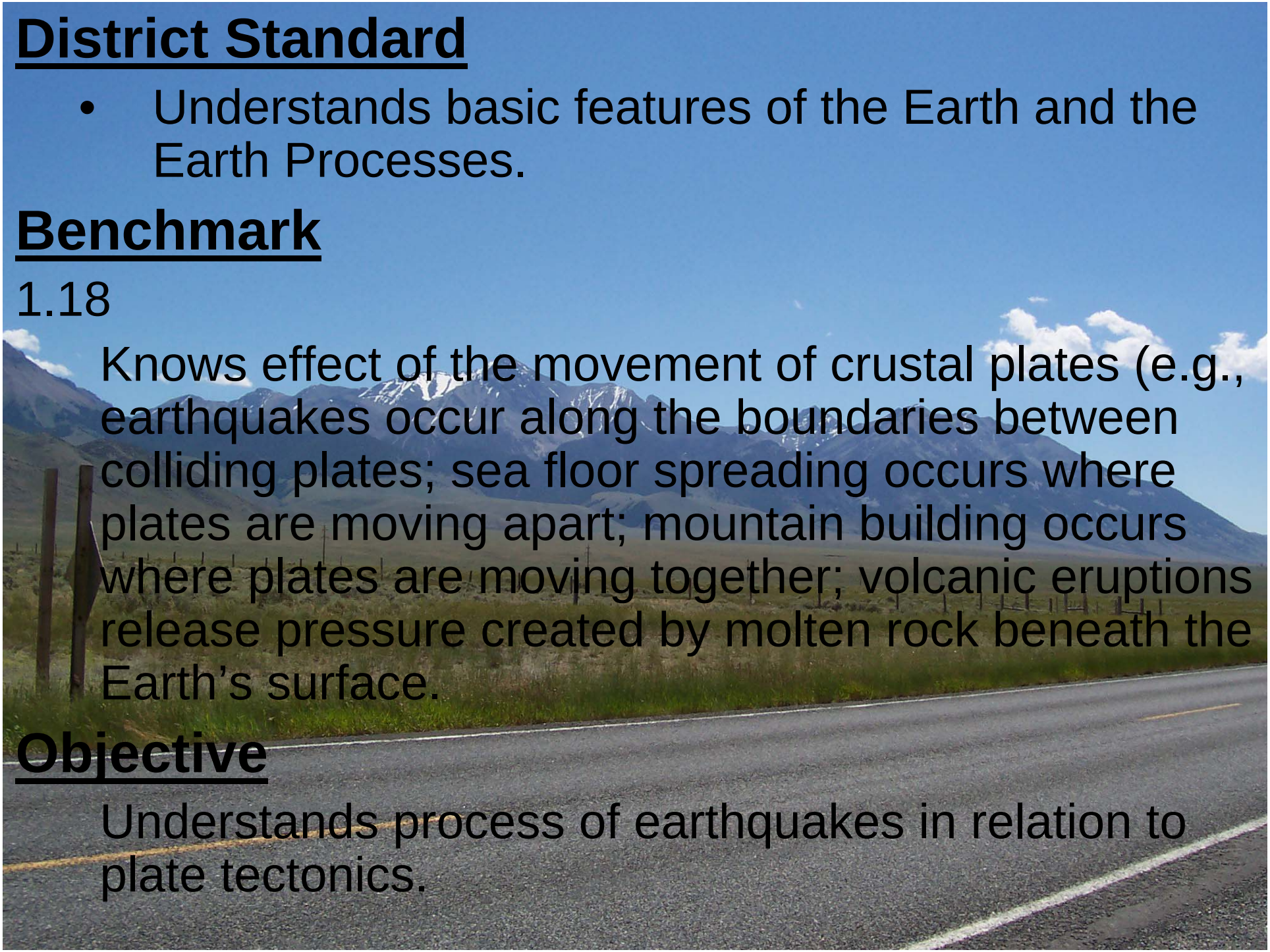
Earthquakes: A Unit Overview



District Standard

- Understands basic features of the Earth and the Earth Processes.

