

6 June 2017

Dr. Jonathan H. Jiang  
Jet Propulsion Laboratory  
4800 Oak Grove Drive  
Pasadena, CA 91109

Dear Dr. Jiang,

Please find the revised manuscript 2017EA000256\_v2, "Propagation of Error and the Reliability of Global Air Temperature Projections," for resubmission to Earth and Space Science.

The manuscript has been revised to address reviewer concerns. Section 2.3 now introduces the concept of model calibration, with new appropriate citations. The idea of calibration error now carries throughout the manuscript.

Revised Section 2.4 fully explains the meaning of the longwave cloud forcing error statistic of [Lauer and Hamilton, 2013]. A dimensional analysis provides the units of  $\pm \text{Wm}^{-2} \text{ year}^{-1} \text{ globe}^{-1}$  appropriate to error propagated in annual time-steps. The full derivational logic now appears in new Section 6.2 of the revised Supporting Information.

The term, "passive warming model" (PWM) has been removed, as a possible source of the confusion apparent among several reviewers that equation 6 concerns climate physics. This occurred despite many clear statements to the contrary. Also, the Introduction has been shortened.

A new discussion of linear error propagation and supporting citations should remove any confusion about its relevance (lines 403-419, 599-601, 616-639 and 845-850).

I believe the revised manuscript is very much improved.

Left to the editor is a decision as to whether Figure S10 should be moved into the manuscript and whether the opening Table of Terms should be retained (Reviewer 5).

The reviews were long, and required extensive analysis in response. For convenience each response begins with a summary. Salient points include:

- The negative correlation of SW and LW cloud forcing does not impact the error analysis (reviewer 1).
- [John and Soden, 2007] does not validate simulated changes, and [Dessler, 2013] does not validate models against observations (Reviewer 6).
- An error statistic is not an energetic perturbation (Reviewer 3 and Reviewer 5).
- The centennial projection uncertainty is insensitive to the time over which calibration error is root-summed. Physics is not about plausibility. (Reviewer 4).

- Manuscript eqn. 6 does not concern climate, the uncertainty does not arise from erroneous air temperatures, and propagated uncertainty is not invalid (Reviewer 5).

None of the reviews survived critical examination. It is therefore respectfully requested that their negative judgments be set aside.

In view of the controversial nature of the analysis, I do not believe the reviewers will ever reconcile to publication. The editor is asked to make a determination in light of this likelihood.

The author hereby agrees that the responses may be made publically available in full, at the discretion of the editor. This is offered as a means to allay any critical reaction should publication be decided.

The author is also willing to provide for public view the entire four-year suite of responses, which fully show the unscientific peculiarities of prior reviews.

Finally, deep thanks are extended to the editor for the opportunity of manuscript submission.

Thank-you for your consideration and I await your reply.

Yours sincerely,

Patrick Frank, Ph.D.  
103 Lincoln Ave.  
Palo Alto, CA 94301

email: pfrank830@earthlink.net  
cell: 650-477-4565

Dessler, A. E. (2013), Observations of Climate Feedbacks over 2000–10 and Comparisons to Climate Models, *Journal of Climate*, 26(1), 333-342, doi: 10.1175/jcli-d-11-00640.1.

John, V. O., and B. J. Soden (2007), Temperature and humidity biases in global climate models and their impact on climate feedbacks, *Geophys. Res. Lett.*, 34(18), L18704, doi: 10.1029/2007GL030429.

Lauer, A., and K. Hamilton (2013), Simulating Clouds with Global Climate Models: A Comparison of CMIP5 Results with CMIP3 and Satellite Data, *J. Climate*, 26(11), 3823-3845, doi: 10.1175/jcli-d-12-00451.1.