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Evaluation of random forests for short-term daily streamflow forecasting in rainfall- and snowmelt-driven watersheds

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The following materials are submitted with the manuscript, *"Evaluation of random forests for short-term daily streamflow forecasting in rainfall and snowmelt-driven watersheds."*

1. Table S1. USGS Gaging stations used in the study, classified regime, and selected physical characteristics that were used to compute Pearson correlation coefficient presented in Table 5 in the manuscript.
2. Figure S1. Delineation of basins (USGS HUC-6) within the Pacific Northwest Hydrologic Region.
3. Table S2. HUC-6 basins, drainage area, number of available SNOTEL stations, and elevation range of the SNOTEL stations.

Table S1: USGS Gaging stations used in the study, classified regime, and selected physical characteristics.

Station ID	Regime	Drainage area ($km2$)	Compactness	Mean elevation (m)	% slope	Aspect eastness	Stream density	% sand in soil	% forested area	% impervious cover
10396000	Snowmelt dominant	528.9	1.92	1890.5	13.7	-0.78	0.81	25.18	14.31	0.12
12043300	Rainfall dominant	135.2	1.97	238.5	24.5	-0.98	0.78	19.87	58.83	0.1
12048000	Transient	405	2.22	1265.7	46.2	0.4	0.56	58.75	71.13	0.04
12054000	Rainfall dominant	171.7	1.69	1073.8	54.2	0.77	0.53	55.07	74.9	0.09
12056500	Rainfall dominant	147	1.93	990.6	53.1	-0.36	0.54	51.14	82.06	0.06
12060500	Rainfall dominant	198.3	1.46	601.9	42.5	0.21	0.74	41.62	78.88	0.63
12079000	Rainfall dominant	224.1	1.31	437.9	21.1	0.2	0.75	34.18	59.36	1.27
12082500	Transient	350	2.03	1182.5	33.9	-0.86	0.8	58.3	68.05	0.43
12092000	Transient	240.9	2.84	1420.3	39.7	-0.88	0.67	67.42	59.01	0.39
12094000	Transient	205.2	1.77	1263.9	41	-0.28	0.77	62.39	69.29	0.17
12095000	Rainfall dominant	205.8	2.8	680.3	23	-0.66	0.74	40.85	65.38	1.16
12096500	Transient	1142.8	2.34	812.6	25.3	-0.65	0.67	51.96	57.65	2.5
12097500	Transient	190.2	2.07	1214.1	35.7	-0.64	0.69	44.47	79.78	0.53
12097850	Transient	970.4	2.51	1262.7	38.2	0.21	0.75	46.52	72.32	0.51
12108500	Rainfall dominant	71.1	1.59	262.2	6.3	-0.86	0.52	41.33	28.96	6.79
12114500	Transient	66.6	2.93	1073.5	37.1	-0.98	0.81	51.54	77.27	0.75
12141300	Transient	401.5	2.05	1038.5	50.2	-0.99	0.7	60.57	76.88	0.06
12142000	Rainfall dominant	165.6	2.76	931.7	44.4	-0.99	0.67	57.48	77.76	0.61
12143400	Transient	107.9	1.9	1042.5	43.4	-0.92	0.64	68.02	69.04	1.52
12143600	Transient	165	1.47	966.3	43.6	-0.91	0.7	65.74	70.34	1.56
12144000	Transient	210.1	1.19	827.9	38	-0.48	0.68	60.42	70.66	2.33
12145500	Rainfall dominant	79	2.13	460.9	19	-0.57	0.87	38.49	73.84	1.23
12167000	Rainfall dominant	683.8	1.64	655.4	32.6	-0.89	0.59	42.41	78.89	0.54
12179900	Transient	128.3	2.38	1110.1	57.2	0.02	0.54	43.96	59.73	0.11
12186000	Transient	398.4	1.92	1176	52.8	-0.63	0.63	43.56	76.4	0.13
12189500	Transient	1855.3	1.88	1150.9	47.3	-0.78	0.58	44.01	74.44	0.25
12201500	Rainfall dominant	224.2	1.42	274.9	17.6	-0.92	0.73	46.03	65.32	1.82
12209490	Rainfall dominant	58.1	1.92	932.9	37.8	-0.95	0.62	42.53	66.85	0.62
12210000	Rainfall dominant	332.1	2.37	838.1	35.4	-0.94	0.64	42.68	71.42	0.35
12210700	Transient	1524.8	1.81	873.5	36.2	-0.91	0.69	43.63	69.46	0.5
12323670	Snowmelt dominant	102.4	2.27	2222.5	29	0.95	0.72	37.24	46.62	0.16
12354000	Snowmelt dominant	828.4	2.14	1383.4	34.4	0.45	0.68	35.36	85.62	0.38
12358500	Snowmelt dominant	2939.2	1.12	1723.7	40.4	-0.99	0.72	34.42	69.91	0.07
12374250	Snowmelt dominant	50.8	2.56	1408.3	24.9	0.98	0.84	41.65	94.87	0.14
12390700	Snowmelt dominant	470.2	2.23	1348.9	37.9	0.89	0.52	42.67	91.73	0.1
12392155	Snowmelt dominant	326.2	2.33	1389.8	38.3	-0.42	0.61	45.05	87.93	0.09

Table S1: USGS Gaging stations used in the study, classified regime, and selected physical characteristics.

