Supplementary Figures.

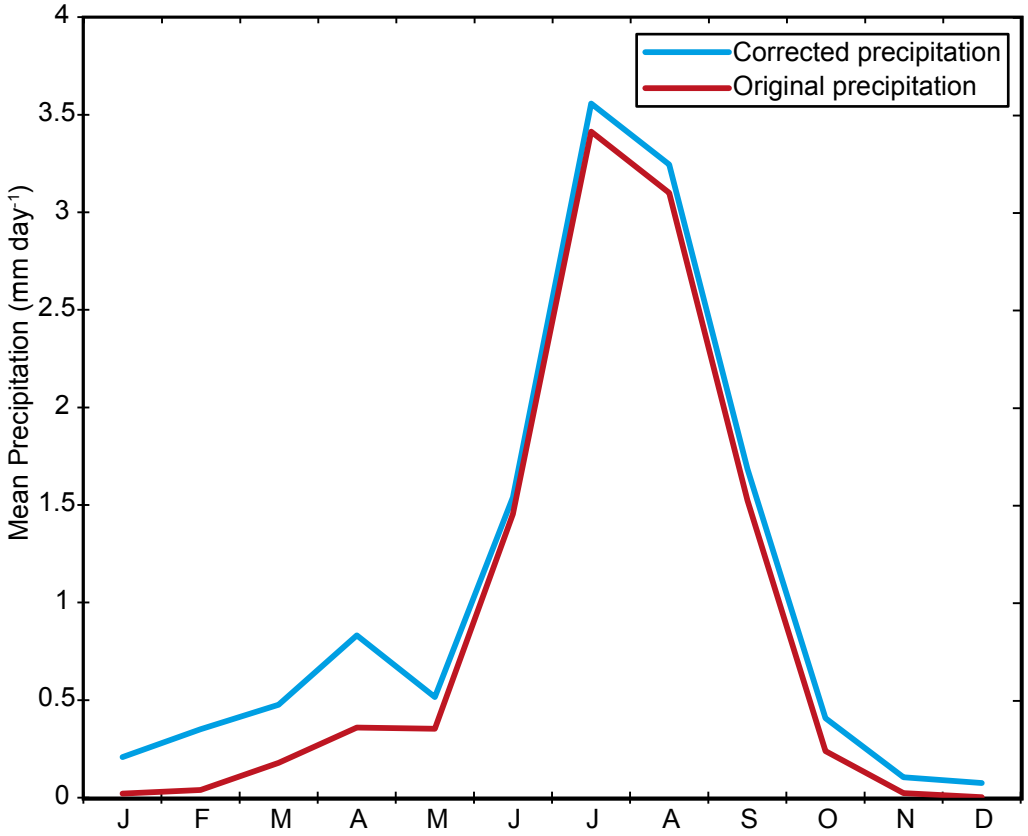

Figure S1: Results of gauge-undercatch correction. Original precipitation from Salerno et al. (2015) and after applying corrections for gauge-undercatch. Note the increase in winter precipitation.

