

# GY111 Introductory Geology

Lecture 10: Evolution of the  
Continents



# Terms to Know

- Craton: interior of continents made of stable Precambrian and Paleozoic rocks
- Shield: portion of Craton composed of older Precambrian rocks
- Platform: portion of Craton made of younger Paleozoic sediments
- Orogenic belt: belts of rocks on the perimeter of the continents that form mountains (Appalachians, Cordillera)



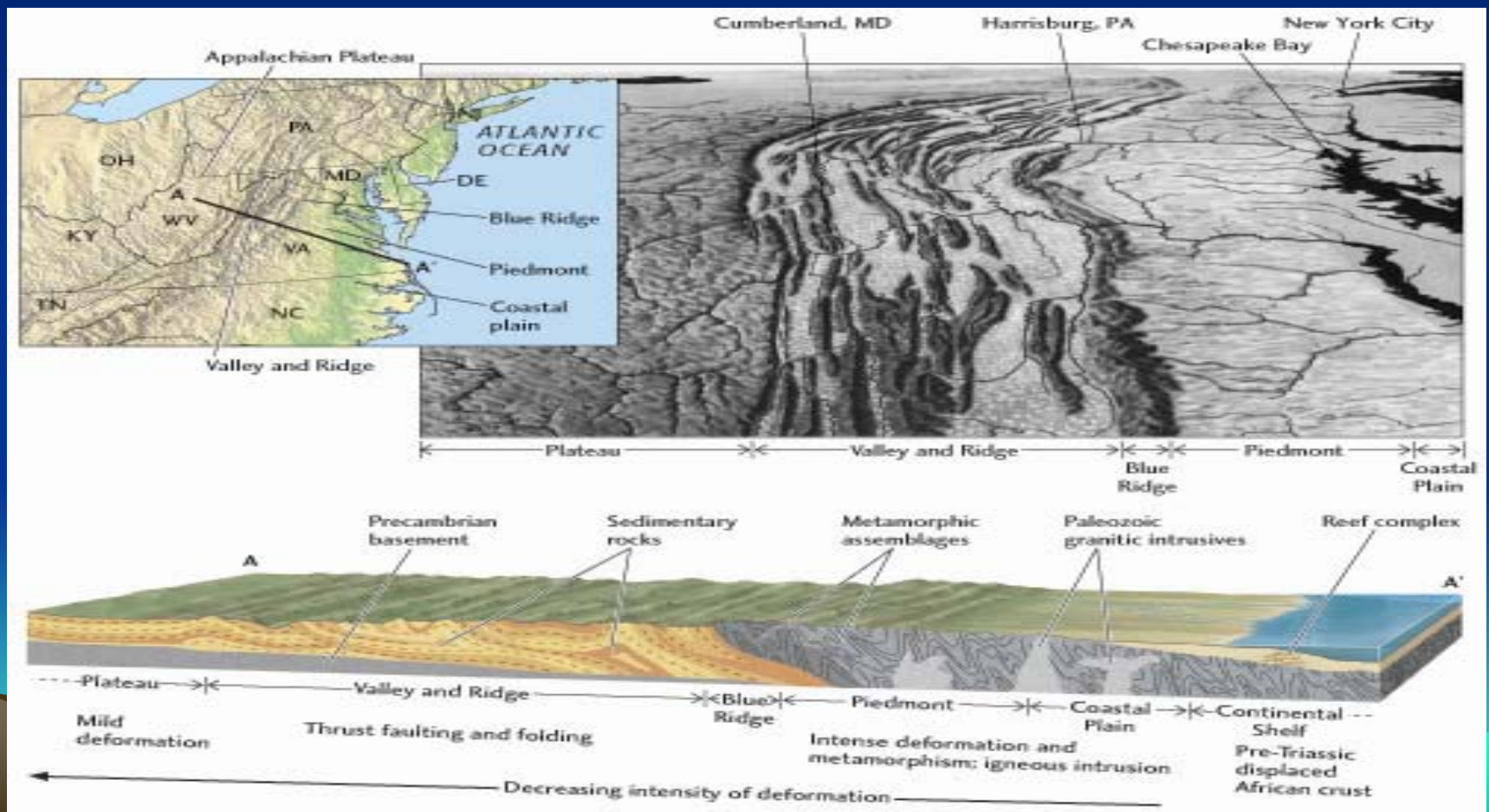
# North America



- Note that the Canadian Shield and Interior Platform compose the N.A. Craton

# Appalachian Orogenic Belt

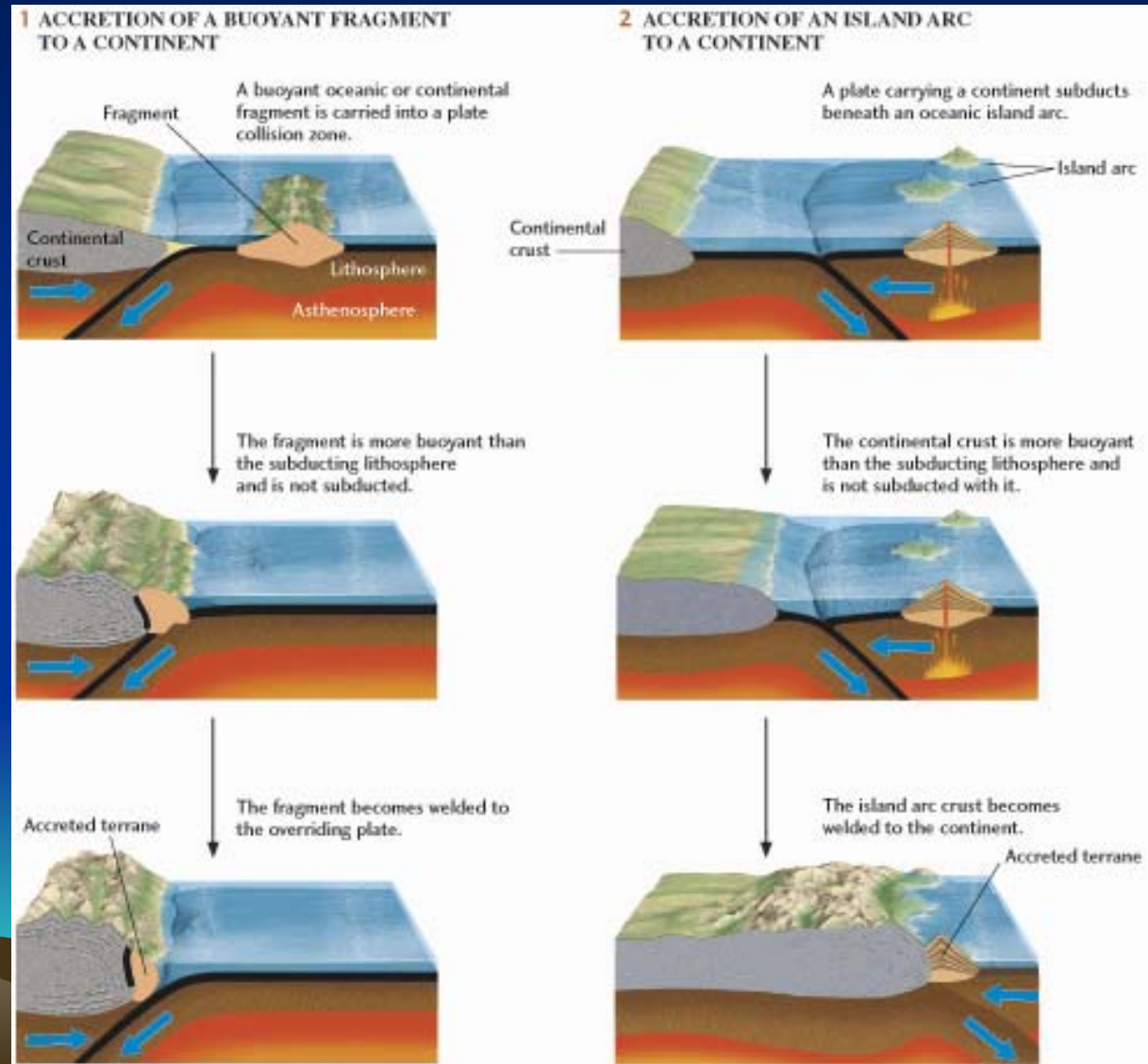
- Know the physiographic provinces



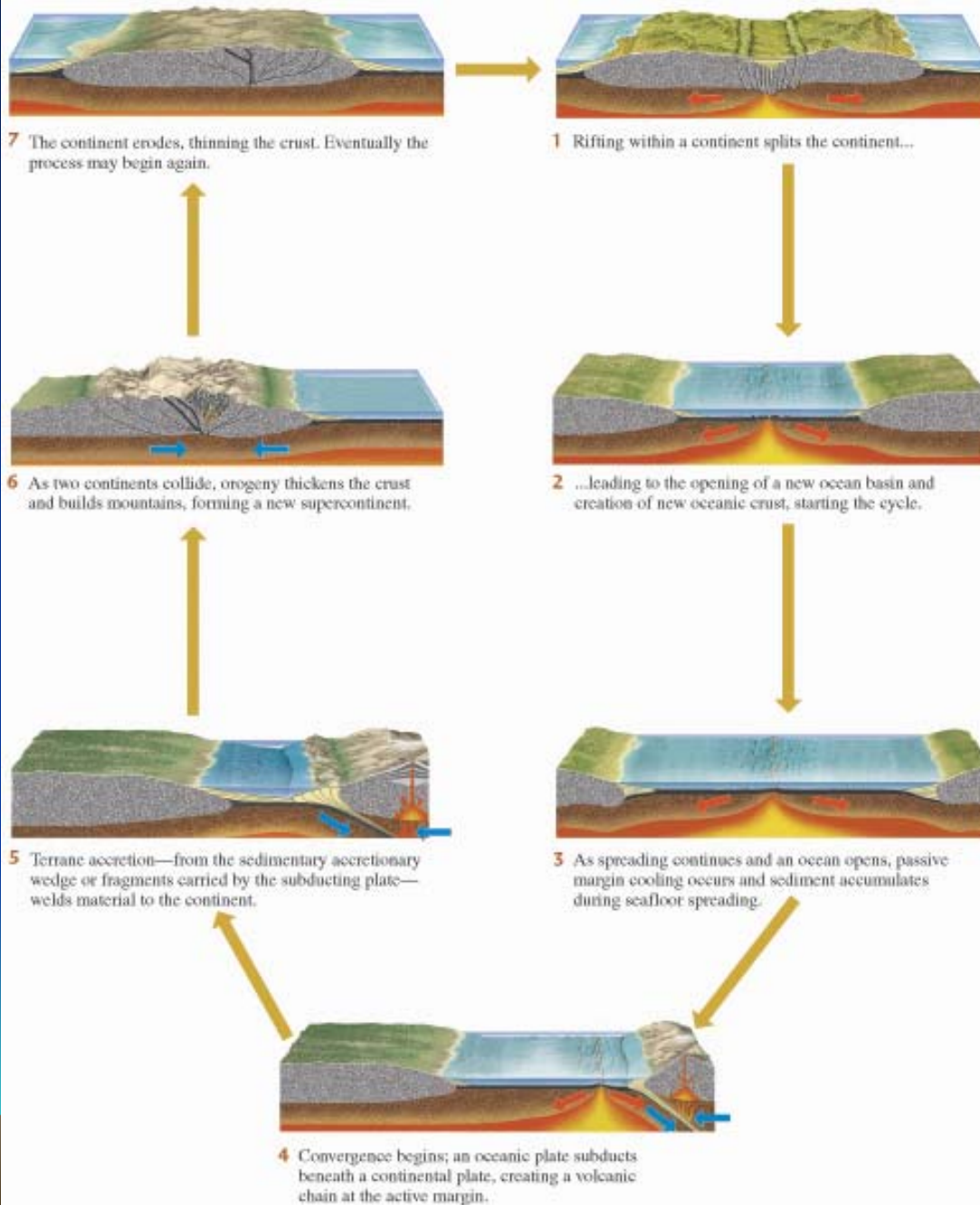


