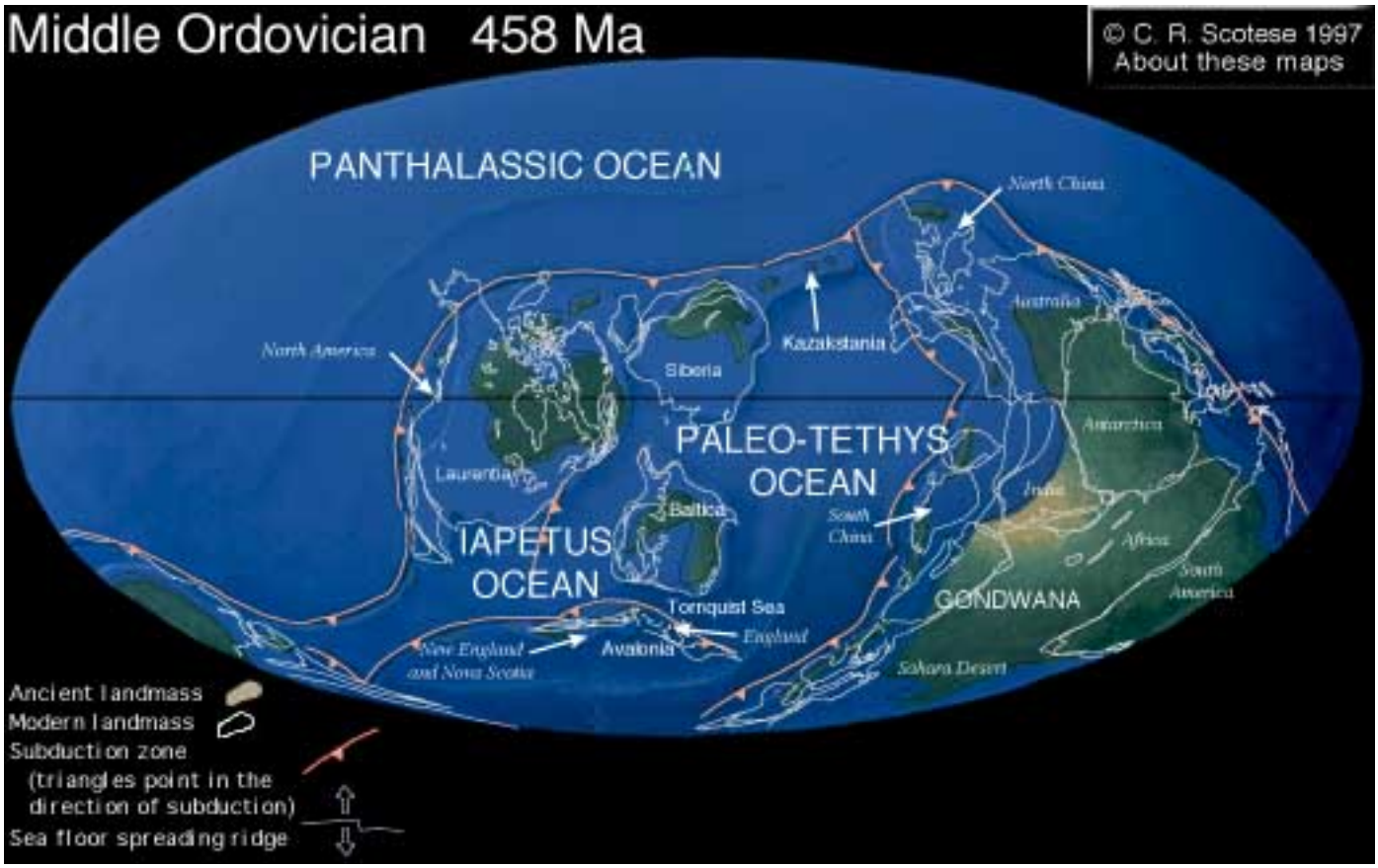
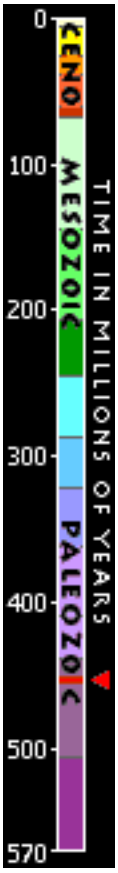
USGS Geology in the Parks





Earth
458 million years ago

Ordivician

What's going on here?

- Look at the southern part of the supercontinent Gondwana and you'll notice that the rocks that now underlie the great Sahara Desert were very near the South Pole! Yes, sedimentary deposits (tillites) left behind by glaciers are found beneath the shifting Sahara sands!
- During the early part of the Ordovician, global sea level dropped, exposing many previously flooded areas to erosion. Repeated sequences of sea level rise with continental flooding, then sea level falls with continental erosion are the norm during most of the Paleozoic Era.
- The core of North America (**Laurentia**) has rotated a bit, but still straddles the equator. A large part of Laurentia remains submerged beneath shallow tropical seas during the Ordovician. In fact, during some parts of the Ordovician, only a tiny part of North America rose above sea level! As we saw in the Cambrian, thick deposits **limestone** formed from the remains of countless shelled marine animals that died and accumulated on the sea bottom. Ordovician limestones are

preserved within many of National Parks.
- Find Baltica. By 458 million years ago, a subduction zone formed near the edge of Laurentia (North America's core). Baltica, made up of Scandinavia and part of the former USSR, was gradually being rafted along on the subducting plate toward North America.
- New England was still far to the south, attached to what eventually becomes England. Now, I ask you, why is one "New England" and the other just plain "England"?

Reconstructing ancient Earth

These remarkable figures are produced by C.R. Scotese and the PALEOMAP project. Geologists call these illustrations **paleogeographic reconstructions**, because they illustrate the reconstructed geography of our Earth at some time in the past.

Making a paleogeographic reconstruction begins by examining several lines of evidence including: **paleomagnetism**, **magnetic anomalies**, **paleobiogeography**, **paleoclimatology**, and **geologic history**. By combining all available evidence, geologists are able to construct paleogeographic maps, such as these, that interpret how the geography might have appeared at a specific location and time in the past. Paleogeographic maps are continually being refined as more evidence is collected.

To find out more about how paleogeographic reconstructions are made visit the PALEOMAP project site.

- Learn more about **this time period** at the PALEOMAP project site.
- Learn more about **geologic time**.
- Learn more about **plate tectonics**.

Move forward or back in time.
| Today | 0.018 | 14 | 50 | 69 | 94 | 152 | 195 | 237 | 255 | 306 | 356 | 390 | 425 | 458 | 514 | 650 |
Time in millions of years. Jump back to visit any time!

Scotese, C. R., 1997. Paleogeographic Atlas, PALEOMAP Progress Report 90-0497, Department of Geology, University of Texas at Arlington, Arlington, Texas, 37 pp.

| Into Earth | | Putting the pieces toge ther | | Action at the edges |
| National Parks by Tectonic Regions |
| Earth through time | | Detailed version: This Dynamic Earth |