Station ID	Regime	Drainage area ($km2$)	Compactness	Mean elevation (m)	% slope	Aspect eastness	Stream density	% sand in soil	% forested area	% impervious cover
12448500	Snowmelt dominant	2683.6	1.83	1591.5	38.2	0.1	0.79	41.21	51.58	0.42
12451000	Snowmelt dominant	830.6	2.12	1534	55.8	-0.61	0.67	49.69	48.34	0.1
12452800	Snowmelt dominant	526.4	1.7	1519.8	42.3	-0.36	0.7	55.51	64.63	0.65
12458000	Snowmelt dominant	499.4	2.59	1547.5	47.9	0.9	0.67	49.12	61.75	0.09
12488500	Snowmelt dominant	205.2	1.77	1465.8	39.2	0.97	0.77	63.55	81.66	0.27
13010065	Snowmelt dominant	1222.3	1.11	2508.5	13.7	-0.8	0.49	46.95	41.54	0.01
13162225	Snowmelt dominant	76.1	2.65	2474.2	40.6	-0.59	0.69	34.96	47.25	0.25
13185000	Snowmelt dominant	2154.4	1.9	1955.1	36.5	-1	0.79	56.11	43.97	0.11
13235000	Snowmelt dominant	1163.2	1.39	2079	39.9	-0.97	0.75	62.57	52.91	0.12
13237920	Snowmelt dominant	874.8	1.39	1658.2	29.1	-0.41	0.83	73.13	77.43	0.11
13296500	Snowmelt dominant	2090.9	1.17	2375.2	28.8	0.44	0.87	40.56	61.14	0.11
13309220	Snowmelt dominant	2696.6	1.55	2192.4	33.4	1	0.83	61.53	59.36	0.04
13313000	Snowmelt dominant	561.9	2.37	2180.4	25	-0.54	0.76	70.04	79.39	0.07
13331500	Snowmelt dominant	618.9	1.15	1736.3	37.7	-0.39	0.63	19.26	76.92	0.04
13334450	Transient	269.8	2.62	1271.8	30.3	0.89	0.82	20.5	51.92	0.21
13337000	Snowmelt dominant	3053.4	1.08	1584.1	33.2	-0.9	0.72	40.18	86.37	0.07
13338500	Snowmelt dominant	3027	1.28	1384.6	21.1	0.57	0.88	29.01	70.53	0.17
13340600	Snowmelt dominant	3354.6	2.18	1442.7	33.9	-1	0.72	40.39	75.57	0.05
14020000	Transient	341.4	2.22	1209.3	32.2	-0.79	0.65	17.85	73.37	0.31
14020300	Transient	456.4	1.53	1187.3	28.4	-0.87	0.79	17.1	67.74	0.42
14092750	Transient	57.5	2.64	1477.3	24.7	1	0.84	54.88	86.46	0.02
14096850	Transient	374.6	1.76	942.7	10.6	0.53	0.75	38.48	57.42	0.19
14107000	Snowmelt dominant	393.8	2.19	1428.8	22.6	-0.05	0.84	40.91	74.79	1.29
14137000	Transient	674.2	2.54	1006.4	30.4	-0.98	0.86	34.75	83.69	0.19
14141500	Rainfall dominant	59.9	1.45	724.7	18.2	-0.96	0.65	25.72	84.58	0.01
14150800	Rainfall dominant	113.3	2.26	765.5	26.5	-1	0.62	22.65	86.26	0.09
14154500	Rainfall dominant	546.8	2.41	857.5	33.3	-0.5	0.68	24.3	84.93	0.04
14158500	Transient	237.1	1.82	1253.9	16.7	-0.94	0.46	42.91	80.99	0.15
14159200	Transient	414.3	1.97	1280.8	28.7	-0.66	0.7	34.93	92.32	0.02
14161500	Rainfall dominant	62.4	2.7	982.7	33.3	-0.97	0.55	31.64	93.6	0.02
14166500	Rainfall dominant	226.5	1.73	253.8	19.1	0.18	0.58	15.62	57.02	0.94
14179000	Transient	272.5	1.73	1149.5	34.9	-0.88	0.85	43.02	85.41	0.05
14180300	Rainfall dominant	66.6	2.72	1027.9	26.5	-0.6	0.62	32.94	87.63	0.08
14182500	Rainfall dominant	286.8	1.73	818.3	35.9	-0.62	0.68	31.45	84.37	0.06
14185000	Rainfall dominant	458.2	2.4	889.5	30.6	-0.89	0.69	27.98	83.15	0.08
14185900	Rainfall dominant	258.2	2.11	918.7	37.8	-0.91	0.68	29.52	82.16	0.05

Table S1: USGS Gaging stations used in the study, classified regime, and selected physical characteristics.

