

Interactive  
Comment

## ***Interactive comment on “Influence of leads widths distribution on turbulent heat transfer between the ocean and the atmosphere” by S. Marcq and J. Weiss***

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Dear Editor, dear authors,

This paper attempts to quantify in a case study the role of the distribution of different lead sizes on the heat fluxes in the sea ice zone. They find out that fluxes over open water change by up to 55% when ones accounts for the lead-size distribution.

The study is novel, the topic is important, the paper is clear, concise and very well written. I really enjoyed reading it.

I needed to scratch my head to find out things to say about it. As a sea ice modeller,

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I don't have much comments on the aspects dealing with boundary-layer meteorology. The two other reviewers are atmospheric specialists and should do a good job on these aspects.

I could have suggested more on the impact for sea ice modelling, but I think the paper is nice as it is, being well focussed and leaving the modelling questions for future work. After all, I think only the appendices need some (little) work.

I therefore suggest to publish as is, with very minor revisions, and congratulate the authors for providing such an accomplished paper in one turn only.

Best wishes,

Martin Vancoppenolle

Minor comments

Title You may add a reference to sea ice or the Arctic in the title. It is not obvious now that you are speaking of sea ice.

Abstract l. 18 extents -> extends

Body Text

p. 2767 l. 17 Here and in other instances. The authors' full name is "Morales Maqueda". Just make sure your bibtex is parameterized correctly to allow for double names. p. 2769 l.11 Specify that this is in the atmospheric boundary layer (e.g. not in the ocean) p. 2769 l. 17 Could you say in a few words what type of method they used to derive this expression. p. 2770 l. 19 I would suggest to use italics for the lonely index "f" instead of using the present form p. 2774 l. 21 "variations of" -> "variations in" p. 2774 "they both" -> "both formulations" p. 2778 "their differences are almost exactly balanced" . . . which differences? be more precise in the formulation

Appendices.

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I think the appendices are slightly too concise. Make sure that all symbols are defined.

Appendix A - Say that symbols are defined in a specific appendix in the beginning. - I would recall equations (4) and (5) for readability - what is  $r$  ?

Appendix B - As it is, this appendix is not very useful. - If you redirect the reader, could you at least explain the principles of their derivation?

Appendix C Again, make sure everything is defined, in particular - the units for pressure involved in the formulae - Define  $k$  - Define  $\psi_L$  - Define  $c_{shN}$ ,  $cl_N$  There is a missing parenthesis in C4

Tables & Figures In general very clear and relevant.

Tables could be more readable in general. The relevant information is not immediately understandable from both tables. I do not request anything here, in the end, one understands. Just make sure that this is the optimal way to carry the information as you want to. You may use a figure, or add differences, or use less numbers in the left row.

Fig. 4 - the meaning of triangles was not obvious to me

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Interactive comment on The Cryosphere Discuss., 5, 2765, 2011.

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