within 10 days



Automatically produced by IRIS Data Services



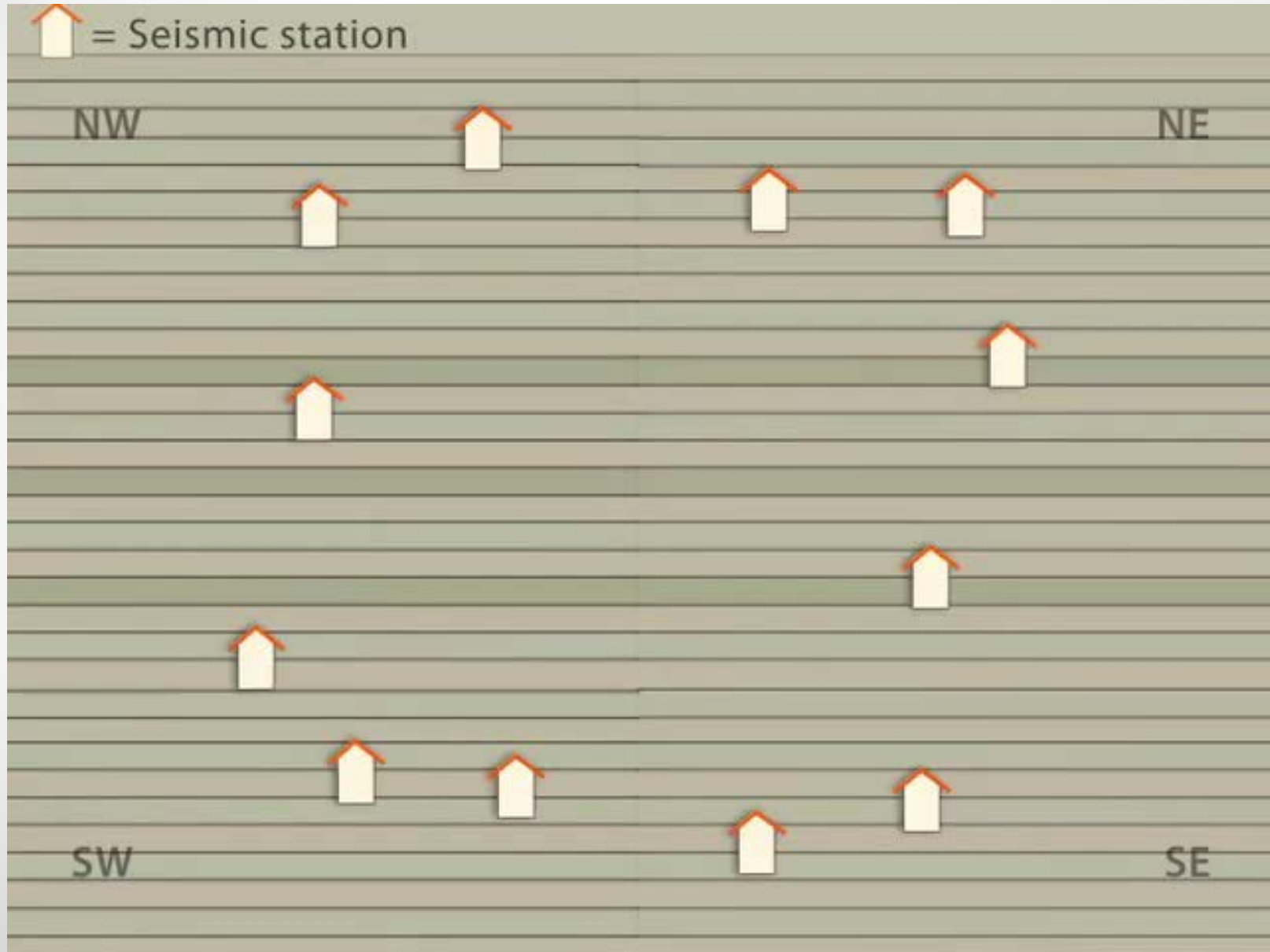
The focal mechanism is how seismologists plot the 3-D stress orientations of an earthquake and determine the direction of faulting.



