

Interactive comment on “Long-term stability of TES satellite radiance measurements” by T. C. Connor et al.

Anonymous Referee #1

Received and published: 21 March 2011

<Overall comments> Overall TES calibration is excellent for four years on orbit. The analytical method is clearly described. It is worth accepting.

<Scientific comments> (Page 1728, line 3). The comparison is limited to low latitude and window region. When the authors compare mid/high latitude or low temperature target at upper atmosphere (or high temperature if the instrument has non-linearity), how accurate and stable is the TES radiometric calibration? Brief comments on expected accuracy or description of the reason why window region is enough are needed. Especially if TES data used for CO₂ and CH₄ monitoring, global data including high latitude and cold target at high altitude is important.

(Bias and standard deviation such as in Page 1726 line 4). The source of the bias is thought to be caused from the instrument performance on-orbit. Is my understanding

C156

correct? If so, what is the major error source? Is it onboard black body? On-orbit, when the authors calibrate with the blackbody and deep space time, ideally there is no change with time in systematic error. What is the possible error source? Is it temperature sensor degradation of the blackbody if it exists? If the authors briefly explain how the optical bench warming makes optics well aligned, readers can understand easily.

<Technical comments> (1) (Page 1734, line 1). The deviation cycle of 180, 360, and 540 might be caused by the instrument seasonal cycle thermal condition. Is it correct? Brief explanation on cause of the seasonality is helpful.ããã

(2)(Page 1743) Unit in Figure 1 is not clear. What do ‘counts’ mean?

(3) (Page 1748-9) Fig. 6-7. Jan. 201 > Jan. 2010

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 1723, 2011.