



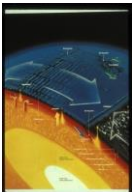
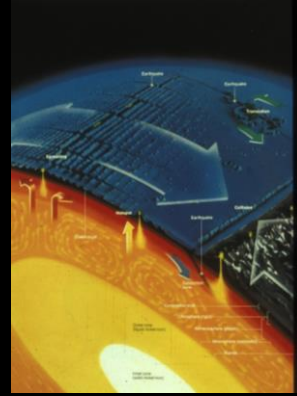
Decay of radioactive isotopes in Earth's core generates heat.

The flow of this heat is the driving force behind Plate Tectonics.

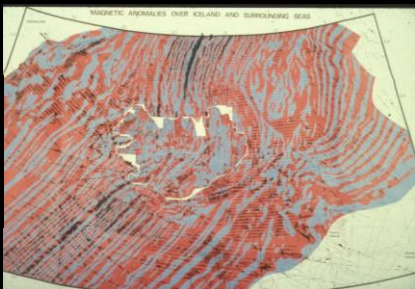
Tectonic activity has produced 3 major rock types that comprise Earth's crust:

- Igneous (including volcanic)
- Sedimentary
- Metamorphic

Tectonic activity is also responsible for fossilization.



Igneous rocks solidify from a molten state – at temperatures too high to preserve life forms.



- Seafloor Spreading
- Magnetic reversals may be recorded as paleomagnetism, which gives us one kind of geological clock.



Volcanic activity rarely promotes fossilization (but the exceptions to this rule can be spectacular).

Volcanic rocks are easy to date, radiometrically, and are very important in establishing the chronology of the fossil record.

Volcanic terranes like this are poor places to look for fossils.



Metamorphic Rocks are transformed from pre-existing rocks, via heat and pressure.

They might have once contained fossils, but the process of metamorphism usually destroys all evidence of life.



Sedimentary rocks are the major sources of fossils.

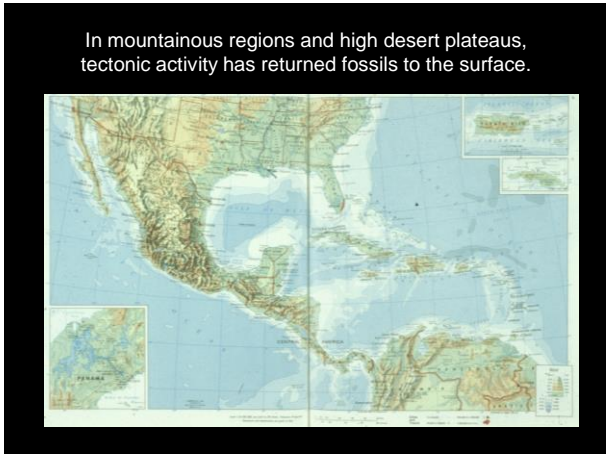
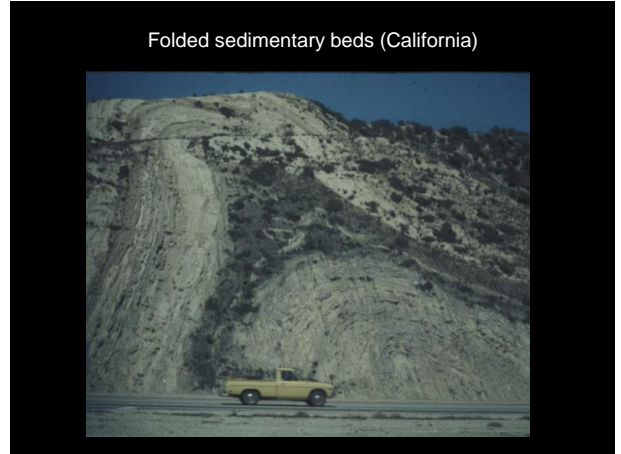
Gravity and water combine as the two major agents of erosion to produce sediments

Sedimentary rocks are layered, and mostly laid down as beds, which can contain fossils.

