Supporting Information

Dynamic precipitation phase partitioning improves modeled simulations of snow across the Northwest US

Bhupinderjeet Singh[1], Mingliang Liu[2], John Abatzoglou[3], Jennifer Adam[2], Kirti Rajagopalan[1]

[1]Department of Biological Systems Engineering, Washington State University, USA
[2]Department of Civil and Environmental Engineering, Washington State University, USA
[3]Management of Complex Systems, University of California, Merced, CA, USA

Correspondence to: Bhupinderjeet Singh (bhupinderjeet.singh@wsu.edu) or Kirti Rajagopalan (kirtir@wsu.edu)

Table S1: Counts of station-years in bins of temperature and relative humidity groups. Bins correspond to average daily temperature (T) and relative humidity (RH) for wet days (precipitation > 1mm) between November and April.

RH ↓	**T →**	***<=-5***	***(-5,-4]***	***(-4,-3]***	***(-3,-2]***	***(-2,-1]***	***(-1,0]***	***(0,1]***	***(1,2]***	***(2,3]***	***(3,4]***	***(4,5]***	***>5***
>80		2	11	26	49	68	112	117	97	78	23	19	5
(70-80]		86	103	171	243	313	305	200	111	50	13	1	
(60-70]		97	105	120	156	141	111	84	36	16	3		
<=60		5	8	9	9	1	1	1					

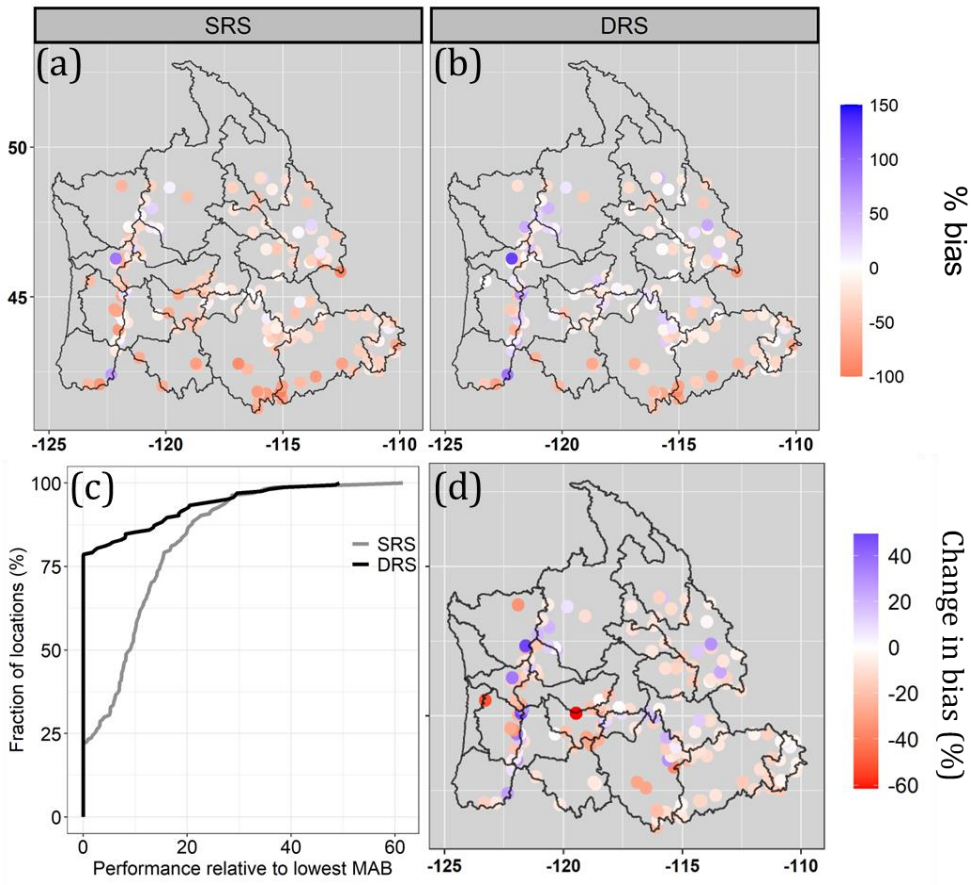

Figure S1. The relative bias in peak SWE (modeled - observed) over SNOTEL stations and the changes in relative bias between SRS and DRS precipitation partitioning methods. (a) and (b) Relative difference(%) in modeled and observed peak SWE for SRS and DRS partitioning, respectively. (c) Relative model performance (RMP) chart: The Y-axis is the fraction of stations for which a particular RMP is achieved, and the X-axis is the difference between each model's mean absolute relative bias (MARB) and the best-performing model's MARB The closer a model's curve is to the Y-axis and for longer, the better. The length of a model's curve exactly on the Y-axis indicates how frequently the model is best performing, and the distance of the curve from the Y-axis indicates how much worse a model's performance is relative to the best model. See methods section 2.6.5 for more details on interpretation. (d) Change in absolute error (|DRS %bias| – |SRS %bias|). Negative values (red) indicate where DRS method reduced the error and positive value (blue) indicate where the errors got worse with implementation of DRS method.