Earth System
Dynamics

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Interactive comment on "Flexible parameter-sparse global temperature time-profiles that stabilise at 1.5 °C and 2.0 °C" *by* Chris Huntingford et al.

Anonymous Referee #1

Received and published: 30 March 2017

General Comments:

Huntingford et al. develops simple temperature-time profiles that stabilize at 1.5 and 2.0 degrees C above preindustrial levels. In climate model comparisons of global warming, typically the greenhouse gas concentrations or emissions are held constant across models and the range of temperature responses is examined. This paper provides a first step towards a method to standardize global mean temperature progressions which could then be used to assess the range of greenhouse gas concentration or emission functions that are consistent with such global mean temperature progressions. The paper is modest in its goals but is worthy of publication.

Specific Comments:

Line 21 – Comparisons between HadCRUT4 and ESM-simulated global mean surface air temperature should probably take into account the non-global spatial extent of Had-CRUT4 as well as HadCRUT4's blend of air and sea surface temperatures (Cowtan et al., 2015)

-Cowtan, K., Z. Hausfather, E. Hawkins, P. Jacobs, M. E. Mann, S. K. Miller, B. A. Steinman, M. B. Stolpe, and R. G. Way (2015), Robust comparison of climate models with observations using blended land air and ocean sea surface temperatures, Geophys. Res. Lett., 42, 6526–6534, doi:10.1002/2015GL064888.

Line 22 – What does decadally smoothed mean? A 10-year running mean or some other filter?

Figure 1 and 2 – I would suggest limiting the x-axis maximum to the year 300 so that the differences in the curves over the 21st century can be seen more easily.

Technical Corrections:

Line 14 – I suggest that the authors change "but may be less able soon" to "but may be less able to in the near-term"

Figure 4 caption – Becom -> become