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Geoscientific Instrumentation Methods and Data Systems Discussions

Interactive comment on "Auroral meridian scanning photometer calibration using Jupiter" *by* Brian J. Jackel et al.

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We sincerely appreciate the detailed comments by the reviewers which have resulted in substantial improvements to the manuscript. Specific responses to each point are included below. Changes to the manuscript are indicated in a PDF generated with "latexdiff".

Reviewer #1 ==========

The authors report on a feasibility study for calibrating ground photometers by using the known spectrum from Jupiter in the field of view. This study includes some important advances in relating optical field measurements more regularly to a known reference and in making calibration procedures more flexible and less dependent on the laboratory facilities. The work is carefully documented and the

caveats well discussed. I only have some few questions to address for clarification. ==========

My main suggestion is to include a little summary or status report in the conclusions. That could include things like: Are both geometric and spectral calibrations based on Jupiter spectrum seen as feasible? What are the required conditions for making the calibration feasible, what do the authors see as main error sources and as the most important area for further improvements? How much processing time does it take to perform a celestial source calibration? Would the procedure presented here be directly applicable to other optical measurements?

—Yes, several paragraphs added to conclusion.

Minor comments:

Figure 2: This figure is used as an example data set. Could you mark some of the main features in the plot or at least add an extra sentence or two about them for readers who are not familiar with MSP data. Useful details may be: direction of north / south (geographic or geomagnetic?), approximate luminosity range, wavelength (the title says channel 1), green/yellow feature on the right hand side edge and the bright feature at around scan number 1000. Clouds are mentioned in the text. Are there cloudy features in the sample data?

—We have selected an example with more complex features eg. moonlight; annotations have been added to indicate these features.

Figure 3: Please use colors for faster distinction between the different spectra.

—Done.

Equation (16) does not explicitly include variables for solar power and planetary albedo which are explained below the equation. Please rearrange the text to match the vari-

ables in equations (16), (17) and (18).

—Fixed.

Figure 4: The caption has a superscript 1 which I found no further information about.

—Fixed.

Colors or filled/nonfilled symbols or a legend would be helpful in figures 9, 10, 11, 12 and 13 since it is challenging to tell small, medium and large symbols apart.

—Legends added to several figures.

Please also note the supplement to this comment:
http://www.geosci-instrum-method-data-syst-discuss.net/gi-2016-5/gi-2016-5-AC1-supplement.pdf

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