

Interactive comment on “A quantitative approach to evaluating the GWP timescale through implicit discount rates” by Marcus C. Sarofim and Michael R. Giordano

Anonymous Referee #3

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Review of “A quantitative approach to evaluating the GWP timescale through implicit discount rates”

I am not an expert in "Economics of climate change" and "discount rates" applied in estimating damages from climate change. Hence, I ask the editor to rely on the opinion of reviewers who are experts in assessing the economic damage from climate change. Here I am providing just a couple of minor comments.

A recent paper (Modak, A., G. Bala, K. Caldeira, and L. Cao, 2018: Does shortwave absorption by Methane influence its effectiveness? *Climate Dynamics*, <https://doi.org/10.1007/s00382-018-4102-x>) shows that the efficacy of methane forc-

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ing is only 80% relative to CO₂ forcing. The lower efficacy affects the estimation of GTP and hence the damages. What is the implication of this result to the conclusion reached in your study? Discuss.

In the abstract and in the 2nd paragraph of the Introduction section, it is stated that GWP assumes constant future concentrations. I believe this is true only for the baseline state. GWP is estimated for a case where the concentration of the gases decay with time. The integrated radiative forcing is calculated for the time evolving concentrations relative the baseline.

Fig. 1c and d: Is the unit for the damages and discounted damages correct? Should it be Billion \$ per year? Same issue for Fig. S1

Interactive comment on Earth Syst. Dynam. Discuss., <https://doi.org/10.5194/esd-2018-6>, 2018.

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