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Examining the impacts of precipitation isotope input ($\delta^{18}\mathbf{O}_{\mathbf{ppt}}$) on distributed, tracer-aided hydrological modelling

Carly J. Delavau et al.

Correspondence to: Tricia Stadnyk (tricia.stadnyk@umanitoba.ca) and Carly J. Delavau (carly.delavau@gov.mb.ca)

Table S-1: Allowable parameter ranges and resulting averaged parameter characteristics for behavioural simulations retained from the three model calibrations (KPN43, REMOiso, and static inputs). Parameters are summarized as: median (minimum, maximum).

Parameter	Allowable Range	KPN43	REMOiso	static
Jean Marie Sub-basin				
flz	[$1x10^{-7}$, $1x10^{-4}$]	$8.60x10^{-6}$ ($1.49x10^{-7}$, $9.32x10^{-5}$)	$8.60x10^{-6}$ ($2.03x10^{-7}$, $9.86x10^{-5}$)	$8.60x10^{-6}$ ($2.03x10^{-7}$, $9.86x10^{-5}$)
pwr	[1, 4]	3.05 (1.33, 4.00)	3.38 (1.12, 4.00)	3.39 (1.12, 3.96)
theta	[0.1, 1.0]	0.60 (0.13, 0.96)	0.61 (0.13, 1.0)	0.60 (0.13, 0.98)
kcond	[0.1, 1.5]	0.79 (0.17, 1.46)	0.68 (0.17, 1.46)	0.86 (0.17, 1.46)
Blackstone Sub-basin				
flz	[$1x10^{-7}$, $1x10^{-4}$]	$2.30x10^{-5}$ ($4.19x10^{-7}$, $9.41x10^{-5}$)	$4.91x10^{-5}$ ($5.36x10^{-7}$, $9.95x10^{-5}$)	$1.67x10^{-5}$ ($3.02x10^{-7}$, $9.86x10^{-5}$)
pwr	[1, 4]	3.34 (1.82, 3.96)	3.21 (1.35, 3.96)	3.57 (2.28, 3.91)
theta	[0.1, 1.0]	0.55 (0.11, 1.0)	0.60 (0.13, 1.0)	0.52 (0.24, 1.0)
kcond	[0.1, 1.5]	0.69 (0.11, 1.41)	0.80 (0.21, 1.48)	0.69 (0.17, 1.49)
Land Cover Weighted-Average Parameter results: median (minimum, maximum)				
fratio	[0.1, 2.5]	0.70 (0.12, 2.22)	0.70 (0.15, 2.16)	0.80 (0.12, 2.23)
ak	[1, 50]	21.6 (2.1, 47.6)	25.8 (2.4, 47.5)	23.6 (1.2, 46.9)
akfs	[0.005, 2]	0.212 (.006, 1.878)	0.059 (0.006, 1.724)	0.203 (0.006, 1.850)
rec	[0.05, 1]	0.47 (0.08, 0.90)	0.46 (0.08, 0.88)	0.43 (0.09, 0.90)
retn	[10, 200]	122 (18, 189)	119 (23, 181)	114 (20, 186)
ak2	[.001, 0.2]	0.013 (0.001, 0.188)	0.008 (0.001, 0.172)	0.021 (0.001, 0.184)
fm	[0.075, 0.2]	0.117 (0.076, 0.189)	0.119 (0.078, 0.190)	0.112 (0.076, 0.189)
base	[-3.5, 3.5]	-0.20 (-3.28, 3.14)	0.34 (-2.81, 3.13)	-0.35 (-3.11, 2.85)
sub	[0.1, 1.1]	0.53 (0.11, 1.05)	0.43 (0.13, 1.05)	0.50 (0.11, 1.05)

