Reviewer #1:
The authors have made revisions to the manuscript that have addressed some minor concerns. However, the major concerns still exist.

Major concern 1:
The author still has not provided a clear explanation for the result shown in Figure 10, 11, 12. Only two lines text were newly added. As stated in the revised text, the author guessed that the lateral scattering of large features is less significant. However, the related model results suggest that scattering from the lateral ice boundary can be ignored when the ice size is larger than 10 m. So, this cannot explain why the reflectance of ice with size of 20 m smaller than size of 18 m.

We agree with the reviewer that a satisfactory explanation for those results was not provided in the previous manuscript draft. After consideration of the feedback provided by both reviewers, we find the most reasonable explanation for this observed behavior to be one related to the thinness of the sea ice. In short: the sea ice was quite thin at the time of our observations, so it is justifiable to assume that there was a sensitivity of surface reflectance to ice thickness. This sensitivity is expected to be greatest for the large patches of bare ice, reducing the surface reflectance for those regions. Text to this effect has been added to the Discussion (L235-238).

Major concern 2:
The flight times have been added in the main text. There is a difference of nearly 5 hours between the flights. The author stated that great care was taken to ensure that ambient radiative conditions did not differ too greatly from one flight to the next. Let's just assume that the radiative conditions are the same at noon and nightfall. However, the solar zenith angle inevitable changed by about 20°. (Note: the angles added in Section 2.1 were elevation angles, not zenith angles). For ice with an albedo of 0.5, a 20° change in zenith angle can result in a 20-25% change in ice albedo. However, this effect was not taken into account in the whole manuscript, making most of the results doubtful. The authors arbitrarily attribute all changes to size effects, which cannot explain many of the results.

We have corrected our erroneous description of the angles in Section 2.1 as zenith angles (they are now properly referred to as elevation angles). We

note the reviewer's concern regarding the variation in flight times—and the potential for introduction of a confounding variable. The greatest difference in solar elevation angle from one flight to any other occurred between the time of the final RAD flight (on 5/15/2019) and the other two on 5/10/2019 and 5/14/2019. The RAD and VNIR flight paths did not overlap on our final day of operations due to operational constraints. As a result, data from that day of flight were not included in our analysis- a fact which is now communicated in the manuscript text at the end of Section 2.1. With respect to the four flights remaining under consideration, the differences in solar elevation angle were 0.8 degrees for the RAD payload and 5.13 degrees for the VNIR payload, limiting the degree to which our observations depended on solar angle.

Reviewer #2:

It seems likely that the sea ice in this study was thin enough for the albedo (reflectance) to show sensitivity to bare ice thickness. Is it possible that bare areas (of size > 18 m) get darker as they get larger because of this thickness sensitivity?

We are grateful to the reviewer for offering this potential explanation for that observed behavior. We find it to be the most reasonable interpretation of the available facts. L235-238 now contain text which offers this account of the observations, connecting the discussion text of the preceding lines with the relevant figures.

Line 163-164: would be helpful to indicate symbols used on plot axes in the text and in the caption: "...with mean visible and near-infrared surface reflectance (ρs) plotted against net solar irradiance (deltaE_s).

The text as originally written gave the false impression that two distinct quantities (visible AND near-infrared surface reflectances) were being plotted alongside one another. The plot in fact shows the surface reflectance averaged over the visible band (as previously mentioned in what is now L96-97 of the text). The text (and caption of Figure 7) have been edited to improve communication of this important detail.

Fig 7a: color scale? Also, not clear, what is distinction on plot between visible and near-infrared surface reflectances?

The caption of Figure 7 indicates that the color of the markers in panel a are representative of the mean sea ice color of the features within that bin. This is meant to provide a qualitative visual aid to the reader. The caption has been edited to clarify that this is visible light surface reflectance.

Fig 9(a, b): color scale?

Please see response to previous comment.

223 - 225: Not a sentence. Rewrite. Or "...shows that for the transition..."?

This chunk of text has been edited to ensure that it is both grammatically correct and easy to understand.

344: Would it be more accurate to say that "..while bare patches of size greater than 18 m get darker as they get larger."?

We agree with the reviewer that the description given in (former) L344 is too simplistic. The non-monotonic behavior of mean reflectance with bare feature size does complicate this picture. We have modified the text to more accurately describe observed dependence of bare ice features on characteristic size.