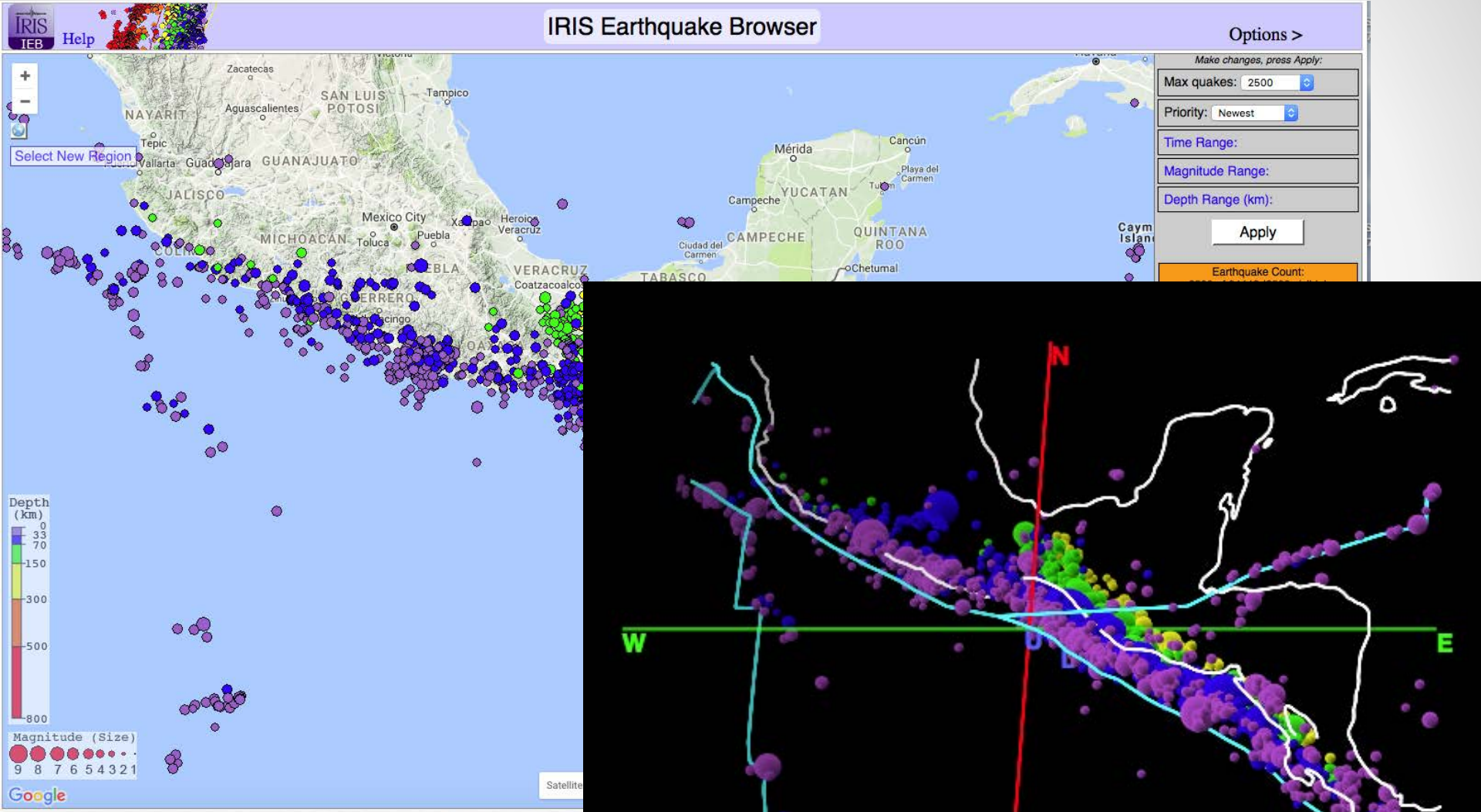
USGS W-phase Moment Tensor Solution

The tension axis (T) reflects the minimum compressive stress direction. The pressure axis (P) reflects the maximum compressive stress direction.