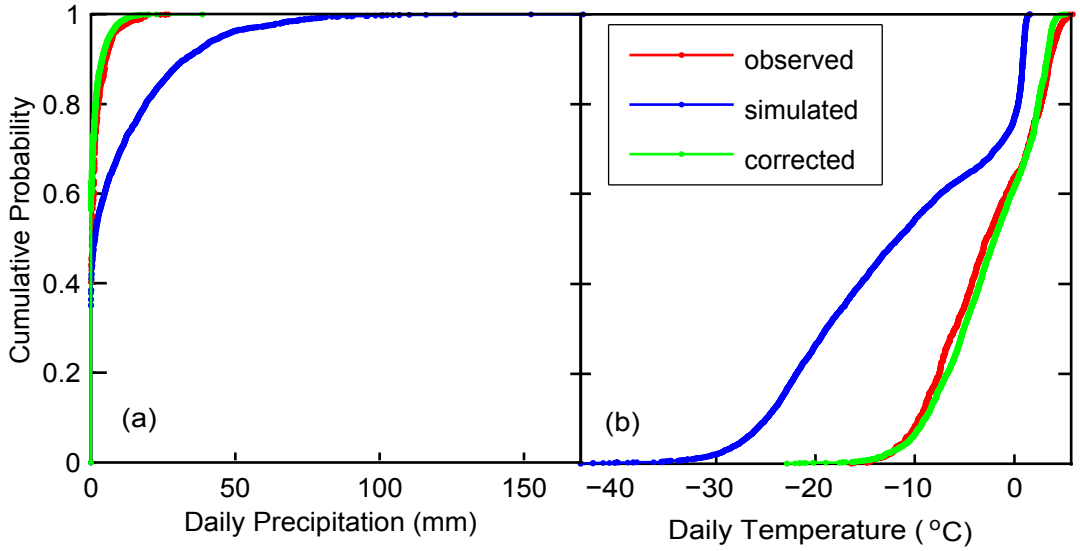

Figure S2: Cumulative Distribution Functions (CDFs) of simulated, observed and corrected temperature (a) and precipitation (b).

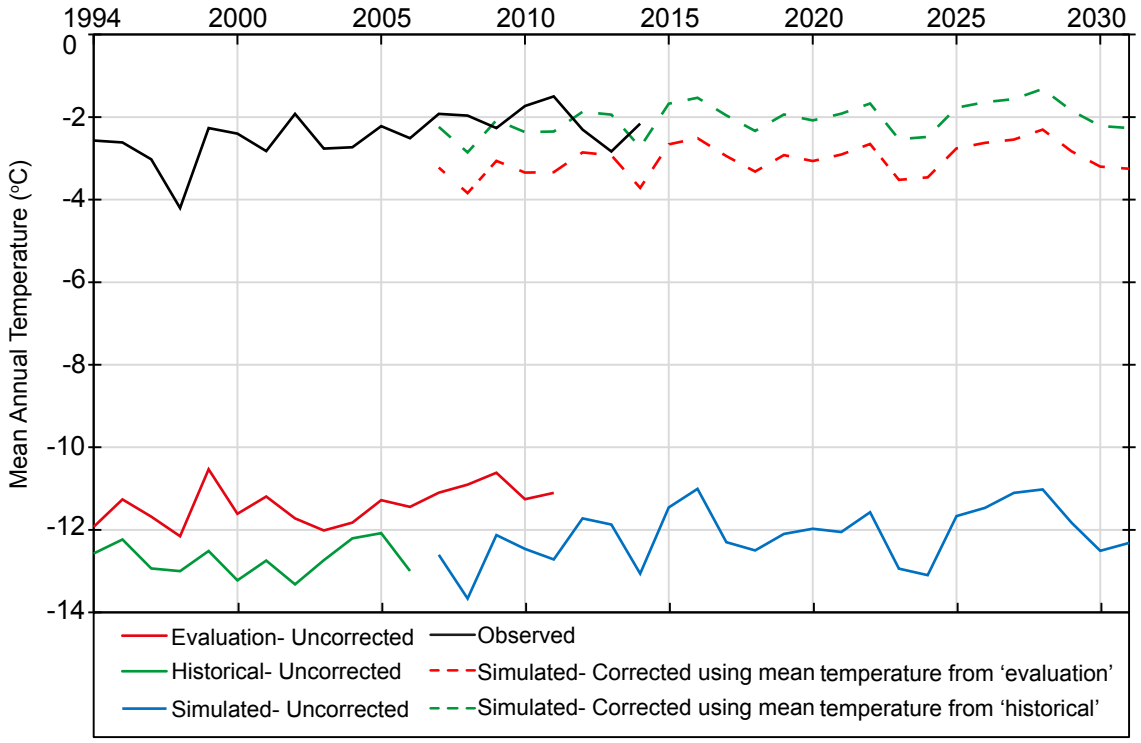

Figure S3: Annual temperature before and after bias-correction, showing the offset between the evaluation and historical simulation outputs and how, after correction, this offset remains due to the initiation of RCM-future simulations from the end of the historical scenario. For example, the mean bias between evaluation and observed temperature is 8.9°C versus 10.3°C between historical and observed temperature. If evaluation bias correction was applied to future scenarios, it would systematically under correct by 1.4°C. For this reason, the mean of the historical simulation is used for the final bias-correction but the standard deviation of the evaluation is used to constrain variability.

