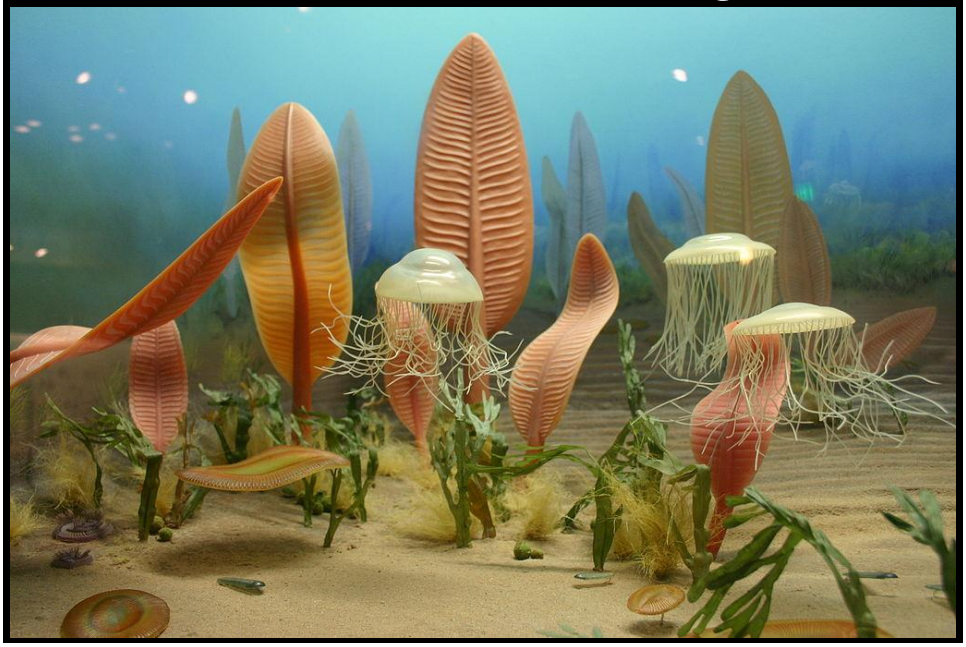
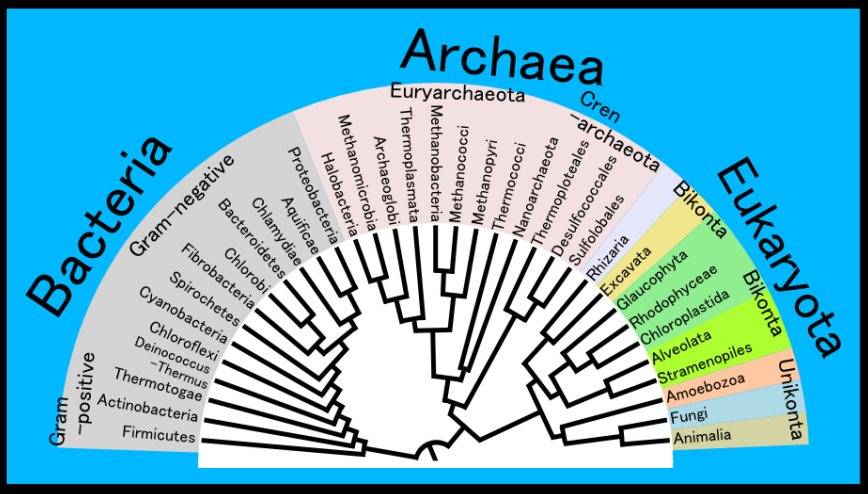
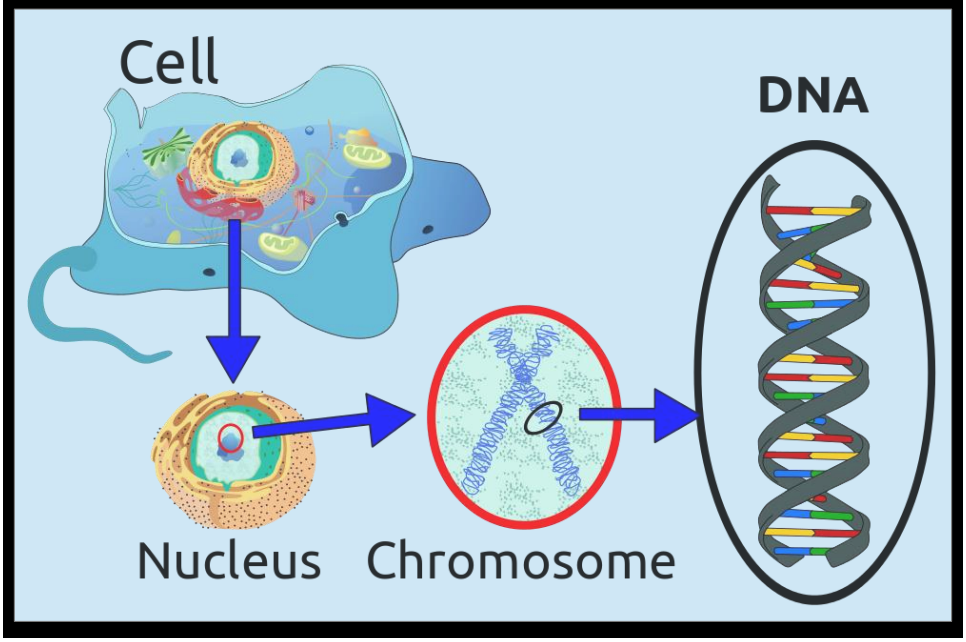
Week 2 – Oceanic origins



