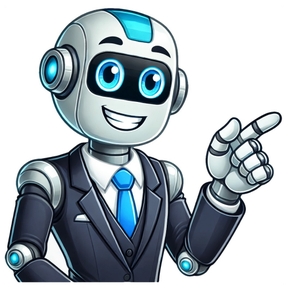
I'm not a bot



The geologic time scale is a system of chronological classification used to organize and subdivide Earth's history. It is based on the physical and biological evidence preserved in the rock record.The geologic time scale is an essential tool for understanding the history of Earth and the evolution of life. In this article , explore the principal eons, eras, periods, and epochs that help us track major events in geologic history. The Geologic Time Scale The geologic time scale is a complex and fascinating system for understanding Earth's history and the evolution of life. It is based on the physical and biological evidence preserved in the rock record, which has been accumulated over centuries of geological research. Geologic Time Scale: Major Eons, Eras, Periods and EpochsThe Geologic Time Scale is divided into four eons, ten eras, 22 periods, and several epochs and ages. Each eon, era, period, and epoch is defined by major geological or paleontological events. The eons are the Hadean, Archean, Proterozoic, and Phanerozoic. The Phanerozoic Eon is the eon of visible life, and is divided into three eras: the Paleozoic, Mesozoic, and Cenozoic. Eons Eons are the largest units of geologic time, spanning hundreds of millions to billions of years, and each represents a significant phase in Earth's history. Eon is the equivalent of a chronostratigraphic eonothem. The four eons are:The Hadean Eon Hadean Eon (4.54 to 4.00 billion years ago): The Hadean Eon is the earliest eon in Earth's history, and is named after Hades, the Greek god of the underworld. It was a time of intense volcanic activity and bombardment by asteroids and comets. The Earth's crust was forming during this time, and the atmosphere was composed of mostly carbon dioxide and water vapor.Archean Eon (4.00 to 2.50 billion years ago): is named after the Greek word "arkhaios," meaning "ancient." It was a time of great change on Earth, as the planet cooled and life began to emerge. The first single-celled organisms appeared during this eon, as well as the first cyanobacteria, which began to produce oxygen.Proterozoic Eon (2.50 to 0.541 billion years ago): is named after the Greek words "protos," meaning "first," and "zoe," meaning "life." The Proterozoic Eon was a time of great diversification of life, with the first animals appearing during this time. The Proterozoic Eon also saw the development of the first multicellular organisms, as well as the first complex ecosystems.The Phanerozoic Eon Phanerozoic Eon (541 million years ago to present): is the eon of visible life, and is divided into three eras: the Paleozoic, Mesozoic, and Cenozoic. The Phanerozoic Eon is named after the Greek words "phaneros," meaning "visible," and "zoe," meaning "life." It is the eon in which we live, and is characterized by the emergence of all major groups of plants and animals.Eras Eras are subdivisions of eons, and they span tens to hundreds of millions of years. Eras are defined by major changes in the Earth's climate, geography, and the diversity of life. Era is the equivalent of a chronostratigraphic erathem. The three eras of the Phanerozoic Eon are: The Paleozoic EraThe Paleozoic Era (541 to 252 Ma): The Paleozoic Era spans from 541 million years ago to 252 million years ago. It is also known as the "age of ancient life." During this time, the Earth's continents were combined into a single supercontinent called Pangaea. The Paleozoic Era is known for the rise of invertebrates, fish, amphibians, reptiles, and the first land plants. The Paleozoic Era is named after the Greek words "palaios," meaning "ancient," and "zoe," meaning "life." It was a time of great change on Earth, as life moved from the oceans onto the land.The Mesozoic EraThe Mesozoic Era (252 to 66 Ma): The Mesozoic Era spans from 252 million years ago to 66 million years ago. It is also known as the "age of dinosaurs." During this time, the dinosaurs were the dominant land animals on Earth. The Mesozoic Era is named after the Greek words "mesos," meaning "middle," and "zoe," meaning "life." It was a time when the dinosaurs dominated the planet. The Mesozoic Era also saw the rise of mammals and birdsThe Cenozoic Era The Cenozoic Era (66 Ma to present). The Cenozoic Era began 66 million years ago and continues to the present day. It is also known as the "age of mammals." During this time, the continents have drifted to their present positions, and the mammals have diversified to fill many different niches on Earth. The Cenozoic Era is named after the Greek words "kainos," meaning "recent," and "zoe," meaning "life." It is a time of great diversity among mammals, and is also marked by the rise of human civilization. Geologic Time Scale: Major Eons, Eras, Periods and EpochsPeriods are major subdivisions of geologic time. Geologic periods are subdivisions of eras. They are defined based on major changes in the fossil record, which reflect changes in the Earth's environment and the evolution of life. Geologic periods are typically hundreds of millions of years long. Geologic periods are defined based on changes in the fossil record, as well as changes in the Earth's physical features, such as its climate