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Interactive comment on "A Retrospective, Iterative, Geometry-Based (RIGB) tilt correction method for radiation observed by Automatic Weather Stations on snow-covered surfaces: application to Greenland" *by* W. Wang et al.

Anonymous Referee #1

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The manuscript describes a novel method to correct for the well-known, albeit often ignored, tilt error in surface radiation measurements. The tilt error may give erroneous surface albedo and surface insolation. The method presented in the manuscript cleverly uses the data together with a radiative transfer model to correct for the tilt error. The error corrected data give a better description of the system studied and is likely to have an impact on our understanding of the energy budget of snow-covered surfaces.

The manuscript is well-written and well-organized. The paper is suitable for publication after consideration of the technical remarks below.

Technical remarks

- **Page 6029, line 18**: Replace “Multi-scattering” with “Multiple scattering”.
- **Page 6033, line 20**: Replace “following algorithm” with “using the algorithm”.
- **Page 6033, Eqs. 4-5**: You may consider including a sentence mentioning that Eqs. 4-5 implies that the diffuse radiation is isotropic.
- **Page 6034, line 7**: Replace “accounts” with “includes”.
- **Page 6034, line 15**: Remove “is also”.
- **Page 6035, line 6**: Replace “which tilt” with “which the tilt”.
- **Page 6041, line 2**: Replace “RIGB” with “The RIGB”.
- **Page 6054,Fig. 5**: In the caption and the text it is said the Fig. 5 presents the albedo. However, the left y-axis label states that this is the “Albedo anomaly”. However, this term is not defined in the manuscript. Please either define this variable and adjust caption and text accordingly or plot the albedo. Similarily for the y-axis where the label reads“cos’(sza) anomaly” and this quantity is not defined anywhere.
- **Page 6056,Fig. 7**: The left and right y-axes are labelled albedos. However, the y-axis range is symmetric around zero implying that some offset has been subtracted. Please clarify this and plot the albedo or other relevant quantity. Change text accordingly.
- **Page 6057,Fig. 8**: Please make figure larger. It is very hard to read.

Interactive comment on The Cryosphere Discuss., 9, 6025, 2015.