

GEOLOGIC TIME SCALE

MYA	ERA	PERIOD	EPOCH	PLATE TECTONICS	LIFE
0.01	Cenozoic “Age of Mammals”	Quaternary	Holocene	Beaches and barrier islands form	-Mastadons become extinct -Human culture flourishes -Accelerating extinction of many species
1.8			Pleistocene	Ice sheets form	-Modern humans develop -Asians arrive and settle the Americas
5.3		Tertiary	Pliocene	-Volcanic activity in North America and Africa -Grand Canyon forms	Hominids develop
23.8			Miocene	Sandhills form in S.C.	Horses, mastadons, mammoths, tigers, and camels live in South Carolina
33.7			Oligocene	Appalachians uplift; erosion increases	Cats, dogs, and apes appear
54.8			Eocene	Sea levels rise; deposits of marine sediments – limestone in S.C.; land bridges form	-Grass spreads widely -Diverse array of animals develop, including whales, rhinos, and elephants
65.0			Paleocene	Earthquakes common; Georgia Embayment, Cape Fear Arch forms in Southeast	-First horses appear (size of a cat) -Tropical plants dominate
144	Mesozoic “Age of Reptiles”	Cretaceous		Mass extinction occurs at the end of the period caused by a meteorite impact (Dinosaurs, ammonites and 25% of marine life become extinct)	-T-Rex develops but number of dinosaur species decline -Snakes appear and first primates appear -Angiosperms appear
206		Jurassic		Western US: orogeny of Rockies; North America continues to rotate away from Africa	-First birds appear -Golden age of dinosaurs
248		Triassic		-Pangea begins to break apart -Rocky Mountains and Sierra Nevada form	First dinosaurs, mammals, crinoids, and modern echinoids appear
290	Permian	-Pangea forms -Appalachians rise		-90% of Earth’s species become extinct, including trilobites, blastoids, fish and amphibians because of heavy volcanism in Siberia	

320	Paleozoic "Age of Invertebrates"	Carboniferous	Pennsylvanian	Great swamps develop (future coal deposits)	-Reptiles develop from amphibians -Flying insects appear
354			Mississippian	Much of North America is under water	-First seed plants appear -Sea life flourishes including coral, brachiopods, blastoids, and bryozoa
417		Devonian	Acadian Orogeny – SC metamorphism	-Dominant animals: fish -Amphibians, evergreens and ferns appear	
443		Silurian	Extensive erosion	First land plants appear and land animals follow	
490		Ordovician	-Beginning of the construction of South Carolina -Great extinction due to growth of ice caps including in what is now northern Africa	-First animals with bones appear -Dominant animals: marine invertebrates including corals and trilobites	
540		Cambrian	S.C. near the equator; island arc continues to move toward North America	-Explosion of life -All existing phyla came into being here -Life forms in warm seas as oxygen levels rose enough to support life -Dominant animals: trilobites and brachiopods	
4600	Precambrian (Hadean, Archean, and Proterozoic Ages)		Earth takes 10 million years to cool: initial atmosphere escapes into space (H&He) and the core forms (Fe&Ni) Volcanic outgassing of water and carbon dioxide occurred for millions of years, helping to build atmosphere and then oceans At 3 billion years ago, banded iron formation rocks appear due to rising oxygen levels in the atmosphere and sea	No life possible as the Earth initially forms 4.6 billion years ago. Simple, single-celled forms of life appear 3.8 billion years ago. They will become more complex and successful over the next 3 billion years: Prokaryotes then Eukaryotes Cyanobacteria begins producing free oxygen (photosynthesis)	