and geography. The Phanerozoic era is divided into 12 periods:Paleozoic Periods Cambrian Period (541-485.4 million years ago). The Cambrian Period is often called the "Age of Trilobites," because these marine arthropods were the most common animals of the time. Other important lifeforms that evolved during the Cambrian Period include the first vertebrates and the first land plants.Ordovician Period (485.4-443.8 million years ago). The Ordovician Period was a time of continued diversification of life on Earth. The first coral reefs appeared during this time, and fish became more common.Silurian Period (443.8-419.2 million years ago). The Silurian Period is often called the "Age of Fishes," because fish became the dominant vertebrates of the time. The first jawed fish appeared during this time, as well as the first land animals, such as insects and scorpions.Devonian Period (419.2-358.9 million years ago). The Devonian Period was a time of great change on Earth. The first amphibians appeared during this time, and land plants began to spread widely. The Devonian Period is also known for its giant fish, such as Dunkleosteus. Carboniferous Period (358.9-298.9 million years ago). The Carboniferous Period is often called the "Age of Coal Forests," because the vast amounts of coal that we use today were formed from the plants that lived during this time. The Carboniferous Period was also a time of diversification for reptiles and amphibians.Permian Period (298.9-252.2 million years ago). The Permian Period was the last period of the Paleozoic Era. It was a time of great change on Earth, as the climate became drier and the continents began to drift together. The Permian Period ended with the largest mass extinction in Earth's history, which killed off about 90% of all marine life.Mesozoic Periods Triassic Period (252.2-201.3 million years ago). The Triassic Period was a time of recovery from the Permian mass extinction. The first dinosaurs appeared during this time, as well as the first mammals and birds.Jurassic Period (201.3-145 million years ago). The Jurassic Period is often called the "Age of Dinosaurs," because dinosaurs were the dominant land animals of the time. The Jurassic Period was also a time of great change in the Earth's environment, as the continents continued to drift and the climate became warmer.Cretaceous Period (145-66 million years ago). The Cretaceous Period was the last period of the Mesozoic Era. It was a time of continued diversification for dinosaurs and other animals. The Cretaceous Period ended with the second-largest mass extinction in Earth's history, which killed off all dinosaurs except for birds.Cenozoic Periods Paleogene Period (66-23.03 million years ago). The Paleogene Period is the first period of the Cenozoic Era. It was a time of recovery from the Cretaceous mass extinction. Mammals began to diversify during this time, and the first primates appeared.Neogene Period (23.03-2.58 million years ago). The Neogene Period is the second period of the Cenozoic Era. It was a time of continued diversification for mammals and other animals. The first hominins appeared during this time, as well as the first grasses.Quaternary Period (2.58 million years ago to present). The Quaternary Period is the last period of the Cenozoic Era. It is the period in which humans evolved and became the dominant species on Earth. The Quaternary Period is also known for its ice ages. EpochsEpochs are subdivisions of geologic periods. They are also defined by changes in the Earth's rock record, but these changes are generally less significant than those that define periods. Geologic epochs typically last for hundreds of thousands to millions of years. Epoch is the equivalent of a chronostratigraphic series. There are also 11 subepochs/subseries which are all within the Neogene and Quaternary.Examples of geologic epochsPaleocene epoch: (66.0-56.0 million years ago) The Paleocene epoch was the first epoch of the Cenozoic Era. It began with the extinction of the dinosaurs and ended with the rise of the first mammals and birds.Eocene epoch: (56.0-33.9 million years ago) The Eocene epoch was a time of warm, wet climates and lush forests. Mammals diversified rapidly during this time, and the first primates appeared.Oligocene epoch: (33.9-23.0 million years ago) The Oligocene epoch was a time of cooling and drying climates. The first hominins appeared during this time.Miocene epoch: (23.0-5.3 million years ago) The Miocene epoch was a time of continued cooling and drying climates. The first grasses appeared during this time, and hominins began to walk upright.Pliocene epoch: (5.3-2.6 million years ago) The Pliocene epoch was a time of relatively warm and stable climates. Hominins became more diverse during this time, and the first Homo species appeared.Pleistocene epoch: (2.6 million years ago to present) The Pleistocene epoch is the current epoch. It is characterized by a series of ice ages and interglacial periods. Humans evolved during this time, and the first Homo sapiens appeared.Holocene epoch: (11,700 years ago to present) The Holocene epoch is the current interglacial period. It has been a time of relatively stable climates and human expansion.AgesAges are