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Interactive comment on "What glaciers are telling us about Earth's changing climate" *by* W. Tangborn and M. Mosteller

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Author response to anonymous referee

Author's response: Unfortunately this paper was so poorly organized and written that this referee did not understand the significance of the PTAA model nor could grasp the scope of the glacier monitoring program that was presented. It is disappointing that introducing a model that inexpensively produces glacier mass balances with proven accuracy was not appreciated. All of the referee comments were taken into account in the revised version of this paper that is forthcoming. Each of the reviewer's main criticisms is followed by the author's response (AR).

The title is too bold. AR: The title, What are glaciers telling us about Earth's changing

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climate, is precisely what this paper is about, which is that glaciers change in response to the climate and clearly document these changes. If the premise that glacier mass balance results are superior to other ways of understanding climate-change is credible, then the title is appropriate.

The manuscript is poorly organized. AR: The paper has been revised and rewritten with an improved organization The manuscript is not self-contained.

AR: The revised paper has all the information needed to make it understandable. Negative sign is incorrect.

AR: Corrected. (Accumulation is always positive and Ablation is always negative, therefore they should be added and the minus sign that is shown is incorrect.). This was an unfortunate typo. Let me assure this referee that the signs are correct in the PTAA Fortran program

Correlating glacier ablation with global climate

AR: The correlation shown between glacier ablation and global temperatures in Figures 3 and 4 is unusual but I believe it is real and is not a coincidence as this referee implies. A correlation of 0.78 for a 60 year sample is considered significant. It is emphasized that annual ablation averaged for the thirty Wrangell glaciers is produced independently of the global temperatures. The area altitude distribution of these glaciers is the main controlling factor for ablation. The correlation occurs because these glaciers are more sensitive to global temperature variations than are individual temperature observations that do not correlate with the global temperatures.

Web page is inappropriate AR: The section Displaying Graphical results is an essential part of the Glacier Monitoring Program for anyone who would like to independently duplicate this program,

Table 1 AR: Glacier locations have been added in this table.

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Interactive comment on The Cryosphere Discuss., 8, 3475, 2014.