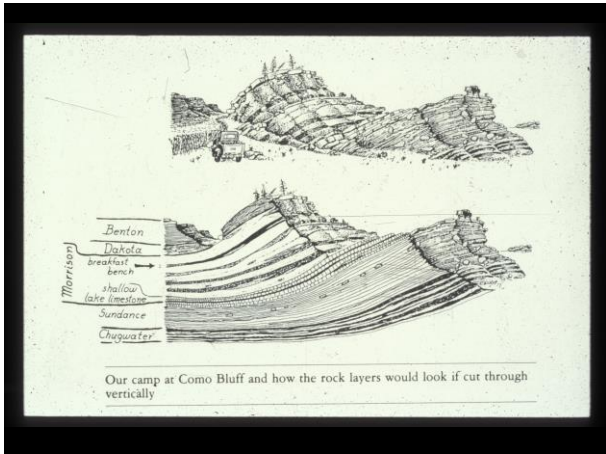
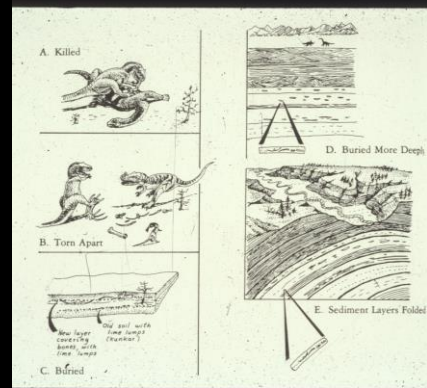


Tectonic activity returns deeply buried fossils to the surface, where they can be found with an eyeball-ometer and a pair of feet.



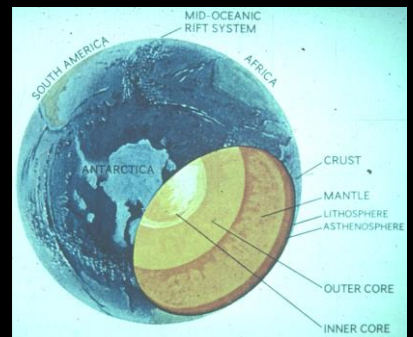


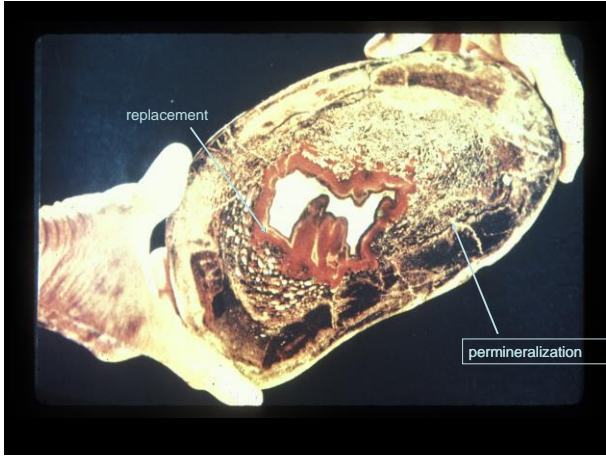
Vegetation obscures fossils.



There is a natural connection between:

- radioactive decay
- heat production
- tectonic activity
- burial of fossils
- fossilization
- uplift
- discovery





Microscopic detail can be preserved, possibly even ancient molecules.

A grid of four microscopic images showing fossilized biological structures. The top-left image shows a cross-section of a fossilized plant stem with distinct cellular structures. The top-right image shows a dense, dark, granular fossilized material. The bottom-left image shows a cross-section of a fossilized plant stem with a central vascular cylinder. The bottom-right image shows a cross-section of a fossilized plant stem with a distinct cellular structure. Small text labels are present between the images, but they are illegible.

A composite image. On the left, a glowing blue sphere with concentric rings, possibly representing a fossil or a celestial body. On the right, a large volcanic eruption with a massive plume of ash and smoke rising into the sky.

Fossil record is highly incomplete, which makes testing both extinction hypotheses challenging....

Deserts, for example, abound in Life....

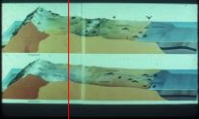
A composite image. On the left, a photograph of a lizard (possibly a spiny-tailed lizard) on a sandy desert floor. On the right, a photograph of a fossilized lizard skeleton embedded in a reddish-brown desert soil.

and potential fossils...