the smallest subdivisions of geologic time. They typically last only a few million years and are defined by specific changes in the fossil record or climate.Examples of geologic ages:Meghalayan age: (4,200 years ago to present) The Meghalayan age is the current geologic age. It is characterized by a relatively stable climate and a period of human-driven environmental change.Northgrippian age: (8,270-4,200 years ago) The Northgrippian age was a time of relatively stable climate. Humans began to develop agriculture and build cities during this time. The geologic time scale is a powerful tool for understanding the Earth's history and the evolution of life. It provides a framework for organizing and interpreting the Earth's rock record. The scale is also used to study climate change, sea level changes, and other important geological processes. 10 Interesting Facts About the Geological Time Scale Share — copy and redistribute the material in any medium or format for any purpose, even commercially. Adapt — remix, transform, and build upon the material for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms. Attribution — You must give appropriate credit , provide a link to the license, and indicate if changes were made . You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. ShareAlike — If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original. No additional restrictions — You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits. You do not have to comply with the license for elements of the material in the public domain or where your use is permitted by an applicable exception or limitation . No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. on April 16, 2022Geology For example, the entire age of the earth is divided into four eons: the Hadean Eon, the Archean Eon, the Proterozoic Eon, and the Phanerozoic Eon. These four eons are further subdivided into eras (Table 7.3). What are the 4 divisions of the geologic time scale in order? The geologic time scale is divided into (from longest to shortest): eons, eras, periods, epochs and ages. What are the 4 geologic eras from oldest to most recent? The four main ERAS are, from oldest to youngest: PreCambrian, Palaeozoic, Mesozoic and Cenozoic. What is eons in geologic time scale? eon, Long span of geologic time. In formal usage, eons are the longest portions of geologic time (eras are the second-longest). Three eons are recognized: the Phanerozoic Eon (dating from the present back to the beginning of the Cambrian Period), the Proterozoic Eon, and the Archean Eon. What are eons divided into? Eons are divided into smaller time intervals known as eras. In the time scale above you can see that the Phanerozoic is divided into three eras: Cenozoic, Mesozoic and Paleozoic. Very significant events in Earth’s history are used to determine the boundaries of the eras. How are geologic time periods divided? In the Geologic Time Scale, time is generally divided on the basis of the earth’s biotic composition, with the Phanerozoic Eon (i.e. the Paleozoic, Mesozoic and Cenozoic Eras) representing the period of Earth’s history with advanced life forms, and the Pre Cambrian (or Proterozoic and Hadean Eras) representing the … An Example Of The Geologic Time Scale In Use A well-known period of the geologic time scale is the Jurassic Period, made famous by the film Jurassic Park. The Jurassic Period began around 201 million years ago (Mya), and ended around 145 Mya. The geologic time scale breaks down the earth's history into time spans marked by different events, species, and evolution of the species. Earth scientists such as geologists and paleontologists use the geologic time scale to explain the timing and association of occurrences that have taken place in earth’s history. Formulation of Geologic Time Scale The first significant attempt to construct a geologic time scale applicable anywhere on earth was made towards the end of the 18th century. Werner championed the most significant attempt. William Smith, Jean d'Omlius d'Halloy, Georges Cuvier, and Alexandre Brogniart made efforts to identify strata using the fossils they contained in the early 19th century. These efforts made it easier for geologists to make more precise divisions of earth's history. Correlation of strata cross-national, and continental boundaries became possible. Any two strata that contained the same fossil were considered to have been laid down at the same period regardless of how far apart the strata was located. Between 1820 and 1850, a detailed study of the stratification and fossils of Europe were carried out. It is this study that produced the order of geological periods that are recognized today. Geological Table The geologic table was constructed by earth geologists based on how strata and fossils were positioned in the crust of the earth. Before radioactivity was discovered in 1896 and radiometric dating was developed, geologists estimated the timescales by studying the speeds of erosion, weathering lithification, and sedimentation. In 1913, Arthur Holmes, a British geologist, published the first geologic time scale with absolute dates. The geologist is also credited with furthering the discipline of geochronology and publishing ‘The