Question: What two scientists help discover evidence to explain how the planet looks today.

Continental Drift and Sea-floor Spreading

Alfred Wegener (1910) hypothesized that at one time all the continents were once joined together in a single landmass, he named Pangea, and have since drifted apart - now known as continental drift.

Wegener gathered the following evidence to support his hypothesis:

- Evidence from land features such as mountain ranges lining up on continents when pieced together
- Evidence from fossils, or traces of ancient organisms preserved in rock, show the same animals and plants occurred on the now separated land masses
- Evidence from climate change where Wegener showed scratches on rocks make from glaciers in places with much more mild climates today

Wegener could not provide a satisfactory explanation for the push or pull of the continents, therefore his hypothesis was rejected... until Harry Hess (1960) proposed a radical idea suggesting a process of sea-floor spreading.

Sea-floor spreading - sea floor spreads apart along both sides of a mid-ocean ridge as new crust is added. Ocean floors move like a conveyor belt, carrying continents along with them.

Evidence of Hess's theory of sea-floor spreading included:

- Evidence from molten material which looked like pillow-shaped rocks formed if molten material erupts and hardens quickly
- Evidence from magnetic stripes - rocks that lie in a pattern showing a record of reversals of Earth's magnetic field
- Evidence from drilling samples reveal that the farther from a ridge the rocks were taken, the older they were

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