Benchmark

1.18

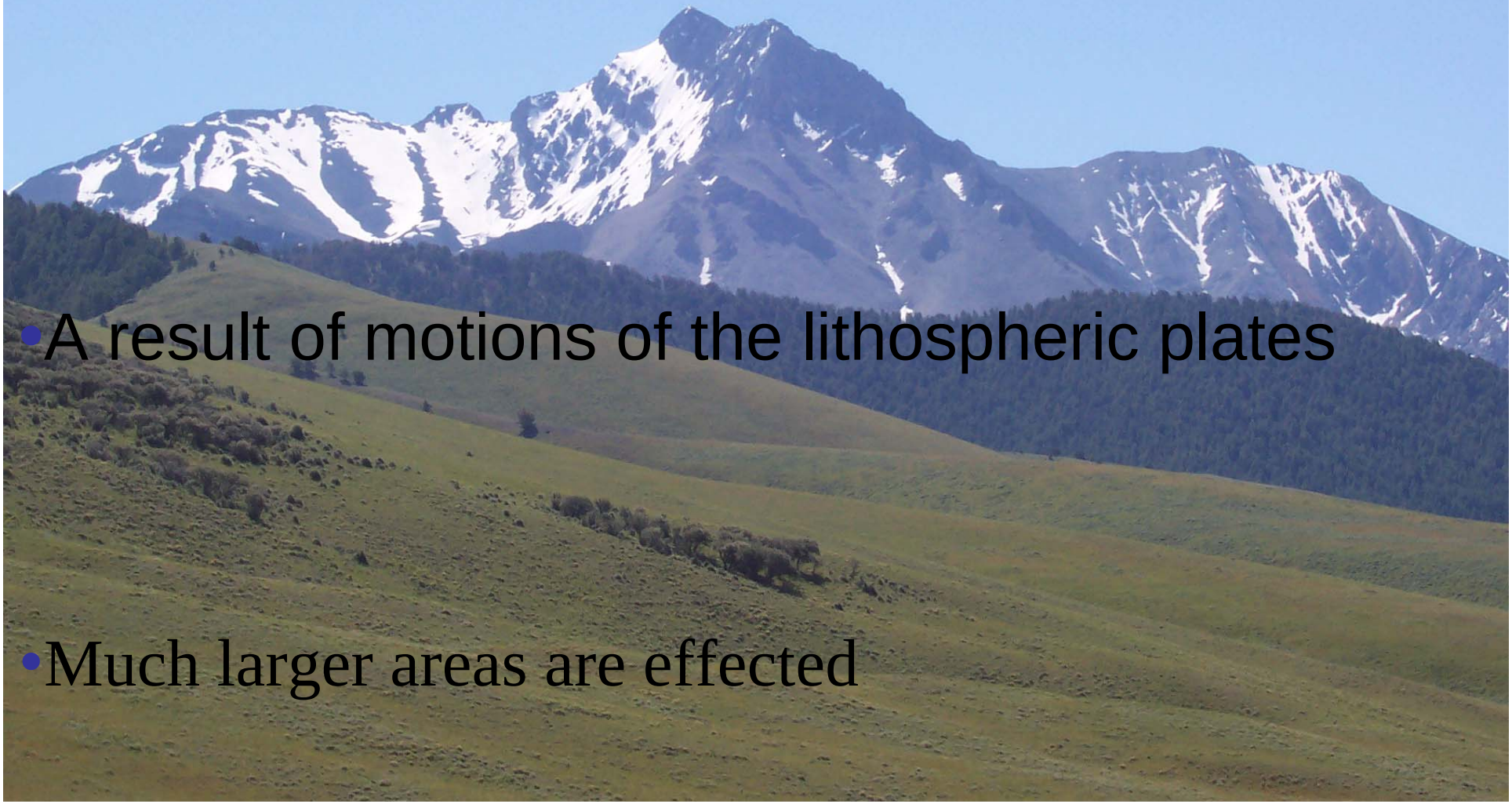
Knows effect of the movement of crustal plates (e.g., earthquakes occur along the boundaries between colliding plates; sea floor spreading occurs where plates are moving apart; mountain building occurs where plates are moving together; volcanic eruptions release pressure created by molten rock beneath the Earth's surface.

Objective

Understands process of earthquakes in relation to plate tectonics.

What is an Earthquake?

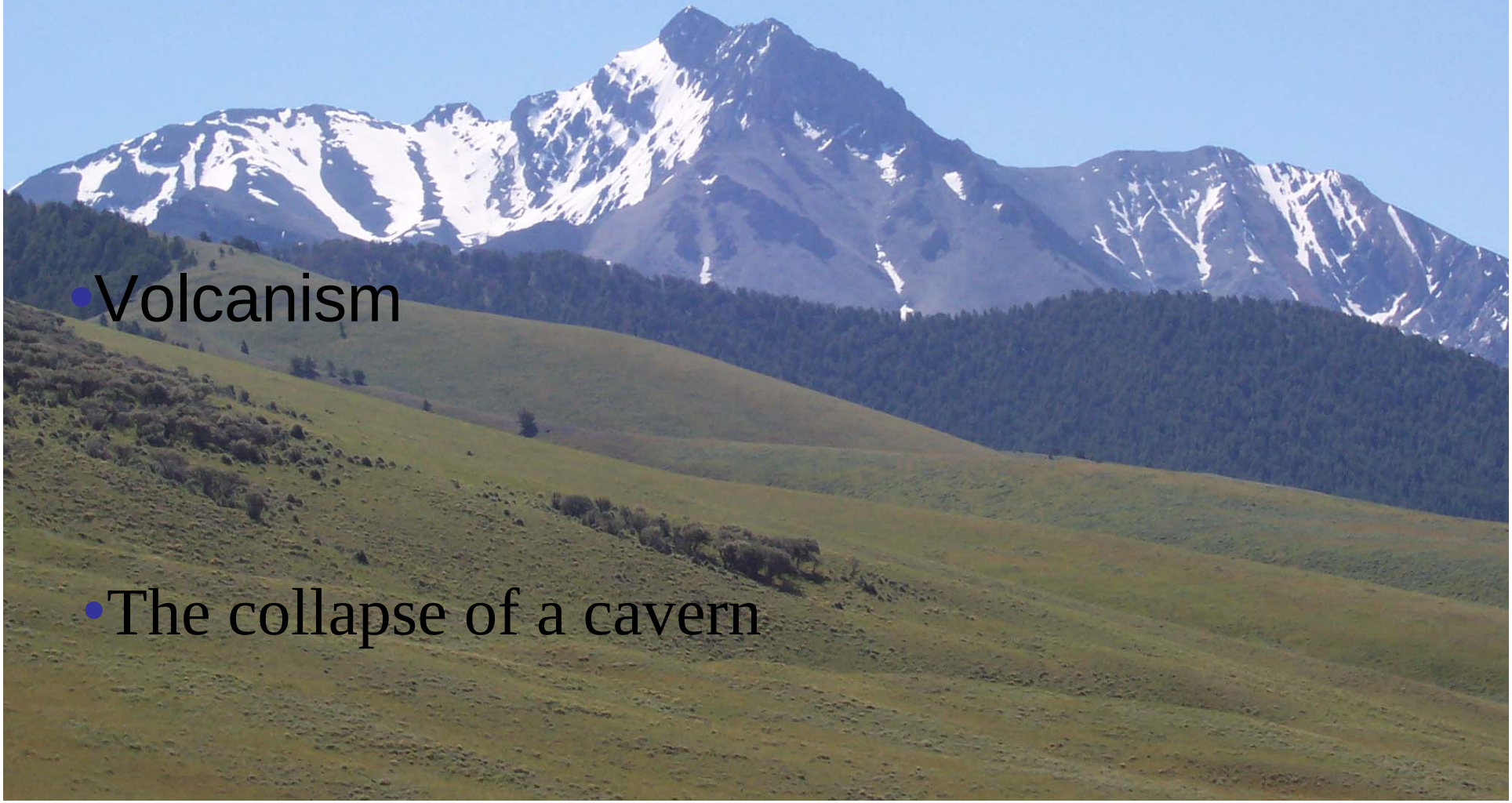
- An earthquake is a shaking of the earth crust caused by a release of energy.



