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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's reply to short comment by Cameron Rye on July 4

We used a highly modified adaption of the Nelder and Mead (1965) article to find optimum values for fifteen coefficients that convert temperature and precipitation observations to snow accumulation and snow an ice ablation. The objective function we used definitely was not the RMSE between observations and model results, but rather the mean error produced by regression of generated balance variables. This is an important distinction that if overlooked leads to a misunderstanding of how the simolex is applied in the PTAA model. We did not use Monte Carlo simulation and merely noted its similarity to the method we used. It should be noted that the glacier's area-altitude intervals play a key role in the calibration. A finely divided file of intervals is required –

10 meters is preferable to 50 meters. If the interval is too coarse, the simplex will not close.

In answer to your questions: 1. The initial parameter (coefficient) values are based on a trial and error process using physically real values for each coefficient. Unreal values usually caused the program to crash 2. The objective function that was minimized as noted above is the mean error produced by regression of generated balance variables. 3. Boundary conditions are defined simply by using reasonable (physically real) values for the initial coefficients

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