Biogeosciences

Discussions

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Interactive comment on "Ideas and perspectives: Hydrothermally driven redistribution and sequestration of early Archaean biomass – the "hydrothermal pump hypothesis"" *by* Jan-Peter Duda et al.

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This is innovative, thorough and significant work addressing the biogenicity of the oldest known well preserved organic matter in the geological record and the biological affinities of its precursor organisms. The techniques involved have been applied rigorously but the interpretations are only as good as those techiques allow; I lack the expertise to judge them carefully so it is essential that this be done by well informed experts such as Roger Summons, Simon George and Jochen Brocks.

There is a need to discuss the possibility that there could have been contamination by organic compounds derived from the 2.7-2.8Ga Fortescue Group that overlies the Dresser Fm in the studied area. It is conceivable that a "hydrothermal pump" could have circulated fluids downwards into the older succession. There is a significant literature on the organic geochemistry of the Fortescue Group by George, Coffey, Summons and others. The same applies to the Strelley Pool Fm where there are abundant stromatolites and microfossils.

The manuscript would be enhanced by adding a paragraph outlining the evidence that indicates that the 3.5Ga environment was anoxic.

It seems to me that the evidence from the Apex Chert needs to be at least briefly reviewed here as it would add significantly to the context of this new work.

The manuscript is well written and almost free of errors. P.11 l. 19 change to instantaneously.

References to the published geological maps of the North Pole area should be added. There may be other publications by Hickman that should be cited.

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