- A result of motions of the lithospheric plates
- Much larger areas are effected

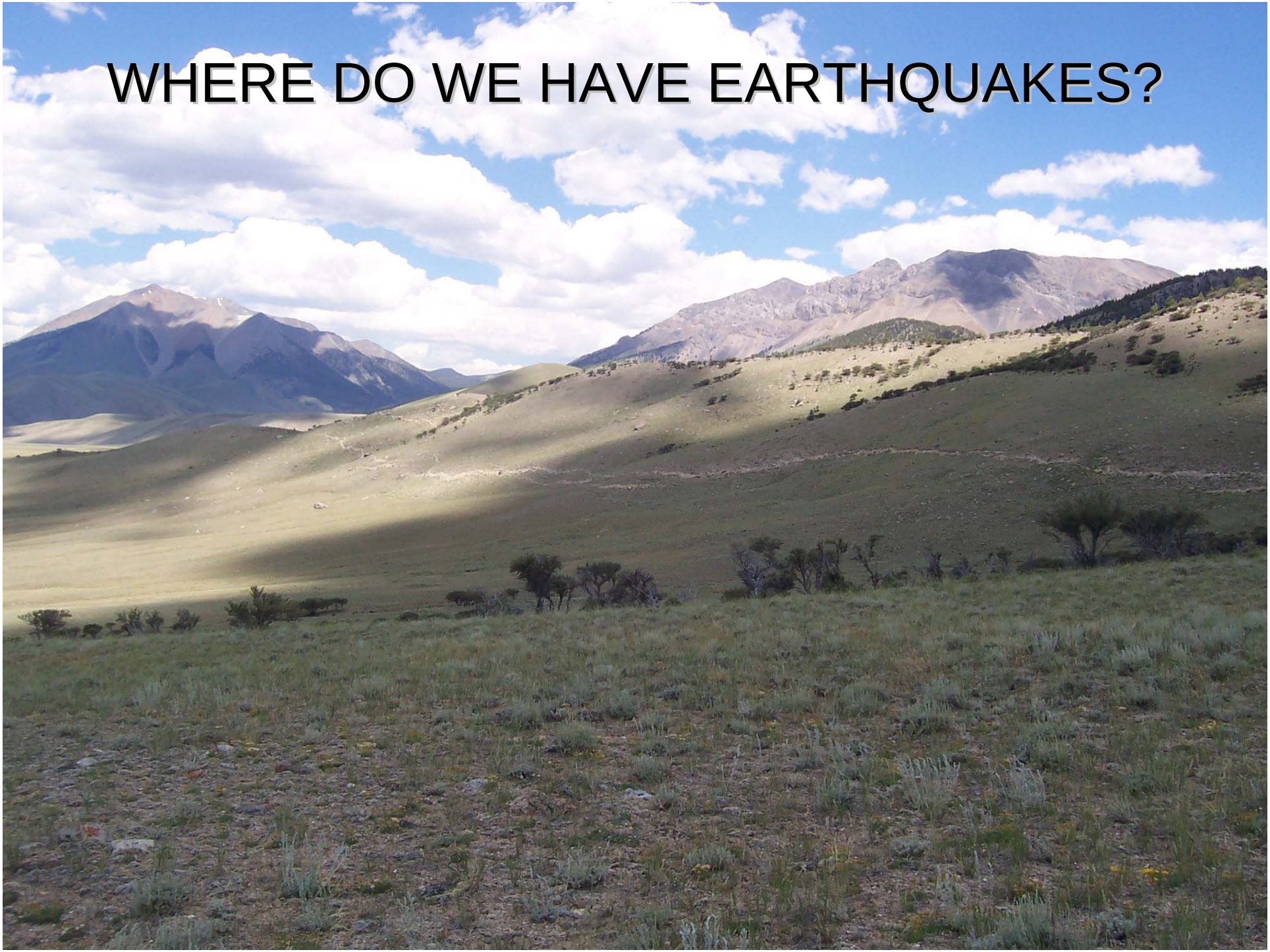
What causes earthquakes?

