Comment from Tol

The debate between Ross McKitrick on the one hand and Myles Allen and Simon Tett on the other is a difficult one. It is about a detail in statistical theory. Most people try to steer clear of statistics, let alone the inner workings of estimators that are robust to heteroskedasticity.

Allen and Tett worked on a method developed earlier by Klaus Hasselmann, now a Nobel laureate. Regression analysis consists of a model and an error term. It maximized the similarity between model and data, minimizing the error. Ordinary least squares, the standard regression method, assumes that all errors are the same. If this assumption is violated, the standard errors of the estimated parameters are biased even if there are infinitely many observations. The test whether there is a climate signal in the data relies on those standard errors. That test is therefore wrong.

Allen and Tett were aware of this problem and proposed a solution in their 1999 paper. Unfortunately, their list of references shows that they did not consult much statistical literature. They did not visit Oxford's excellent departments of statistics or econometrics either – where they would have learned that Halbert White had published a solution in 1980, a solution that was in every textbook by 1990.

The solution proposed by Allen and Tett does not solve the problem. On the contrary. Ordinary least squares would have done better. The estimated standard error is still inconsistent. Worse, McKitrick shows that the estimated parameter is now biased. Allen and Tett also proposed a test of their method. McKitrick shows this test is wrong as well: It finds too many false positives. That is, Allen and Tett published a non-solution that made matters worse plus a way to cover it all up.

In his reply, here and elsewhere, Myles Allen makes light of his mistake. It was so long ago. He also reveals that he does not understand the issue. Allen argues that there are now much more data. This would overcome all statistical problems. Nothing could be further from the truth. The Allen and Tett estimator is biased. More data just means that you have greater confidence in the wrong result.

Richard S.J. Tol
University of Sussex and Vrije Universiteit Amsterdam