

Interactive comment on “Development of a sky imaging system for short-term solar power forecasting” by B. Urquhart et al.

Anonymous Referee #2

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This paper gives a very good account of the details of a camera suitable for sky imaging and would be a useful addition to the literature.

The stated goal of the paper is to provide details on the USI system and its imaging performance to help making informed design decisions. However, given that the paper does include a review of other cameras available, it does not make clear what the shortcomings of these cameras are and why the authors saw the need to design and build a new one. There is a single statement indicating shortcomings of the TSI camera, but no discussion of what they were and how the USI design overcomes these. It would be extremely useful if section 1.2 included some mention of where each of the designs discussed failed to meet the requirements summarized in section 1.1, and what exactly the problem is that the current camera attempts to solve. In short: the technical and

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scientific objective of the design work in view of existing technology.

Section 2 has a good description of the camera design, but the figures are small and difficult to read (eg fig 2) and Fig 1 does not add useful information. . .especially when combined with Fig 4. A simple sketch and optical configuration would help. I was also surprised that measured dynamic range of 61dB was significantly lower than the camera spec of 72dB, with no mention of attempts to improve it, given the requirement of a very large dynamic range, and the effort described to "live with " the the reduced range (eliminations of pixels with low counts. . .a process which could lead to distorted images unless done very carefully, and more discussion of this issue would be helpful)

The discussion about baffles and stray light is very interesting and highlights the difficulties of having a camera looking directly at the sun. While a shade is being used , there is no discussion of an optimization of the shade. . .(is it the best one possible?). Furthermore, the spectral variation of the stray light and its practical consequences (whether sunlight scattered from clouds or from internal camera components) are mentioned but not discussed in detail . . .with some results "omitted due to inconsistency". This is worrying.

Given these problems it would be a welcome addition to the conclusion to have a statement evaluating how well the camera performed as compared with other cameras and techniques available for this purpose, and what the key issues for further development are.

Minor comments include the need to differentiate between "principle" and "principal" in section 2.1, page 4861, line 22, omit "a" in "provide details", page 4862 line 19, change "This" to "The". Fix p 4886 line 15 . . .Suggest: " site is fitted out with ", or the site includes...

Interactive comment on Atmos. Meas. Tech. Discuss., 7, 4859, 2014.

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