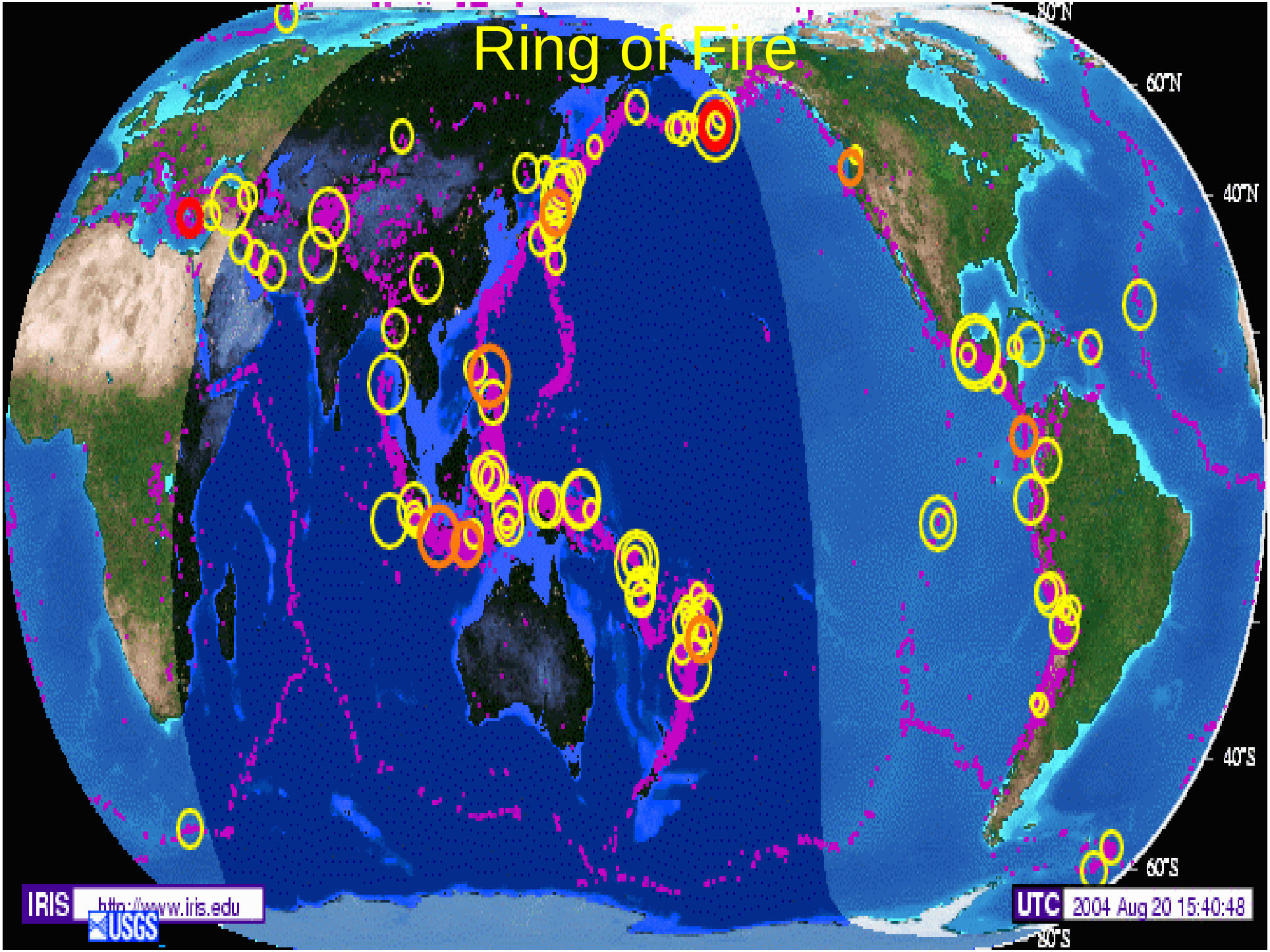
- The major cause is the stress build up of two lithospheric plates.



- Volcanism
- The collapse of a cavern

WHERE DO WE HAVE EARTHQUAKES?