Tree of Life

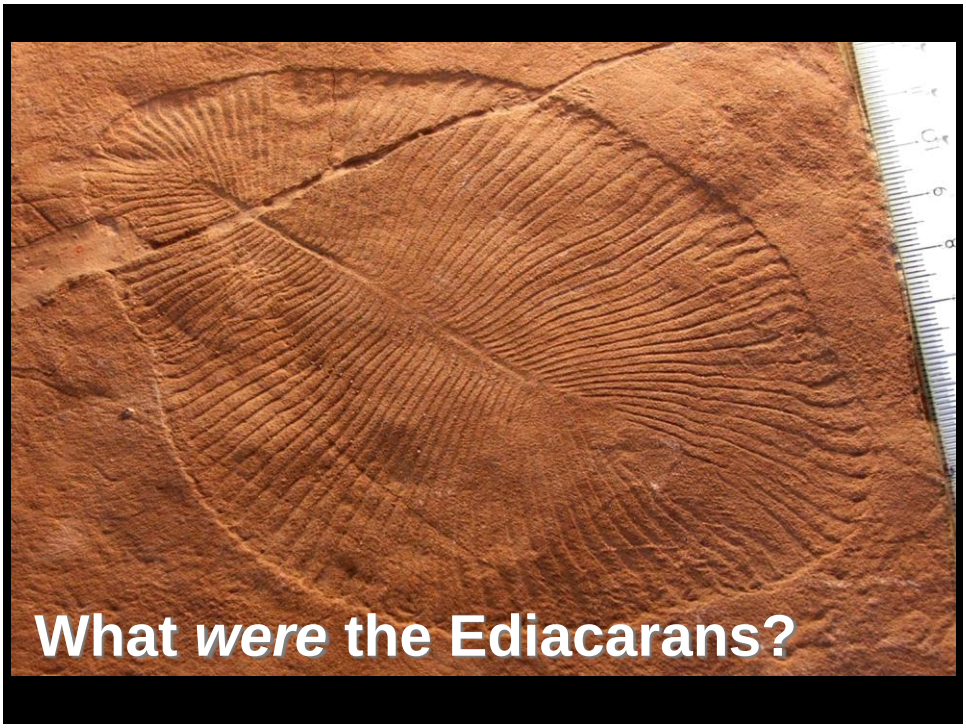


Eukaryotes



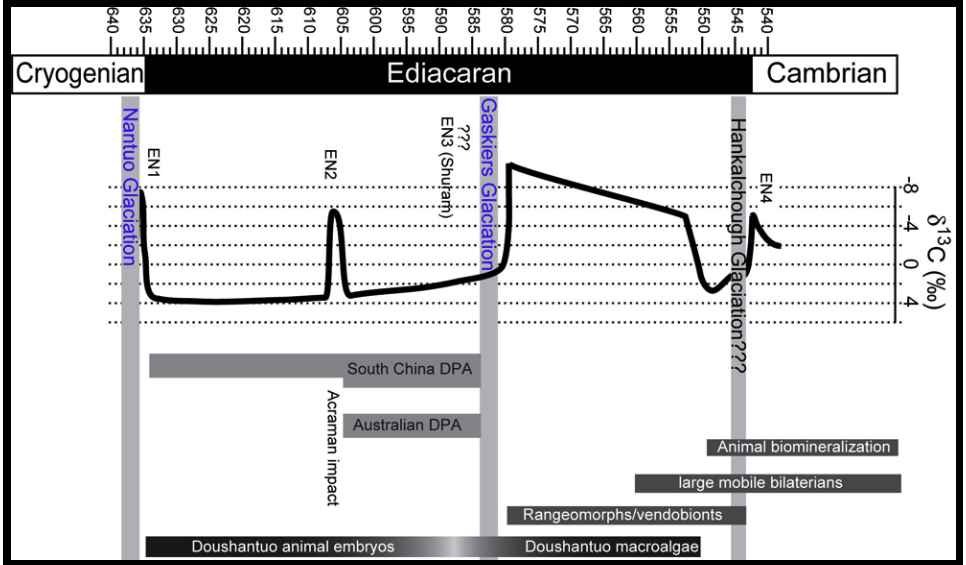
