How Was the Geologic Column Created?

Chapter 10 Lesson 2
Part 1

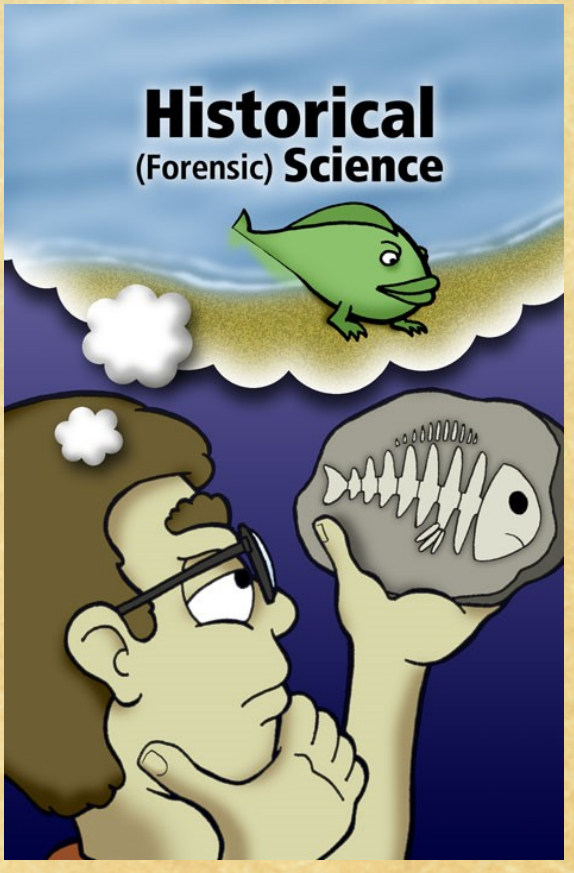
ByDesign Science, 6th Grade

Interpreting the Data

- It should not surprise you that one of the main differences between interpretations of geological data involves time.
- For example, one interpretation suggests that the geologic column was laid down over hundreds of millions of years.
- Another approach, however, suggests that most of it was laid down in several thousand years, with a significant amount being deposited in just one year during the biblical Flood.

Interpreting the Data

- The origin of the geologic column is a matter of **historical science**.
- Unlike science experiments that are observable and repeatable, historical science seeks to answer questions about events that no living person witnessed and that cannot be repeated.
- Historical science has limitations.



Biblical Flood Account

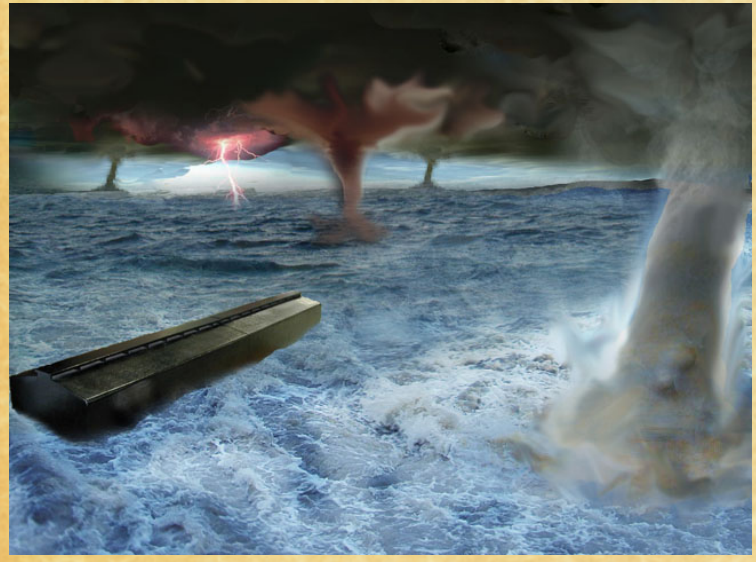
- As geologists seek to determine which view of Earth's history describes the conditions best suited for creating the geologic column, those who believe in the worldwide Flood of Genesis suggest this **catastrophe**, or sudden disaster, as a reasonable scientific explanation for the data.

