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Supplement of

Global re-analysis datasets to improve hydrological assessment and snow water equivalent estimation in a sub-Arctic watershed

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Table S1: Rank Correlation Analysis Data Summary

Date	Ground Data (mm)	GlobSnow (mm)	PCR-Glob (mm)	HTESEL (mm)	WaterGAP (mm)	W3RA (mm)	wflow hbv (mm)	Peak Discharge (m³/s)	Snowmelt Contribution to Streamflow (mm)
1985	100	120	128	121	93	134	106	180	112
1986	134	131	140	138	103	143	106	224	118
1987	107	122	117	109	85	114	91	136	81
1988	105	135	137	136	100	139	110	170	111
1989	88	125	89	87	66	91	101	101	78
1990	110	149	103	98	74	107	112	144	90
1991	111	190	137	138	100	144	113	255	114
1992	119	217	149	147	105	149	135	178	81
1993	118	149	127	119	92	118	161	200	119
1994	107	125	105	99	76	107	92	67	39
1995	108	155	146	148	108	149	113	76	53
1996	104	118	120	112	85	117	96	237	127
1997	95	108	89	92	67	83	90	309	117
1998	87	114	131	134	97	127	113	80	40
1999	110	103	110	104	80	109	117	335	122
2000	135	109	92	86	68	86	94	136	76
2001	143	130	109	102	78	106	142	306	139
2002	123	99	112	92	82	116	86	80	69
2003	84	93	80	74	59	76	82	58	40
2004	145	108	112	84	81	112	103	85	60
2005	121	126	97	81	69	96	130	210	109
2006	133	132	103	97	74	105	137	287	143
2007	127	127	113	100	81	112	112	113	66
2008	101	142	107	98	74	103	101	142	51
2009	99	113	111	100	82	109	98	141	82
2010	98	134	124	122	92	123	82	88	62
2011	84	125	92	84	61	81	76	64	49
2012	134	124	107	103	78	109	131	149	91
Mean	112	129	114	107	83	113	107	114	91
SD	17.3	25.5	17.9	20.7	13.3	19.8	20.0	17.9	15.1

Table S2: Calibration Ranges and Values for WFLOW-HBV model

Parameter	Description	Lower Bound	Upper Bound	Catchment 1	Catchment 2	Catchment 3
TT	Limit temperature for rain/snow precipitation	-2	2	-0.16	1.04	1.16
TTI	temperature threshold for linear mix of snow/rain precipitation	0	3	1.68	0.010	0.33
CFMAX	Degree day factor	0.4	4	1.60	1.89	2.14
FC	Field Capacity	40	300	125.7	117	50.7
ECORR	Evapotranspiration corrector factor	0.8	1.2	1.13	1.10	1.18
LP	Soil moisture value where soil moisture reaches maximum potential evapotranspiration	0.05	1	0.90	0.15	0.48
KHQ	Upper zone response coefficient	0.0001	0.05	0.028	0.024	0.022
K4	Lower zone response coefficient	0.0001	0.05	0.042	0.033	0.0041
ALPHA	Upper zone runoff coefficient	0.05	2	1.14	0.78	1.29
BETA	Contribution of the soil moisture to the response function	0.4	1	0.75	0.52	0.65
Beta Seepage	Exponent in soil runoff generation equation	0.4	2	1.63	1.87	1.31
WHC	Maximum amount of water that can be stored in snow pack	0.0001	0.2	0.032	0.041	0.181
CFR	Refreezing factor	0.01	0.3	0.14	0.17	0.18
CFLUX	Capillary Rise Rate	0.01	2	1.54	0.83	0.13
PERC	Percolation Rate	0.1	1	0.24	0.46	0.94
RFCF	Rainfall Correction Factor	0.8	1.2	0.80	0.83	0.86
SFCF	Snowfall Correction Factor	0.8	1.2	0.112	1.18	0.89
ICF	Interception (Water)	0	0	0	0	0
	Interception(Tree)	0	0.75	0.03	0.32	0.19
	Interception (Shrub/Tundra)	0	0.75	0.70	0.07	0.64
CEVPF	PET Correction (Water)	1.15	6	2.09	1.76	1.87
	PET Correction (Tree)	1.15	1.15	1.15	1.15	1.15
	PET Correction (Shrub/Tundra)	0.4	1	0.48	0.55	0.55