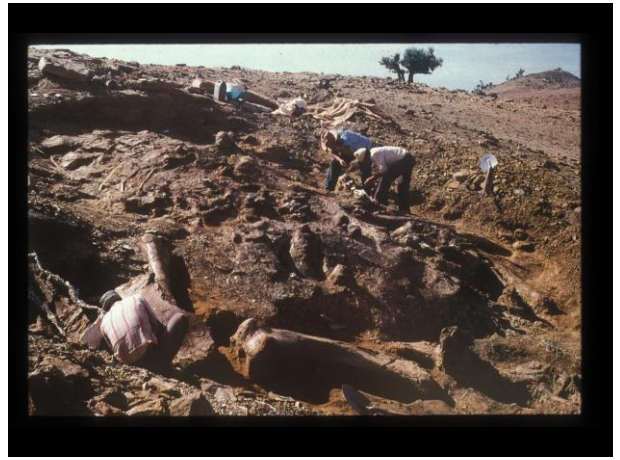


Water for Life, water for erosion, water to carry sediments for burial...sometimes blowing sand, sometimes ash...

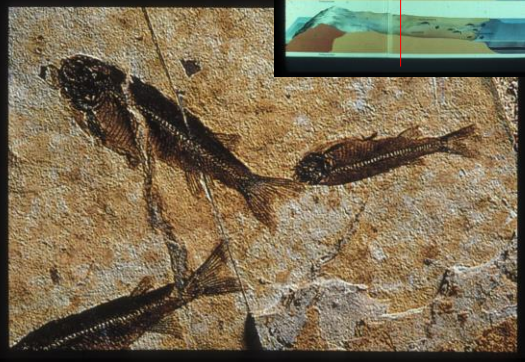
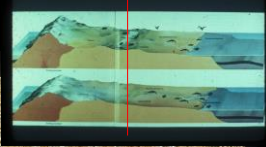
A diagram illustrating the water cycle and erosion processes in a desert landscape. The diagram is divided into two horizontal sections. The top section shows a cross-section of a mountain range with a river valley. Arrows indicate water flowing from the mountains down to the river, and then back up to the clouds. The bottom section shows a cross-section of a desert landscape with a sand dune. Arrows indicate wind blowing sand from the dune, and water flowing from the dune down to the ground.

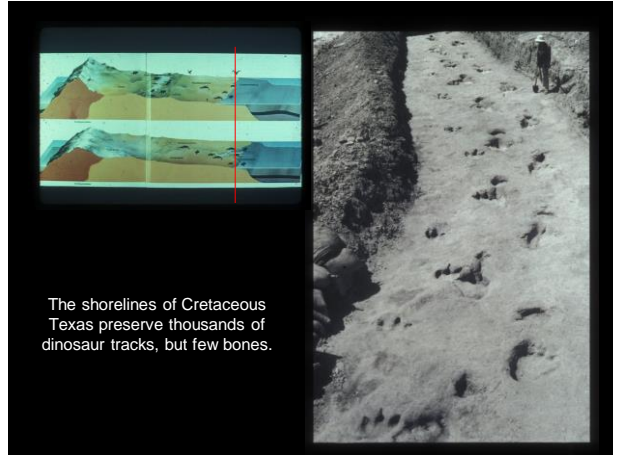
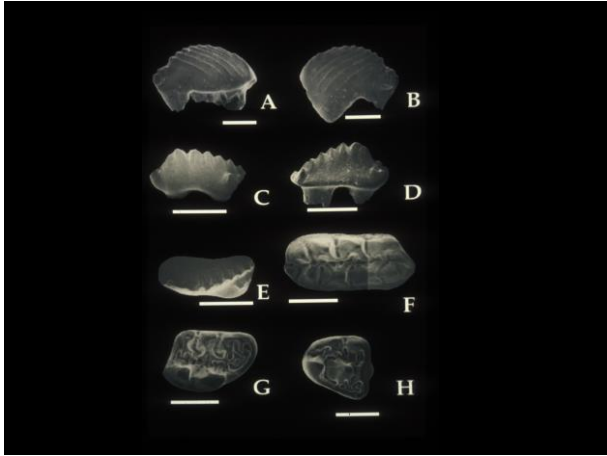