Station ID	Regime	Drainage area ($km2$)	Compactness	Mean elevation (m)	% slope	Aspect eastness	Stream density	% sand in soil	% forested area	% impervious cover
14187000	Rainfall dominant	134.7	2.56	732.7	28.6	-0.09	0.63	24.89	71.81	0.02
14216000	Transient	594.6	1.84	1080.2	20.8	-0.91	0.75	36.93	83.55	0.97
14216500	Transient	349.5	2.33	921	30	-0.09	0.82	59.62	60.01	1.07
14219000	Rainfall dominant	167.4	1.79	687	30.2	-0.5	0.51	32.49	67.64	0.67
14222500	Rainfall dominant	323.9	1.85	573.3	25.1	-0.97	0.68	25.62	69.44	0.43
14231000	Transient	1378	1.94	1128.6	38.3	-0.99	0.82	60.56	76.23	0.5
14236200	Rainfall dominant	361	1.79	672.9	33.1	-0.84	0.58	29.76	61.65	1.02
14308990	Rainfall dominant	167.8	2.59	917.6	26.5	-0.36	0.75	44.33	84.29	0.04
14309500	Rainfall dominant	224.9	2.4	736.3	33	0.97	0.66	30.53	82.45	0.12
14316495	Rainfall dominant	79	3.22	1207.1	37.4	-0.5	0.75	33.75	83.85	0.03
14316700	Rainfall dominant	587.9	2.76	944	34.4	-0.36	0.69	28.62	87.24	0.04
14318000	Rainfall dominant	459.5	2.23	858.9	27.1	-0.26	0.71	27.3	85.85	0.04
14325000	Rainfall dominant	443.1	2.27	651.9	28.4	-0.31	0.65	32.43	75.87	0.31
14400000	Rainfall dominant	702.6	2.39	671.2	36.5	-0.88	0.61	22.5	57.15	0.1

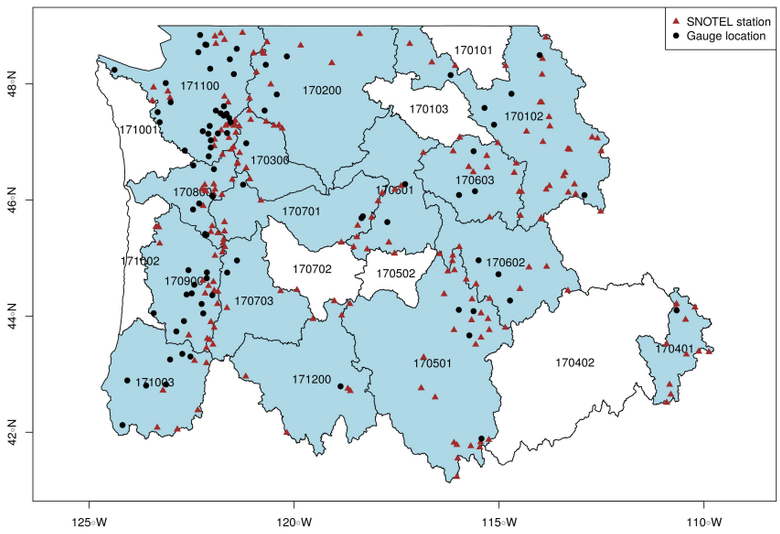

Figure S1: Delineation of basins (USGS HUC-6) within the Pacific Northwest Hydrologic Region. Blue basins contain at least one of the 86 chosen watershed included in the study.

Table S2: Basin names, drainage area, number of available SNOTEL stations, and elevation range of the SNOTEL stations.

HUC-6	Basin name	Area (km^2)	Number of SNOTEL	Elevation range (m)
170102	Pend Oreille	67598.70	30	4350-8250
170200	Upper Columbia	119755.57	10	3590-6490
170300	Yakima	15928.20	9	3430-5920
170401	Snake Headwaters	14812.20	11	6770-9820
170501	Middle Snake-Boise	85150.16	27	4800-8360
170601	Lower Snake	30198.02	7	4000-5760
170602	Salmon	36248.15	11	5350-9150
170603	Clearwater	24318.13	9	4600-6320
170701	Middle Columbia	29124.57	11	3310-5580
170703	Deschutes	27789.56	8	3810-5850
170800	Lower Columbia	16120.04	15	2140-5800
170900	Willamette	29697.66	15	2420-4950
171003	Southern Oregon Coastal	34510.01	6	3240-6050
171100	Puget Sound	52958.23	26	2250-5130
171200	Oregon Closed Basins	45143.34	6	5250-7660