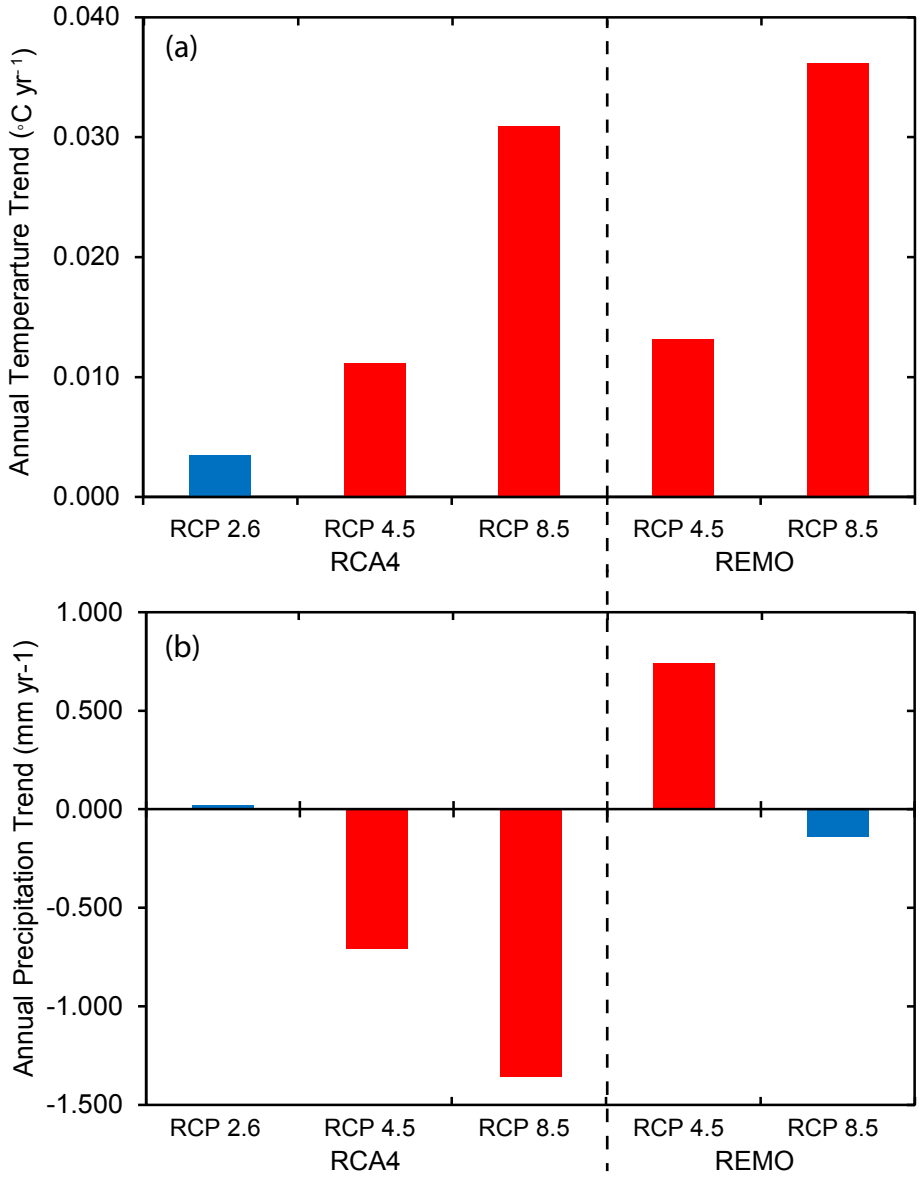

Figure S4: Trend analysis of the bias-corrected RCM outputs for (a) temperature and (b) precipitation, using Sen's slopes for trends and Mann-Kendall test of significance from 2006-2100. Red bars indicate significant (P<0.05) trends, blue are insignificant.

