

Interactive
Comment

Interactive comment on “Snow melting bias in microwave mapping of Antarctic snow accumulation” by O. Magand et al.

Anonymous Referee #1

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The paper by Magand and others deals with surface mass balance in East Antarctica. The main tool used in this study is satellite record of microwave surface emission and surface observations. Surface mass balance of Antarctica is a great challenge due to both spatial and temporal variability and this work improve our knowledge. The paper contributes to ongoing debate concerning the estimation of uncertainty in the measurement of spatial variability in snow accumulation using remote sensing data tuned by in situ observation. Authors point out that regions potentially affected by melting should be masked-out in microwave-based interpolation schemes.

The manuscript subject is very appropriate for 'The Cryosphere discuss'; and analysis are very accurate and the results are sufficient to support the interpretations and conclusion. However Authors have taken in account only the melting process whereas

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pronounced density contrasts within the snow pack is also due to the outcrop of ice. Most of outcrops of blue ice area occur in coastal region due to intense wind scouring.

Manuscript should be improved by minor revision and taking in account also blue ice area related to wind scouring.

Specific Comment

In Figure 1 TransSantarctic Mountains of Victoria Land are mapped as area with 30 melting days, all these mountains present blue ice area and melting area is very imitated due to high elevation.

Pag 260 It is not clear 'The typical length of accumulation variability is about 10 km', please explain.

Pag 260 On the base of figure 2 A06 Maps over-estimate observed SMB values lower than 200 mmwe and under-estimate value higher than 200 mmwe and A06 is not able to detect value higher than 400 mmwe. Accumulation is clearly correlated to elevation, distance from coast, however there is clear difference in the area east and west of Dumont D'Urville-Dome C Ice divide, with higher accumulation in western part. I suggest to Authors a geographical distribution analysis together with elevation analysis that could improve the analysis.

Pag 261 last line and pag 262 first line, It is not clear the region where calculation is not performed and why?

Pag 262 First paragraph of discussion, RMS relative % values are different between text and table 2,

Reference Pag 261 Surdyk and Fily, 1995 Pag 263 Cavalieri and Comiso, 2004

Interactive comment on The Cryosphere Discuss., 2, 255, 2008.

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