Ring of Fire
80°N
60°N
40°N
40°S
60°S
80°S
IRIS
http://www.iris.edu
USGS
UTC
2004 Aug 20 15:40:48

Map of plate tectonics

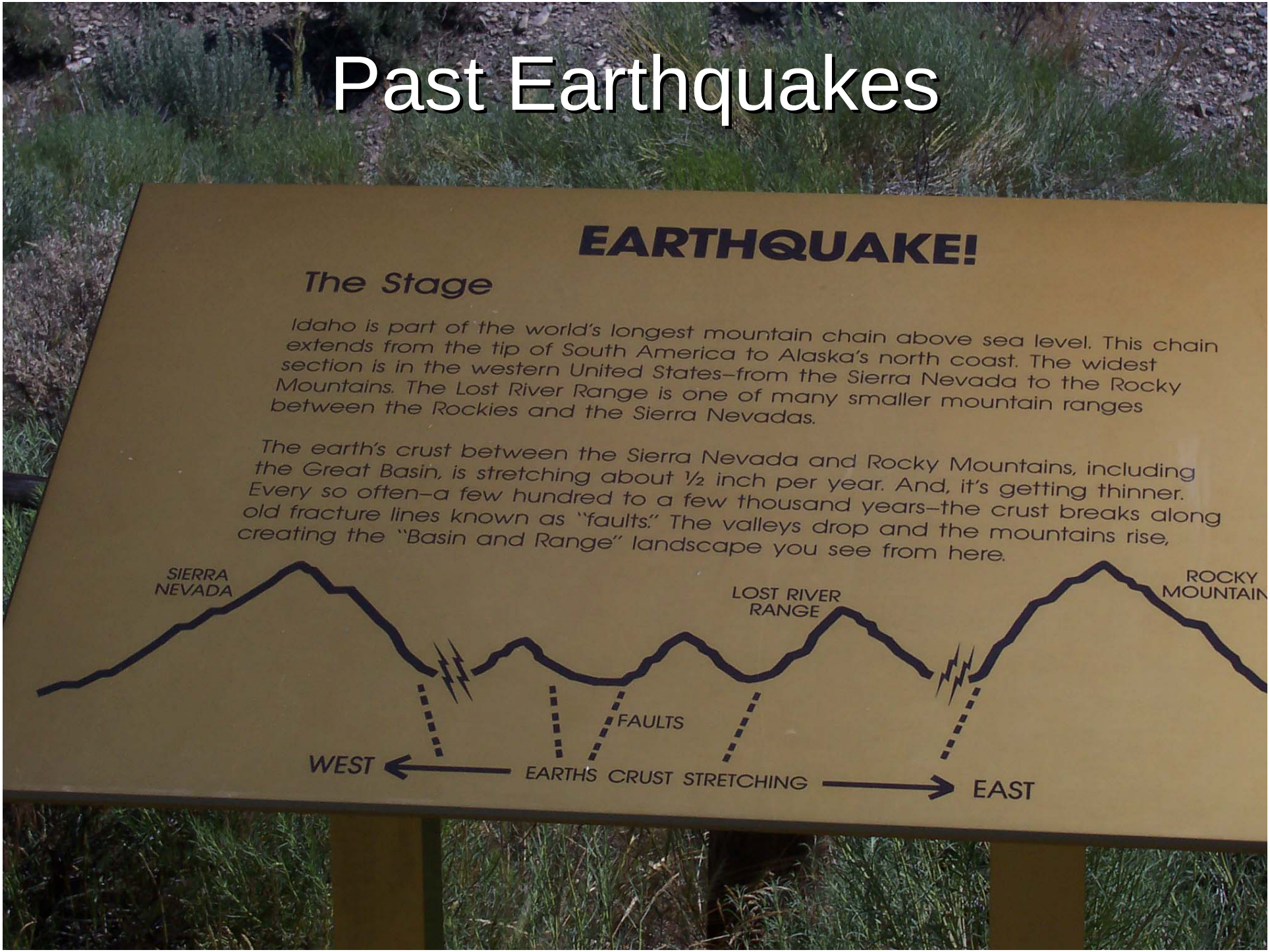
KEY VOCABULARY

*Convergent plates	*Compression	*Richter scale
*Divergent plates	*Elastic Rebound	*S – waves
*Earthquake	*Extention	*Scarp
*Epicenter	*Lithosphere	*Seismogram
*Faults	*Mercalli scale	*Seismograph
*Focus	*P – waves	*Seismologist
*L – waves	*Plate boundaries	*Shear
*Magnitude	*Rapid Visual Survey	*Stress
*Subduction zone	*Transform plates	

Topics for Further Development

- **Elastic- Rebound Theory**
- **Earthquake Waves (P,S,L)**
- **The Shadow Zone**
- **Determine Earthquake Depth and Location**

