

Interactive comment on “Estimate of climate sensitivity from carbonate microfossils dated near the Eocene-Oligocene global cooling” by M. W. Asten

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Received and published: 14 October 2012

I carried out a detailed but informal study of the relationship between CO₂ concentration and climate for various time ranges back to 500 Mya. A pdf can be found at (case sensitive):

<http://www.spaceclimate.net/Ancient.climates.and.CO2.pdf>

In general, the data are too sparse and/or too noisy to draw firm conclusions. While there is a general tendency for warm climates to be associated with higher CO₂, the data do not allow us to construe a quantitative relationship. One possible exception is to compare conditions at the last glacial maximum with conditions in the pre-industrial C1895

era. In both cases, we know the CO₂ concentration fairly accurately. We know the global average temperature in the pre-industrial era and we can roughly estimate the global average temperature at the LGM. However, this difference in temperatures was not produced solely by the difference in CO₂ concentration. Other forcing differences between the two eras need to be estimated. Three different estimates were found in the literature. As might be expected, the estimate by James Hansen is a higher sensitivity than the estimates of others.

In my opinion, the article by Asten, like other such attempts, may be based on a sound approach, but is limited by the sparsity and noise of data. In addition, as I pointed out in my report, there are reasons to suspect that the earth's climate sensitivity might vary considerably, depending on the starting conditions and state of the earth during a change in CO₂.

Interactive comment on Clim. Past Discuss., 8, 4923, 2012.