General comments

As discussed previously, Goodwin et al. present a tool for projecting local warming with uncertainty from multiple anthropogenic emissions scenarios. The major advance of the paper is the combination of output from a probabilistic climate model and warming ratios from AOGCM/ESMs.

The revisions provided have been very helpful. My remaining major concern focuses on clarifying the tool's domain of applicability.

Major concerns

Applying the tool to <= 2C scenarios

The discussion of the issues with applying the tool for <=2C scenarios, particularly the LGRTC maps for <=2C scenarios is buried far too deep into the paper. The revised line which raises this issue is, "The arbitrary and generic <=2°C LGRTC scenarios are problematic to use in practice" (page 6, line 23 of diff pdf). I don't think this is a serious enough problem to prevent publication of the paper. However, I do think that it is a serious enough coveat of this work to warrant discussion in the abstract. At the moment, without a close reading, the paper gives the impression that the tool can be used for arbitrary warming and cumulative emissions targets but, as acknowledged by the authors, that is not the case. For example, a line like, "While the tool can assess arbitrary scenarios, using it for scenarios with peak warming <=2°C is problematic due to the large uncertainties involved."

Given this, I don't think it is appropriate for the headline figure (which I would argue is Figure 5) to use a scenario which is only just above the 2C level (given the issues acknowledged by the authors about using their tool for warming in the region of 2C). I would recommend that the headline Figure 5 use a scenario with warming of at least 2.5C, to avoid straying into ambiguous territory. I also note that in their provided matlab code the authors use a threshold of 1.95C to decide whether to use their "generic >= 2C" map or not, which seems an odd choice given their paper explicitly says don't use the >2C pattern for targets less than 2C.

Calculating LGRTC for RCP2.6

It is of some concern that the authors have to use a different method to calculate the LGRTC for RCP2.6 (page 4, line 10-13 of diff pdf). I think that it also raises questions about the statement (page 3, line 41-42 of diff pdf), "To first order, the mean LGRTC can be treated as being independent of time and emission scenarios (Leduc et al, 2016, 2015).", it appears here as if the authors have shown that doesn't hold for strong mitigation scenarios? I understand that the need for a new method arises because a 2006-2025 reference period is used when calculating the LGRTC. However, given the authors' focus on warming relative to 1850-1900, I don't completely understand the logic of calculating

LGRTC with a 2006-2025 reference period in the first place (and I can't find any justification for doing so in the manuscript, please correct me if I've missed something). Having to use a different method for strong mitigation scenarios is a troubling sign and I suspect it is a large part of the reason that their "generic <= 2C" LGRTC is not useable in practice.

Addressing the concerns

I think both my major concerns can be addressed by simply being clearer about the tool's limited domain of applicability throughout the manuscript, particularly in the key abstract, introduction and conclusion sections. Providing a tool for higher warming levels is nonetheless a useful contribution, and I would not object to work on a tool for lower warming levels being left for future work.

Minor concerns

Reproducibility

I note that the authors have included much of the code required to produce their paper and commend them for their efforts to do so. I am torn because a key piece is missing, however I know how difficult that piece is and can sympathise with why it hasn't been included. The missing pieces is the code required to derive the LGRTC patterns in the first place. Nowhere is such code provided. In practice, I know that deriving these patterns is generally difficult and requires all sorts of programming gymnastics. If it is possible to provide, I think that would be great and would complete the authors' existing reproducibility efforts.