

## ***Interactive comment on “Simulation of snow accumulation and melt in needleleaf forest environments” by C. R. Ellis et al.***

**C. R. Ellis et al.**

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Response to Interactive comment by J. Buttle (Referee):

1. page 1036/line 7 phrasing of “account for forest effects” is awkward, and suggests that something is missing from this sentence.

Yes, on page 1036/line 7 the following phrasing:

“account for forest effects on energy to snow have largely focused on adjustment”  
should be changed to:

“account for forest effects on energy to snow in simulation approaches have largely focused on the adjustment”

2. page 1039/lines 1,2 “snowland” should be “snowload”

Yes, please change as advised.

3. page 1039/eq 7 symbol should be  $I^*s$ ?

Yes, please change “ $I_s^*$ ” to “ $I^*s$ ” in eq 7 as advised.

4. page 1046/line 26 MB is 0.94 in Table 3, not 0.92 as given in the text

The correct MB value is that in Table 3 (MB=0.94). However, the MB value for the clearing site stated on page1046/line27 (i.e. MB=1.0) is incorrect and instead should be “0.99”.

Thus, I suggest the following sentence starting on line 25 on page 1046:

“Here, a slight systematic underestimation of forest SWE is realised (MB=0.92), with no bias for the simulation of SWE at the clearing sites (MB=1.0).”

should be changed to:

“Here, only small systematic underestimations of SWE are realized at both forest and clearing sites, having corresponding MB values of 0.94 and 0.99.”

5. page 1046/line 27 mean ME is 0.51 in Table 3, not 0.57 as given in the text.

Again upon re-examination of Table 3, both the text and Table ME value for the “all sites (mean)” should be changed to 0.55. (i.e. change “0.57” to “0.55” on page 1046/line 27 and change “0.51” to “0.55” in Table 3). Also, the “Forest sites (mean)” and “Clearing sites (mean)” ME should both be “0.55” in Table 3. (Other required changes in Table 3 are specified in the response to the anonymous referee).

Therefore I suggest the following sentence starting on line 27 on page 1046:

“The mean ME for SWE simulations at individual sites was 0.57, with slightly higher efficiencies at the clearing sites.”

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should be changed to:

“The mean ME for SWE simulations at individual sites was 0.55, with similar efficiencies for clearing and forest sites.”

Due to this change in Table 3, I also suggest the following statement on Page 1034/line12:

“achieving a model efficiency of 0.57, with the lowest efficiencies at the forest sites.”

should be changed to:

“achieving a model efficiency of 0.55 for the prediction of snow accumulation at individual sites.”

6. page1050/line 1 “incurred to be random” should be “incurred were random”

Yes, please change as advised.

7. page 1051/line 11 “indexes” could be “values”

Yes, please change as advised.

8. page 1053 definition of  $Q_n$  – “radiationto” should be “radiation to”

Yes, please change as advised.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 1033, 2010.

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