# Continental Accretion

- Subduction produces new continental lithosphere



# Wilson Cycle



# Construction of Pangaea

## Middle Cambrian (510 Ma)

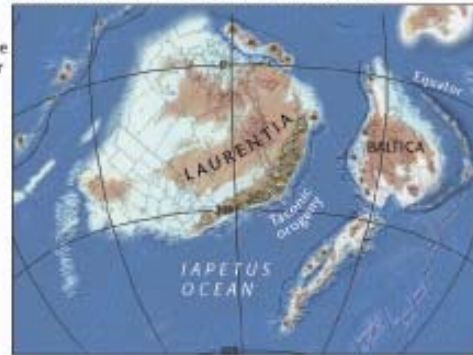
After the breakup of Rodinia, the continent of Laurentia straddled the equator, and its southern side was a passive continental margin, bounded on the south by the Iapetus Ocean.



Outlines show U.S. state boundaries for geographic reference

## Late Ordovician (450 Ma)

The island arc built up by the southward-directed subduction of Iapetus lithosphere collided with Laurentia in the middle to late Ordovician, causing the Taconic orogeny.



## Early Devonian (400 Ma)

The collision of Laurentia with the continent of Baltica caused the Caledonian orogeny and formed Laurussia. The southward continuation of the convergence caused the Acadian orogeny.



Shelf and submerged continent

## Late Mississippian (340 Ma)

The collision of Gondwana with Laurussia began with the Variscan orogeny in what is now central Europe...



## Upper Pennsylvanian (300 Ma)

... and continued along the margin of the North American craton with the Appalachian orogeny. During this terminal cataclysm, Siberia converged with Laurussia in the Ural orogeny to form Laurasia, while the Hercynian orogeny created new mountain belts across Europe and northern Africa.



## Early Permian (270 Ma)

The end product of these episodes of continental convergence was the supercontinent of Pangaea.

