

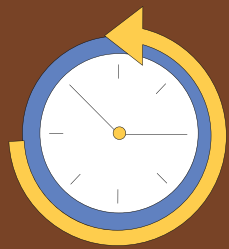
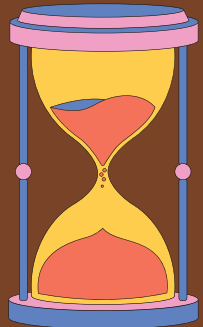


The Geological Time Scale

A classic - but not the only - framework to understand geological history

A matter of (colonial) time...

The Geological Timescale is used worldwide by Earth scientists as a tool to explain the relationships between different geological events. Geological time is divided into "eras" and "periods", many of which were named between 1822 and 1879 by white, male Europeans. The rock sequences used to define these period are often described as examples of "classic" geology.



Left: Photograph of Sir Roderick Impey Murchison, a 19th century Scottish geologist who is credited for naming the Silurian, Devonian and Permian periods ca.1860



Clockwise from above: The church of San Estaban and fragments of traditional pottery made by the people of the Acoma pueblo; a view of the sandstone mesa that houses Sky City, the USA's oldest continuously occupied settlement

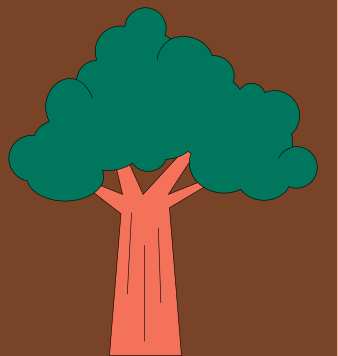
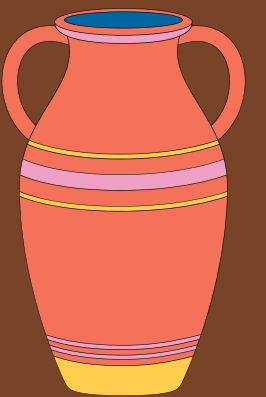
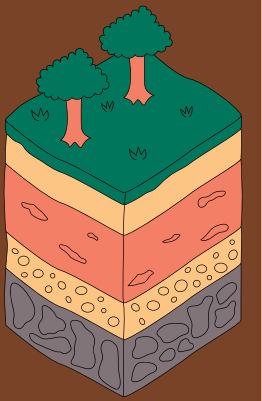
Another time- alternative frameworks for geological time

Whilst the Geologic Time Scale has become invaluable to many an Earth scientist, it is worth noting that valuable geological knowledge doesn't have to rely on European ages and areas of 'classic geology' or indeed Western science in general.

Cultural frameworks exist for explaining Earth science and have been used to great success by indigenous peoples for thousands of years to understand their local geology, from the mountains towering above their heads to the bedrock beneath their feet.

What's more, in lots of cases, the Western, scientific explanation of a region's geological history only confirms ideas that have existed in the indigenous tradition for hundreds or thousands of years prior.

Indigenous oral histories have revealed rich understandings of local/regional stratigraphies, as highlighted by the Acoma Pueblo.