Age of Earth,' a world-renowned book according to which the earth is at least 1.6 billion years old. Eras of the Geologic Time Scale The geologic time scale features four periods, the first one is the Precambrian era, followed by the Paleozoic era, Mesozoic era, and the Cenozoic era. Precambrian Era The Precambrian era dates from the beginning of the earth about 4.6 billion years ago. There was no life on earth during the Precambrian era. Paleozoic Era The next time span is the Paleozoic era which dates from 542 million years ago to 250 million years ago. Many species developed during this era but a majority of them were wiped out before the end of the time span. Mesozoic Era The Mesozoic era followed the Paleozoic era. The period dated between 250 and 65 million years ago. Many species evolved during the Mesozoic era to replace the ones that went extinct in the previous era. The humid and tropical climate of the Mesozoic era leads to the growth of many types of plants. Another incident that marks the Mesozoic period is the evolution of the dinosaurs into birds. Towards the end of this era, another major wipeout of the species including the dinosaurs happened. Cenozoic Era Smaller mammals that survived the Mesozoic era thrived during the Cenozoic era. This period dates from about 65 million years ago to the present time. Human evolution happened during this time span, and all life on earth evolved from their former primitive states to their current states in the Cenozoic era. Naming of Geologic Periods, Epochs and Eras British geologists dominated the early stages of developments of the geologic time scale. The influence of these geologists is evident in the names of the geologic periods such as the Cambrian, Ordovician, and Silurian periods. The periods were named after Welsh tribes and were defined using the sequence of strata formation in Wales. Other periods with this influence include the Devonian named after the Devon County and carboniferous adapted from the British geologist's name for the strata “coal measures.” Geologists from other countries however defined some periods. A good example is the "Triassic" named by Friedrich Von Alberti, a German geologist.The “Jurassic,” on the other hand, was named by Alexandre Brogniart, a French geologist. The British geologists also grouped the periods into eras and subdivided the quaternary and tertiary periods into epochs. diagram from the United States Geological Survey The Geologic Time Scale, as shown above, documents intervals of geologic time relative to one another, and has been continuously developed and updated over the last two centuries. In addition to the relative dating of periods in Earth's history for which we have rocks preserved, geologists are now able to assign absolute age dates to critical intervals. In the Geologic Time Scale, time is generally divided on the basis of the earth's biotic composition, with the Phanerozoic Eon (i.e. the Paleozoic, Mesozoic and Cenozoic Eras) representing the period of Earth's history with advanced life forms, and the Pre Cambrian (or Proterozoic and Hadean Eras) representing the period before advanced life.Within the context of the Phanerozoic Eon, geologists beginning in the late 1700's recognized that fossils appeared in an orderly fashion in stratigraphic units. Moreover, these geologists recognized that the fossilized biota demonstrated rather large changes in overall composition and showed both similarities with, and differences from living taxonomic groups. The majority of fossil organisms, however, did not match with modern groups; this led to the classification of three major eras within the period of time when the Earth's surface was populated with advanced life forms. These eras were referred to as the Paleozoic (meaning ancient life), the Mesozoic (meaning middle life), and the Cenozoic (meaning recent life) based on their relative similarity with modern taxa.Much of the relative geologic time scale had been constructed prior to the 20th century, but much progress has been made in the last half-century toward defining the absolute ages of the rocks on which the relative time scale is based. The modern Geologic Time Scale as shown above is a compendium of both relative and absolute age dating and represents the most up-to-date assessment of Earth's history. Using a variety of techniques and dating methods, geologists have been able to ascertain the age of the Earth, as well as major eras, periods, and epochs within Earth's history. These dates are used to study, among other things, the tempo or rates of environmental and biologic change occurring on Earth. Ordovician time scaleThe Ordovician Period is stratigraphically younger than the Cambrian Period and stratigraphically older than the Silurian, which overlies it. The Ordovician is now dated between 488.3 and 443.7 Ma (million years ago), which makes its duration 44.6 million years (Webby, 2003).The Ordovician, like most periods, has traditionally been sub-divided into Early, Middle and Late epochs, and Lower, Middle and Upper Series, but in practice, this classification is of little use except for the application of broad general patterns. In order to make a more useful and practical time-scale