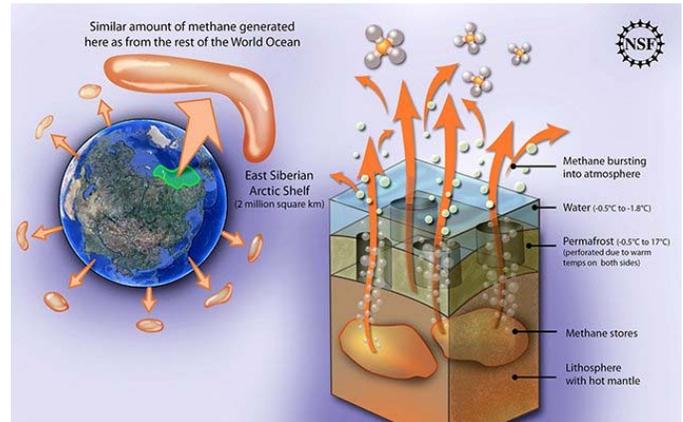


Methane Release: Catastrophic methane release has been suggested as a possible cause of mass extinction. Methane clathrate is an ice-like substance formed from water and methane in the sea bed, arctic lakes and permafrost. It forms where the temperature is at freezing or a little above where the pressure of overlying water and sediment creates the right conditions. A temperature rise causes the methane in the clathrate to be released as gas. Global warming results and causes further clathrate heating and methane release. The resultant soaring temperature causes such stress to plant and animal life that mass extinction follows.



Flood Basalt Eruption: Flood basalt eruptions are a type of large-scale volcanic activity, both in terms of extent and duration that can occur on land or on the ocean floor. A flood basalt may continue to erupt for tens of thousands – possible millions - of years and the lava can cover hundreds of thousands of kilometers. Large plateau and mountains can result from the huge volume of newly surfaced rock. The huge volume of lava is gases such as Sulphur dioxide and carbon dioxide. These can affect climate and cause acid rain, so flood basalts are thought to be a potential cause of mass extinctions.



Global Warming: Earth's climate is not constant. Over geological time, the Earth's dominant climate has gone from ice age to tropical heat and from steamy jungles to searing deserts. When such climate change occurs abruptly – animals and plants have no time to adapt so mass extinctions can occur.



Impact Events: Impact events, proposed as causes of mass extinction, are when the planet is struck by a comet or meteor large enough to create a huge shockwave felt around the globe. Widespread dust and debris rain down, disrupting the climate and causing extinction on a global, rather than local, scale. The demise of the dinosaurs at the end of the Cretaceous has been linked to an impact that left a crater in the seabed off the Yucatan peninsula of Mexico. Impacts have also been blamed for other mass extinctions, but the timing and links between cause and effect for these is still debated by scientists.



Source: http://www.bbc.co.uk/nature/extinction_causes

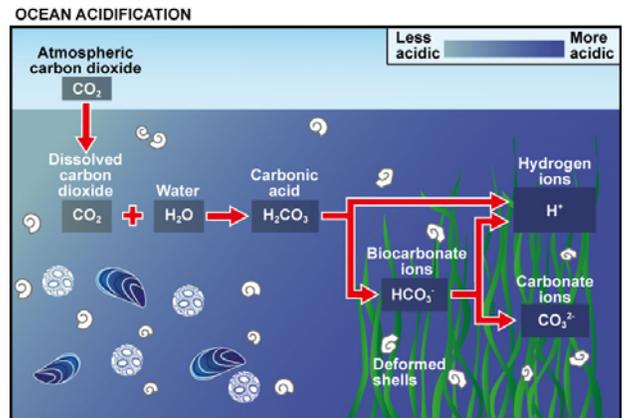
Ice Age: An ice age is a period of colder global temperatures that features recurring glacial expansion across the Earth's surface. Capable of lasting hundreds of millions of years, these periods are interspersed with regular warmer interglacial intervals in which at least one major ice sheet is present. Most life at this time was in the oceans. It is thought that the rapid, planet-wide formation of glaciers froze much of the world's water, causing sea levels to fall sharply. Marine organisms such as sponges and algae, along with primitive snails, clams, cephalopods and jawless fish called ostracoderms, all suffered as a consequence. (<http://www.history.com/topics/ice-age>)



