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Comment

## ***Interactive comment on “The sub-ice platelet layer and its influence on freeboard to thickness conversion of Antarctic sea ice” by D. Price et al.***

### **Anonymous Referee #1**

Received and published: 10 March 2014

This is an interesting study which estimates the sub-platelet layer of sea ice in McMurdo Sound using different measurement techniques. The contribution of the sub-platelet layer on freeboard to thickness conversion from satellite altimetry data is also estimated and found to be significant near ice shelves where this layer is prevalent. The study is clearly written and the data and methodologies look to be very thorough. I recommend publication provided a few minor revisions noted below are addressed.

**Abstract:** What is 'close proximity to the ice shelves'? What distance away could the sub-platelet layer reasonably be expected to be a significant factor in satellite retrievals of sea ice thickness?

**Figure 2:** What is meant by 'snow depth measured at 0.5 m intervals', is this vertical or horizontal? Looks to be horizontal in the text, it would be good to state this in the

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figure.

Page 1004 5-10: How were these estimates for the uncertainties derived? It would be good to provide some justification. At this point in the manuscript I am assuming the low error estimates for SE and Ti are from the in-situ measurements, but it is not clear in the text. One additional point to note is that this excludes sampling or interpolation errors.

Section 5: What is GNSS elevation data? The acronym should be spelled out.

Page 1008, 18-20: How many hours maximum was the transit time? Note also that the temporal variation is not just due to tides, but the inverse barometer as well. How was the information from the static GNSS stations used to correct for temporal variations? Was some sort of weighting used between the three stations based on distance? Was there a noticeable gradient in the three station values?

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Interactive comment on The Cryosphere Discuss., 8, 999, 2014.

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