Eukaryotes

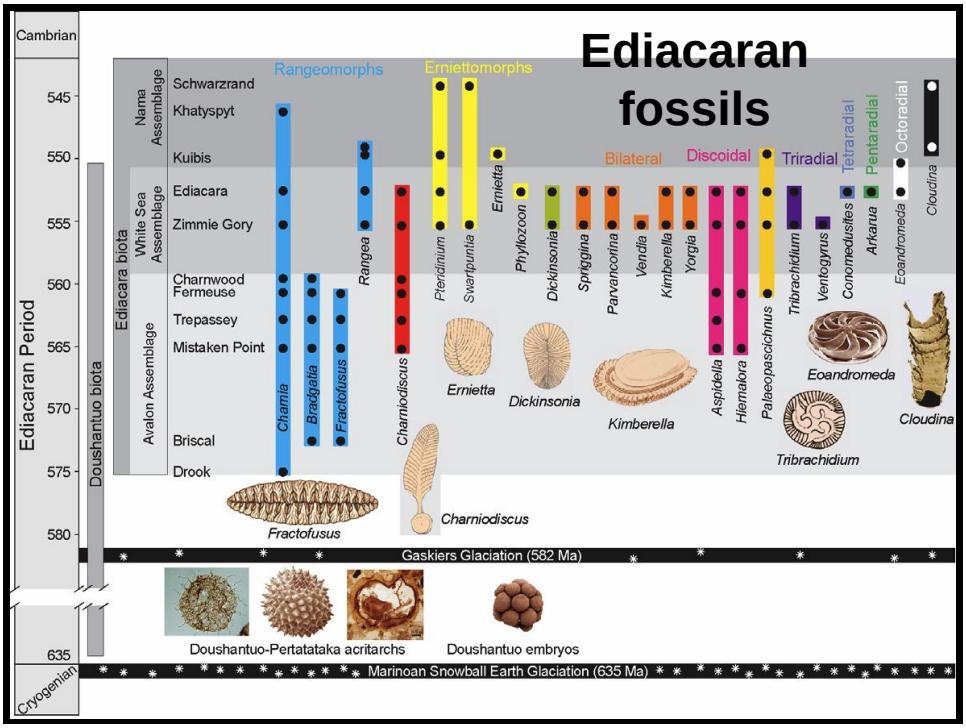
Protozoans
Algae
Plants
Fungi
Animals


What *were* the Ediacarans?

