

1 Dear Editor,

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3 We thank the anonymous referees for their constructive comments which helped us
4 clearly understand to clarify the potential issues that may confuse the readers. All issues
5 related have been carefully modified and marked in red in the revised paper. Here we
6 submit and introduce our revisions point by point.

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8 Best regards,

9 Jing Ming on behalf of the co-authorship

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13 To Report #1

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15 The manuscript is considerably improved relative to the first submission, but still
16 requires modifications before publication in ACP. One of the more notable
17 improvements is the extension of MODIS albedo analysis to 2012, which results in an
18 even larger trend than the original analysis that extended to 2010. Grammar and clarity
19 in the body of the manuscript are substantially improved, though the abstract still needs
20 to be improved. A general concern is that the manuscript still seems to explore two
21 disparate themes, both of which are important, but neither of which are covered in great
22 detail in this paper. These themes are: 1) the decrease in albedo of the glacier between
23 2000 and 2012, as observed with MODIS, and the correlation of this albedo with mass
24 balance; and 2) concentrations of black carbon and dust on the glacier measured during
25 2012, and the associated impacts of these impurities on albedo and radiative forcing.
26 Assuming the paper continues with these two important (but not well connected)
27 themes, it would be nice to see a bit more discussion on 1) the implications of findings
28 from these two separate components of the analysis, 2) how these components may or

29 may not relate to each other (i.e., more discussion/speculation on possible causes of the
30 decadal-scale albedo decline seen in MODIS), and 3) sources of uncertainty in both
31 components of the analysis.

32 *Re: Thank the referee for this constructive comment, which makes the paper more clear
33 and precise after being following. We have carefully corrected the grammatical errors
34 in the abstract. Indeed, two themes raised by the referee were included in the paper,
35 whereas they were not well connected in the original paper and may confuse the readers.
36 We clarified the two themes in the abstract and presented new evidences and more
37 discussion that may link them well in the revised paper.*

38 *First, the surface temperature trend is decreasing which may not interpret the albedo
39 decreasing, and other factors may contribute the decreasing, e.g., black carbon and
40 dust. And aerosol monitoring near the glacier during 2006-2010 showed an increasing
41 trend of black carbon, indicating more BC deposition in the surface of the glacier and
42 making the decreasing more reasonable, although the record of dust is absent presently.
43 These statements have been properly added into the revised paper.*

44 *In the revised paper we state that "Lacking long-term measurements of LACs in the
45 Zhadang glacier makes directly evaluating the impacts of LACs on the albedo
46 decreasing in 2001-2012 impossible, whereas the investigation in 2012 presented a
47 possible interpretation that the LACs could decrease the surface albedo, taking into
48 consideration the increasing of BC concentration in surrounding atmosphere (Zhao et
49 al., 2013)".*

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51 Other specific suggestions:

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53 - Abstract: Carefully check the abstract again for grammar issues (e.g., "founded" ->
54 "found"). Also, try to more clearly indicate that two separate themes were explored, so
55 that readers do not become confused in trying to connect the two sets of findings.

56 *Re: Yes. We have carefully check the abstract and corrected the mistakes. Two themes*

57 *suggested by the referee have been clarified in the revised abstract.*

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59 - Rename the heading of section 3.1 to reflect something more precise than "21st
60 century".

61 *Re: Yes, has been revised to "during 2001-2012".*

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63 - Include a brief description of the mass balance measurements in the Methods section,
64 since these form the basis of one of the paper's more important conclusions that albedo
65 and mass balance are well-correlated.

66 *Re: Yes, a brief description of the mass balance measurements has been added into the*
67 *Methods section and a related reference was also provided.*

68

69 - Make sure all references to the MODIS albedo analysis are changed from 2010 (the
70 original end point) to 2012 (the new end point), e.g., in line 1 of Conclusions.

71 *Re: This issue has been checked and corrected throughout the manuscript.*

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75 Report #2

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77 Citation could be improved. For example, following relevant papers over Tibetan
78 Plateau should be cited. Otherwise, I will suggest the paper to be accepted for
79 publication in ACP (Omitting the citation list).

80 *Re: All citations suggested by the Referee have been properly cited in the revised paper.*