

Supplementary material

Interannual Variability of Summer Surface Mass Balance and Surface Melting in the Amundsen Sector, West Antarctica

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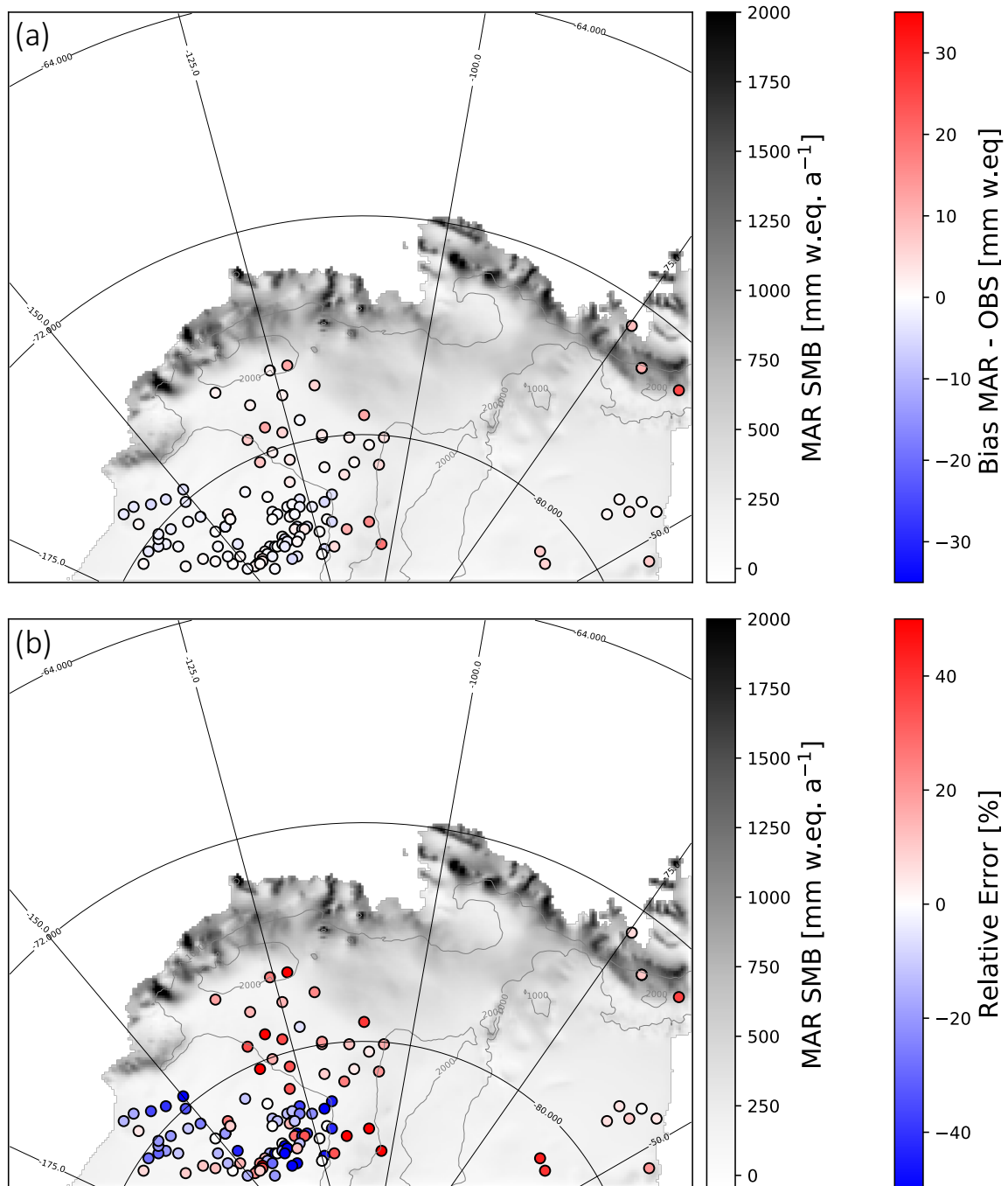


Figure S1. Annual mean (1979-2017) simulated SMB (grey scale) and (a) bias between simulated SMB and SMB from GLACIOCLIM SAMBA dataset from Favier et al., (2013) updated by Wang et al., (2016) (blue-red color bar) ; (b) relative error of the simulated SMB compared to GLACIOCLIM SAMBA dataset (blue-red color bar). Grey contours indicate the surface height.

