

Interactive comment on “Polar baseline surface radiation measurements during the International Polar Year 2007–2009” by C. Lanconelli et al.

X. Dong (Referee)

dong@aero.und.edu

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General comments:

This paper is well written and easy to read through. This study documents the SW and LW radiation fluxes over Polar regions during IPY, which is much needed database and document for community to study the surface radiation budget over Polar regions. Therefore, I suggest ESSD to accept it with the following minor changes.

Minor Comments (Tables and Figures):

1. Table 3: Can you extend the *ppl* and *erl* in the table caption or a note? The table 3 can stay alone. Otherwise, people have to read the text to know their meanings.

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2. Figure 2. I found the min and max SWD values are almost the same as SWD, at least from your plot. If so, what is the purpose to plot the min and max SWD values in Figure 2? In the text, you also did not talk about the min and max SWD values. If they are not important, then remove them.
3. Figure 3. It looks like you used different software to plot Figure 3. Please keep the same as others. Also it is better to have either a title: “Six BSRN stations over Polar regions” on the top of plot or in the Figure caption, you need to list (a) Concordia (dom), (b) South Pole (spo). (f) . . . Do not assume people know these station names.
4. Figure 5. Again, what are *erl_i* and *ppl_i*?
5. Figure 6. After comparing the BAR and NYA results with our current and published paper, they are close to each other. Therefore, it is necessary to cite the following paper in the paper and compare your Figure 6 with their Figure 2.

Dong, X., B. Xi, K. Crosby, C.N. Long, R. Stone and M. Shupe, 2010: A 10-yr Climatology of Arctic Cloud Fraction and Radiative Forcing at Barrow, Alaska. *J. Geophys. Res.*, 115, D12124, doi:10.1029/2009JD013489.

Additional Comments:

1) *Page 260. Section 1 Introduction. Lines 14-16.* “. . . , shaping the main characteristics of the **earth’s** climate.”

2) *Page 266. Section 3 Instruments and Methods. Lines 26-29.* First part of statement is talking about availability % of each parameter for each station, then you say “. . . (that for BSRN requirements has to be greater than -4 W/m^2).” What does this -4 value mean? How does this -4 W/m^2 value relate to the availability of shortwave data? A little confusing.

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3) Page 267. Section 4 Data Availability and Quality Test. Lines 13-14. Grammatical suggestion: Restate sentence as follows.... For each station, the root mean square for **the** pair with global 2 greater **than** +50 W/m² was calculated.

4) Fig. 3. Where is the red availability box for Oct 2008 at **syo** and why is there no red line connecting the red boxes from Sep 2008 – Nov 2008, when there is the presence of daylight in Oct 2008 as indicated by the background grey bar?

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