the Ordovician has been sub-divided into distinctive, well-defined intervals of time often referred to as series and stages. Adding to the complexity of stratigraphic nomenclature of the geologic time scale, two main systems are employed to designate these time units. These two separate classification systems are presently in use for the establishment of chronostratigraphic age, one called the North American Stage Classification and the other the British or European Stage Classification system. The British classification system is more often used and represents the preferred chronostratigraphic system for the Ordovician. The relationship between the British and North American stage nomenclature is provided in the figure above. This site will follow the North American Classification system, as Trenton Falls is one of the primary type sections for this dating system. Figure modifed from Webby, 2003 Upper Ordovician time scaleThe Upper Ordovician has been divided in the European System into the Caradoc and Ashgill Series and in the North American regional system into the upper part of the Whiterockian, the Mohawkian and the Cincinnatian Series.Historically, the identification of European global series and stage boundaries has been difficult in North American carbonate-dominated rocks, such as the Trenton limestone. This is due, in part, to the lack of the key diagnostic graptolite and conondont species used in the British system. Paleontologists have developed an equally well-defined chronostratigraphic framework for use in the cratonic rocks of North America. Both relative dating systems are shown in the figure above so that the reader can be familiarized with the classification systems now employed globally for this period of time. Key index taxa (graptolites and conondonts species) that are commonly used for correlation are also provided in stratigraphic succession.The North American series and stage classification has been constructed in part based on the rock exposures in central New York State. The Mohawkian Series, of which the Trenton limestone is a part, is now in use as the lower part of the Upper Ordovician. Although the duration of the Late Ordovician is now established at approximately 17.2 million years, the total amount of time contained within the Mohawkian Series is nearly 10 million years (or almost 1/4 the total duration of the Ordovician Period).The Mohawkian Series is further subdivided into the Ashbyan, Turinian, Rocklandian (Ro. above), Kirkfieldian (Ki. above), and Shermanian stages, so the total duration of time represented within the Trenton limestone (Rocklandian, Kirkfieldian and Shermanian stages) is significantly less. No absolute dates have been published establishing the depositional time of the Trenton, but current estimates by Holland and Patzkowsky (1998) suggest that the total time for this interval is approximately 4 to 5 million years. Upper Mohawkian time scaleThe most recent publication dealing with the chronostratigraphic framework of the Trenton Group and its lateral equivalents for the New York State region was published in 2002 by Brett and Baird. In their figure, as shown below, there are no specific absolute age restraints placed on the strata from the type section of the Trenton limestone. However, it does show the specific relative age position of the Trenton Group carbonates relative to other key stratigraphic intervals in the Upper Ordovician of New York. These stratigraphic intervals are highlighted yellow. In their diagram, Brett and Baird have summarized the current biostratigraphic and lithostratigraphic units on a spatial scale from central to eastern New York State , which approximates the depositional strike of the Trenton Group during the Upper Ordovician. This diagram shows several key features which will be discussed in detail in other sections of this website. However, for the purpose of introducing them, the most critical observations shown in the diagram are: 1) the presence of several (there are 3 major ones shown) disconformities in the rocks in this area as shown by the vertical striping. These include: a) the basal Trenton Unconformity which is accentuated (and of longer duration) in the central Mohawk Valley in the neighborhood of the Canajoharie Arch; b) the upper Trenton Lower Utica disconformity centered in the Western Mohawk Valley region in the vicinity of Middleville, New York; and c) the top Schenectady disconformity centered in the region to the east of Little Falls New York; 2). The large-scale westward shift in facies belts through time beginning near the end of the Diplograputus multidens (Middle Mohawkian) chronozone and progressing through the Geniculograptus pygmaeus graptolite chronozone; and 3) the relative dominance of carbonate facies (in blue) in the Western Mohawk Valley in the Mohawkian and the dominance of shale and flysch facies (in black and stippled gray) in the Eastern Mohawk Valley.In order to fully understand the complexities of the diagram shown above, the reader is encouraged to visit discussions on the tectonic setting of the Trenton Group, as well as sections on the lithostratigraphy and biostratigraphy as found in the section on sedimentary geology. Events in