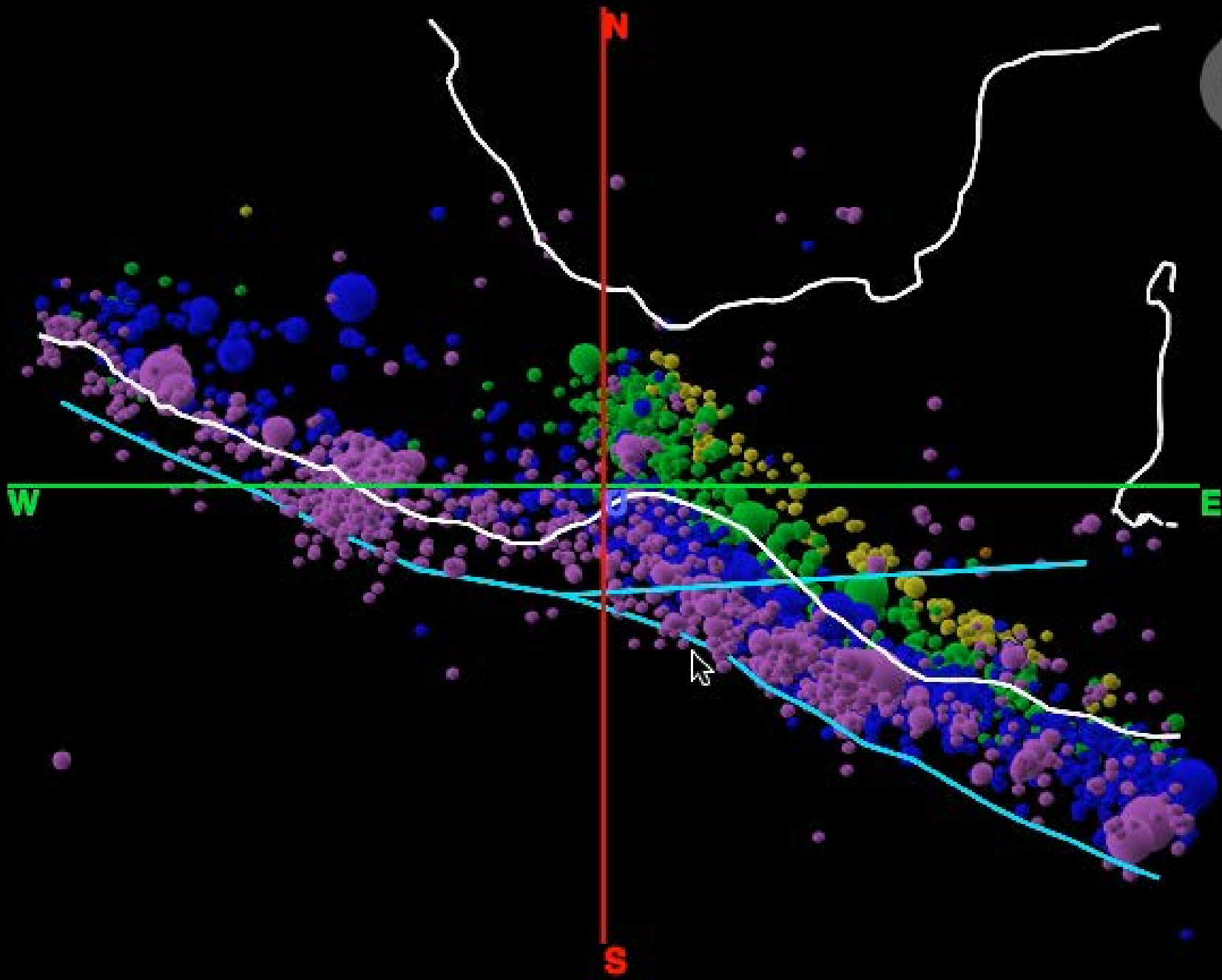
In this case, the focal mechanism indicates this earthquake occurred as the result of normal faulting.