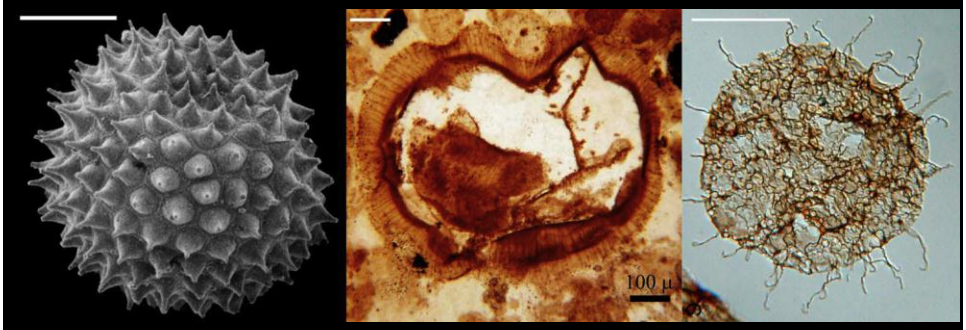

Ediacaran (635-542 Ma)
EDIACARAN
GSSP
2004

Ediacaran events



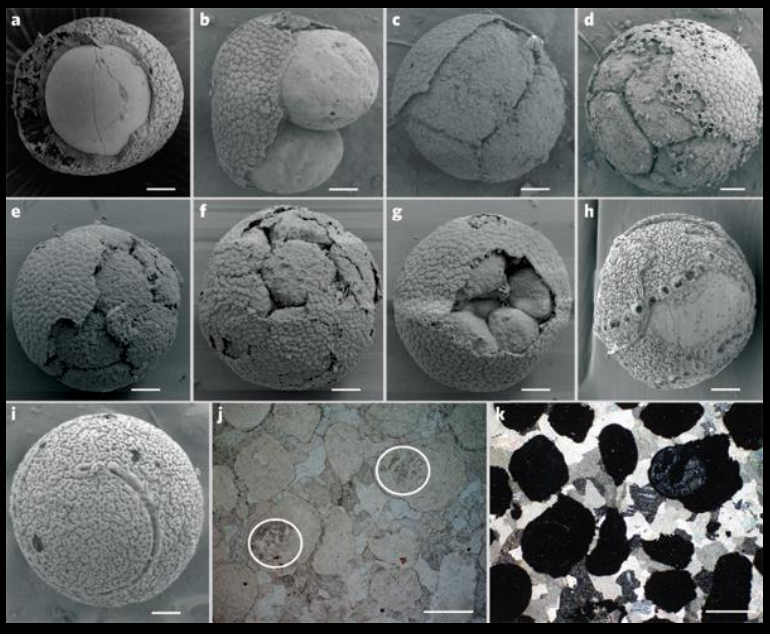


Acritarchs



Acanthomorphs = thorny-shaped

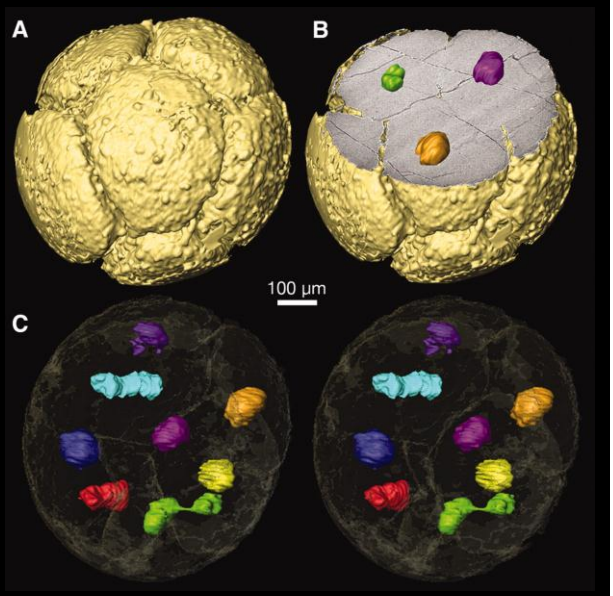
Ediacaran embryos?



