Hydrology and Earth System Sciences Discussions

Interactive
Comment

Interactive comment on "Modelling hourly rates of lake evaporation" *by* R. J. Granger and N. Hedstrom

Anonymous Referee #1

Received and published: 15 June 2010

General Significant overlap with the other paper by the same authors (same figures; much of the text and results). Strongly recommend combining the two. Many of my comments on the other paper also apply to this one.

Specific

Page 2728 Line 18: What is the "Arctic shield" (do you mean Canadian Shield?) Reference for the surface area numbers?

Page 2729 Line 14: Great Slave, not Bear.

Page 2730 Line 1: What were the distances from the leading edge that were affected by the land surface, under what conditions, and how does that relate to this study (study

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sites)?

Line 17: Is evaporation always governed land-water temperature contrasts? Doesn't lake size (distance from shore) play a role, especially for large lakes?

Page 2731: Methods/Study site As in the companion paper, many more details are needed here, including: instrument heights, make/model, distance of land towers from lake, lake depth, lake depth in the footprint of the lake towers, island dimensions...

Page 2732 In a combined paper, also provide details on the gradient-based flux calculations, agreement with EC measurements, and gap-filling (how much and when).

Section 2.2: Same comments for the other paper apply here.

Page 2733 Lines 23-28: As in the other paper, the definition of "stable/unstable" needs improvement. Here, you are using a horizontal gradient to imply a vertical one, and that raises the question of the depth of the boundary layer at each location. Also, you should use the accepted meteorological determination of stability conditions (eg z/L).

Evaporation does not always include advection under suitable fetch conditions.

Page 2734 Fig 2 shows one lake only, and I assume the equations 1-4 (the model) were based on the one lake? Please explain and clarify. Why are you using a partial derivative notation for finite differences?

Page 2735 Why 4 days, and what was the basis for the selection of those days? What were the sudden changes in environmental conditions?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 2727, 2010.