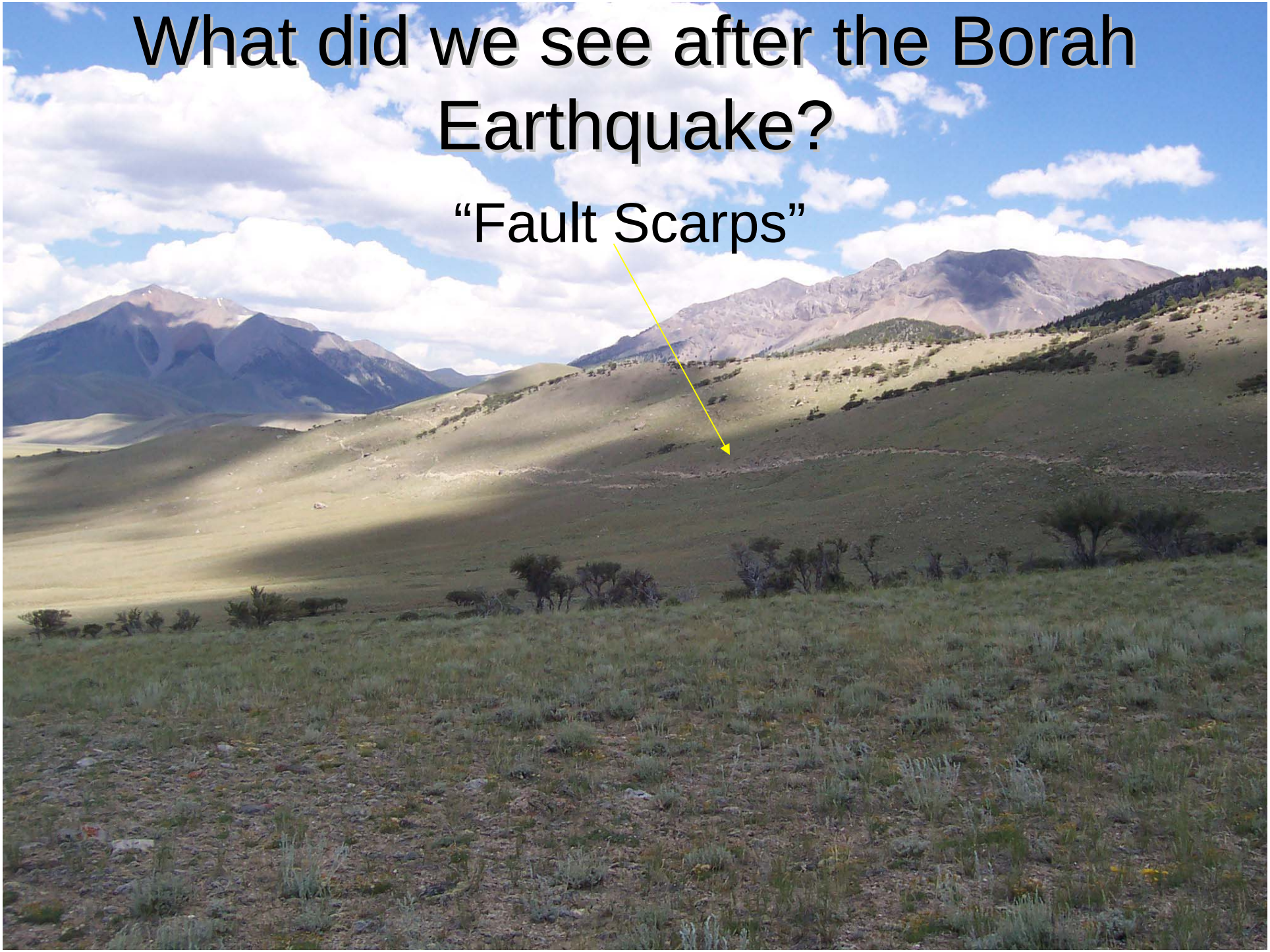
Past Earthquakes



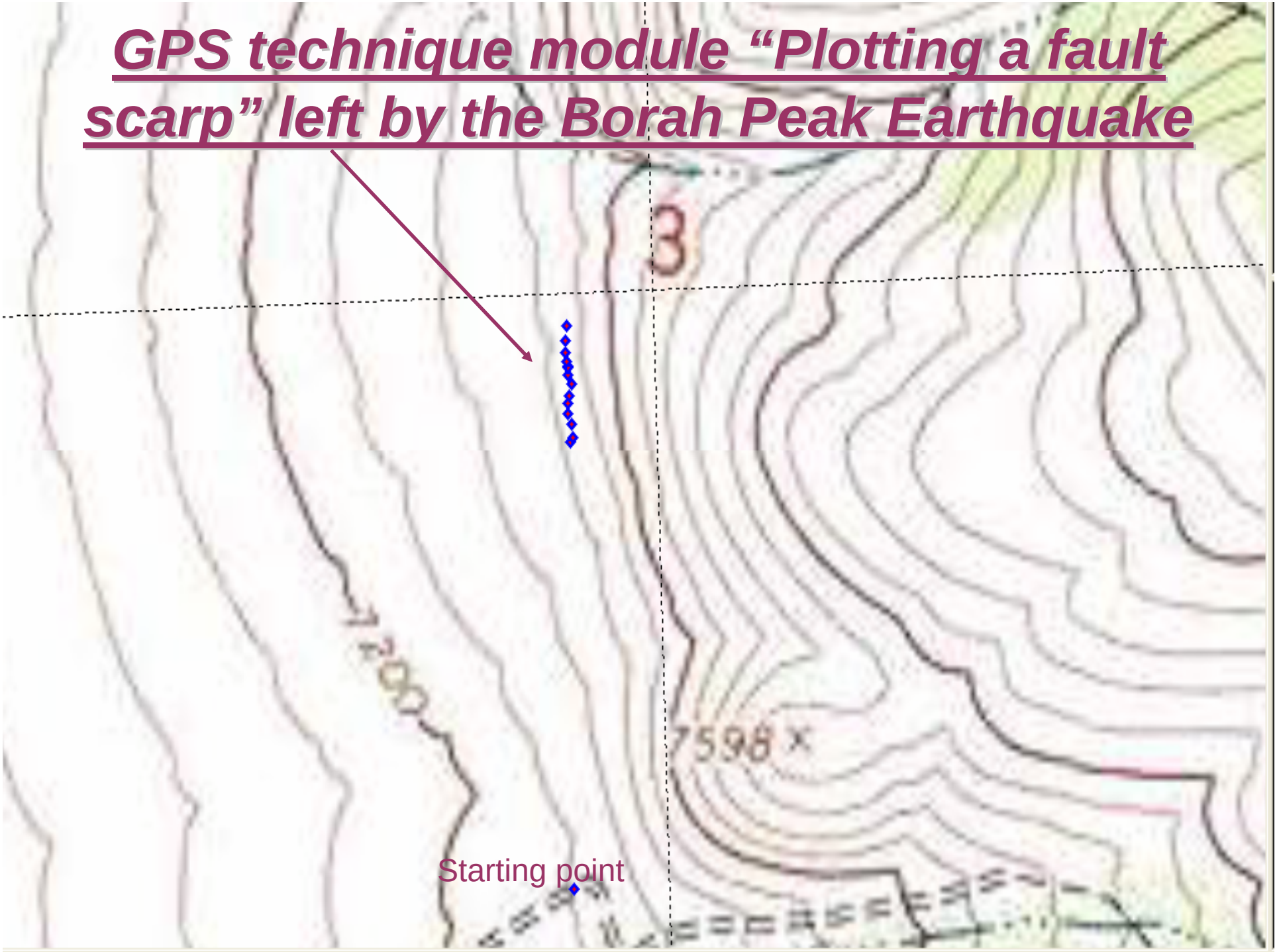
BORAH PEAK EARTHQUAKE

FEATURES OF THE BORAH PEAK EARTHQUAKE

What did we see after the Borah Earthquake?



GPS technique module "Plotting a fault scarp" left by the Borah Peak Earthquake