Biblical Flood Account

- The biblical account does not give many geological details about what happened during the Flood, but we do know:
  - It lasted a little over a year.
  - All Earth was covered with water, which later receded.
  - As the Flood began, "the foundations of the great deep were broken up and the windows of heaven were opened," and both were closed after 150 days.

Evidence

- A catastrophe as monumental as the Flood described in Genesis would be expected to leave behind significant evidence.
- What kinds of evidence might it leave?



- Many features in the geologic record can be explained by a complex event like the biblical Flood.

Evidence:
Burial & Preservation of Remains

- As you know, millions of fossils have been found all around the world.
- The preservation of some fossils provides evidence of sudden death and burial.
- Sometime organisms even appear to have been preserved in the act of dying
- For example, Ichthyosaur that was giving birth at the time of its burial.

Evidence:
Burial & Preservation of Remains

- Preserved tracks and evidence of burrowing indicate the passage of time while the geologic column was being formed.
- In many cases, individual fossils are preserved, but sometimes we see evidence of mass extinction.

- Whether suddenly, or slowly, affecting individuals or larger populations, destruction on a worldwide scale is evident in the fossil record.

Evidence:

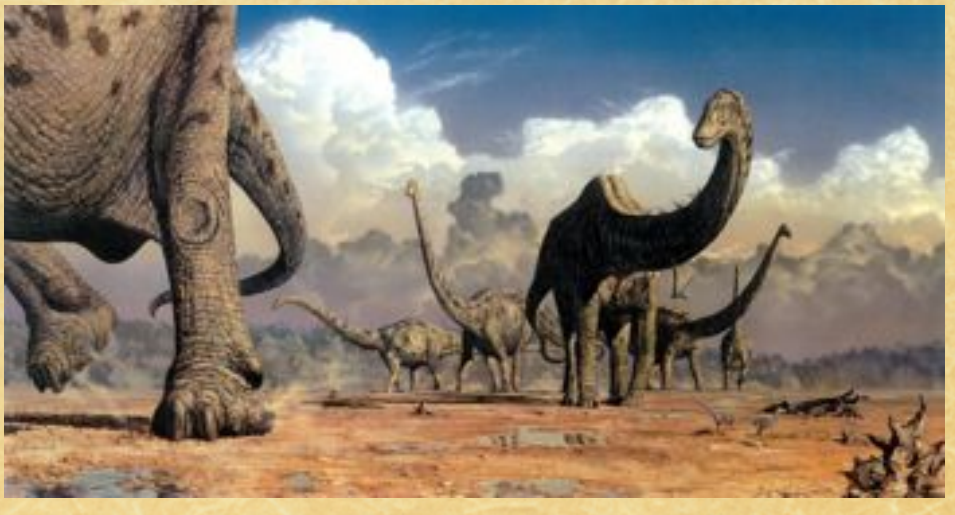
Widespread Sedimentary Deposits

- You may recall that sedimentary rock, which is usually deposited by water, covers 75% of Earth's surface.
- There are many examples of sedimentary deposits that are relatively thin and so widespread that they cover hundreds of thousands of square kilometers.

Evidence:

Widespread Sedimentary Deposits

- One such deposit is the Morrison Formation, which is well known for its abundant dinosaur fossils.
- It stretches from Texas to Canada, covering 621,371 square miles.



