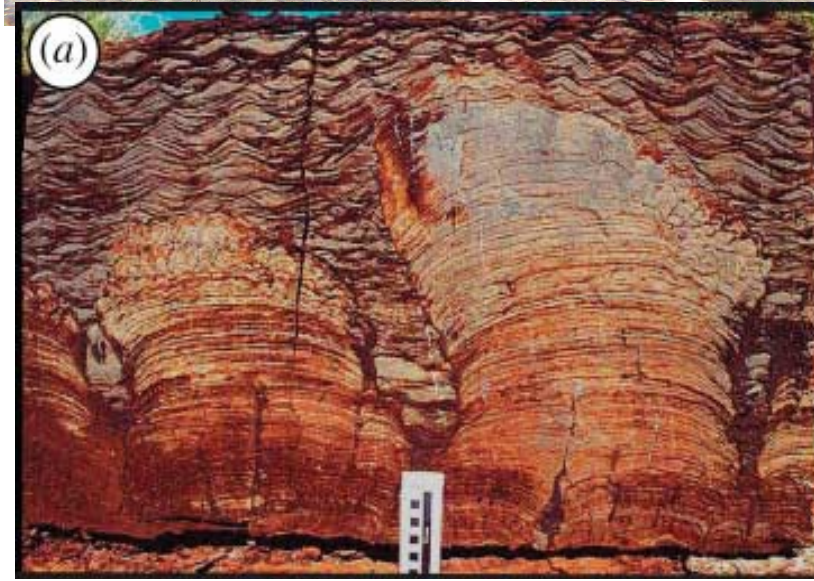


Evolution of Life Through Time

Subhronil Mondal

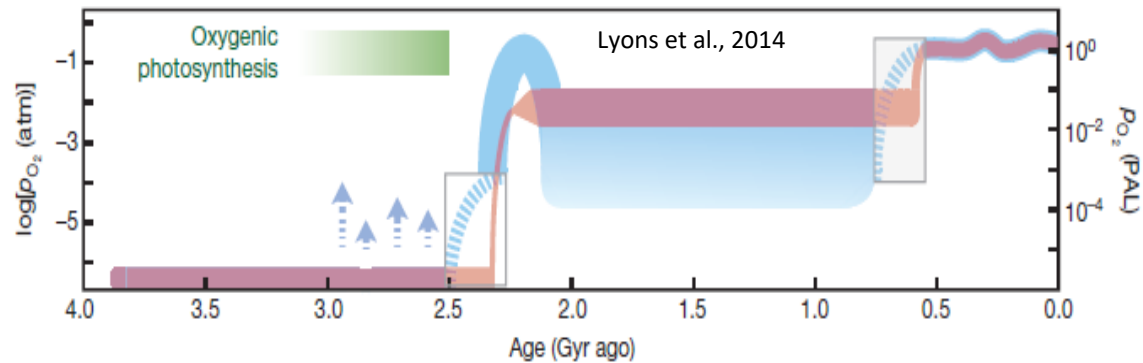
STROMATOLITES

- Trace fossil
- 3.5 Ga to 550 Ma
- indicates photosynthesis



REVOLUTION: RISE OF ATMOSPHERIC OXYGEN

- 'Great Oxidation Event' or GOE
- 2.5-2.25 Ga
- Two-step rise
- photosynthesis

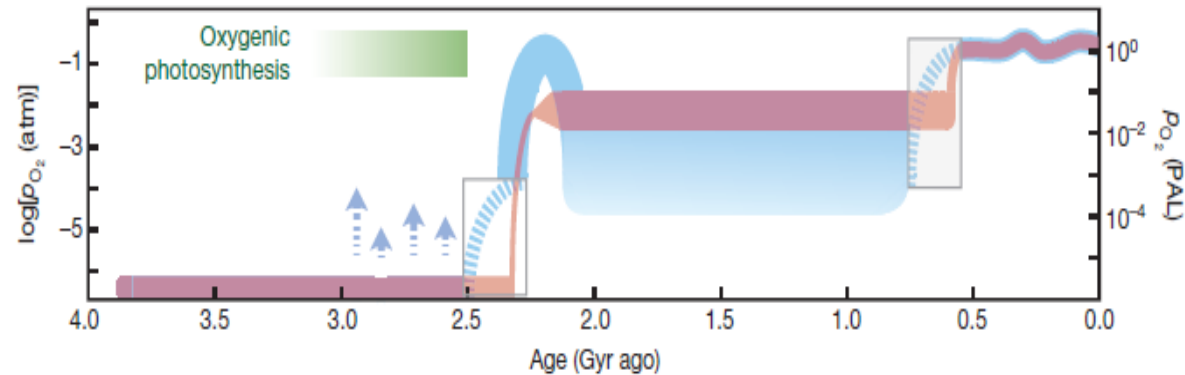


BIF: RISE OF ATMOSPHERIC OXYGEN

1. Range: 3.8-c.1.5 Ga
2. Sedimentary rocks [hematite-chert intercalation] with high Fe content.
Magnetite, hematite, siderite, jasper, chert
3. Chemically precipitated

Formation

1. Weathering of continents and submarine volcanisms carried Fe



Hematite layer grey color

BIF: RISE OF ATMOSPHERIC OXYGEN

- Iron can dissolve in water in the form of ferrous oxide (FeO), but not as ferric oxide (Fe_2O_3) which precipitates out as sediment.

Large occurrences of this rock starts from 2.4 billion years ago

EUCARYOTES - METAZOANS

Advantages:

1. Rapid reproduction by mitosis and meiosis
2. Show variation – evolutionary stable
3. Can be large and complex – complexity, diversity, body size increased
4. Multicellularity – work load distribution, variation in works, maintenance, sustenance, repairability, etc. very high

Significance:

1. aerobic, so indicate rise in atmospheric oxygen

Modularity?

Doushantuo Embryos: China

- ~600 Ma
- anthozoan planula larvae and hydrozoan embryos [cnidarian and bilaterians]