Table S1. Evaluation of near-surface wind speed for the selected AWS, including Root Mean Square Error (RMSE), correlation (R) and standard deviations (σ).

| Station name | Bias (MAR-OBS) | Centered RMSE | R | $\sigma_{MAR}/\sigma_{AWS}$ |
|-----------------|----------------|---------------|------|-----------------------------|
| Brianna | -0.17 | 1.84 | 0.87 | 0.97 |
| Byrd | 0.09 | 1.77 | 0.86 | 0.89 |
| Cape Adams | -0.09 | 1.70 | 0.62 | 0.94 |
| Doug | 0.22 | 2.40 | 0.76 | 0.91 |
| Elizabeth | 0.06 | 1.72 | 0.77 | 0.85 |
| Evans Knoll | -0.56 | 2.28 | 0.82 | 0.87 |
| Harry | 0.18 | 2.14 | 0.78 | 0.93 |
| Janet | -0.33 | 1.69 | 0.89 | 0.89 |
| Kominko Slade | 0.55 | 2.30 | 0.81 | 0.85 |
| Martha_2 | 2.02 | 1.72 | 0.77 | 0.99 |
| Martha_I | 1.22 | 1.92 | 0.65 | 0.92 |
| Mount McKibben | -2.59 | 2.91 | 0.76 | 0.59 |
| Noel | -1.82 | 3.87 | 0.79 | 0.53 |
| Patriot Hills | 0.00 | 2.29 | 0.75 | 0.89 |
| Siple | 0.11 | 1.81 | 0.82 | 0.82 |
| Ski Hills | -1.11 | 2.46 | 0.86 | 0.70 |
| Swithinbank | -0.91 | 1.73 | 0.88 | 0.93 |
| Theresa | 1.69 | 2.07 | 0.86 | 1 |
| Backer Island | -2.23 | 2.41 | 0.77 | 0.77 |
| Bean Peaks | -0.07 | 2.71 | 0.71 | 0.61 |
| Bear Peninsula | -0.52 | 3.68 | 0.63 | 0.88 |
| Clarke Mountain | -0.69 | 3.62 | 0.45 | 0.77 |
| Gomez Nunatak | -3.18 | 2.62 | 0.82 | 0.58 |
| Haag Nunatak | -3.00 | 2.66 | 0.80 | 0.58 |
| Howard Nunatak | 0.85 | 2.55 | 0.77 | 1.2 |
| Inman Nunatak | -1.40 | 2.98 | 0.80 | 0.68 |
| Kohler Glacier | -0.95 | 1.92 | 0.65 | 0.94 |
| Lepley Nunatak | -1.69 | 2.48 | 0.78 | 0.88 |
| Lower Thwaites | -0.48 | 2.03 | 0.71 | 1.1 |
| Lyon Nunatak | -1.34 | 2.14 | 0.74 | 0.76 |
| Mount Paterson | -1.12 | 2.40 | 0.69 | 0.74 |
| Mount Sidley | 2.99 | 3.96 | 0.61 | 1 |
| Mount Suggs | -2.18 | 3.44 | 0.55 | 0.54 |
| Pirrot Hills | -2.30 | 3.56 | 0.70 | 0.55 |
| Steward Hills | -5.98 | 2.76 | 0.87 | 0.52 |
| Thurston Island | -1.32 | 2.56 | 0.74 | 0.68 |
| Toney Mountain | -4.71 | 5.76 | 0.53 | 0.44 |
| Up Thwaites Gla | -0.39 | 2.02 | 0.73 | 0.83 |
| Whitmore Mounta | -3.08 | 3.69 | 0.72 | 0.45 |
| Wilson Nunatak | -2.42 | 2.42 | 0.78 | 0.83 |
| Russkaya | -4.32 | 7.68 | 0.54 | 0.54 |

