**Theory of Seafloor Spreading**

* Alfred Wegner could not provide a satisfactory explanation for the or of the continents, therefore his hypothesis was .
* Harry Hess (1960) proposed an idea suggesting a process of
* Seafloor Spreading- sea floor spreads apart along both sides of a mid-ocean as new crust is created. Ocean floors move like a , carrying continents along with them.
* Evidence of Hess’s theory of sea-floor spreading:
  + Evidence from material which looked like pillow-shaped rocks formed if molten material erupts and hardens quickly
  + Evidence from stripes- rocks that lie in a pattern showing a record of reversals of Earth’s

field.

* + Evidence from drilling samples reveal that the from a ridge the rocks were taking, the

they were

* Eventually the ocean floor sinks into deep, underwater canyons called deep-ocean where subduction takes place
* Subduction allows part of the ocean floor to back into the mantle, over tens of millions of years.

**Theory of Plate Tectonics**

* J. Tuzo Wilson (1965)- Canadian scientist that proposed the is broken into separate sections called .
* Theory of Plate Tectonics- explains the , , and

of Earth’s plates

* + The earth’s crust and rigid upper mantle are broken into enormous slabs called plates
  + Tectonic plates move in different directions and at different over Earth’s surface
* Theory Highlights
  + Plates float on top of the
  + Convection currents rise in the asthenosphere and spread out beneath the
  + Convection currents cause plates to , producing changes in Earth’s surface
  + Changes in Earth’s surface include; , and

**Plate Boundaries**

* The edges of the plates meet at lines called plate boundaries. When rocks slip past each other along these boundaries faults, or breaks in the Earth’s crust occur. Plates interact at places called plate boundaries
* Plates can interact in several ways: (1) (2) (3)
* **Divergent Boundaries**
  + Places where two tectonic plates are moving are called [divergent boundaries](http://www.classzone.com/books/earth_science/terc/content/visualizations/es0804/es0804page01.cfm?chapter_no=visualization)
  + Most divergent boundaries are found on the , where they form ocean
  + Seafloor spreading along a divergent boundary causes ocean to grow wider
  + When continental crust separates, the stretched crust forms a long, narrow depression called a *rift valley*
* **Convergent Boundaries** 
  + Places where two tectonic plates are moving each other are called *convergent boundaries*
  + Three types: (1) Oceanic-oceanic (2) Oceanic-continental (3) Continental-continental
  + Oceanic-Oceanic
    - Subduction occurs when one oceanic plate slides under another oceanic plate
    - The oceanic plate that has more is the more plate, and therefore will slide under the other oceanic plate to melt into magma
    - Some of the magma formed is back to surface to form   
       , creates a deep-sea trench and volcanic islands
    - Examples: Marianas Trench/Islands and Aleutian Trench/Islands
  + Oceanic-Continental
    - Oceanic and continental plates meet
    - The dense oceanic crust will slide under the dense continental crust
    - Also creates a , but this time a with
    - Examples: Peru-Chile Trench and Andes Mountains
  + Continental-Continental
    - Occurs when ocean basin between two **continental crusts** is entirely . The two continental crusts collide to form
    - Example: India land mass gradually moved northeast until it collided with the Plate.  It is currently moving at a rate of 67 mm/year, or about 2.6 inches. The collision formed the Himalayas Mountains.
* **Transform Boundaries**
  + Two plates slide past each other
  + Crust is only or fractured
  + Characterized by long and earthquakes
  + Example: San Andreas fault in California responsible for majority of earthquakes in Ca.