Re: 500 million year old poo and Oxygen

Source: http://sci.tech−archive.net/Archive/sci.geo.geology/2006−06/msg00180.html

- *From*: Jo Schaper <joschapern4ospam@xxxxxxxxxxxxxxxxx>
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Paul Ciszek wrote:

> In article <VA.00000f09.0b343d10@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>,
> Aidan Karley <doIlookDAFTenoughTOpost@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx> wrote:
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> > http://www.thelocal.se/article.php?ID=3542&date=20060412
> >
> > Published: 12th April 2006 18:14 CET
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> > Swedish scientists have found half−billion−year−old
> > droppings thought to be from an aquatic worm and hope the
> > discovery will contribute to the understanding of prehistoric
> > ecosystems, researchers announced on Wednesday.
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> Some people think that the development of guts capable of producing
> pelleted poo was a major geochemical event, with the high mass of
> coprolites and their high organic content acting in synergy to remove carbon
> from the atmosphere and biosphere, helping O2 levels to climb around the
> start of the Phanerozoic (reasonably well accepted, these days), and so
> enabling the development of new, more complex body plans.

1) How much free oxygen was needed for the worms to exist in the first place? I assume that there is a direct relationship between
oxygen in the air and oxygen dissolved in seawater, so how much would have been in the air back then?

2) A sort of related question: They have found another sealed underground ecosystem, in Israel this time, with bacteria as the "primary producers". Where do such ecosystems get their oxygen? So far as I know, photosynthesis is the only autotrophic process that produces free oxygen. Last time I tried to ask this question, I tried to find an appropriate biology newsgroup and none of them seemed to fit.

A worm is a tenuous description. Sewer worms, tube worms and the weird worms of the black smoker regions can actually be poisoned by too high levels of oxygen. High sulfur water is not a restrictive factor to animals adapted to it. Cueva Villa Luz in Mexico (home of snotites) have such high levels of sulfur/ and depressed oxygen (episodic− 9−14% in the air) that SCBA is used, with high sulfur water being practically oxygen−free. This cave supports a species of fish which the locals harvest in some sort of festive atmosphere and all sorts of other 'higher' creatures, including bats.
http://www.i−pi.com/~diana/slime/villaluz/

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