Oxygen Depletion in the Ocean: The levels of oxygen in seawater are just as important as on land. All aerobic aquatic organisms require oxygen to breathe and without sufficient oxygen, marine ecosystems collapse. The depletion of oxygen in the oceans is known as "anoxia," and scientists from the University of Exeter have been studying how periods of anoxia end. They found that the drop in oxygen causes more carbon to be buried in sediment on the ocean floor, eventually leading to rising oxygen in the atmosphere which ultimately re-oxygenates the ocean. "Once you get into a major event like anoxia (depletion of oxygen), it takes a long time for the Earth's system to rebalance," said lead researcher Sarah Baker, a geographer at the University of Exeter. The researchers, who also include Professor Stephen Hesselbo from the Camborne School of Mines, studied the Toarcian Oceanic Anoxic Event, which took place 183 million years ago and was characterized by a major disturbance to the global carbon cycle, depleted oxygen in Earth's oceans and mass extinction of marine life. <https://www.sciencedaily.com/releases/2017/05/170512081327.htm>



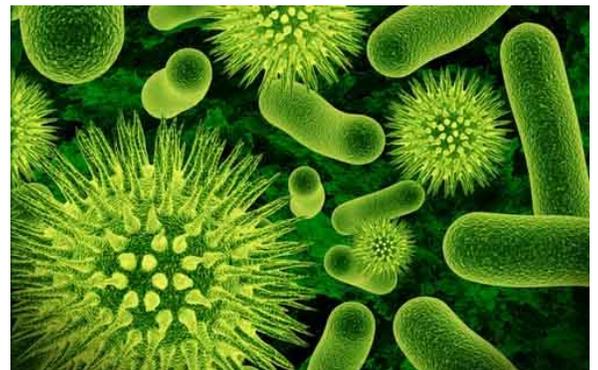
Ocean Chemistry and Circulation: Earth's greatest extinction event happened in a one-two punch 252 million years ago. Research now suggests that the second pulse of extinction, during which nearly all marine species vanished from the planet, happened in the wake of huge volcanic eruptions that spewed out carbon dioxide. The reaction of CO₂ and ocean water produces chemicals such as carbonic acid, which lowers ocean pH, and bicarbonate. On the one hand, increased amounts of carbonic acid should make it more difficult for many organisms, like snails or corals, to build their calcium carbonate shells or skeletons. On the other hand, increased amounts of bicarbonate may stimulate growth in some marine organisms, so the overall effect of rising CO₂ is uncertain and may affect different organisms in varied ways. Most scientists, however, view changing ocean composition with alarm.



Continental Movements: During the Permian and Triassic, all continents were fused into a supercontinent, Pangaea. At one time, the end Permian mass extinction was linked to this, based on the suggestion that fusion of continents removes intercontinental seas, each with its own unique fauna, and allows land animals and plants to mix. It now seems, however, that such movements are too slow to lead to massive species loss.



Disease Epidemic: Disease can wipe out an entire species, reveals a new study. Rats native to Australia's Christmas Island fell prey to "hyperdisease conditions" caused by a pathogen that led to the rodents' extinction. The study presents the first evidence for extinction of an animal entirely because of disease. Tolerance levels of selenium for phytoplankton, molluscs, fish and many land plants and animals are very well known. Recently, selenium deficiency in large parts of China and Africa has been linked to major outbreaks of diseases such as AIDS, SARS, Ebola and Avian flu (H1N1). This is because lack of selenium impacts on the immune systems. Read more at: <https://phys.org/news/2015-11-elementary-theory-mass-extinctions-life.html#jCp>



Invasive Species: An invasive species can be any kind of living organism that is not native to an ecosystem and which causes harm. Invasive species can harm the environment, the economy or even, human health. Species that grow and reproduce quickly, and spread aggressively, with potential to cause harm, are given the label of “invasive”. Invasive species are primarily spread by human activities, often unintentionally. People, and the goods we use, travel around the world very quickly, and they often carry uninvited species with them. Invasive species cause harm to wildlife in many ways. When a new and aggressive species is introduced into an ecosystem, it might not have any natural predators or controls. It can breed and spread quickly, taking over an area. Native wildlife may not have evolved defenses against the invader or they cannot compete with a species that has no predators.

