

## ***Interactive comment on “Arctic Ocean sea ice snow depth evaluation and bias sensitivity in CCSM” by B. A. Blazey et al.***

**C. Bitz**

bitz@auw.edu

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It is good to see some scrutiny of snow on sea ice in CCSM. However, I was unsure how to interpret the comparison with Russian drifting stations. Fig 1 shows that error bars overlap between model and observation. Yet, the text seems to indicate that there is statistically significant differences in some months. It would be helpful to plot the standard error in Fig 1, rather than one sigma for the error bar. Further, it would be useful to explain how the standard error is computed, like whether spatial correlation is considered and how many degrees of freedom are assumed.

If we could believe the seasonality of the absolute bias, which is higher in summer than winter, does it suggest that the melt rate of snow on sea ice is too low?

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p 1508 line 12-14 stumped me at first where you say that it would be hard to conserve mass/energy if the snow density were altered. I guess you mean if the snow density varied in time rather than being held fixed in time it would be hard to conserve properties.

I noticed Massom et al in your reference list, but it was not cited in your paper

You may find our GRL Hezel et al, 2012, to be interesting. We compared snow depths in the CMIP5 models with the Russian drifting stations via the Warren climatology and found CMIP5 models on average have snow too deep on sea ice. We also found that CCSM4 had deeper snow than any of the 10 models we analyzed. We made figures (but did not include them) of the snowfall rate for each of the 10 models. The snowfall rate in CCSM4 was high but not extraordinary.

Hezel et al can be found here <http://onlinelibrary.wiley.com/doi/10.1029/2012GL052794/abstract>

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Interactive comment on The Cryosphere Discuss., 7, 1495, 2013.

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