Rocks of Ontario

ONTARIO BENEATH YOUR FEET

GEOLOGY IS THE STUDY OF THE EARTH • **MINERALS** ARE SOLID MATERIALS THAT OCCUR NATURALLY • **ROCKS** ARE MADE UP OF TWO OR MORE MINERALS

Rock Types

Igneous rocks cool from magma (inside the Earth) or lava (outside the Earth).

Metamorphic rocks are rocks that have been changed by heat and/or pressure.

Sedimentary rocks are formed from bits of other rocks or shells of marine life laid down in water bodies.

Quartzite
Hard, light-coloured rock changed from sandstone under high heat and/or pressure.

Rhyolite
Light-coloured rock, with small mineral grains, cooled from lava erupted from volcanoes.

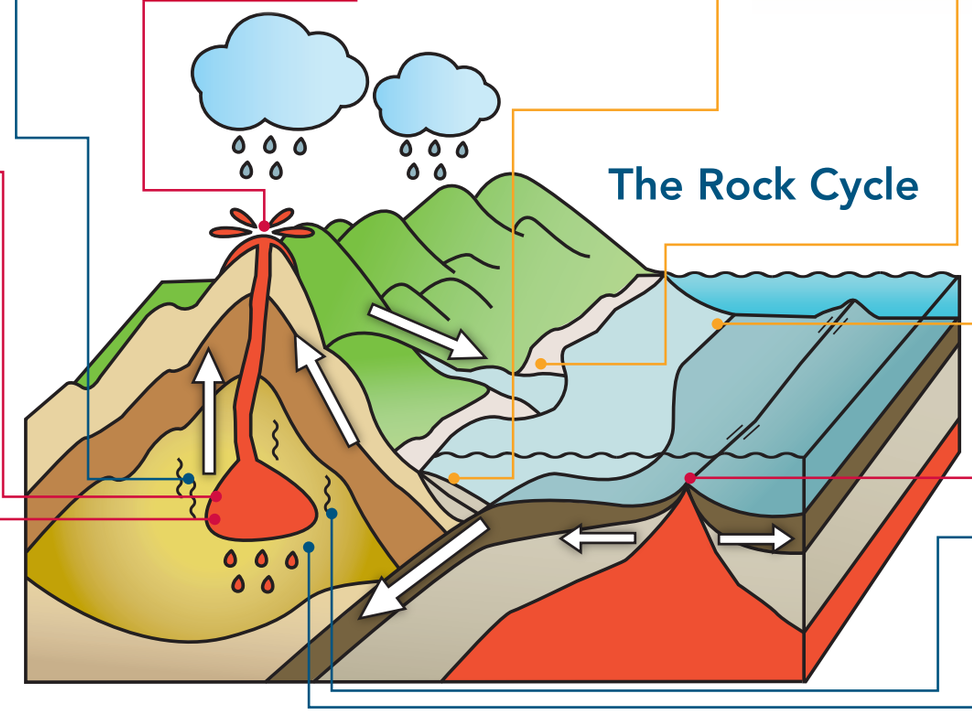
Limestone
A light coloured rock formed from the remains of animals and shells on the bottom of a warm, shallow ocean.

Sandstone
A light coloured rock formed from grains of sand.

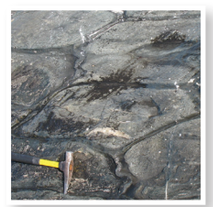
Shale
A light- to dark-coloured rock, with very small mineral grains, formed from silt, clay or mud. It easily breaks into flat pieces.

Granite
Rock with larger pink, black and white mineral grains formed by magma cooling under the Earth's surface.

Gabbro
Dark rock with larger mineral grains formed by magma cooling under the Earth's surface.



Basalt
A dark-coloured rock, with small mineral grains and pillow-like shapes, that formed from lava erupted under water from volcanoes.



Gneiss
Rocks showing multi-coloured layers formed under high heat and/or pressure.

Marble
Sparkly light-coloured rock changed from limestone under heat and/or pressure.

mining MATTERS

Ontario

Sleeping Giant, Thunder Bay

Rocks of Ontario

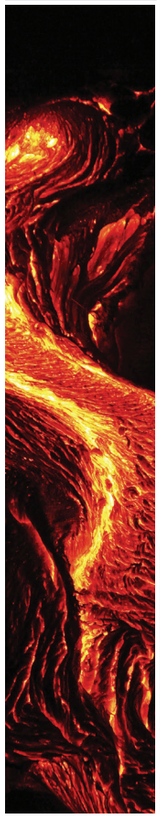
THROUGH FIRE, EARTH AND WATER

Ontario Geological Timeline

OLDEST ROCKS (age, million years)

4600 — 4000

HADEAN *Oceans of Fire*



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ARCHEAN *Life is Small*

Canadian Shield: Large region made of granites and greenstone rocks – the oldest rocks and middle age rocks of Ontario.