'Neither animals nor embryos'

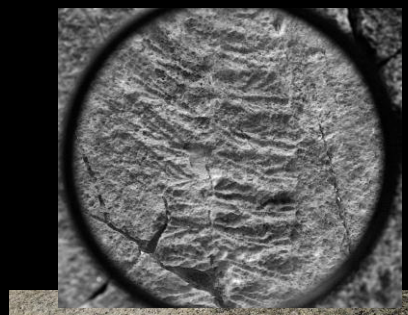
Huldtgren et al. (2011):

Protists showing cyst-like growth

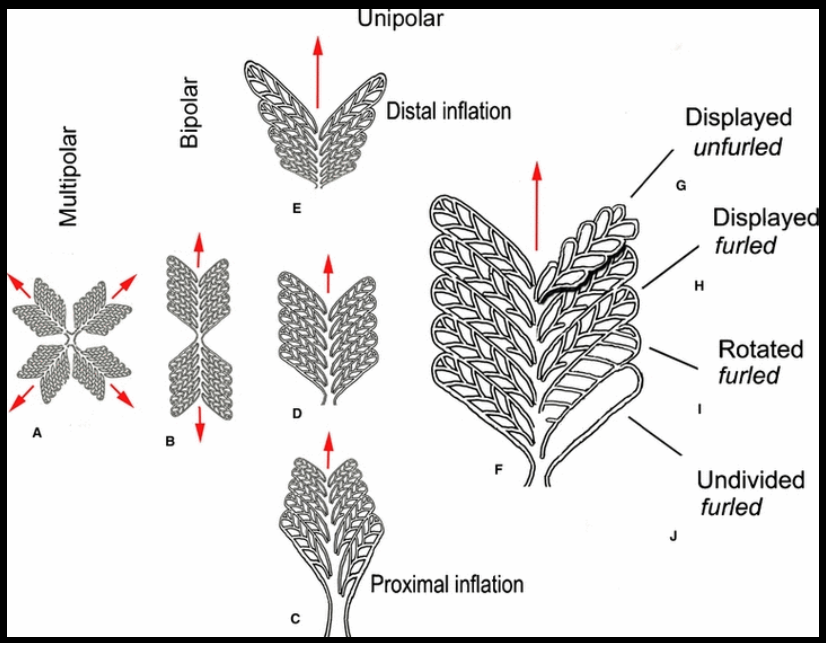


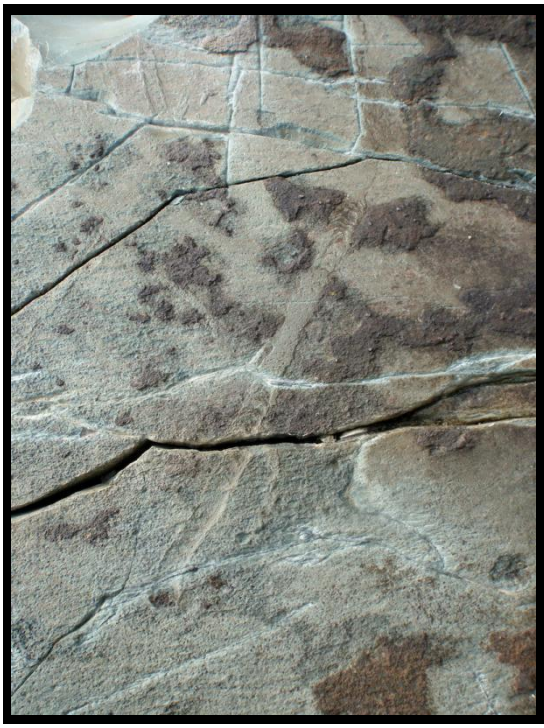
Algae? Lantian Fm, China

Avalon assemblage



