

Response to comments (bg-2021-135, L.O. Björn)

L28-30. Making comparisons to Mars and the moon take away from the narrative. Let the focus purely be on Earth and the evolution of living systems on Earth.

Deleted.

Section. 2 Vegetation compared to bare ground.

I think the changing albedo of glaciers/ice sheets due to ice algae should be touched upon in this section.

Touched upon on lines 174–177.

L36. I am not sure what point you are trying to make with this lead sentence.

Sentence deleted.

L37. You disregard the importance of UV radiation but it could be of importance when thinking about primitive PAH pigments, as well as UV-absorbing pigments in marine algae.

Now mentioned on lines 68–70.

L38. Do not start a sentence with ‘And’. Also, fix the grammatical errors within this sentence.

‘And’ deleted. Hopefully other errors fixed.

L44. Please clarify. ‘ground albedo increases with the proportion of cyanobacteria cover (compared to cover by cyanobacteria, moss, and lichen?’

Sentence deleted.

L47. Fix, ‘De opposite effect’.

Changed to ‘The opposite effect’.

Section 3 The temporal aspect

L72. Legend. ‘ Fix. The variation of cyanobacteria coverage was partly natural, partly caused by experimental treatment

The Figure and its legend have been deleted.

L76. Fix, ‘We cannot back from our responsibility....’

Deleted.

Section 4 The aquatic environment.

There are a few extra important points which could be included in this section. These include, the impacts of sea-foam formed from marine algal surfactants and marine aerosols (DMS) and cloud formation.

L80-81. ‘since we do not have to deal with gases’. Yes, but we still have to deal with dissolved gases.

Expanded: ‘since we do not have to deal with gases (with the exception of dissolved ones, which may escape **to the atmosphere, and those forming froth).**

L89-90. I would include the sargassum paper by Bach et al. here.

Added on lines 106–108: ‘ Bach et al. (2021) suspect that the increased albedo caused by recent increase in the Atlantic Ocean of floating *Sargassum* algae may be more important than the effect of the alga on carbon dioxide and phytoplankton nutrients.’

L101. A gap is needed. '(2020) and...'.

Fixed.

Further change: A new Section 2, 'Ancient life', has been added, because the previous manuscript version dealt too little with this.