

Interactive comment on “Ice melt, sea level rise and superstorms: evidence from paleoclimate data, climate modeling, and modern observations that 2 °C global warming is highly dangerous” by J. Hansen et al.

J. Hansen et al.

jeh1@columbia.edu

Received and published: 13 October 2015

Response to SC C6149: ‘Second Response to Thorne Comments’, Dale Berner, 22 Aug 2015

These are all relevant references. As I discuss in response to SC C5549 (Bill Ruddiman), I believe that Bill has misestimated how much anthropogenic CO₂ he needs in order to account for the stabilization of atmospheric CO₂ about 7500 years ago and then its slow increase. Because of the Southern Ocean’s dominant role in determin-

C7949

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



ing atmospheric CO₂ amount (prior to human influence), and given that the Southern Ocean was still bathed in positive irradiance anomaly, it required little push from human-made GHGs to push the Southern Ocean to provide more CO₂. The Southern Ocean CO₂ has the right 13C to agree with data. There is no need to hypothesize such a large anthropogenic CO₂ source or such a large peat sink to try to fix the 13C problem. A 40 ppm anthropogenic CO₂ input is not needed. Of the order of 10 ppm is enough to overcome the slight orbital forcing that would tend to lower CO₂. I think the conclusion is that the Anthropocene began ~7500 years ago, and the Hyperanthropocene began with the coal use of the industrial revolution – you could put that at say 1750, depending on how large a signal you want it to produce.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 15, 20059, 2015.

ACPD

15, C7949–C7950, 2015

Interactive
Comment

[Full Screen / Esc](#)

[Printer-friendly Version](#)

[Interactive Discussion](#)

[Discussion Paper](#)

