

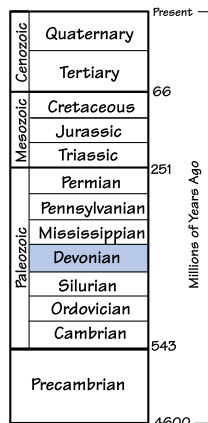


Geologic History

The **Queenston Delta** formed from sediments eroding off of the Taconic highlands. With the rise of the Acadian Mountains, erosion of sediments was renewed and the Catskill Delta deposits covered over the Queenston delta.

The Mississippi Delta is a modern delta that is dumping sediment from the Mississippi River into the Gulf of Mexico. Looking at the Mississippi Delta from above, the characteristic wedge shape of a delta is evident.

The sediments of the **Catskill Delta** are over 1.2 km thick in some places, indicating intense erosion and the enormity of the Acadian Mountains. Close to the source of erosion (the Acadian highlands) the delta sediments are coarser grained and thicker. As the sediments spread west across New York and Pennsylvania, they became finer grained and thinner deposits.



Mountain Building Part III: *the Acadian Mountains*

When Baltica (proto-Europe) finally collided with North America around 380 million years ago in the middle Devonian, the exotic terranes

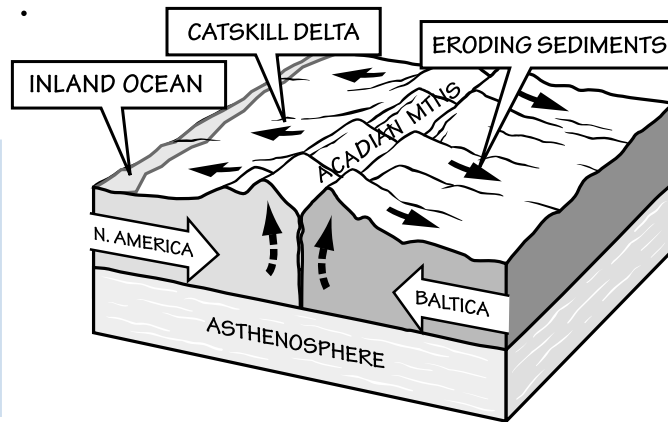


Figure 1.13: North America and Baltica collided finally in the mid-Devonian, crumpling the crust to form the Acadian Mountains. Sediments eroded from the highlands formed

making up New England were in between the colliding continents. The terranes (and the eastern margin of North America) were squeezed, folded, metamorphosed and intruded by magma. This collision with Baltica and North America formed yet another tall mountain chain, the Acadian Mountains, along the eastern margin of North America.

The Acadian mountains were similar to the Taconic and Grenville mountains of the past which had since eroded (Figure 1.13). Just as in the Taconic mountain-building period, compression from the Acadian continental collision warped the crust downward, reinforcing the inland ocean. The **Queenston Delta** was buried by new sediments eroding from the western side of the Acadian mountains. These sediments, known as the **Catskill Delta**, created a new wedge of sediments stretching into a shallow inland sea.

During this time, North America gradually began to move closer to its present geography and assume the north-south alignment we see today. At the time of the Acadian mountain building and subsequent erosion during the Devonian, the Northeast was at the

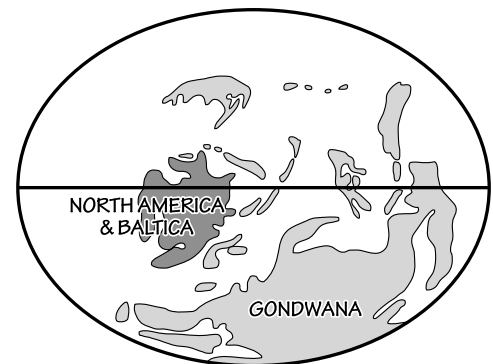


Figure 1.14: Devonian: 390 million years ago.





Equator and experiencing the associated tropical climate (Figure 1.15). Baltica (proto-Europe) and North America were united as one larger landmass. Africa, South America, India, Australia, Antarctica and Florida were all combined as one continent (Gondwana) in the southern hemisphere. The continents were gradually merging to become one.

Pangea, meaning 'all Earth,' formed over 250 million years ago and lasted for almost 100 million years. All of the Earth's continents were literally joined as one to form a giant super-continent.

Between mountain-building events: deposition in the inland ocean

The Northeast was not continuously experiencing dynamic mountain-building events. There were quieter times as well between the rise of great mountains and crushing crusts of colliding plates. The quiet times were marked by erosion of the highlands and very little plate movement and compression within the Northeast region. The building of the Taconic Mountains was over by the late Ordovician. Throughout the following Silurian period, the Northeast experienced a quiet time in which erosion from the Taconic highlands and deposition in the inland sea were the main events. Huge thicknesses of sedimentary rocks accumulated in and on the margins of the inland sea during part of the Silurian. The inland ocean, which spread across much of New York, Pennsylvania and western Maryland, was similar to the modern Persian Gulf, becoming very salty because of the shallow water, high rates of evaporation and poor circulation.

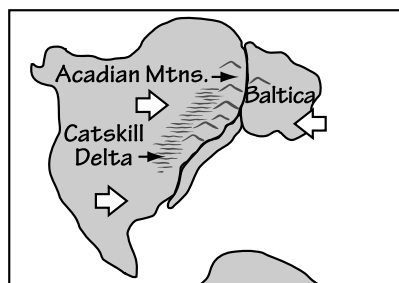


Figure 1.15: Acadian Mountain Building
 -Baltica collides with North America
 -Acadian Mountains form (northern Appalachian Mountains)
 -similar to Taconic mountain building
 -inland sea forms west of Acadian Mountains
 -Acadian Mountains erode
 -Catskill Delta deposited west of Acadian Mountains

Cenozoic	Quaternary	Present
	Tertiary	
Mesozoic	Cretaceous	66
	Jurassic	
	Triassic	
	Permian	
Paleozoic	Pennsylvanian	251
	Mississippian	
	Devonian	
	Silurian	
	Ordovician	
	Cambrian	
Precambrian		543
		4600

