

0. MOVING TECTONIC PLATES - Story Preface

1. STORY PREFACE

2. INSIDE THE EARTH

**3. MOVING TECTONIC PLATES**

4. EARTHQUAKES

5. A SHOCKING QUAKE

6. THE CITY IN RUINS

7. AN EYEWITNESS REMEMBERS

8. A PICTORIAL HISTORY

9. THE PEOPLE REBUILD



Scientists believe that Planet Earth has tectonic plates which move. This image, from the U.S. Geological Survey (USGS) depicts the location of those plates. PD

Because Earth's tectonic plates rest on the mantle's molten layer, those plates also move, although scientists do not exactly understand that process. Sometimes, when tectonic plates move, earthquakes occur or volcanoes erupt.

Scientists describe the deepest part of Earth - its core - as two separate sections. The outer core is a swirling liquid composed mostly of a nickel-iron alloy. Experts think the Earth's magnetic field is controlled by this part of the core.

Earth's solid inner core, made mostly of iron, spins independently from the rest of the planet and is about 4,000 miles below its crust. Scientists believe pressures at that level are about 45 million pounds per square inch. That is equivalent to 3 million times the air pressure at sea level.

How the earth's core impacts the tectonic plates (which "float" on top of it) has a lot to do with natural occurrences like earthquakes. During the years leading up to the San Francisco quake, however, few people really understood how, and why, earthquakes happened. They just understood the tremendous damage that could result from such a catastrophic event.

How frequently do earthquakes actually occur?

See Alignments to State and Common Core standards for this story online at:

<http://www.awesomestories.com/asset/AcademicAlignment/MOVING-TECTONIC-PLATES-San-Francisco-Earthquake-of-1906>

See Learning Tasks for this story online at:

<http://www.awesomestories.com/asset/AcademicActivities/MOVING-TECTONIC-PLATES-San-Francisco-Earthquake-of-1906>

## Media Stream

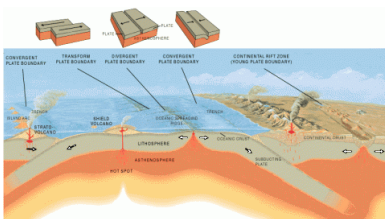


### Planet Earth's Tectonic Plates

Image online, courtesy USGS. PD

View this asset at:

<http://www.awesomestories.com/asset/view/Planet-Earth-s-Tectonic-Plates>

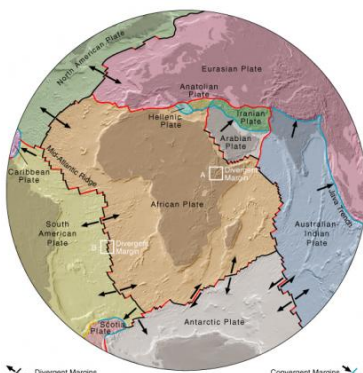


### Moving Tectonic Plates

Drawing, courtesy USGS (United States Geological Survey).

Cross section by José F. Vigil from *This Dynamic Planet* - a wall map produced jointly by the U.S. Geological Survey, the Smithsonian Institution, and the U.S. Naval Research Laboratory.

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### Divergent and Convergent Tectonic Plates

Illustration, depicting the Earth's tectonic plates - mostly in the Eastern Hemisphere - is from John Wiley and Sons, Inc., online via USGS (U.S. Geological Survey).

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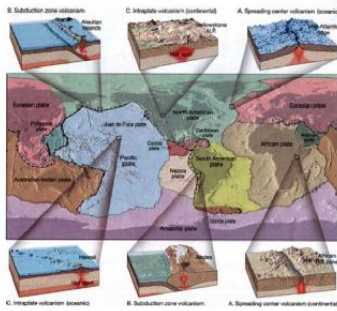
### Pacific Plate and Its Neighbors

Illustration, depicting the Earth's tectonic plates - mostly bordering the Pacific Plate - is from John Wiley and Sons, Inc., online via USGS (U.S. Geological Survey).

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## Distribution of Volcanoes



Figs. 4.31

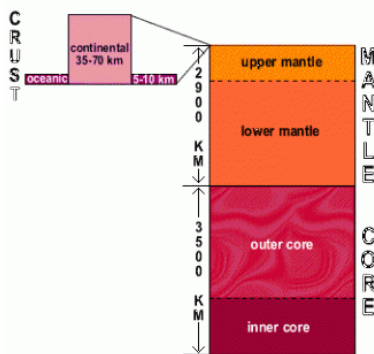
## Volcanoes - Relationship to Tectonic Plates

Image online, courtesy USGS. PD

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## Cross section of the Earth (not to scale)

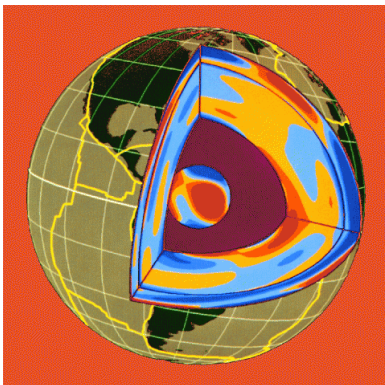


## Cross Section of Planet Earth

Image online, courtesy USGS. PD

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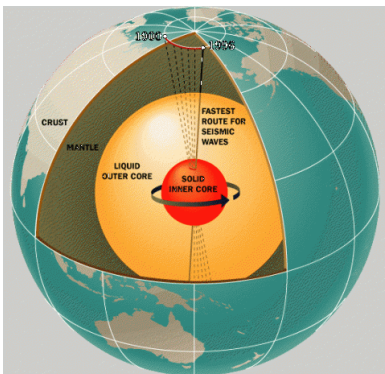
<http://www.awesomestories.com/asset/view/Cross-Section-of-Planet-Earth>



## Earth's Inner Core

Image online, courtesy USGS. PD

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## Rotation of Earth's Inner Core

Image online, courtesy NASA. PD

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