

Supplementary Material

Table S1: Correlations between the annual winter, summer and net balance estimates of Storglaciären and the annual maximum flood peaks [$\log(\text{flood})$], flood occurrences, and mean summer (JJA) discharge for Tarfalajokk catchment. Correlations that are significant at the 5% and 10% significance level for a 2-sided test are indicated in bold and by a star respectively.

	b_w	b_s	b_n	$\log(\text{flood})$	DOY	Mean JJA discharge
b_w	1	0.00	0.66	-0.14	0.16	-0.31
b_s		1	-0.75	-0.18	0.09	-0.01
b_n			1	0.04	0.04	-0.20
$\log(\text{flood})$				1	0.21	0.48
DOY					1	0.22
Mean JJA discharge						1

DOY = Day of flood occurrence, b_w = Storglaciären winter balance, b_s = Storglaciären summer balance, b_n = Storglaciären net balance.

Table S2: Correlations between seasonal (3-months averaged) and annual (12-months averaged) anomalies of climate teleconnection patterns and annual maximum flood peaks [$\log(\text{flood})$], flood occurrences (DOY), and mean summer (JJA) discharge for Tarfalajokk catchment and correlations of the winter (b_w), summer (b_s) and net balance (b_n) of Storglaciären to the annual flood peaks and flood occurrences of Tarfalajokk and the climate pattern indices are shown. The surface mass balance records of Storglaciären are available through the Tarfala Research Station. Methods regarding the estimation of the mass balance are described in (Holmlund et al., 2005). Correlations that are significant at the 5% and 10% significance level are indicated in bold and by a star respectively.

		TARFALAJOKK					
		Discharge			Glacier mass balance		
		log(Flood)	DOY	Mean JJA discharge	b_w	b_s	b_n
DJF	NAO	-0.21	-0.05	-0.07	0.42	-0.21	0.44
	EA	-0.23	-0.17	0.17	0.16	-0.01	0.11
	EA/WR	-0.04	0.02	-0.18	0.60	-0.04	0.43
	SCAND	-0.04	0.18	-0.01	-0.57	0.22	-0.55
	POL	-0.07	0.19	-0.20	0.32	-0.27	0.41
	AMO	0.37	-0.17	0.58	-0.19	0.32	-0.37
MAM	NAO	-0.33	-0.26	-0.15	0.22	-0.20	0.30
	EA	0.22	0.05	0.21	-0.15	0.16	-0.22
	EA/WR	0.25	-0.11	0.18	-0.09	-0.21	0.09
	SCAND	-0.37	-0.07	-0.21	-0.19	0.12	-0.21
	POL	-0.09	0.13	-0.24	0.17	-0.12	0.20
	AMO	0.39	0.16	0.50	-0.16	0.33	-0.35
JJA	NAO	-0.15	0.05	-0.25	0.15	0.26	-0.09
	EA	0.16	-0.18	0.34	-0.39	0.21	-0.42
	EA/WR	-0.23	-0.17	-0.29	-0.16	-0.10	-0.03
	SCAND	-0.38	0.12	-0.14	0.14	0.28	-0.12
	POL	-0.07	-0.29	-0.18	0.16	-0.12	0.19
	AMO	0.54	0.15	0.59	-0.12	0.13	-0.18
Annual	NAO	-0.02	0.26	-0.05	0.51	-0.11	0.43
	EA	0.22	-0.09	0.41	-0.04	0.04	-0.06
	EA/WR	-0.30	-0.09	-0.20	0.25	0.05	0.13
	SCAND	-0.29	-0.04	-0.18	-0.18	0.12	-0.21
	POL	-0.17	0.06	0.02	0.25	-0.11	0.25
	AMO	0.44	-0.04	0.66	-0.26	0.23	-0.35

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