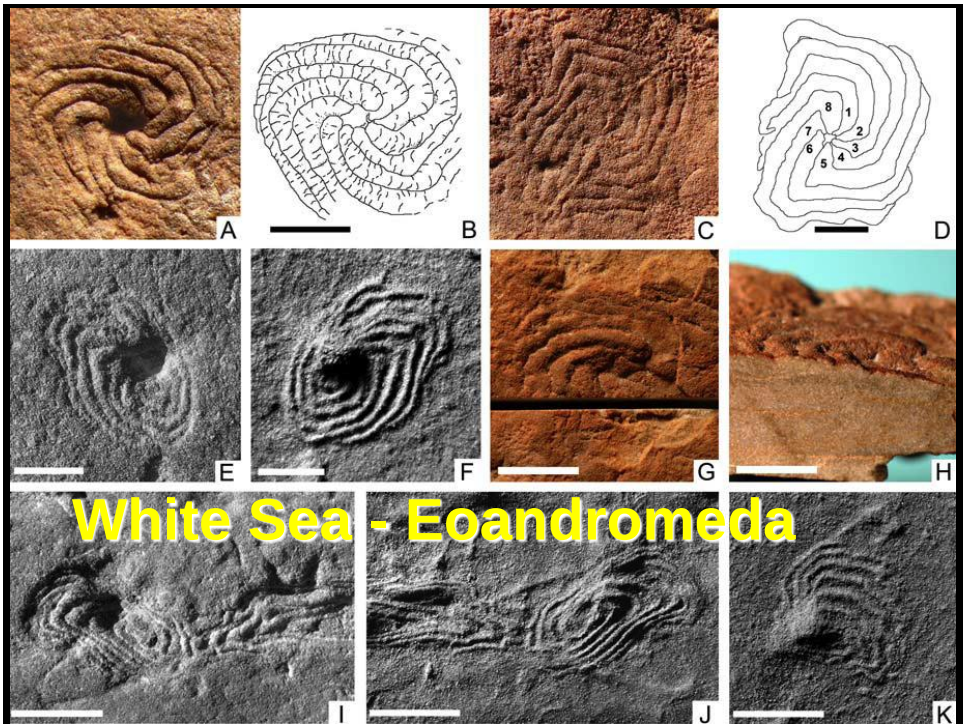
Fractal fronds



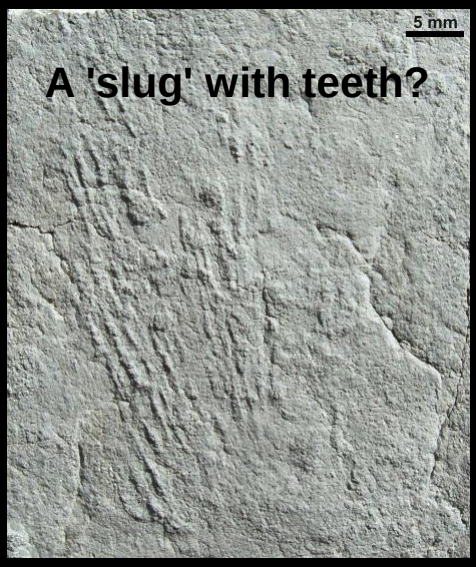


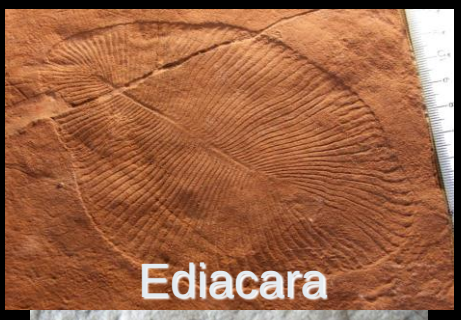
Avalonian locomotion

- 565 Ma trace fossils
- Indicate movement by anemone-grade animal
- (Liu et al. 2010)