Evidence: Flat Gaps

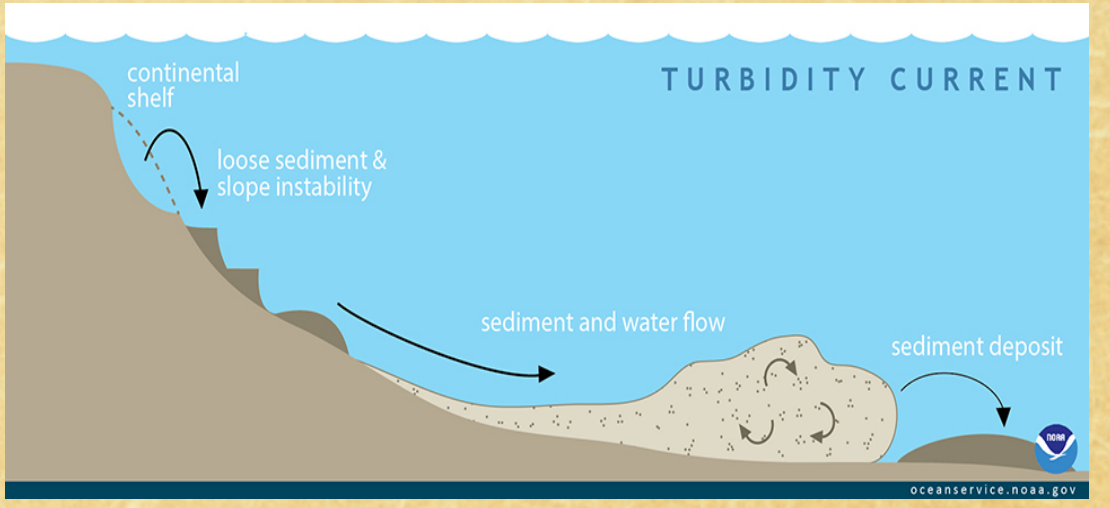
- You learned that the fossils in the geologic column appear in a consistent, predictable order around the world, but that not all layers are found in all locations.
- Recall also that conventional geologists interpret the layers as representing millions of years.
- According to that interpretation, the absence of certain layers in a location would represent a gap of millions of years of time.

Evidence: Flat Gaps

- You also learned that weathering and erosion cause layers of rock to change when exposed to the elements over time.
- Even though rock layers are usually laid down flat, we would not expect them to remain smooth if they were uncovered for a long time.
- Yet the geologic column contains examples of places where, despite missing layers, the rocks above and below the absent layers are in flat contact with each other, show little or no evidence of erosion.
- This can be interpreted as evidence that the layers were laid down quickly instead of forming over millions of years.

Evidence: Turbidities

- When mud and sand begin to slide down an underwater slope, they flow downhill like an avalanche in a turbidity current.
- As the sediment reaches a flat area, it spreads out and stops.
- The sedimentary layers it forms are called **turbidities**.

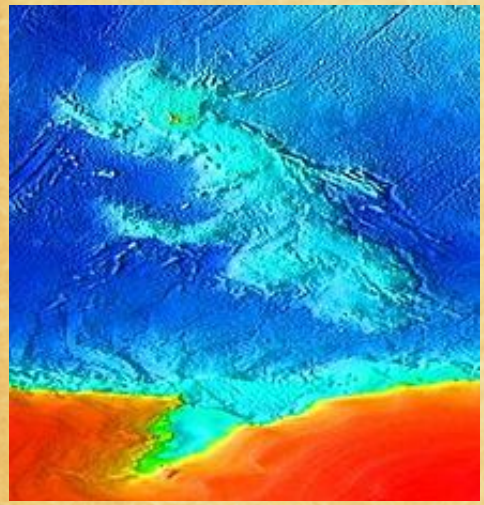


Evidence: Turbidites

- In 1929, the Grand Banks Earthquake caused this to happen along the east coast of Canada.
- A large mass of sediment on the edge of the continental shelf traveled toward the abyssal plain at about 50 mi/hr. and spread out across thousands of square miles.

Evidence: Turbidites

- Thousands of these turbidites, which form only underwater, are found on continents.
- This could mean that our continents were once under water, which would be consistent with the Flood.



- Another possibility is that these turbidites were formed on oceanic crust that was somehow moved to its current location on the continent.