This paper attempts to make use a linear error propagation approximation to quantify the error in projection of air temperature from GCMs. While this is a commonly used method and it is important to quantify the error in predicting temperature using the GCMs, the approach in this paper, however, is over simplified, which leads to incorrect estimation of error in future air temperature prediction.

The main idea of this paper is to use the current average greenhouse effect to establish a linear relation between the increase of the surface temperature in response to the radiative forcing from greenhouse gas.
And then use the errors for the GCMs to simulate longwave cloud radiative forcing, which is ~+/-4W/m^2, as an input to the estimated linear relation to yield +/-15C error in predicting the future air temperature.

The problems in this approach are the follows.

First of all, we don't reliably know the relation between the radiative forcing from greenhouse gas and the surface temperature increase. Actually, this is the relation is that all current GCM future projection is trying to find. It is kind of hard to follow the logic why Equation 6 is true. Is cloud radiative feedback considered? Probably not because the cloud fraction is fixed at 66.7%. Fig 1b shows a fitting with only 3 points, an extrapolation can be very sensitive.
No quantification of error is quoted for this estimation.

Second, this simple model propagates mainly the error due to the longwave cloud radiative forcing. However, there are many other important factors are not considered here and will affect the error propagation significantly.
For example, the shortwave cloud radiative forcing, which tends to compensate the longwave cloud radiative forcing, is negatively correlated with the longwave radiative forcing.
If including shortwave radiative forcing, in view of Eq. 1, the cross term involving dx/du*dx/dv for shortwave and longwave cloud radiative forcing is negative and will cancel a major portion of the 15C error projection.
Because if the longwave cloud radiative forcing has an extra +4W/m^2 down to surface, there must be other cooling process to compensate to make the total TOA flux in balance (much smaller than 4W/m^2), otherwise the surface temperature will increase unrealistically.

It is unlikely such a simplified approach can be more reliable than using the GCM outputs from the ensemble runs to quantify the uncertainties of projection. Of course, there could be a systematic bias in the projection due to a model defect that is common to all the GCMs so that the ensemble mean is incorrect. But this kind of error should be quantified by studying effect due to this common defect in the GCMs, not by the linear error propagation presented in this paper.