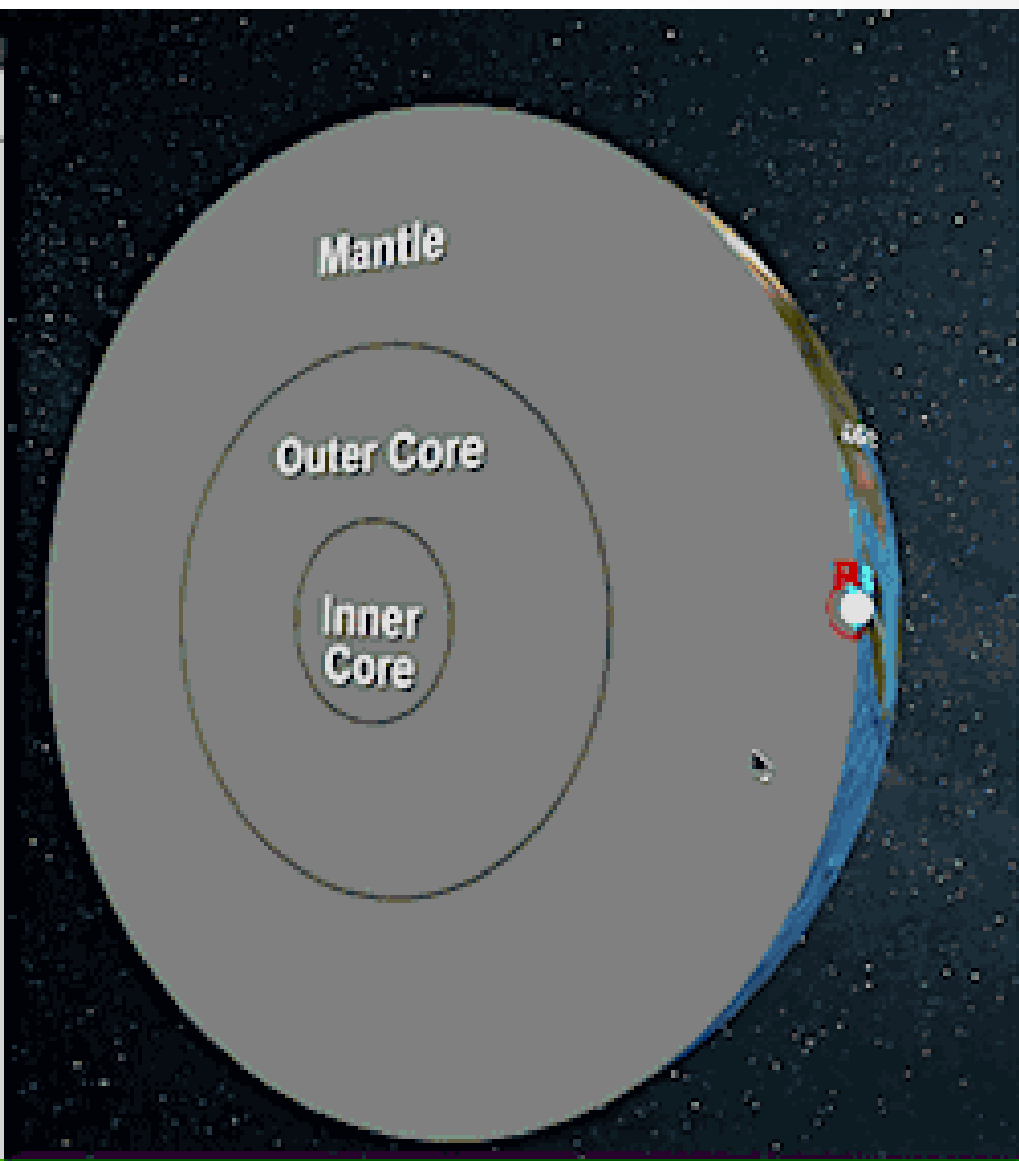
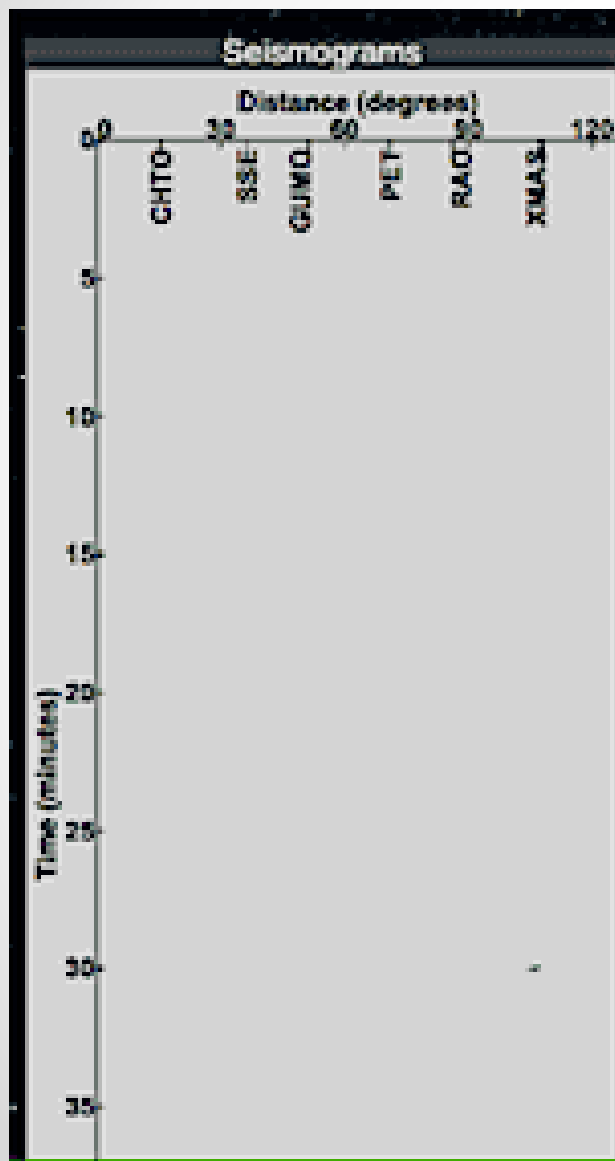


