

Authors' response to comments.

We received very thoughtful and comprehensive comments from three referees on our paper. The following is a list of how we have addressed or plan to address these comments in our revised manuscript.

Anonymous referee #1:

The phrase “other important cloud properties” in the abstract has been clarified.

Referees' specific comments:

1. A link to the ASR Science Program Plan document has been given.
2. The suggested portion of the first paragraph of the Introduction has been moved to Section 2. A new paragraph on previous works will be added to the introduction. We are still reviewing the suggested references so that we may address which of these should be included in our discussion as well as our references. We thank the referee for providing such a comprehensive list of possible references.
3. The word “microns” has been replaced throughout the text by “ μm ”.
4. The latitude, longitude and altitude of the ARM SGP site have been included.
5. FITS is defined (Flexible Image Transport System.)
6. Symbol definitions have been added.
7. The second step in the calibration is indicated more clearly.
8. Additional discussion of “normalized spectral radiance” will be added.
9. Comments on the points of disagreement between ASIVA and AERI will be added.
10. Reference to paper by Long et al. added. The gold line will be made a different color to make it more legible.
11. The reference to “this day” is correct, since the comparisons shown in Fig 9a and 9b are for the entire (sunlit) day. We had just received the improved TSI analysis at the time of our manuscript submission. We will consider incorporating this improved analysis in our revised manuscript.
12. Section 5.4 (Determination of cloud height) is being deleted from this paper pending further study.
13. It will be emphasized that the current study only looks in detail at two days.
14. The figures are being re-plotted for clarity and we will make every effort to consolidate figures as well as remove nonessential figures.

Anonymous referee #2:

Page 7986, Line 10

The name of the campaign has been added. (Solmirus' All Sky Infrared Visible Analyzer (ASIVA) campaign)

Page 7988, Line 12

The acronym FITS is now spelled out.

Page 7989, Line 8

The resolution of the TSI and ASIVA are now specified

Page 7989, Line 19

The meaning of all the symbols is now specified.

Pages 7990 – 7998

The qualitative statements will be made more definitive.

Page 7990, Lines 27-29

Discussion regarding the linearity of the response across the full range will be added. We are also considering eliminating figure 4 to reduce the number of figures in this paper.

Page 7991, Lines 19-20

Reference added for the details of the AERI instrument.

Page 7992, Line 16

The figures will be revised, including changing the gold line.

Page 7992, Lines 22-23

A more complete discussion of the cloud thresholds will be added.

Page 7997, Line 12

Additional discussion of threshold determination will be added.

Page 7997, Line 14

Reference added for “standard mid-latitude summer”.

Page 7997, Line 14

The sonde data used in the simulations has been clarified.

Page 7998

The discussion of cloud height determination has been removed from the current paper.

Interactive comment by C.N. Long

1. The term “hemispheric cloud cover” has been removed and replaced by “fractional sky cover” or “sky cover” throughout the paper.
2. Page 7986, line 23
The sentence has been rewritten for clarity
3. Additional reference has been added.
4. As mentioned above, the gold line on the figures will be changed.
5. Page 7992, line 21
“cloud fraction” has been changed to “fractional sky cover”.
6. The discussion of IR sky cover determination and thresholds will be revised and clarified. In particular, thresholds for the IR images will be called “low emission” and “high emission” to distinguish them from the “thin” and “opaque” thresholds derived from the visible images. This would then correctly reflect the meaning of these thresholds. A goal of this research will be to investigate how these two different measures of fractional sky cover correlate to one another.
7. We will consider including visible sky images for reference with respect to figs 7, 8, 10, 12, 15, 16 and 17. We are working to consolidate figures so don’t know at present how this will play out.
8. Much of this discussion will be changed or omitted in light of defining IR fractional sky cover in terms of “low emission” and “high emission”. Differences such as these should be chalked up to the differences in the process and meaning of determining fractional sky coverage between infrared and visible.
9. Analysis of the complete campaign dataset is underway and results will be presented in the future. This would include analysis regarding the correlation of fractional sky cover determined by infrared vs. visible imagery for the complete campaign dataset.
10. The discussion of cloud heights has been removed from the present paper.