Earth’s history are “calendared” according to the geologic time scale. Eons, eras, periods, epochs, and ages are a few of the named units of abstract time that it divides all of the time into. Read here to learn in detail about the geologic time scale. Earth’s history has been classified into many periods by geologists. The length of these periods is not uniform like the hours in a day. The modern geologic time scale was formulated in 1911 by Arthur Holmes. But ancient Greek philosophers like Xenophanes and Aristotle had put forth observations about rock beds, fossils, and changes in the positions of lands and seas. The geologic time scale is a way of representing deep time based on events that have occurred throughout Earth’s history, a period of about 4.54 billion years. The most widely used standard chart showing the relationships between the various intervals of geologic time is the International Chronostratigraphic Chart, which is maintained by the International Commission on Stratigraphy (ICS). Geologic time scale A representation of time-based on Earth’s rock record is called the geologic time scale. It is a method of chronological dating that makes use of geochronology and chronostratigraphy, which relate strata to time (a scientific branch of geology that aims to determine the age of rocks). It is largely used to explain the timing and linkages of events in the history of the Earth by Earth scientists, such as geologists, paleontologists, geophysicists, and geochemists. The study of rock layers, observation of their correlations, and identification of elements like lithologies, paleomagnetic characteristics, and fossils have all contributed to the development of the time scale. Formal geologic time begins at the start of the Archean Eon (4.0 billion to 2.5 billion years ago) and continues to the present day. Modern geologic time scales additionally often include the Hadean Eon, which is an informal interval that extends from about 4.6 billion years ago (corresponding to Earth’s initial formation) to 4.0 billion years ago. Because they have undergone evolutionary changes over geologic time, living things have played crucial roles in the creation of geologic time scales. Additionally, specific regions of the geologic record are characterized by specific types of life. The geologic history of distinct regions and Earth as a whole can be reconstructed by comparing the strata in which particular types of fossils are discovered. By using absolute dates derived using radiometric dating techniques, the relative geologic time scale that emerged from the fossil record has been numerically measured. Division of geologic time Courtesy: ICS The geologic time scale is divided into several magnitudes of units of time. The names of geologic time units are defined for chronostratigraphic units with the corresponding geochronologic unit. Eons Eons are the largest intervals of geologic time and are hundreds of millions of years in duration. The Precambrian is an informal unit of geologic time, subdivided into three eons (Hadean, Archean, Proterozoic) of the geologic time scale. The Phanerozoic Eon is the most recent eon and began more than 500 million years ago. Phanerozoic- 538.8 to 0 million years ago Proterozoic- 2,500 to 538.8 million years ago Archean- 4,000 to 2,500 million years ago Hadean- 4,567.3 to 4,000 million years ago Eras Eons are divided into smaller time intervals known as eras. The Phanerozoic is divided into three eras: Cenozoic, Mesozoic, and Paleozoic. Very significant events in Earth’s history are used to determine the boundaries of the eras. Cenozoic- 66 to 0 million years ago (Recent) Mesozoic- 251.9 to 66 million years ago (Middle) Palaeozoic- 538.8 to 251.9 million years ago (Ancient) Neoproterozoic- 1,000 to 538.8 million years ago Mesoproterozoic- 1,600 to 1,000 million years ago Paleoproterozoic- 2,500 to 1,600 million years ago Neoarchean- 2,800 to 2,500 million years ago Mesoarchean- 3,200 to 2,800 million years ago Paleoarchean- 3,600 to 3,200 million years ago Eoarchean- 4,000 to 3,600 million years ago Also read: Geomorphic Processes and Earth Movements Periods Eras are subdivided into periods. The events that bound the periods are widespread in their extent but are not as significant as those which bound the eras. The Paleozoic is subdivided into the Permian, Pennsylvanian, Mississippian, Devonian, Silurian, Ordovician, and Cambrian periods. Quaternary- 2.6 to 0 million years ago (Cenozoic) Neogene- 23 to 2.6 million years ago (Cenozoic) Paleogene- 66 to 23 million years ago (Cenozoic) Cretaceous- 145 to 66 million years ago (Mesozoic) Jurassic- 201.4 to 145 million years ago (Mesozoic) Triassic- 251.9 to 201.4 million years ago (Mesozoic) Permian- 298.9 to 251.9 million years ago (Palaeozoic) Carboniferous- 358.9 to 298.9 million years ago (Palaeozoic) Devonian- 419.2 to 358.9 million years ago (Palaeozoic) Silurian- 443.8 to 419.2 million years ago (Palaeozoic) Ordovician- 485.4 to 443.8 million years ago (Palaeozoic) Cambrian- 538.8 to 485.4 million years ago (Palaeozoic) Ediacaran- 635 to 538.8 million years ago Cryogenian- 720 to 635 million years ago Stenian- 1,200 to 1,000 million years ago Ectasian- 1,400 to 1,200 million years