IRIS Explore the regional seismicity



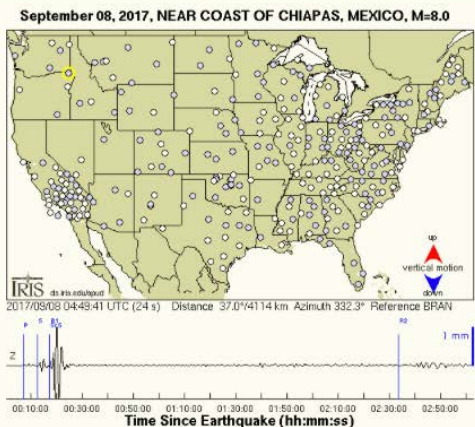
<http://ds.iris.edu/ieb/>



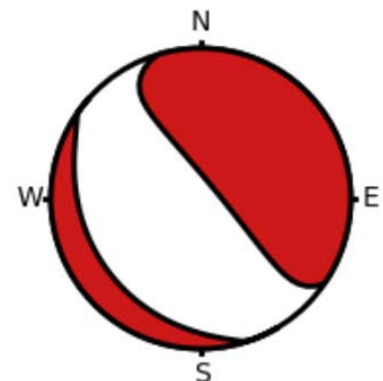


Web
app

USArray GMV

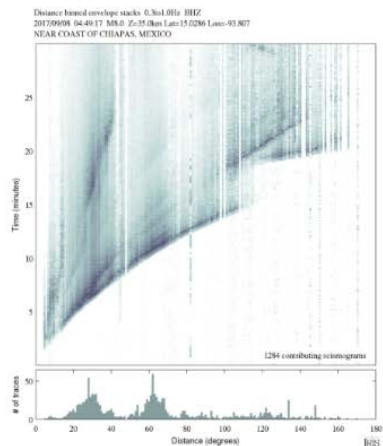


Moment Tensor

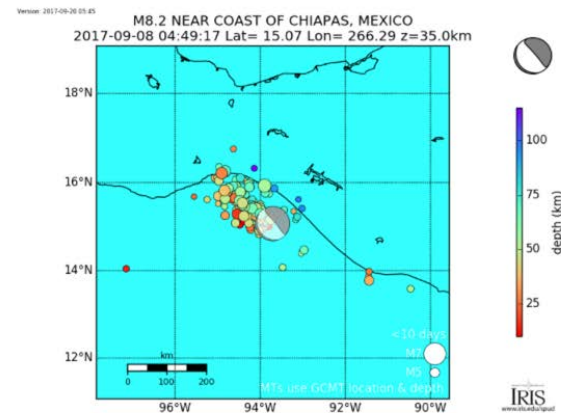


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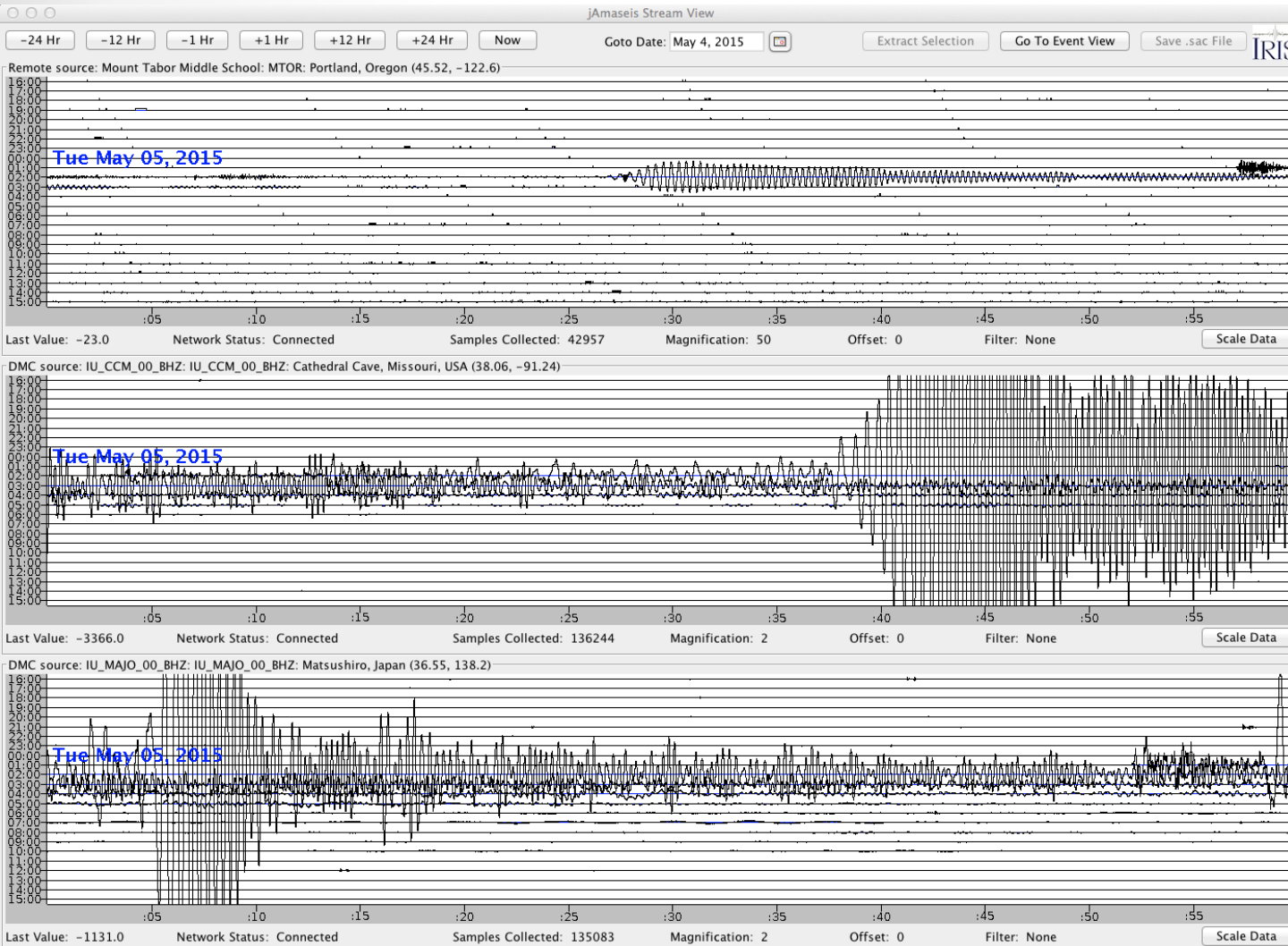
Event Plots