San Andreas
“Loma Prieta”

M 7.1 – October 17, 1989, *$5.9 billion in damage*
63 deaths – 3,757 injuries -




San Andreas
“Northridge”

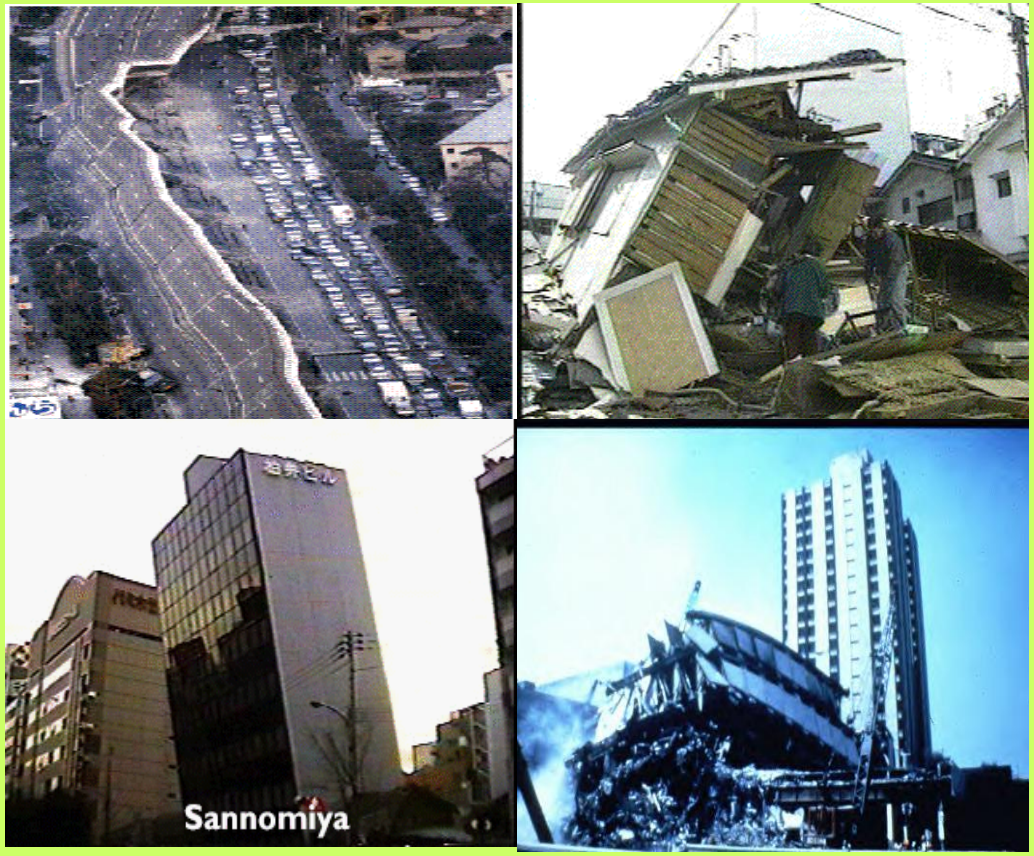
M6.7 – January 17, 1994, *57 deaths – more than 11,000 injuries - $40 + billion in damage*

San Andreas
"San Francisco"

