

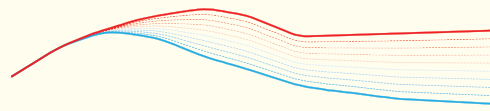
Five questions for James Hansen about his 'PLOS' paper & giving contradictory messages in the USA and in China

1. Why does the PLOS climate-model assert an emissions output value of only 8.5 Gt C in 2010, (unstated) which is below all other published sources (RCP, CDIAC, UKCA) without mention?
2. Can he explain why the PLOS climate-model has such a strong '*sink-function*' (e.g. sinks reabsorbing 3 times sources in 2040 for the 6%/year scenario)?
3. Why does the PLOS paper exclude calculated representation of the '*carbon-budgets*' mentioned in text & why is there no mention at all of the '*sink-function*'?
4. Why does the PLOS climate-model exclude any representation of positive-feedback effects (e.g. potentially vast CO₂ & CH₄ emissions from melting Arctic Permafrost)?
5. As it is ethically questionable to do this, why does he advocate *global* emissions cuts of 6% a year from 2020 in the USA, but of only 2% a year from 2020 when in China?

2% a year in China: - http://www.gci.org.uk/Documents/20140224_Beijing35.pdf [slide 32];

6% a year in PLOS: - http://www.gci.org.uk/Documents/Hansen_PLOS.pdf [page 8].

The images below separate and explain the elements combined in the image on the opposite page of this document.



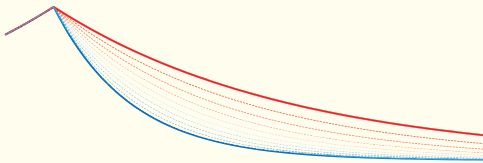
Atmosphere CO₂ Concentrations

Atmosphere CO₂ Concentrations (in PPMV) from the 'PLOS' paper Hansen cited as source of his Carbon Budgets.

Subject to smoothing, the solid RED line faithfully reproduces Atmosphere CO₂ Concentrations consequent on Hansen's assertion of CO₂ emissions peaking in 2020 and then falling at 2% a year. This is what he advocated to the Chinese Government in Beijing in February 2014: - http://www.gci.org.uk/Documents/20140224_Beijing35.pdf

Subject to smoothing, the solid BLUE line faithfully reproduces Atmosphere CO₂ Concentrations consequent on his assertion of CO₂ emissions peaking in 2020 and then falling at 6% a year, the position he advocated in his 'Galileo' paper in the US in February 2014 http://www.gci.org.uk/Documents/Galileo_Hansen_DraftOpinion.pdf

There are 8 equally spaced interim positions that I have added. This is to help elucidate the assumption behind the 'sink-function' [the relationship of emissions:concentrations] in the climate-model he has used.



CO₂ Emissions - Carbon Budgets - extrapolated from the 'PLOS' paper in which calculated Atmosphere CO₂ Concentrations were shown but Carbon Budgets were merely mentioned in the text.

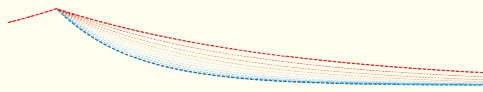
The solid RED line faithfully reproduces Hansen's assertion of CO₂ emissions peaking in 2020 and then falling at 2% a year, the position he advocated to the Chinese Government in Beijing in February 2014. This budget 2010 to 2110 weighs 526 Gt C, a figure confirmed as 'correct' by Hansen's modeller Pushker Kharecha.

The solid BLUE line faithfully reproduces his assertion of CO₂ emissions peaking in 2020 and then falling at 6% a year, the position he advocated in his 'Galileo' paper in the US of the same month. This budget 2010 to 2110 weighs 265 Gt C, a figure that follows from the above 2% rate being 'correct' (Pushker Kharecha).

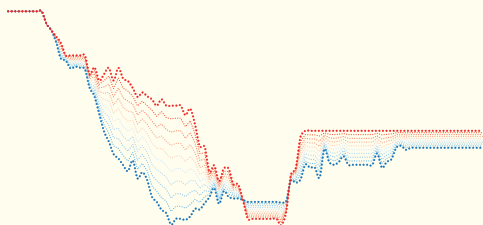
There are 8 equally spaced interim positions that I have added to help elucidate the quantitative assumptions behind the 'sink-function' [the result of emissions:concentrations] in the climate-model he has used.

Each of these emissions profiles is shown again halved to 50% of the values emitted, providing a reference for a constant airborne fraction of 50% retained against the other 50% being returned to the sinks.