The Acoma Pueblo

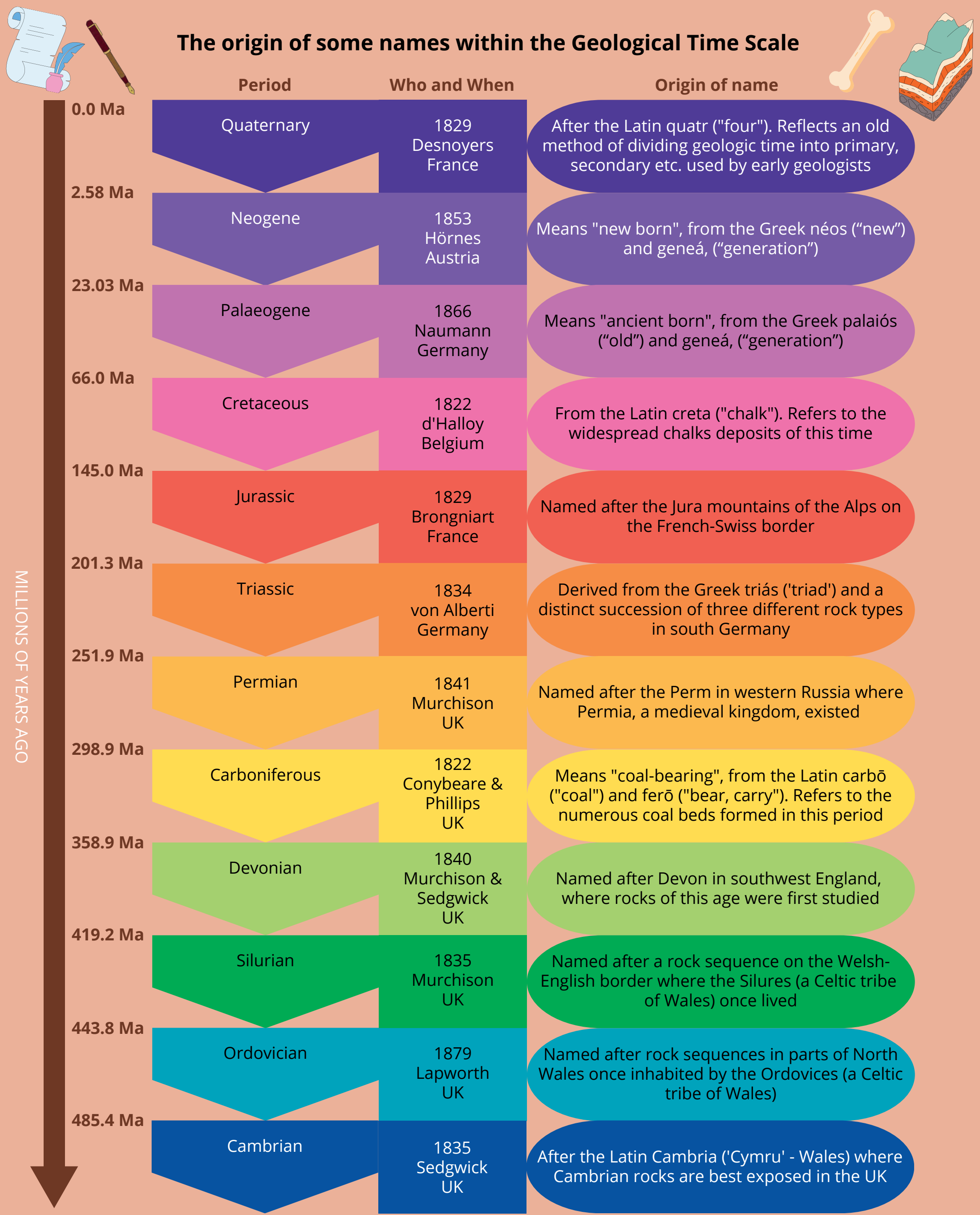
The Acoma Pueblo, also known as the 'Sky City', in New Mexico is the oldest continually inhabited settlement in the USA and home to four Native American communities that make up the larger Acoma Pueblo tribe.

The settlement was strategically built atop a sandstone mesa, an isolated flat-topped hill with steep sides that is similar to a plateau, only smaller. Mesas are found in landscapes where the underlying strata is horizontal.

Rather than differentiating strata based on the basis of their age and environment of formation, as the Western scientific viewpoint would, the Acoma people group different rocks by their cultural or resource significance, for example as farmland, water resources, building materials and in pottery.

For example, the strata classified by Western Earth scientists as the Dakota Sandstone, is known to the Acoma tribe for its use as a building material. Many structures within the settlement are constructed from the Dakota Sandstone, such as the Church of San Estaban. The church has a colonial history, being built between 1629 and 1641 by the forced labor of the Acoma tribe by Spanish colonizers. All the building materials had to be carried to the top of the mesa by the Acoma people, unaided by machinery. So although San Estaban is often described as an architectural masterpiece it is also an example of where Indigenous knowledge, which has so often been dismissed as 'inferior' or 'less developed' than Western scientific knowledge, has been actively exploited by colonial forces.

The origin of some names within the Geological Time Scale



Explore more...

Bentley et al. (2020) Geologic Time - Historical Geology, *opengeology.org*

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Cohen, K.M., Finney, S.C., Gibbard, P.L. and Fan, J.-X. (2013; updated) The ICS International Chronostratigraphic Chart. *Episodes* 36, 199-204.