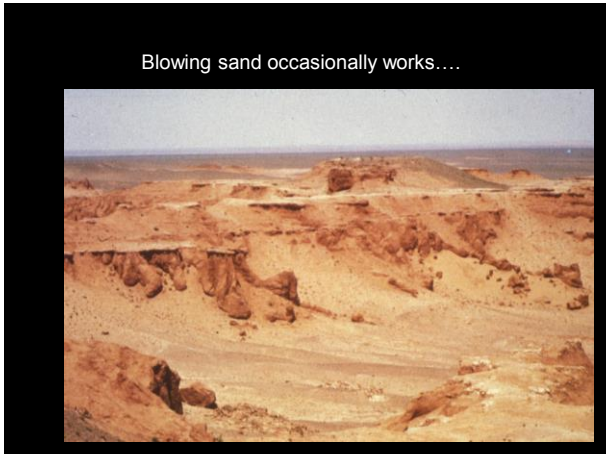
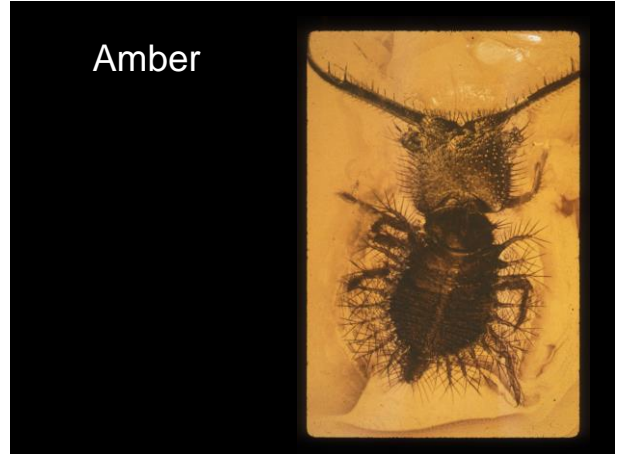
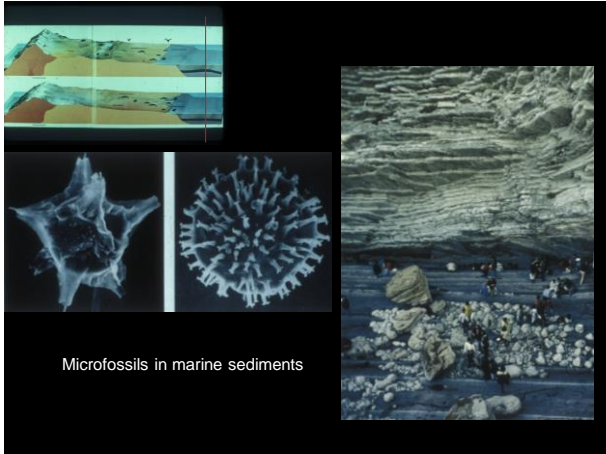
Steep slopes =
fast water, high-
energy streams
—
carcasses
tumble apart as
they are carried
to final resting
ground



Lake bed fossils



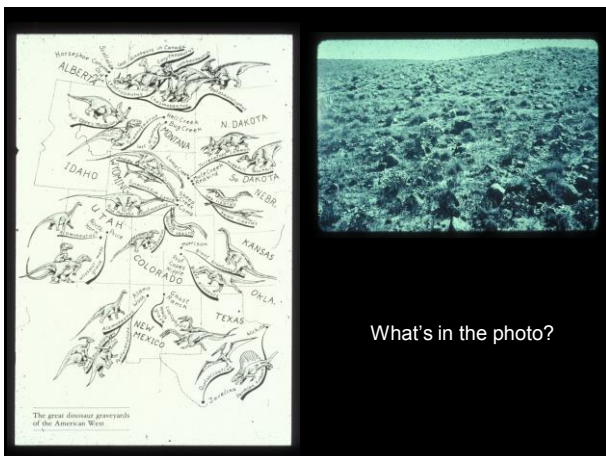
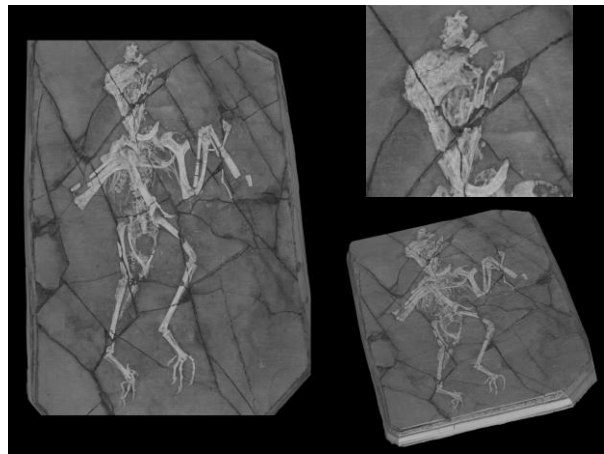




