



## Supplement of

## Surface mass balance downscaling through elevation classes in an Earth system model: application to the Greenland ice sheet

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**Figure S1.** Same as figure 1, for summer SEB components from EC-6K (blue) and RACMO2.3 (black). a) Incoming solar radiation (W m<sup>-2</sup>), b) outgoing solar radiation (W m<sup>-2</sup>), c) incoming longwave radiation (W m<sup>-2</sup>) and d) outgoing longwave radiation (W m<sup>-2</sup>). The lines represent least-squares linear regressions. The annotated *m* is the least-squares linear regression gradient (mm yr<sup>-1</sup> km<sup>-1</sup>, *r* is the correlation coefficient.



**Figure S2.** Annual means of selected climate variables in the simulations EC-1K ("No elevation classes", blue) and EC-6K ("elevation classes", red), and ERA-Interim (only 1979-2005, black) for reference. The data are area-weighted averages (integrated for sea-ice) for the region in Fig. 5.