ago Calymmian- 1,600 to 1,400 million years ago Statherian- 1,800 to 1,600 million years ago Orosirian- 2,050 to 1,800 million years ago Rhyacian- 2,300 to 2,050 million years ago Siderian- 2,500 to 2,300 million years ago The Cenozoic era also has a tertiary period considered by some which have five epochs- Paleocene, Eocene, Oligocene, Miocene, and Pliocene. It was during this era that the vegetation increased and the ape-man appeared. Epochs and Age Subdivision of periods into epochs can be done only for the most recent portion of the geologic time scale. This is because older rocks have been buried deeply, intensely deformed, and severely modified by long-term earth processes. As a result, the history contained within these rocks cannot be as clearly interpreted. An age is the smallest hierarchical geologic unit. The International Commission on Stratigraphy named the most recent geologic age, often known as the topmost stage of the Quaternary, the Meghalayan age in 2018. Additionally, the Holocene era or series is divided into three higher, or most recent, subdivisions. The Meghalayan age starts 4,200 years ago (about 2251 BCE), allowing for the potential emergence of the Anthropocene. Meghalayan history began between 2190 and 1990 BCE. A 200-year drought that affected the Eastern Mediterranean, Mesopotamia, the Indus Valley, and the Yangtze River Valley marked the start of the period. Also read: Geohazards and their Management How are geologic time scale divisions decided? A variety of event categories are used to determine the division dates of the numerous eons, eras, periods, epochs, and ages. These occasion categories comprise, but are not restricted to: The first occurrence of a species: All biological forms are included in this (plants, animals, bacteria, etc). The “first of first” species are of particular interest (e.g., the first oxygen-breathing organism, the first seed-producing plant, and so on). Key species going extinct or catastrophic extinctions: A huge number of species going extinct in a short period of geologic time is known as a mass extinction. The Cretaceous-Paleogene extinction event, when most dinosaur species became extinct, is a well-known illustration of mass extinction. Major worldwide climate shifts: when the climate significantly diverges from the average for the time, as during ice ages. Supercontinental formation and/or breakup: When all significant landmasses on the surface of the Earth combine to form one landmass, supercontinents are created. Catastrophic events: Major catastrophes can result in or set off other occurrences like extinctions and climate change. Major floods, meteorite impacts, and volcanic eruptions are examples of catastrophic catastrophes. Global magnetic polarity shifts: The planet’s magnetic polarity “flips” on an irregular basis, with the North pole switching places with the South pole. Various significant events throughout history have been considered to divide the geologic time scale. For instance, a significant portion of Earth’s plant and animal species disappeared during a global extinction that occurred during the transition between the Permian and Triassic periods. Another illustration is the transition from the Precambrian to the Paleozoic, which is shown by the emergence of the first animals with hard parts. Read: Geo-Heritage Sites and UNESCO Global Geoparks -Article written by Swathi Satish Latest Chart version in PDF or JPG. Additional Chart resources: Mobile App Search Apple App Store for "ics timescale" Translations & Old Versions Correlation Tables Global chronostratigraphical correlation table for the last 2.7 million years Click here to download the pdf file and here to see the explanation of the correlation table. Ordovician Chronostratigraphic Chart Showing correlation of regional chronostratigraphic schemes with the new global stages and series for the Ordovician System. By Bergstrom, S.M., Xu Chen, Gutierrez-Marco, J.C., and Dronov, A., 2008, Lethaia, DOI 10.1111/j.1502-3931.2008.00136.x Click HERE to download a better version (higher resolution) Ordovician Carbon Isotope Curve By Bergstrom, S.M., Xu Chen, Gutierrez-Marco, J.C., and Dronov, A., 2008, Lethaia, DOI 10.1111/j.1502-3931.2008.00136.x Click HERE to download a better version (higher resolution) Permian Time Scale 2012 By Shen S.Z. et al. Click HERE to download a better version (higher resolution) Pronunciation Guide Here is a pronunciation guide in English, French & Spanish for the Chart elements that gives hyphenated syllabification: Pronunciation Guide in Excel English Hyphenation Pronunciation (British) Français Césure Español Silabación Aalenian Aa-le-ni-an Aalénien Aa-lé-nien Aaleniense A-a-le-nien-se Aeronian Ae-ro-ni-an Aéronien Aé-ro-nien Aeroniense A-e-ro-nien-se Albian Al-bi-an Albien Al-bien Albiense Al-bien-se Anisian Ani-si-an Anisien A-ni-sien Anisiense A-ni-sien-se Aptian Ap-ti-an Aptien Ap-tien Aptiense Ap-tien-se Aquitanian Aq-ui-ta-ni-an Aquitanien A-qui-ta-nien Aquitaniense A-qui-ta-nien-se Archean Ar-che-an Archéen Ar-chéen Arcaico Ar-cai-co Artinskian Art-in-ski-an Artinskien Ar-tins-kien Artinskiense Ar-tins-kien-se Asselian As-sel-ian Assélien As-sé-lien Asseliense As-se-lien-se Bajocian