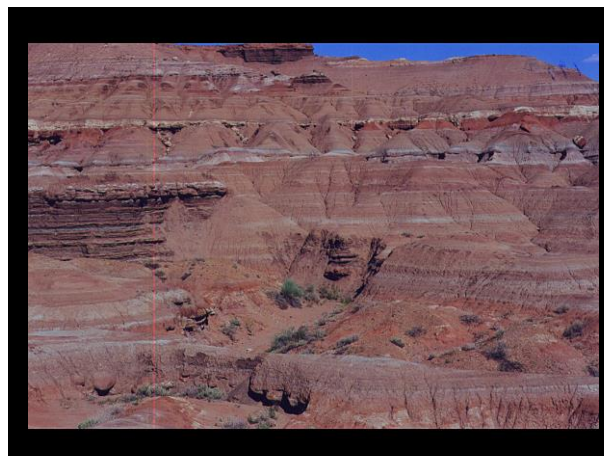
Liaoning, China

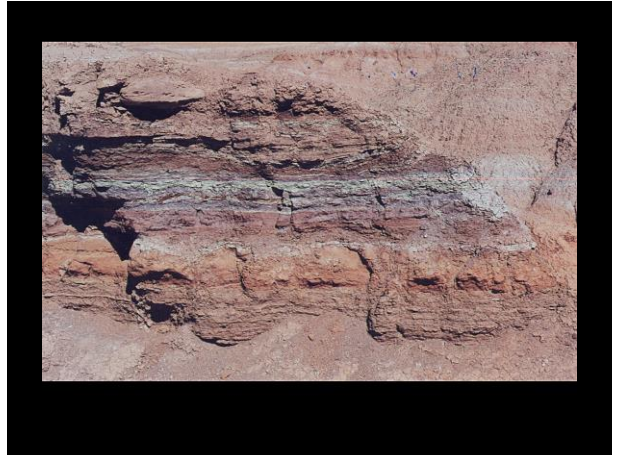
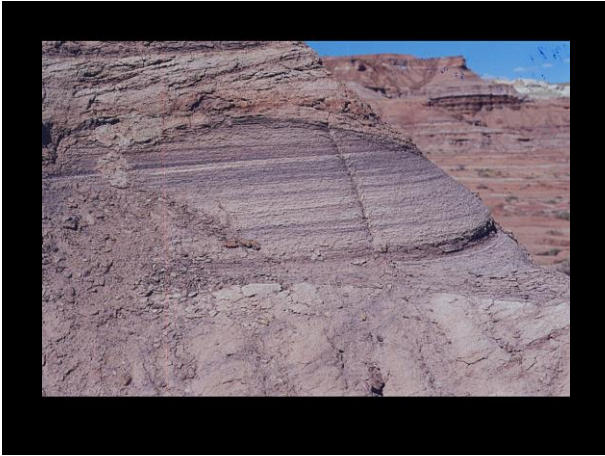


With surgical precision, paleontologist Kenrick Akeley has unearthed a fossilized dinosaur skeleton from the Late Cretaceous period. The specimen is a partial skeleton that has been found in the Liaoning province of China.



What's in the photo?





Late Cretaceous rocks of western North America are an important source of fossil evidence of the great extinction, owing to the tectonic history of the plate.

Alberta - South Saskatchewan
North America
Late Cretaceous
Dinosaur

Late Cretaceous brontosaurs avoided swampy forests. The Alberta delta was wet year-round most years, and brontosaurs weren't there. But in North Horn, Utah, there was a distinct dry season (producing kankar) and the brontosaur *A. lamiae* entered the climate.

The diagram shows a map of North America with a focus on the western part. It highlights the Alberta-South Saskatchewan region and the North Horn area in Utah. A dinosaur is depicted in the western part of the continent, and a geological cross-section is shown through the western part of the continent. The text explains that Late Cretaceous brontosaurs avoided swampy forests, and that the Alberta delta was wet year-round most years, while the North Horn area in Utah had a distinct dry season (producing kankar) where the brontosaur *A. lamiae* entered the climate.