Table S2. Evaluation of near-surface temperature for the selected AWS, including Root Mean Square Error (RMSE), correlation (R) and standard deviations (σ).

| Station name | Bias (MAR-OBS) | Centered RMSE | R | $\sigma_{\text{MAR}}/\sigma_{\text{AWS}}$ |
|---------------------|----------------|---------------|------|---|
| Brianna | 0.18 | 2.83 | 0.96 | 0.94 |
| Byrd | 1.31 | 3.95 | 0.93 | 0.87 |
| Cape Adams | 2.51 | 3.78 | 0.94 | 0.90 |
| Doug | 0.94 | 3.04 | 0.94 | 0.89 |
| Elizabeth | -0.70 | 3.53 | 0.95 | 0.94 |
| Evans_Knoll | -0.29 | 3.54 | 0.92 | 1 |
| Harry | 1.08 | 2.87 | 0.96 | 0.91 |
| Janet | 1.06 | 3.62 | 0.92 | 0.97 |
| Kominko_Slade | 1.15 | 4.08 | 0.92 | 0.86 |
| Martha_2 | -0.22 | 4.18 | 0.96 | 0.94 |
| Martha_I | -1.61 | 4.26 | 0.95 | 0.96 |
| Mount_McKibben | 0.34 | 2.66 | 0.95 | 1.1 |
| Noel | 0.94 | 4.49 | 0.86 | 0.82 |
| Patriot_Hills | -2.78 | 1.76 | 0.97 | 0.96 |
| Siple | 2.12 | 3.45 | 0.93 | 0.88 |
| Ski_Hills | 0.83 | 3.15 | 0.94 | 0.92 |
| Swithinbank | -0.92 | 3.04 | 0.95 | 0.92 |
| Theresa | -1.47 | 2.73 | 0.94 | 0.87 |
| Backer_Island | -1.53 | 3.37 | 0.94 | 1.1 |
| Bean_Peaks | -0.12 | 2.88 | 0.95 | 0.93 |
| Bear_Peninsula | -0.06 | 2.6 | 0.94 | 1 |
| Clarke_Mountain | -2.81 | 3.39 | 0.94 | 1.2 |
| Gomez_Nunatak | -0.34 | 2.29 | 0.93 | 0.97 |
| Haag_Nunatak | 0.04 | 2.74 | 0.95 | 0.95 |
| Howard_Nunatak | -0.09 | 2.86 | 0.92 | 0.93 |
| Inman_Nunatak | 0.38 | 2.86 | 0.93 | 1 |
| Kohler_Glacier | 0.89 | 3.56 | 0.91 | 0.93 |
| Lepley_Nunatak | 0.52 | 3.06 | 0.91 | 0.97 |
| Lower_Thwaites | 1.32 | 4.10 | 0.90 | 0.87 |
| Lyon_Nunatak | 0.88 | 3.46 | 0.90 | 1 |
| Mount_Paterson | -2.82 | 2.84 | 0.95 | 1.1 |
| Mount_Sidley | -2.27 | 2.85 | 0.91 | 1 |
| Mount_Suggs | -1.03 | 3.99 | 0.90 | 1 |
| Pirrot_Hills | -1.97 | 2.79 | 0.94 | 0.95 |
| Steward_Hills | -0.42 | 2.13 | 0.97 | 0.95 |
| Thurston_Island | -0.28 | 3.35 | 0.89 | 0.98 |
| Toney_Mountain | 0.72 | 3.16 | 0.91 | 0.96 |
| Up_Thwaites_Glacier | 1.31 | 4.75 | 0.88 | 0.88 |
| Whitmore_Mounta | -0.69 | 3.01 | 0.92 | 1.1 |
| Wilson_Nunatak | 1.10 | 1.90 | 0.98 | 0.90 |
| Russkaya | 0.47 | 4.15 | 0.87 | 0.87 |