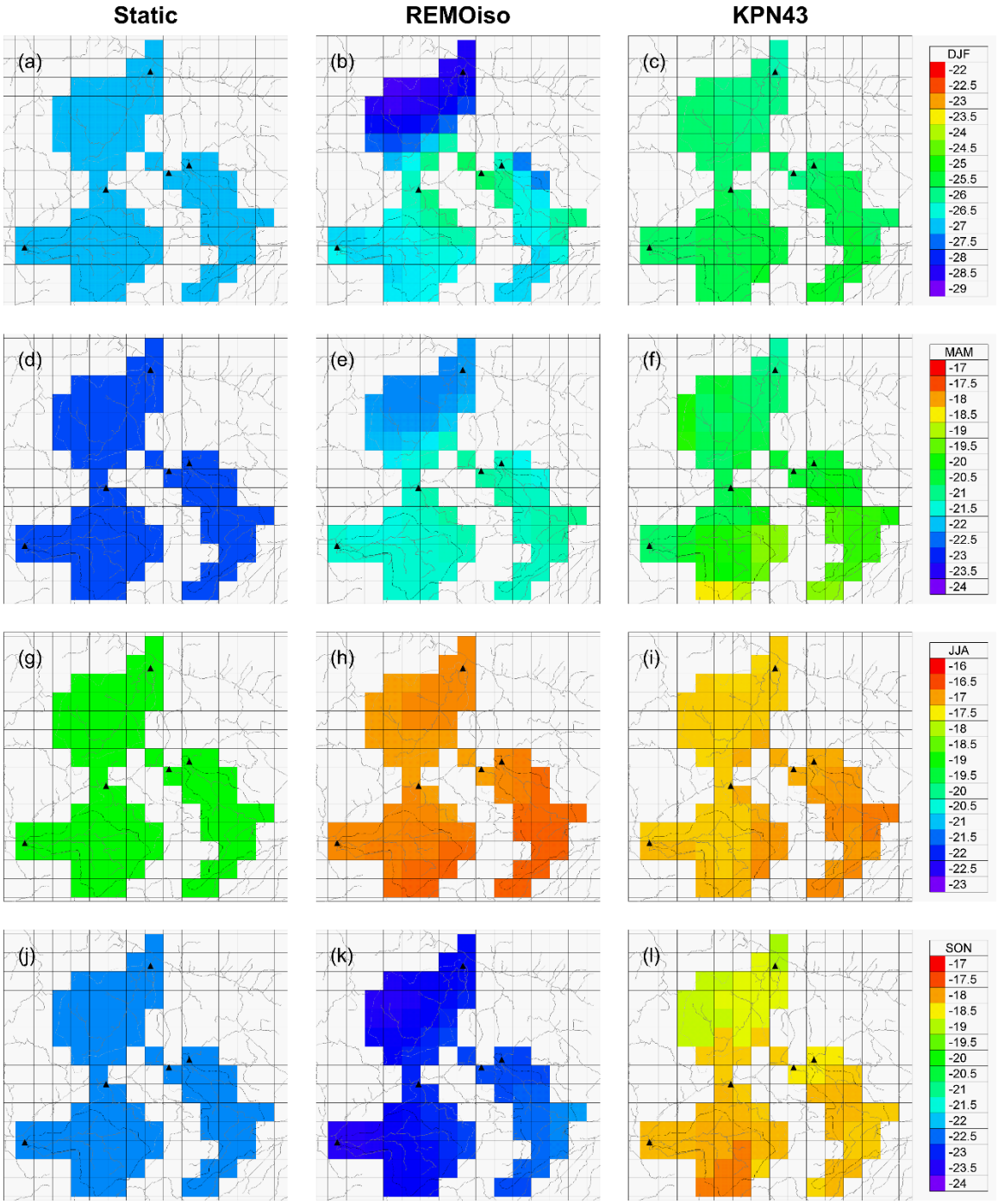

Figure S-1: Spatial distribution of precipitation isotope product $\delta^{18}O_{ppt}$ input to isoWATFLOOD (10 km resolution) for static (first column), REMOiso (second column) and KPN43 (third column). $\delta^{18}O_{ppt}$ was flux-weighted using gridded WATFLOOD precipitation input and averaged daily by season over the study period (1997-1999): DJF (a to c), MAM (d to f), JJA (g to i) and SON (j to l).