'Budgets' - CO₂ Emissions (Sources)



50% of each Carbon Budget



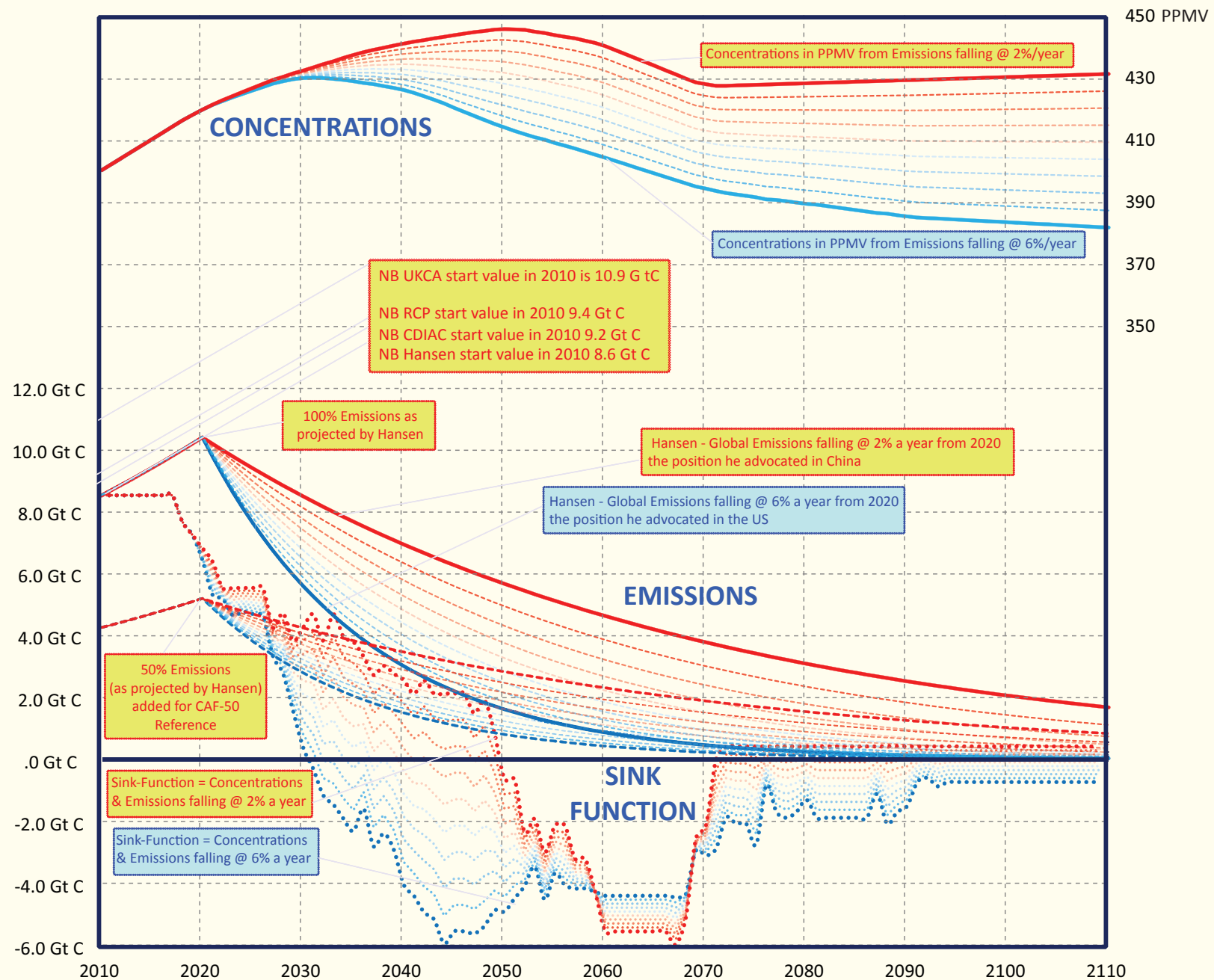
Sink Function (Souces:Sinks)

Sink Function - this is Atmosphere CO₂ Concentrations relative to the Carbon Budgets showing the strength of the sink-function or uptake by natural sinks for CO₂. This was not mentioned in the text.

The solid RED line follows CO₂ emissions peaking in 2020 and then falling at 2% a year. As can be seen in the composite, by 2060 sinks are <3 times stronger than sources (stronger than CAF 50% ref).

The solid BLUE line follows CO₂ emissions peaking in 2020 and then falling at 6% a year. This time, by 2040, sinks are <2 times stronger than sources (much stronger than CAF 50% ref - not believable).

Again there are 8 equally spaced interim positions that I have added to help demonstrate the quantitative assumptions behind the sink-function in the climate-model Hansen & his modeller Pushker Kharecha have used.



The image above composites the elements presented & explained separately on the opposite page of this document.