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Discussions

Interactive comment on "Baseline Surface Radiation Network (BSRN): structure and data description (1992–2017)" *by* Amelie Driemel et al.

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The authors sincerely thank Mr. Wild for his kind words and his valuable comments, which we all incorporated and used to significantly improve the manuscript.

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Details below (comment ==> our answer)

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P2 L7: replace "with data" by "delivering data to the archive" ==> has been replaced

P2 L8: "distributed over all continents": this excludes stations in oceanic environments. Although very limited in number in BSRN, they should still be referred to as well. ==>

you are absolutely right, we changed the sentence to "over all continents and oceanic environments"

P2 L13: Add "e.g.," in front of the references, as there are many other studies that point this out. ==> has been added

P2 L23: "temporal resolution" ==> was changed

P2 L29: "see also" at wrong position ==> "see also" was removed as it is not necessary

P2 L33: "for use in satellite and climate model validation" ==> was changed

P3 L4: Add Ohmura et al. 1998 to this reference list ==> reference was added

P3 L11: see comment P2 L7 ==> has been replaced

P3 L16: either use consistently shortwave/longwave, short-wave/long-wave, or short wave/long wave throughout, but not in a mixture as it is now in the manuscript. ==> thanks for this hint, we now use consistently long-wave and short-wave (apart from the reference titles which of course may deviate

P4 L5ff: How about aerosol information? ==> up to now BSRN does not offer aerosol information, this is the focus of other networks

P4 L14: maybe "types of instruments" ==> has been changed

P5 L13: expand what Solpos means. ==> We added in brackets the full name "Solar Position and Intensity"

p5 L28: "corrections can be made using algorithms that make use of the other collocated data that is part of the BSRN instrument suite". What other data are these? => The sentence was changed to: ".."…or in other cases corrections can be made using algorithms that make use of co-located pyrgeometer data that is part of the BSRN instrument suite (Dutton et al., 2001; Long et al., 2001; Younkin and Long, 2004)."

p6 L4/5: "Other interesting papers on the quality and possible biases of radiation mea-

surements were published by Vuilleumier et al. (2014), Olefs et al. (2016) and Nyeki et al. (2017)". It would be helpful for a reader to expand a bit on these to get an idea whether they are of relevance for his/her application. Just "interesting" is a bit vague. ==> we added for each a short sentence on the main points of the papers

p6 L11: "LR0100+0300 or LR0100 and LR3010" , add here "see Table 1" to clarify the meaning of this statement. ==> has been added

p7 L11: "Arithmetic averages can be calculated via "Method" but the results should be considered with care in cases where significant data gaps exist." I think this is a critical point, it is good that it is mentioned here, but I would emphasize this even more strongly. I have seen several applications where BSRN monthly means have been generated this way without any critical assessment. I would even opt to remove this function from the data warehouse as the risk of misuse is very high, as also past experience showed. ==> we added the sentence "or should best not be used at all" to emphasise that even more. The Warehouse of PANGAEA unfortunately will not remove this functionality just for BSRN

p7 L25ff: As mentioned in the general comment. I personally would have highlighted the scientific impacts of BSRN more, and not just put it in one small paragraph as part of the summary. But as said I understand the focus of the manuscript is on the technical aspects of BSRN, so I do not request to expand this further. ==> thanks, this will maybe be the content of the next BSRN paper

p7 L26: The first study that made full use of the BSRN network to estimate trends and constituted the "solar brightening" was: Wild, M., Gilgen, H., Roesch, A., Ohmura, A., Long, C., Dutton, E., Forgan, B., Kallis, A., Russak, V., and Tsvetkov, A., 2005: From dimming to brightening: Decadal changes in solar radiation at the Earth's surface. Science, 308, 847-850, which could also be mentioned here. ==> thanks for the hint, this paper definitely needed to be included and was therefore added to the list of references using BSRN data.

p8 L5: I think the focus should not be simply on "as many stations as possible", but rather on the worldwide coverage including particularly also ocean and remote land areas, as well as on the coverage of all major climate regimes. ==> you are of course right, we added "representative" in front of "stations". The reason we wrote this is that it becomes increasingly hard to handle everything, as none of the people within BSRN get paid for working for BSRN (it is all "on top" – even the WRMC director is only part-time responsible for the WRMC) and there is no extra money available for handling many more stations or for travel expanses to visit candidate stations.

p9 L17: Should the complete reference not read: König-Langlo G, Sieger R, Schmithusen H, Bucker A, Richter F, Dutton EG (2013) The baseline surface radiation network and its world radiation monitoring centre at the Alfred Wegener Institute. GCOS Report 174: update of the technical plan for BSRN data management. World Meteorological Organization (WMO). http://www.wmo.int/pages/prog/gcos/Publications/gcos-174.pdf ==> good catch, we adapted the reference, BUT as we knew that the pdf link does not work anymore we created and provided a different identifier for the publication (http://hdl.handle.net/10013/epic.42596.d001)

Figure 1: I would also add the yellow circle, indicating stations that measure both upward and downward radiative fluxes, to the legend underneath the map for completeness, as on a first sight one wonders what this prominent yellow circles mean and then first searches for its explanation in the legend. But why only the stations that measure both upward and downward radiative fluxes are labelled with their BSRN abbreviation? This looks a bit like a "two class BSRN society" too me. I think this should be avoided. ==> you are absolutely right (both comments), we only added the labels of the stations with full budget for better readability, but will now add all labels as this was not a very good approach.

Figure 3: what data are underlying the panel to the left? I assume minute data? And from which station over what period of time? ==> yes you assume right, these are

minute data, the station is Fukuoka (Japan) and it contains data from one month. We opted not to add more information in the figure caption as the focus lies on the theory/method here.