

***Interactive comment on* “Evaluation of arctic broadband surface radiation measurements” by N. Matsui et al.**

N. Matsui et al.

nobuki.matsui@colorado.edu

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In general, we agree with this reviewer very much. We are not trying to publish something new, but it is the fact that nobody has published this content yet. New information comes from inventions of new sensors such as SPN-1, which expands the instrument deployment possibilities in cold climate.

1. P. 4913, l. 6:

We agree with the reviewer and revised the manuscript by emphasizing the need of understanding poorly understood Arctic clouds and its drastic effects on Arctic surface

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radiation budget.

P. 4917, I. 17 We revised the manuscript to clarify our intent.

P. 4918, I. 22: We agree with the reviewer and modified the manuscript.

P. 4919, I. 1: It should be about 15 Wm⁻² or less after the cleaning. We revised the manuscript accordingly.

P. 4923, I. 24- P.4924, I. 2: We included the two suggested references.

P. 2924, I. 2: We agree with the reviewer.

1. By multi-variable sensor, we meant total and diffuse.

2. The redundancy of measurements is the primary aspect that improves QC, but in the case of the Arctic, the multi-variable SPN-1 offers more than a simple redundant global measurement in cases where the tracker fails. It supplies diffuse and global SW measurements from which the direct component can be derived, albeit less accurate than the tracker-mounted measurements. The internal heating aids the QC in that unobstructed reasonably accurate total, direct and diffuse SW measurements will continue until weather conditions improve to the degree that the tracker can be repaired or any obstructions on the tracker mounted instruments disappears.

We therefore revised the manuscript accordingly.

P.4924, I. 3: We added the suggested reference.

P. 4924, I. 4-6 We revised the manuscript accordingly.

Interactive comment on Atmos. Meas. Tech. Discuss., 4, 4911, 2011.

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