

Name
Hour
Date

Cenozoic Era

During the Cenozoic, the earth was shaped by the Ice Ages, and modern humans developed.

Important Facts:

- *The mass extinction of the dinosaurs allowed mammals and flowering plants to develop.
- *Most of the landforms we see today were created during this time, like mtns., canyons, etc.
- *During the last 2 million years the earth has had a series of ice ages. Glaciers covered much of the continents' surfaces.
- *Hominids develop and leave Africa.
- *Over the last 100,000 years modern humans take over planet



Life Forms

- *Mammals
- *Flowering plants
- *megafauna during the ice ages
- *early hominids
- *modern humans

What's going on in Utah?

- * Many mountain ranges (Wasatch) uplift along with the Colorado Plateau
- *The last ice age shaped Utah with glaciers in the mountains
- *Lake Bonneville covered 1/3 of Utah
- *Megafauna lived across the state.
- *The first humans arrive in Utah 15,000-10,000 years ago



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Mesozoic Era

During the Mesozoic Era dinosaurs dominated the planet.

Important Facts:

- *The ancestors of the dinosaurs survived the Paleozoic mass extinction.
- *Dinos grew very large because it was warmer & there was more oxygen for plants/animals
- *The super continent Pangea formed at the beginning of the era, and broke into the modern continents at the end.
- *Birds, flowering plants, and mammals evolve.
- *A mass extinction ends the era & the dinosaurs.



Life Forms

*dinosaurs



- *mammals
- *birds (therizinosaurus)
- *flowering plants



What's going on in Utah?

- *Deserts cover part of Utah in the Jurassic that cemented into sandstone now.
- *Volcanic activity brings valuable minerals to the surface of Utah: copper, silver, gold, topaz, etc
- *Shallow seas and swamps turn into deposits of oil shale and coal, which are very important to Utah's economy today.
- *Wasatch, Rockies and other mountain ranges begin to uplift during this time.

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Paleozoic Era

During the Paleozoic, complex life grew and took over the land.

Important Facts:

- *Complex life forms increase in biodiversity.
- *The Ozone (O₃) forms in the atmosphere, making it possible for organisms to live on land.
- *Life forms expand onto the land. Plants appear first, then insects, amphibians, and reptiles.
- *Swamps from this time created coal, and ocean animals became oil & natural gas.
- *The Paleozoic ends with the largest mass extinction in earth's history.



Life Forms

*Many new organisms formed during this time, including:

-trilobites

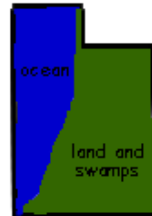


-ammonite

- plants (trees)
- insects (giant!)
- amphibians (frog)
- reptiles (alligator)

What's going on in Utah?

- *Part of Utah is covered with oceans.
- *Logan was underwater at this time, and Logan Canyon has many fossils from this era of earth's history.
- *Swamps covered the land of Utah and created coal deposits that are worth a lot of money today.



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Proterozoic Eon

During part of the Proterozoic Eon, the earth was frozen for a time (like a big snow ball), & complex life forms appeared.

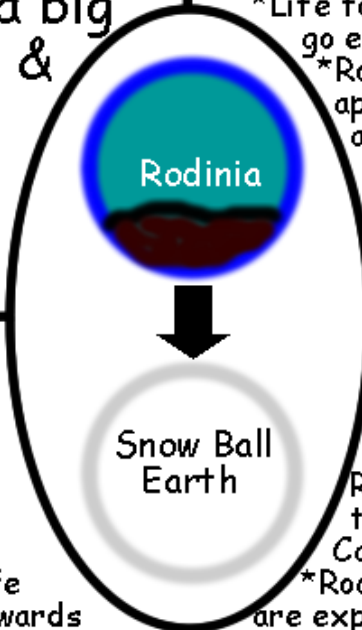
Important Facts:

- *The super continent, Rodinia, formed and blocked warm ocean water.
- *The earth froze in the biggest ice age in geologic history.

- *Life forms almost all go extinct.

- *Rodinia is broken apart by volcanic activity.

- *Life forms that take in oxygen and exhale methane appear along with more complex life



Life Forms

- *bacteria
- *cyanobacteria
- *algae
- *stromatolites

More complex life forms appear towards the end of the Proterozoic, like mollusks, clams, and other shelled sea creatures.



shells appear at the end of the Proterozoic Eon

What's going on in Utah?

- *Utah is part of the core/heart of Rodinia along with the U.S.A. and Canada.

- *Rocks from this era are exposed on Antelope Island in the Great Salt Lake. These are some of the oldest rocks in Utah.

- *Base of the Uinta mountains was at the heart of the super continent Rodinia, and split in half with part of the mountains ending up in Australia.

*Stromatolites still live along the shores of the Great Salt Lake, which is one of the few places you can find them in the world today.)

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Achaean Eon

During the Achaean, life forms appeared in the green oceans of the planet.

Important Facts:

- * 90% of the earth was covered by oceans that were green with iron.
- * The sky was red from carbon dioxide (CO_2).
- * A new rock, granite, began to form the core of the continents.
- * Life forms produced oxygen that rusted the iron out of the water, and diluted the CO_2 filled air turning both blue.



Life Forms

- * bacteria
- * cyanobacteria
- * algae
- * stromatolites

stromatolite



blue green
algae



Many of these early life forms appear to have taken in methane gas and expelled oxygen, eventually transforming the planet into the blue one we see today.

What's going on in Utah?

- * Utah is being formed along with the continents.
- * The iron that rusted out of the water was deposited at the bottom of the ocean, forming rich iron filled soil like that found in southern Utah.

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Hadean Eon

During the Hadean, the Earth formed and was a hot, ball of lava that gradually cooled to form a crust.

Important Events:

* 4.5-4.6 billion years ago the Earth formed.

* It was liquid lava for millions of years, but eventually cooled.

* As the surface cooled, volcanoes formed on the surface.

* Volcanic gases may have joined to form water

* At the end, the earth had oceans

The earth was too toxic to support life at this time.

Utah was not formed yet