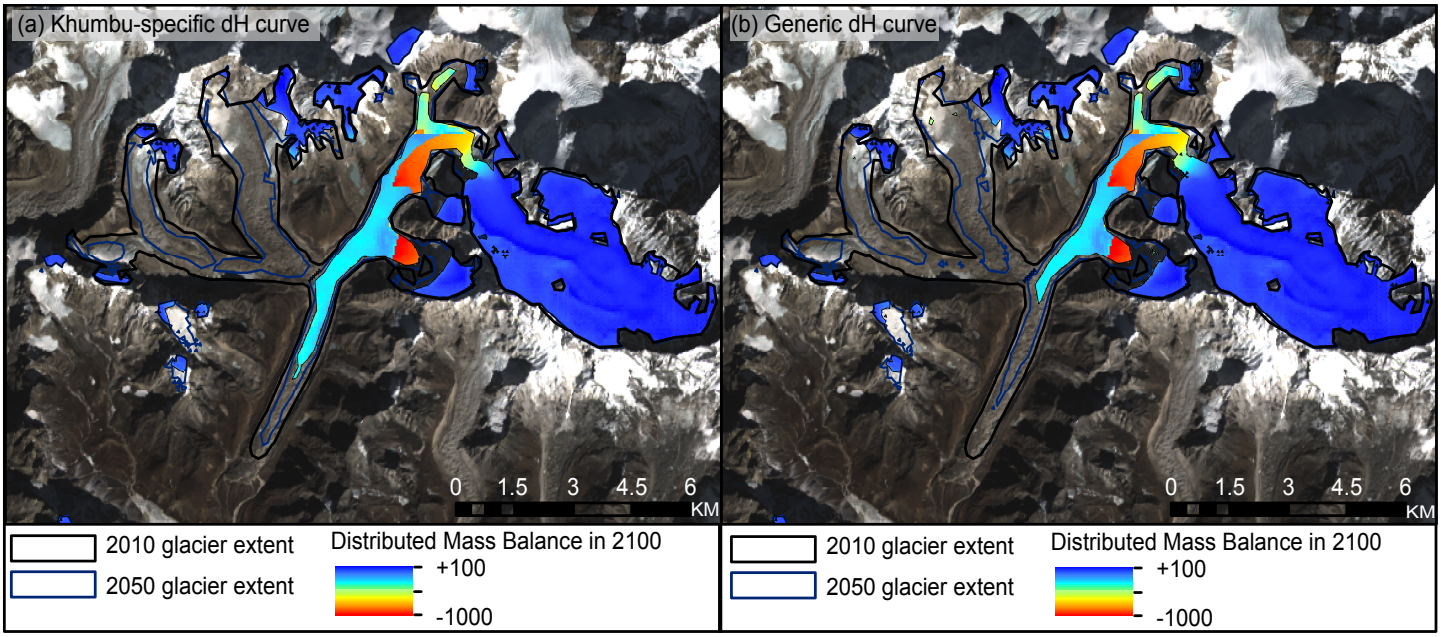

Figure S5: Testing the impact of the mass redistribution curves. (a) is specifically calibrated to Khumbu whereas (b) uses generic curves designed for typical glaciers of the European Alps. Note the more dramatic terminus retreat of (b).

References.

Salerno, F., Guyennon, N., Thakuri, S., Viviano, G., Romano, E., Vuillermoz, E., Cristofanelli, P., Stocchi, P., Agrillo, G., Ma, Y. and Tartari, G.: Weak precipitation, warm winters and springs impact glaciers of south slopes of Mt. Everest (central Himalaya) in the last 2 decades (1994–2013), Cryosph., 9(3), 1229–1247, doi:10.5194/tc-9-1229-2015, 2015.