**The Great Oxygenation Event**

**Cyanobacteria:** Responsible for the buildup of Oxygen in the Earth’s atmosphere.



By Doc. RNDr. Josef Reischig, CSc. - Author's archive, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=31550579



https://commons.wikimedia.org/wiki/File:Stromatolithe\_Pal%C3%A9oarch%C3%A9en\_-\_MNHT.PAL.2009.10.1.jpg#/media/File:Stromatolithe\_Pal%C3%A9oarch%C3%A9en\_-\_MNHT.PAL.2009.10.1.jpg

Stromatolites are formed over the years by mats (1-10 mm in thickness) of cynobacteria, among others, found in shallow, mainly marine waters. The microorganisms precipitate mineral particles, which makes the mat thicken, but only the upper part survives. Most stromatolites display characteristically layered structures. Only the layers are visible to the naked eye. Paleoarchean from -3 600 à -3 200 Ma (million years ago). Locality: Western Australia



Estimated evolution of atmospheric oxygen partial pressure (*P*O2). The upper red and lower green lines represent the range of the estimates of *P*O2. The stages are:

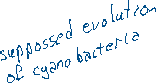
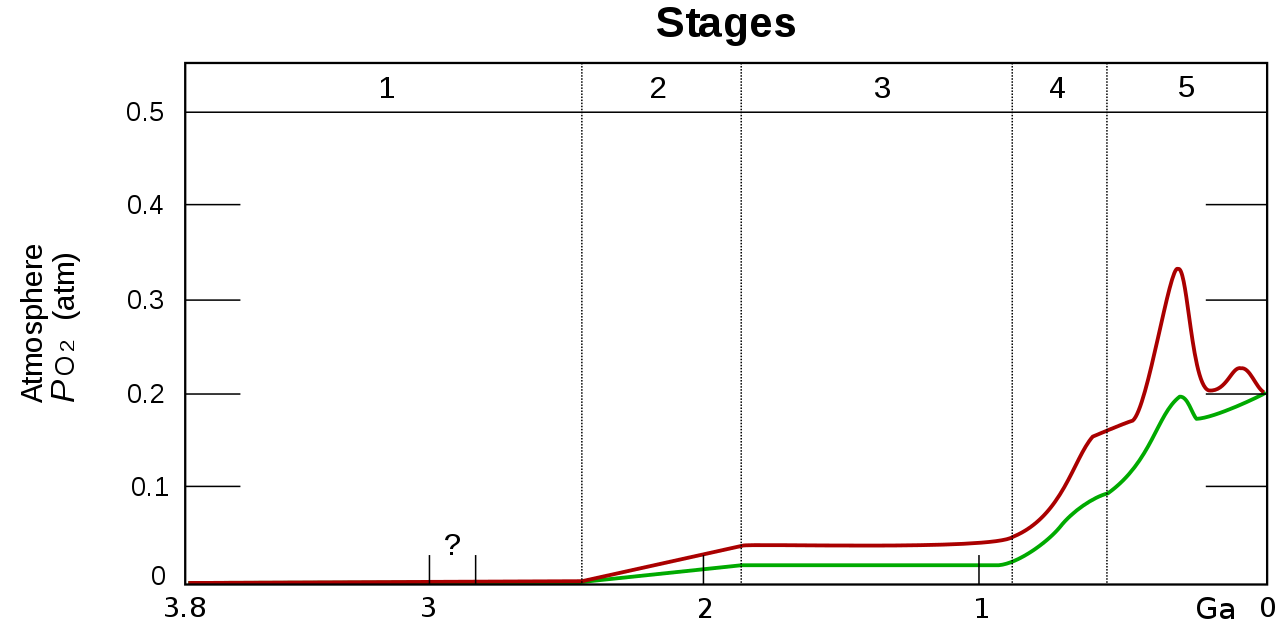
Stage 1 (3.85 – 2.45 Gyr ago (Ga)) Practically no O2 in the atmosphere. The Oceans were also largely anoxic with the possible exception of O2 gases in the shallow areas.

Stage 2 (2.45 – 1.85 Ga) O2 produced, and rose to values of 0.02 to 0.04 atm, but absorbed by the oceans and seabed rocks.

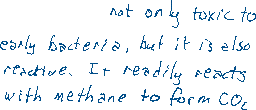
Stage 3 (1.85 – 0.85 Ga) O2 starts to gas out of the oceans, but is absorbed by land surfaces and formation of ozone layer. There was no significant change in O2 levels.

Stages 4 (0.85 – 0.54 Ga) and 5 (0.54 Ga – present) O2 sinks filled, the gas accumulates.

By Oxygenation-atm.svg: Heinrich D. Hollandderivative work: Loudubewe (talk) - Oxygenation-atm.svg, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=12776502







By Paul Harrison - Photograph taken by Paul Harrison (Reading, UK) using a Sony CyberShot DSC-H1 digital camera., CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=714512>

[Stromatolites](https://en.wikipedia.org/wiki/Stromatolite) growing in [Hamelin Pool Marine Nature Reserve](https://en.wikipedia.org/wiki/Hamelin_Pool_Marine_Nature_Reserve), [Shark Bay](https://en.wikipedia.org/wiki/Shark_Bay,_Western_Australia) in [Western Australia](https://en.wikipedia.org/wiki/Western_Australia)..