

Interactive comment on “ESD Ideas: Global climate response scenarios for IPCC AR6” by Rowan T. Sutton and Ed Hawkins

Rowan T. Sutton and Ed Hawkins

rowan.sutton@ncas.ac.uk

Received and published: 2 June 2020

We thank the referee for their thoughtful comments.

Our responses to the specific points about the figure are as follows:

1) In the sample of models used, the lowest ECS is 2.3K so some non-monotonic behaviour in panels d,e is expected, given the lowest climate response scenario considered here is 2.0K.

2) We choose to retain the labels in panels d,e as they are. Changing to labelling the bid edges will not overcome the non-even spacing issue and, in our view, would be more confusing.

Printer-friendly version

Discussion paper



3) Panels a,b are necessary to explain the approach used. We have attached for interest a version of the figure which shows GSAT change in 2050 and 2100 relative to pre-industrial, instead of the crossing years in panels d,e. Similar features can be seen: i.e. the same GSAT change can be realised from widely different socio-economic and climate response combinations.

Concerning use of the term scenario - this term is very widely used in problems of risk assessment to describe, and explore the consequences of, a specific set of assumptions about the future. Of course, it is true that in climate science scenarios have traditionally been concerned with socio-economic assumptions only, whereas uncertainties about the climate response have been characterised in terms of likelihood. However, it a fundamental part of our argument that this asymmetric approach is not justified. Future socio-economics and future climate response are both forms of epistemic uncertainty, and it is therefore appropriate to use scenarios for both. To quote Sutton (BAMS, 2019):

“...for the purposes of risk assessment, there is little difference between our knowledge/ ignorance of (say) future population growth and our knowledge/ignorance of (say) the future rate of global warming, so it would be helpful for decision-makers if the same tools - scenarios - were used to communicate this knowledge. Such an approach would be in line with King et al.'s (2015) fifth principle of risk assessment: take a holistic approach. Decision-relevant climate scenarios could usefully be developed to sample all the major dimensions of epistemic uncertainty (e.g., rapid economic growth, high greenhouse gas emissions, and high climate sensitivity).”

Interactive comment on Earth Syst. Dynam. Discuss., <https://doi.org/10.5194/esd-2019-88>, 2020.

[Printer-friendly version](#)[Discussion paper](#)

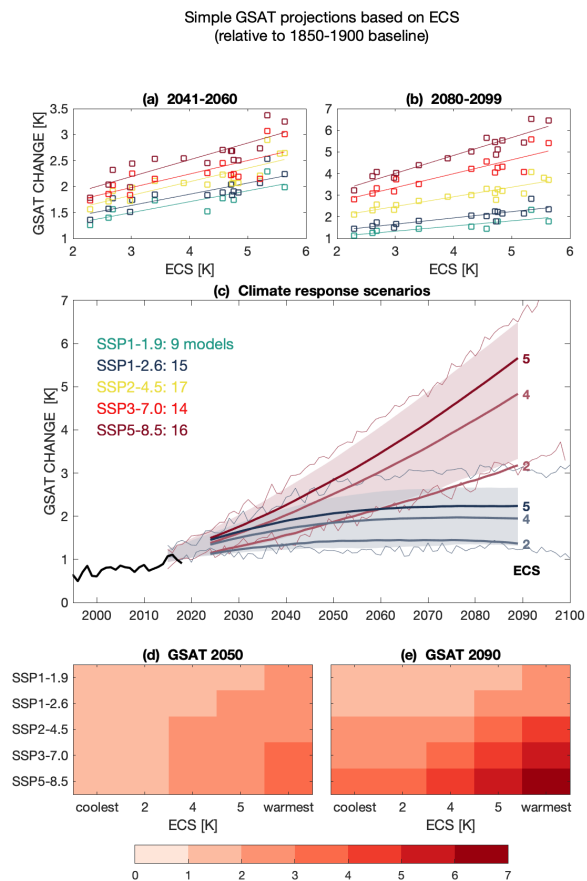


Fig. 1.