



TCU Idea Factory – Pangea, Plate Tectonics & Continental Drift Place Mat

Start on the side of the place mat without the map

- **The Idea! Alfred Wegener**
 - The evidence he used to support the idea of continental drift was that the coast lines of Africa and South America seemed to fit together, and that large-scale geologic features on separated continents could be matched (North American Appalachian Mountains and Scottish Highlands).
 - His idea of an ancient supercontinent was ridiculed when it was first proposed.
- **The Critics**
 - Wegener's theory was discredited because he didn't have enough evidence AND because he couldn't explain the mechanism for how the continents could move.
- **Elaboration with More Data**
 - Harry Hess was the commander of the *U.S.S. Cape Johnson* and while traveling, Hess used sonar equipment to take measurements of the sea floor.
 - His greatest contribution to the theory of continental drift was his observation that there appeared to be mountains with flattened tops on the sea floor.
 - This discovery led to the theory that hot magma was rising from the ocean floor in between the continental plates and as the magma cooled it pushed the plates apart.
- **Glomar Challenger**
 - Launched in 1968, The Glomar Challenger was deep sea drilling vessel that was used for scientific exploration.
 - The drill holes taken between South America and Africa provided definitive evidence for continental drift and the age of various parts of the sea floor.
- **The Sea Floor is Spreading**
 - Sea floor spreading is a geologic process in which the continental plates are drifting apart.
 - The motion of the continental plates is a function of the mantle convection that cycles heat and magma from the earth's core to the lithosphere (crust).
 - The magnetic signatures of the mid-ocean ridges provided further evidence of sea floor spreading.
- **Seismology**
 - Seismology is the study of earthquakes and seismic waves.
 - Seismologic data showed that the locations of earthquakes matched the proposed plate boundaries which further cemented the theory of tectonic plates.

Flip the place mat over! Turn to the side with the map

- Have students take turns reading the different pieces of evidence.
- Use the QR codes provided to link to videos that further explain the evidence.