White Sea - *Kimberella*

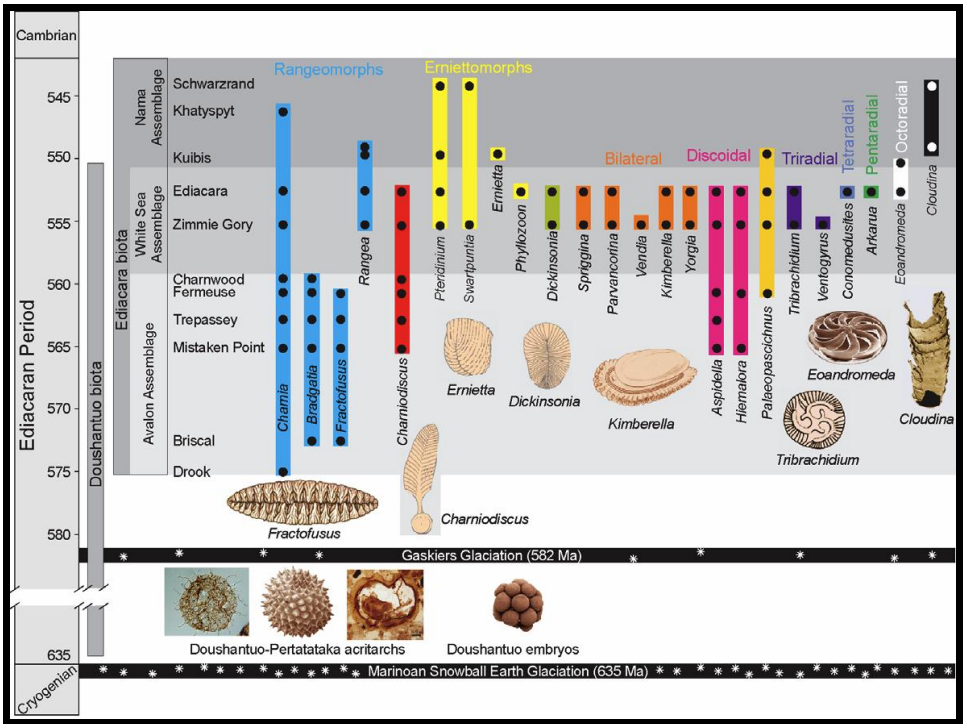


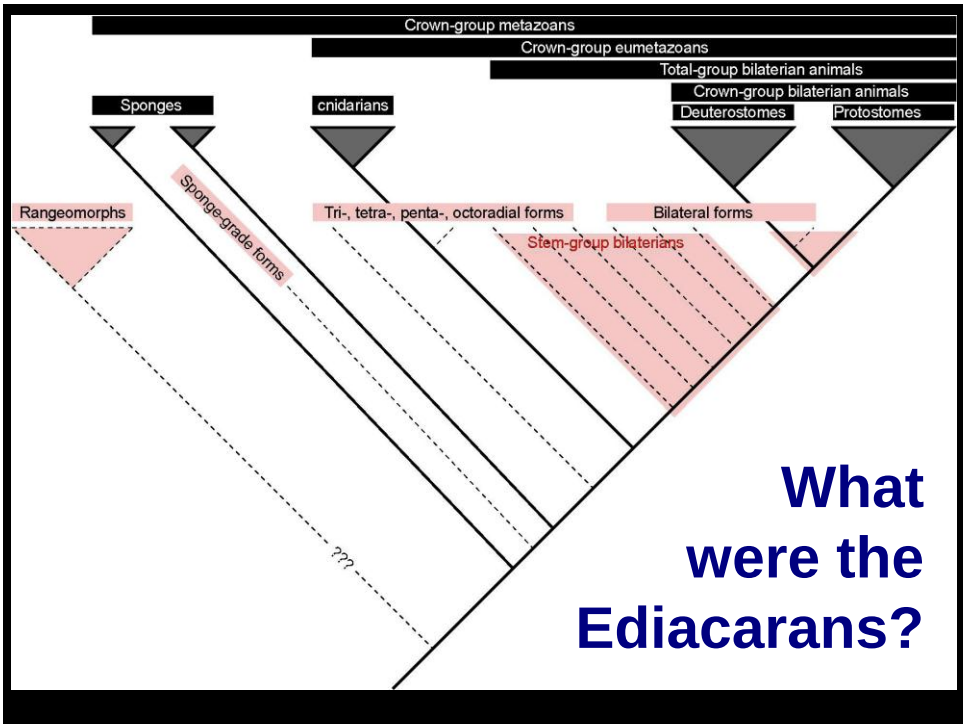


Evolution of biomineralization

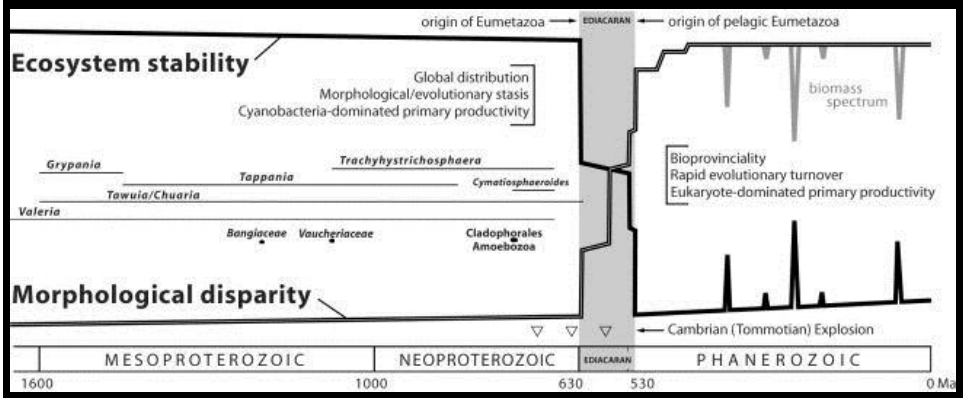
Late Ediacaran Nama Group:

Cloudina = small, tubular, skeletal fossil



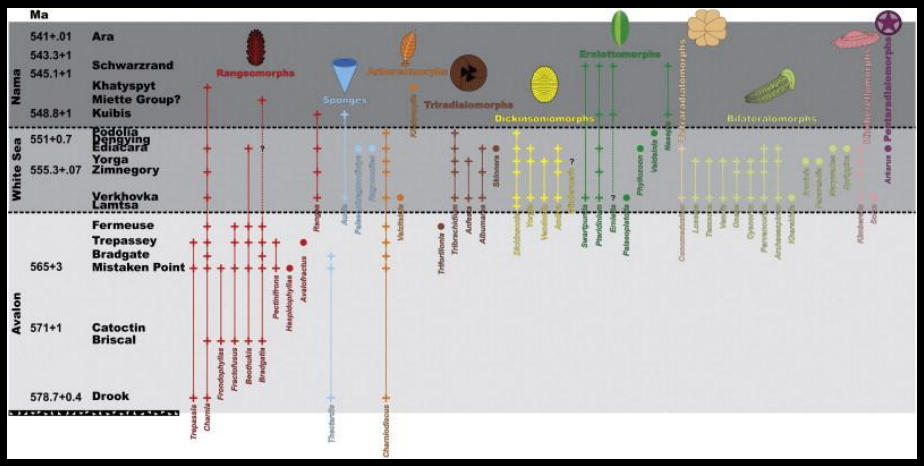


Ediacaran explosion



More dramatic change than any other time (Butterfield 2007)

Ediacaran extinction



Predation? Preservation? Competition?

Next week

Why did the Cambrian explode?

Useful websites

The Advent of Complex Life:

http://www.complex-life.org/node/91

Snowball Earth:

http://www.snowballearth.org/

Ediacara Biota (Wikipedia):

http://en.wikipedia.org/wiki/Ediacara_biota

David Attenborough's First Life:

http://firstlifeseries.com/about/

References

Ediacaran embryos: Xiao et al. (2007) -

http://geology.gsapubs.org/content/35/2/115.short

Ediacaran non-embryos: Huldtgren et al. (2011) -

http://www.sciencemag.org/content/334/6063/1696.full

The Ediacara Biota: Xiao & Laflamme (2009) -

http://www.sciencedirect.com/science/article/pii/S0169534708003066

The earliest animal trails: Liu et al. (2010) -

http://www.intl-geology.geoscienceworld.org/content/38/2/123.short