

Interactive
Comment

Interactive comment on “Boundary layer physics over snow and ice” by P. S. Anderson and W. D. Neff

P. S. Anderson and W. D. Neff

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General Points.

The combined boundary layer chemistry and physics studies carried out in Alaskan and Canadian Arctic, as well as the studies at GEOSummit, Greenland, are given greater coverage in this revised version. In addition, the preliminary studies at Dome C are also noted.

Specific Points

Points 1 through to 5 have been acted upon according to the reviewers suggestions.

Point 6: Figure from Tarasick and Bottenheim 2002 reproduced by permission

Points 7 through to 11 have been acted upon according to the reviewers suggestions.

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Point 12. Page 17 bullet points are left as is, due to their introduction of a set of sub-headings. Page 23 bullets have been deleted and the text included in the preceding paragraph.

Point 13: Given the paper is both part introduction and part review, the text is now just "paper"

Point 14: Reply to "A plot would be inappropriate here": there is no general form for the diffusivity profile, which defines the flux/profile relationship. Indeed, the essence of boundary layer process studies is to find such relationships under a variety of naturally occurring internal and boundary conditions. At this point in the paper, prior to discussing buoyancy modification, the only aspect that can be affirmed is that turbulent mixing zero at the top and bottom of the boundary layer.

Point 15. "Halley" is an official place name according to the SCAR Composite Gazetteer of Antarctica. see

http://apple.arcoveggio.enea.it/SCAR_GAZE

To maintain consistency with the gazetteer, other Antarctic place names throughout the text have been updated. Arctic place names are given geographic place names or in the case of the Greenland summit, the NSF designation GEOSummit to prevent confusion with the GISP2 or GRIP site.

Point 16. This paragraph re-written for clarity.

Point 17 to 19 acted upon according to the reviewers suggestions.

Point 20 This section re-written for clarity

Point 21 A paragraph is now including explaining the need for a discussion on the convective BL.

Point 22 Some typographical errors corrected to repair the grammar..

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Point 23 The South Pole is unique in the regard that there is no diurnal forcing in summer. Greenland and whole of the Antarctic interior are physically similar, and indeed this aspect is highlighted in the introduction, where GEOSummit and Dome C are indicated as radiatively equivalent.

Point 24 No action required.

Point 25:30 acted upon according to the reviewers suggestions.

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 7625, 2007.

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