Aftershocks



jAmaSeis

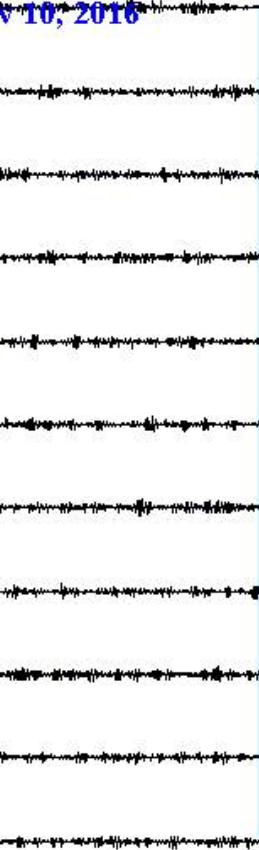


- Cross-platform software
- Can run with/without an educational seismometer
- Watch earthquakes arrive in real-time
- Analysis tools for students

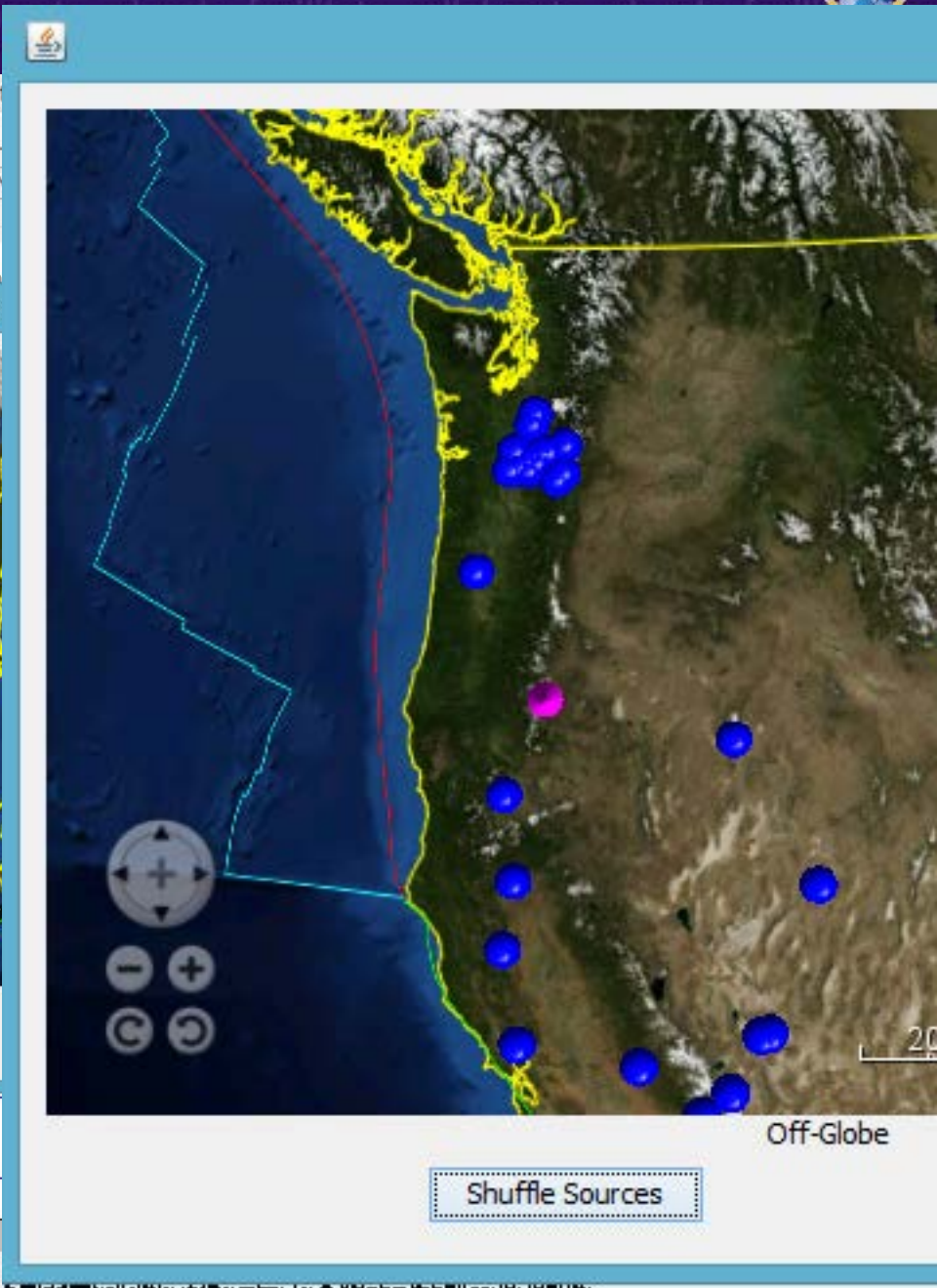
IRIS Select stations

Window About
-1 Hr +1 Hr +6 Hr +12 Hr Now
Goto Date: []
Location: BNOR: Bend, OR (44.524, -121.348)