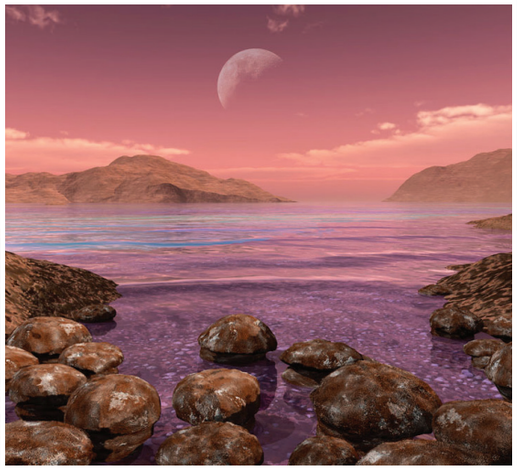
Granites: The first crust.

Greenstone Rocks: Formed from Ontario's first volcanoes – often contain valuable mineral resources.

1850 — 541

PROTEROZOIC *We Can Breathe*

Emerging Earth: The land was pushed and pulled into pieces, creating oceans, volcanoes and mountains. Early life created oxygen.

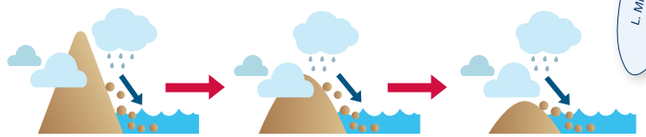


The Sudbury Structure

A large meteorite hit the Earth and created the Sudbury impact crater.

Weathering: Wind, water, ice, heat and pressure break down rocks.

Erosion: Movement of broken rocks. This wearing away of the rocks is why Ontario no longer has mountains as high as the Himalayas.



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PHANEROZOIC *Life Gets Big*

Paleozoic						Mesozoic			Cenozoic		
Cambrian	Ordovician	Silurian	Devonian	Carboniferous	Permian	Triassic	Jurassic	Cretaceous	Paleogene	Neogene	Quaternary

YOUNGEST ROCKS (Today)

Coral *Trilobite*

Tropical Seas

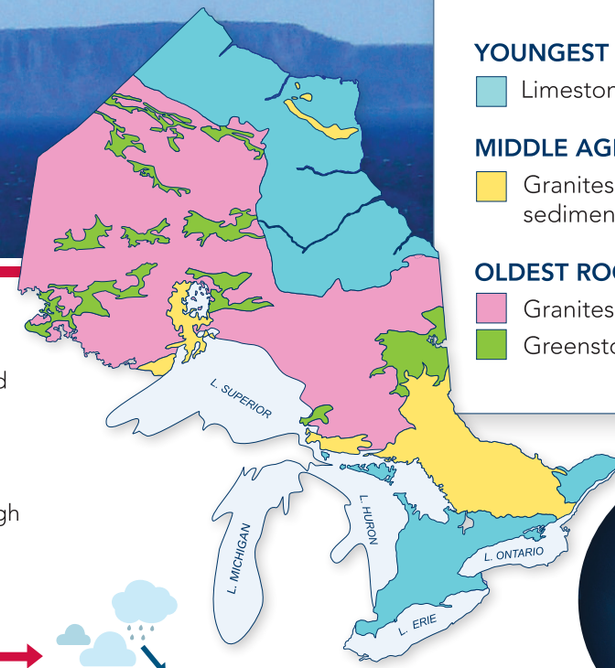
Warm, shallow ancient seas periodically covered most of Ontario, leaving behind many animal and plant remains seen today as fossils.

Ice Ages

During the most recent ice age, glaciers covered most of Ontario, up to 4 km thick! As glaciers moved forward, they carved out the Great Lakes. Evidence of the melting of glaciers is seen today on land as striations and erratic boulders.

Erratic Boulder: Boulder moved to different area by glaciers. The rock type of the erratic boulder and the rock under the boulder are often different.

Striations: Long, straight parallel lines or gouges formed as glaciers scratched the underlying rock.



YOUNGEST ROCKS, Phanerozoic
Limestones, sandstones

MIDDLE AGE ROCKS, Proterozoic
Granites, volcanic rocks, sedimentary rocks

OLDEST ROCKS, Archean
Granites
Greenstone rocks