

# Continental Drift and Seafloor Spreading

## Part 1: A Controversial Theory

- In a 1912 lecture, German born meteorologist \_\_\_\_\_ proposed the idea of \_\_\_\_\_.
- His idea came from 2 observations
  - The \_\_\_\_\_ seem to fit together like a \_\_\_\_\_
  - \_\_\_\_\_ of animals found on coasts of different \_\_\_\_\_ also \_\_\_\_\_
- The original land mass he referred to as '\_\_\_\_\_', meaning '\_\_\_\_\_.'

## Ideas that supported Wegener

- Puzzle pieces: the way the \_\_\_\_\_ together
- Fossil records: Locations of \_\_\_\_\_ on \_\_\_\_\_ that would have fit together
- Geologic records: nearly identical \_\_\_\_\_ on continents that would have fit together
- Climate change: Plants that live primarily in \_\_\_\_\_ regions found on multiple continents, including \_\_\_\_\_. If Pangea were true, the continent would have been in a \_\_\_\_\_ allowing for that plant to survive.

## Wegener gets denied

- Alfred Wegener had a \_\_\_\_\_ in his theory... He could not explain \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_ this occurred.

- Wegener proposed that the \_\_\_\_\_ of the Earth somehow caused the \_\_\_\_\_ to move, and they had '\_\_\_\_\_' through the oceans.
- This idea was quickly shot down by \_\_\_\_\_ and \_\_\_\_\_.
  - The Earth spinning cannot cause less dense continental crust to plow through more dense and rigid oceanic crust.
- Wegener's idea was \_\_\_\_\_ by the \_\_\_\_\_ and would not be revisited until \_\_\_\_\_ his \_\_\_\_\_.

## Part II: Seafloor Spreading

- During the 1940s and 1950s, there were huge \_\_\_\_\_ in technology, specifically in the use of \_\_\_\_\_ waves.
- Scientists began bouncing \_\_\_\_\_ off the \_\_\_\_\_ in an effort to make a map of the \_\_\_\_\_ floor.
  - This led to a major discovery! In the middle of the Atlantic, Pacific, and other oceans around the world was a chain of \_\_\_\_\_ and \_\_\_\_\_.
    - These are now referred to as '\_\_\_\_\_-\_\_\_\_\_.'
    - We often refer to the one present in the Atlantic as the mid-Atlantic ridge.
    - Where did these ridges come from?

## Harry Hess

- In the early 1960s, Harry \_\_\_\_\_, a Princeton University Professor, proposed his now famous theory.
- Harry's theory is called "\_\_\_\_\_."
- Hess proposed that \_\_\_\_\_ dense, \_\_\_\_\_ magma, from beneath the Earth's crust was pushed \_\_\_\_\_ through the \_\_\_\_\_ ocean floor.
- The seafloor then was forced \_\_\_\_\_ from the \_\_\_\_\_, \_\_\_\_\_ the seafloor apart.

## Evidence for Spreading

- In 1968, the *Glomar Challenger* began collecting \_\_\_\_\_ from the \_\_\_\_\_ that would \_\_\_\_\_ Hess's theory.
- Scientists collected \_\_\_\_\_ from the ocean floor, and also drilled samples from different distances between the ridge and the coastline.
- Scientists found that the \_\_\_\_\_ rocks are found along the \_\_\_\_\_, and became increasingly \_\_\_\_\_ as you move \_\_\_\_\_ toward the coastline.
- These findings \_\_\_\_\_ both \_\_\_\_\_ theory of seafloor spreading, and \_\_\_\_\_ theory of continental drift.

## More Supporting Evidence: Magnetic Time Scale

- When rocks containing \_\_\_\_\_ cool, the iron aligns itself with the Earth's \_\_\_\_\_, much like a \_\_\_\_\_ does.
- Scientists have determined that the Earth's magnetic poles have \_\_\_\_\_ multiple times.
- Looking at the sea floor iron-containing rocks, they '\_\_\_\_\_' their polarity as you move \_\_\_\_\_ from the mid-ocean ridge.
- In other words, the sea floor spreading theory fits \_\_\_\_\_ with another theory scientists have had for some time.