Nov 10, 2016



:05 :10 :15 :20 :25
Network Status: Connected Samples Collected: 289592



Information is not available

Event View

Lat 9.3453° Lon -96.9017°

Station ID	Station Name	Location	Lat/Lon	Distance	Magnitude	Filter	StartTime	
NHCA			(38.30, -122.29)	28.50° 3168.9...	Not Comput...	None	06/30/2010 03:...	<input checked="" type="checkbox"/>
WCIL			(41.79, -88.45)	29.70° 3302.0...	Not Comput...	None	06/30/2010 03:...	<input checked="" type="checkbox"/>
AZA7			(22.22, -111.02)	20.65° 2295.7...	Not Comput...	None	06/30/2010 03:...	<input checked="" type="checkbox"/>

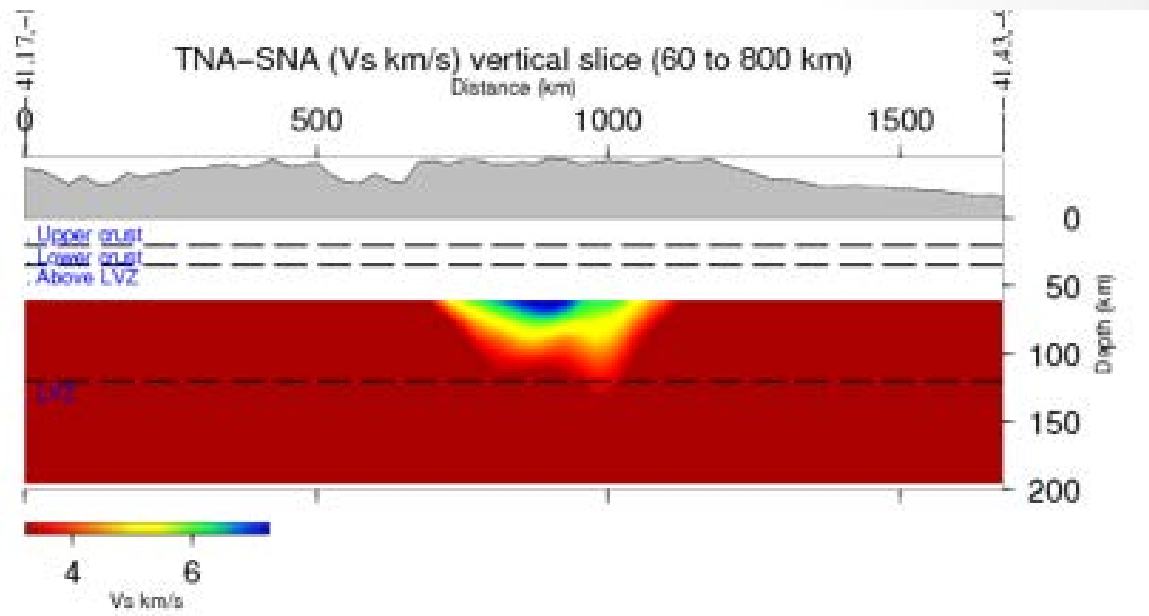
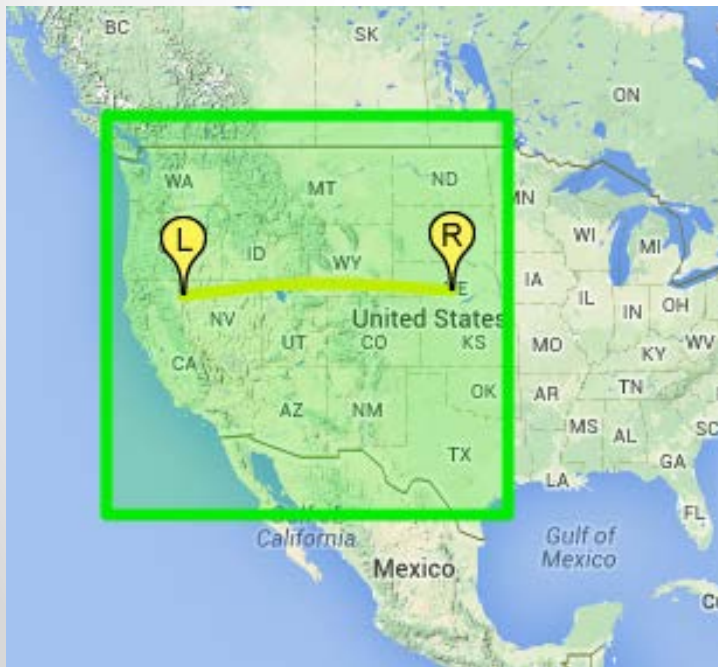
Station Actions

Change Station Information
Compute Distance
Compute Magnitude
Set Filter
Change Selection
Remove Station

