

## ***Interactive comment on “Assessment of BSRN radiation records for the computation of monthly means” by A. Roesch et al.***

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Thank you very much for the valuable comments provided by the anonymous reviewer. The answer to the comments are as follows.

Page 4426, line 3: We will change the sentence into "In 2005, BSRN provides radiation data at almost 40 sites."

Page 4427, Chapter 2.1 The WWW address will be corrected, the actual status of the database (5800 station months) will be adapted.

Page 4429, line 2: Thank you for this hint. I think that it is better to omit "ETHZ" since the fact that the quality flags were developed at the ETHZ (the BSRN database was

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hosted by ETH up to the year of 2007) was already mentioned on the previous page 4428 (lines 5-7).

Page 4433, line 2-5: The problem of nighttime offsets is still under debate in the BSRN community. There is still no common sense within the community how to handle nighttime offsets. The evaluation of the data clearly shows that the majority of the problems are related to negative nighttime offsets. But in order to follow the reviewer's concern, we decided to replace "can" by "may (line 3)". The formulation is in line with the opinion of the person who is leading the BSRN (Dr. Ellis Dutton)

Page 4433, line 9: It is true that the flagging procedure developed at ETH (and used for flagging of BSRN data till 2007) are not very sophisticated. But they have been developed by visual/statistical inspection of BSRN data by radiation experts at ETH Zurich (among others Dr. Guido Mueller and Prof. Atsumu Ohmura). But it is true that more sophisticated physically based algorithms based on additional (meteorological) input data might have improved the reliability of the quality control. But we have to base our investigations on the flagging information that was available during these times. We think that the detailed specification of the quality control (Section 2.2 and Table 1) gives a detailed insight into the quality control that have been applied for the BSRN data up to 2007.

Page 4433, line 16: The term "tracker errors" (or "tracker failure") will be included

Page 4437, line 5: We agree with the reviewer's comment that we might omit M6 in Fig.6. However, we decided to leave the results of M6 in Fig.6 for two reasons: (i) the method is based on a sophisticated procedure that has been developed by a radiation specialist who is working with BSRN data since many years, (ii) it shows the reader that differences in monthly means (that have been published in papers that are based on BSRN data) might also be related to the use of different data versions. This problem is even more pronounced as the BSRN data base - at least during the period when ETH was hosting the database - did not include any version control.

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Page 4438, line 24: All methods have been used by radiation specialists who make extensive use of BSRN data in their research. M5 requires the setting of parameters that has to be specified for each BSRN station separately. This procedure has been performed for nine sites only that have been used for the purpose of his research. It was beyond his time to compute the monthly means for all the other BSRN sites.

Page 4439, line 17-18: This is the result of our study and it based on observed BSRN data. But we do not state that missing data are "better" or "worse" than flagged data. We only state that we found that "Further investigation revealed that the methods generally are more sensitive to changes in the gap frequency than to the amount of flagged data". It has to be specified that is a very "general" statement which does not apply to all parameters in a uniform manner.

Page 4439, line 20-21: The reviewer's suggestion will be adopted.

Page 4443, line 1-3: The citation of Ohmura et. al (1998) will be corrected into

Ohmura, A., Dutton, E., Forgan, B., Fröhlich, C., Gilgen, H., Hegner, H., Heimo, A., König-Langlo, G., McArthur, B., Müller, G., Philipona, R., Pinker, R., Whitlock, C. H., Wild, M. (1998): Baseline Surface Radiation Network (BSRN/WRMC), a new precision radiometry for climate research.- Bull. Amer. Meteor. Soc. 79: 2115-2136.

Figure 3,6,7: change from GLOB2 to GLOB will be done.

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