



Estimating unaccounted, late season snow accumulation in glacier mass balance programmes

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Snow accumulation surveys for glacier mass balance programmes are performed, in practice, as and when circumstances best allow, but always with the aim of capturing the end of season maximum. It is rarely possible to time the data acquisition precisely with maximum accumulation, especially over the entire glacier. Whilst the calculations of net balance remain unaffected, this missed accumulation results in a subsequent underestimate of melt and thus runoff from the glacier. Using data from the Storglaciären mass balance programme the potential size of this error was shown to be considerable in some years but also easily reduced using only a simple, modified degree day model to calculate an estimate of melt that must have occurred between the winter season's last accumulation survey and the summer's first ablation survey.

Though the model may have limited accuracy it is used to estimate an error in mass balance calculations, an error that is known to exist but of unknown size. We therefore recommend integrating such models into mass balance programmes, especially where runoff calculations are desired.