

Interactive comment on “Imager-to-radiometer inflight cross calibration: RSP radiometric comparison with airborne and satellite sensors” by J. McCorkel et al.

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Received and published: 5 February 2016

We thank Dr. Carol Bruegge for her review and constructive comments.

C1 - How well is RSP calibrated?

R1 - This is answered in the paragraph that starts on page 10366, line 25 and associated Table 1.

C2 - How [is] the RSP scale is determined (discuss the laboratory calibration), as well as the certainty of radiances from the sensor used in the cross-comparison.

R2 - At line 22 on p. 10367 I suggest inserting a sentence such that:

C5335

"the RSP sensor response is linear. In Sect. 3..." becomes "the RSP sensor response is linear. The RSP sensor used in this study was radiometrically calibrated at NASA Ames Research Center looking down into a 30" spherical integrating sphere at seven different lamp levels (cf. Cairns et al. 1999). In Sect. 3..."

C3 - The authors state that ground-data were taken at Ivanpah[, CA]. These also could be used to provide the top-of-atmosphere spectra needed to validate RSP.

R3 - Our colleagues at NASA JPL (S.N.) kindly sent ground data to us but warned that there were "cirrus and contrails throughout the day" at Ivanpah Playa. Given that ground measurements take ~30-40 minutes centered around overpass, uncertainties would increase due to variations in illumination. It was decided to focus on the inter-comparison of the three sensors rather than contaminated data set that did not coincide with the Landsat overpass.

C4 - What follow-on work will there be, if any, in order to validate the RSP radiometric calibration?

R4 - In the second paragraph of page 10372, we mention that future efforts will work to close the radiometric link between RSP and OLI presented here. This is possible with laboratory experiments to compare the sensor calibration of RSP and the Landsat Transfer Radiometer (LXR) using the same extended source. This would be a valuable comparison since the LXR was used during prelaunch laboratory testing of OLI to provide radiometric traceability to national standards – the LXR would therefore be a laboratory surrogate for OLI (Markham et al., 1998; Butler and Barnes, 2003). Analysis of these data will use much of the same spectral analysis presented here and results will be directly comparable to those presented above. In addition, we plan execute this with use of the detector-based laboratory calibration method developed by NIST called SIRCUS in Fall 2016.

Interactive comment on Atmos. Meas. Tech. Discuss., 8, 10361, 2015.