M8.5 – April 18, 1906, *700-800 deaths –$400 million in damage*

Kobe

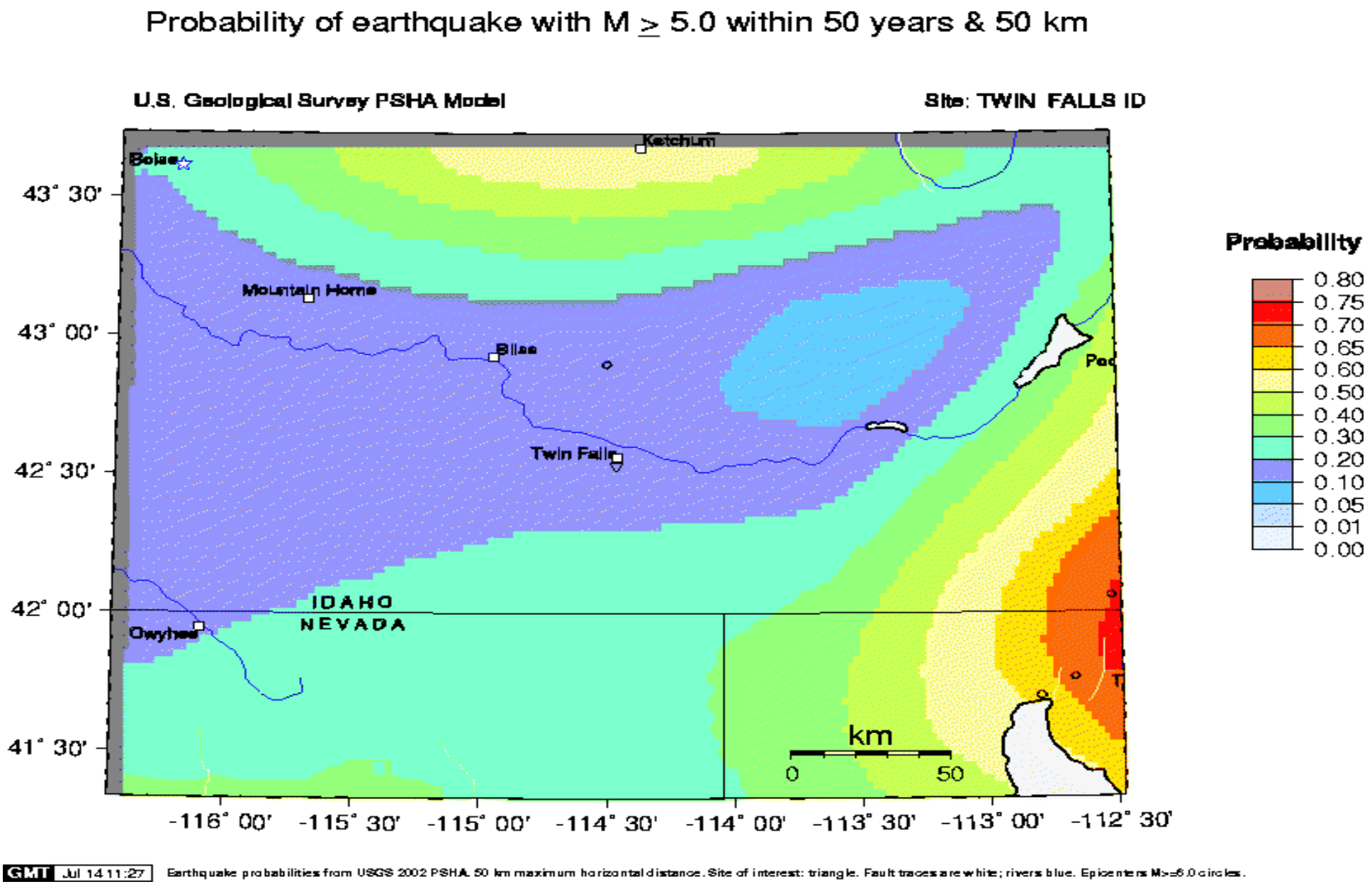
- M7.2--,January 17, 1995,--*5,500 deaths,26,000 injured, $200 billion (US dollars)*



Mexico City

- M 8.1 -- September 19, 1985, --10,000 deaths, 50,000 injured -- $4 billion dollars in damage

So what's in your future?



WHAT SHOULD YOU DO IN CASE OF AN EARTHQUAKE?

Four Rules For Earthquake Survival

Rule 1 (inside): Look for a safe place

Rule 2 (inside):

Rule 3 (inside): Once the shaking has stopped, get out.

Rule 4 (outside): Get away from the sides of buildings.

Student Activities

- **WATTSVILLE**
- **RAPID SURVEY OF SCHOOL**
- **SEISMOGRAMS - SIMPLIFIED**
- **TRIANGULATION**
- **BORAH EARTHQUAKE ACTIVITY**
- **HOME SURVEY EARTHQUAKE SAFETY**
- **HISTORICAL EARTHQUAKES OF IDAHO**
- **HISTORICAL EARTHQUAKES OF UNITED STATES**
- **HISTORICAL EARTHQUAKES OF THE WORLD**
- **CURRENT SEISMIC ACTIVITY?**
- **NAME THAT FEATURE?**
- **EARTHQUAKE DAMAGE POWER-POINT PRESENTATION**
- **READINGS OF FIRST HAND ACCOUNTS OF EARTHQUAKES**

Assessments

- **Daily entrance and exit Quizzes**
- **Key Concept Quizzes**
- **Key Vocabulary Quizzes**
- **Lab / Activities**
- **District Unit Summative assessments**
- **Idaho Standardized Assessment Test**


Questions?????

Special Thanks To:

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