Ba-jo-ci-an Bajocien Ba-jo-cien Bajociense Ba-jo-cien-se Barremian Bar-re-mi-an Barrémien Bar-ré-mien Barremiense Ba-rre-mien-se Bartonian Bar-to-ni-an Bartonien Bar-to-nien Bartoniense Bar-to-nien-se Bashkirian Bash-kiri-an Bashkirien Bash-ki-rien Bashkiriense Bash-ki-rien-se Bathonian Batho-ni-an Bathonien Ba-tho-nien Bathoniense Ba-tho-nien-se Berriasian Ber-ri-a-sian Berriasien Ber-ria-sien Berriasiense Be-rria-sien-se Burdigalian Bur-di-gal-i-an Burdigalien Bur-diga-lien Burdigaliense Bur-diga-lien-se Calabrian Ca-la-bri-an Calabrien Ca-la-brien Calabriense Ca-la-brien-se Callovian Call-o-v-i-an Callovien Cal-lo-vien Calímico Ca-lí-mi-co Calymmian Cal-ym-mi-an Calymmien Ca-lym-mien Calloviense Ca-llo-vien-se Cambrian Cam-bri-an ˈkæmbɹiən Cambrien Cam-brien Cámbrico Cám-bri-co Campanian Cam-pa-ni-an Campanien Cam-pa-nien Campaniense Cam-pa-nien-se Capitanian Cap-i-ta-ni-an Capitanien Ca-pi-ta-nien Capitaniense Ca-pi-ta-nien-se Carboniferous Car-bon-if-er-ous ˌkɑɹbəˈnɪfɜ·əs Carbonifère Car-bo-ni-fè-re Carbonífero Car-bo-ní-fe-ro Carnian Car-ni-an Carnien Car-nien Carniense Car-nien-se Cenomanian Cenoma-ni-an Cénomanien Cé-no-ma-nien Cenomaniense Ce-no-ma-nien-se Cenozoic Ce-no-zo-ic ˌsinəˈzoʊɪk Cénozoïque Cé-no-zoï-que Cenozoico Ce-no-zoi-co Changhsingian Changhsin-gi-an Changhsingien Changh-sin-gien Changhsingiense Changh-sin-gien-se Chattian Chat-ti-an Chattien Chat-tien Chattiense Cha-ttien-se Chibanian Chi-ba-ni-an Chibanien Chi-ba-nien Chibaniense Chi-ba-nien-se Cisuralian Cis-ura-li-an Cisuralien Ci-su-ra-lien Cisuraliense Ci-su-ra-lien-se Coniacian Co-ni-a-cian Coniacien Co-nia-cien Coniaciense Co-nia-cien-se Cretaceous Cre-ta-ceous krɪˈteɪ.ʃəs Crétacé Cré-ta-cé Cretácico Cre-tá-ci-co Cryogenian Cry-o-ge-ni-an Cryogénien Cryo-gé-nien Criogénico Crio-gé-ni-co Danian Da-ni-an Danien Da-nien Daniense Da-nien-se Dapingian Dapin-gi-an Dapingien Da-pin-gien Dapingiense Da-pin-gien-se Darriwilian Dar-ri-wil-ian Darriwilien Dar-ri-wi-lien Darriwiliense Da-rri-wi-lien-se Devonian De-vo-ni-an dɪˈvoʊniən Dévonien Dé-vo-nien Devónico De-vó-ni-co Drumian Dru-mi-an Drumien Dru-mien Drumiense Dru-mien-se Ectasian Ec-ta-si-an Ectasien Ec-ta-sien Ectásico Ec-tá-si-co Ediacaran E-di-a-ca-ran Édiacarien É-dia-ca-rien Ediacárico E-dia-cá-ri-co Eifelian Eife-lian Eifélien Ei-fé-lien Eifeliense Ei-fe-lien-se Emsian Em-sian Emsien Em-sien Emsiense Em-sien-se Eoarchean E-o-ar-che-an Éoarchéen Éo-ar-chéen Eoarcaico E-o-ar-cai-co Eocene E-o-cene ˈiəˌsin Éocène Éo-cè-ne Eoceno E-o-ce-no Famennian Fa-men-ni-an Famennien Fa-men-nien Fameniense Fa-me-nien-se Floian Flo-i-an Floien Floien Floiense Floien-se Fortunian For-tu-ni-an Fortunien Fo-rtu-nien Fortuniense For-tu-nien-se Frasnian Frasn-i-an Frasnien Fras-nien Frasniense Fras-nien-se Furongian Fu-ron-gi-an Furongien Fu-ron-gien Furongiense Fu-ron-gien-se Gelasian Ge-la-si-an Gélasien Gé-la-sien Gelasiense Ge-la-sien-se Givetian Give-tian Givétien Gi-vé-tien Givetiense Gi-ve-tien-se Gorstian Gors-tian Gorstien Gor-stien Gorstiense Gors-tien-se Greenlandian Geen-lan-d-i-an Greenlandien Green-lan-dien Groenlandiense Gro-en-lan-dien-se Guadalupian Gua-da-lu-pian Guadalupien Gua-da-lu-pien Guadalupiense Gua-da-lu-pien-se Guzhangian Gu-zhan-gi-an Guzhangien Guz-han-gien Guzhangiense Guz-han-gien-se Gzhelian G-zhe-li-an Gzhélien Gzhé-lien Gzheliense Gzhe-lien-se Hadean Hade-an Hadéen Ha-déen Hádico Há-di-co Hauterivian Hau-teriv-i-an Hauterivien Hau-te-ri-vien Hauteriviense Hau-te-ri-vien-se Hettangian Het-tan-gi-an Hettangien Het-tan-gien Hettangiense Het-tan-gien-se Hirnantian Hir-nan-ti-an Hirnantien Hir-nan-tien Hirnantiense Hir-nan-tien-se Holocene Hol-o-cene Holocène Ho-lo-cè-ne Holoceno Ho-lo-ce-no Homerian Ho-mer-i-an Homérien Ho-mé-rien Homeriense Ho-me-rien-se Induan In-du-an Indusien In-du-sien Induense In-du-sien-se Jiangshanian Ji-ang-sha-ni-an Jiangshanien Jiang-sha-nien Jiangshaniense Jiang-sha-nien-se Jurassic Ju-ras-sic dʒʊˈræsɪk Jurassique Ju-ras-si-que Jurásico Ju-rá-si-co Kasimovian Ka-s-i-mo-vi-an Kasimovien Ka-si-mo-vien Kasimoviense Ka-si-mo-vien-se Katian Kat-i-an Katien Ka-tien Katiense Ka-tien-se Kimmeridgian Kim-me-r-idg-ian Kimméridgien Kim-mé-rid-gien Kimmeridgiense Kim-me-rid-gien-se Kungurian Kun-gu-ri-an Koungourien Koun-gou-rien Kunguriense Kun-gu-rien-se Ladinian La-din-i-an Ladinien La-di-nien Ladiniense La-di-nien-se Langhian Lan-ghi-an Langhien Lan-ghien Langhiense Lan-ghien-se Llandovery Lla-nd-o-ver-y Llandovery Llan-do-ve-ry Llandovery Llan-do-ve-ry Lochkovian Lochko-vi-an Lochkovien Loch-ko-vien Lochkoviense Loch-ko-vien-se Lopingian Lopin-gi-an Lopingien Lo-pin-gien Lopingiense Lo-pin-gien-se Ludfordian Lud-for-di-an Ludfordien Lud-for-dien Ludfordiense Lud-for-dien-se Ludlow Lud-low Ludlow Lud-low Ludlow Lud-low Lutetian Lu-te-tian Lutétien Lu-té-tien Luteciense Lu-te-cien-se Maastrichtian Maas-trich-tian Maastrichtien Maëstrichtien Maas-trich-tien Maës-trich-tien Maastrichtiense Ma-as-trich-tien-se Meghalayan Meg-ha-layan Méghalayen Mé-gha-layen Megalayense Me-ga-la-yen-se Mesoarchean Mes-o-ar-che-an Mésoarchéen Mé-so-ar-chéen Mesoarcaico Me-so-ar-cai-co Mesoproterozoic Meso-pro-te-ro-zo-ic Mésoprotérozoïque Mé-so-pro-té-ro-zoï-que Mesoproterozoico Me-so-pro-te-ro-zoi-co Mesozoic Mes-o-zo-