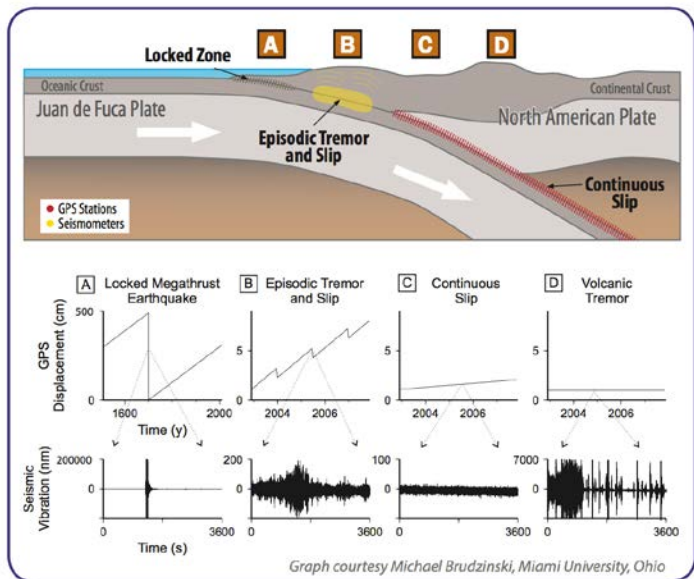
Add Station
Goto Stream View
Help

- Simple filtering, arrival picking, locations, magnitudes

- Select a region and a submitted velocity model and generate a cross section
- Fate of slabs
- Crustal and upper mantle thickness under mountain ranges



- Undergraduate seismology labs
 - A collection of inquiry-based classroom activities
 - Episode tremor and slip, glacial earthquakes, induced seismicity, earthquake hazards, earth structure
 - Utilize authentic data to modernize seismological instruction
 - 100- and 200-level undergraduate courses
- Searchable online database of over 300 EPO resources provides links to related resources to expand impact



IRIS Incorporated Research Institutions for Seismology

RESEARCH data, derived products, software, web services	EDUCATION Lessons, lectures, videos, public displays	FACILITIES Directorates, programs, networks, centers	EARTHQUAKES Recent earthquakes, teachable moments	ABOUT IRIS Organization, governance, news, jobs, annual reports	RESOURCES Publications, webinars, posters, newsletters, proposals
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Home / InClass / Search

Filter

- Search
- Resource Level [?]
- Concepts
- Resource Type [?]
- Language

Displaying 74 Resources

How to use this page [?]

Can Humans Cause Earthquakes?

Does hydraulic fracturing cause earthquakes?

Explore the "hot topic" of induced earthquakes with your students through an activity built on the Argument Driven Inquiry (ADI) framework that supports three-dimensional learning. Students propose, support, evaluate, and revise ideas through data gathering, argumentation, and discussion.

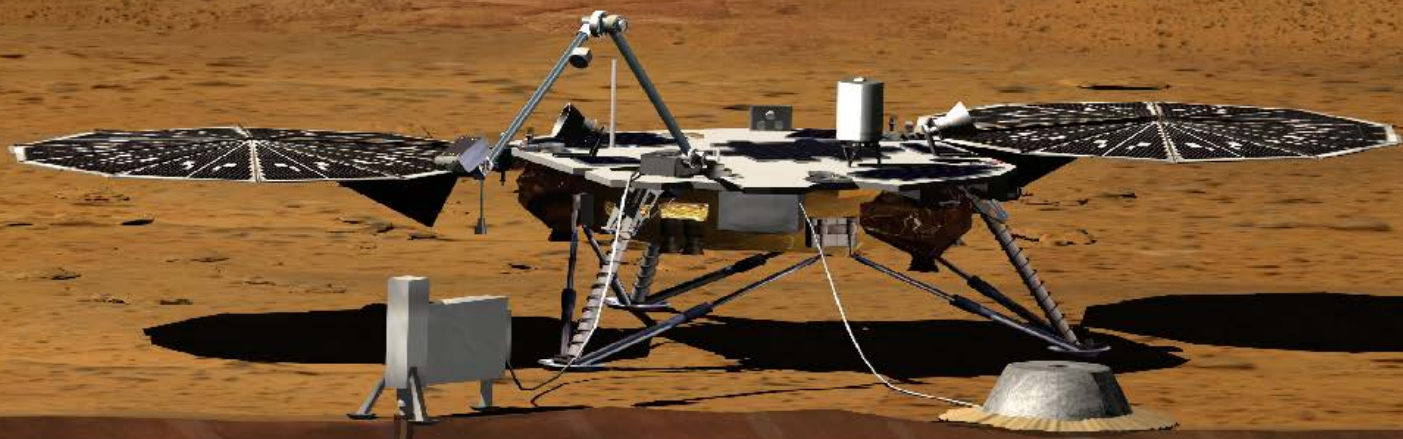
Lesson | Novice

3D Seismic Data

This lesson will help to answer the question: 'What is 3D Seismic Data?'. Students will learn about the advantages of

InSight

(Interior Exploration using Seismic Investigations, Geodesy and Heat Transport)



Into the History and Evolution of our Solar System

Bruce Banerdt – PI
Tom Hoffman – PM

