



AMS
American Meteorological Society

Supplemental Material

[© Copyright 2018 American Meteorological Society](#)

Permission to use figures, tables, and brief excerpts from this work in scientific and educational works is hereby granted provided that the source is acknowledged. Any use of material in this work that is determined to be “fair use” under Section 107 of the U.S. Copyright Act or that satisfies the conditions specified in Section 108 of the U.S. Copyright Act (17 USC §108) does not require the AMS’s permission. Republication, systematic reproduction, posting in electronic form, such as on a website or in a searchable database, or other uses of this material, except as exempted by the above statement, requires written permission or a license from the AMS. All AMS journals and monograph publications are registered with the Copyright Clearance Center (<http://www.copyright.com>). Questions about permission to use materials for which AMS holds the copyright can also be directed to permissions@ametsoc.org. Additional details are provided in the AMS Copyright Policy statement, available on the AMS website (<http://www.ametsoc.org/CopyrightInformation>).

Interactions between climate change and complex topography drive observed streamflow changes in the Colorado River Basin

Kurt C. Solander^{a*}, Katrina E. Bennett^a, Sean W. Fleming^b, David S. Gutzler^c, Emily M. Hopkins^a, Richard S. Middleton^a

^a Los Alamos National Laboratory, Los Alamos, NM 87545, USA

^b White Rabbit R&D LLC, Corvallis, OR 97333 USA; Oregon State University, Corvallis, OR 97331 USA

^c Department of Earth & Planetary Sciences, University of New Mexico, Albuquerque, NM 87131, USA

*Corresponding author: ksolander@lanl.gov

Supplementary Information

1 The information in Supplemental Table 1 provides additional geospatial information
2 regarding the USGS streamflow gages that were used in this study. As shown, the
3 percentage of a HUC8 watershed that exists upstream a given USGS streamflow gage
4 reached a maximum of 12.2 % for gage ID 9430500, which is located in the Lower Colorado
5 River Basin (CRB). All other gages had upstream contributing HUC4 areas that fell below
6 2.1%, confirming that only headwaters gages were used in the study.

Supplemental Table 1. Geospatial information for USGS streamflow gages used in this study. HUC4 Area shows the total HUC4 watershed area that intersects the given gage. Ratio represents the percentage of the HUC4 watershed that exists upstream of the gage.

USGS Gage ID	Elev (m)	LAT (°)	LON (°)	Upstream Area (km ²)	HUC4 Area (km ²)	Ratio (%)
9196500	2271	43.0271	-109.7735	88.7	53893.5	0.2
9223000	2272	42.1109	-110.7094	331.1	53893.5	0.6
9210500	2118	42.0958	-110.4161	399.2	53893.5	0.7
9217900	2686	40.9590	-110.5797	327.2	53893.5	0.6
9306242	2006	39.9203	-108.4729	81.9	34362	0.2
9312600	2204	39.8758	-111.0374	192.6	37663.4	0.5
9035800	2725	39.8005	-106.0264	22.5	25485.6	0.1
9035900	2728	39.7958	-106.0306	71.9	25485.6	0.3
9034900	3179	39.7603	-105.9064	15.9	25485.6	0.1
9058800	2882	39.7317	-106.4267	9.2	25485.6	0.0
9058700	2845	39.6983	-106.4456	7.6	25485.6	0.0
9066400	2808	39.6828	-106.4014	19.0	25485.6	0.1
9066100	2629	39.6400	-106.2934	11.8	25485.6	0.0
9066150	2598	39.6436	-106.3025	13.8	25485.6	0.1
9066200	2537	39.6483	-106.3231	15.9	25485.6	0.1
9066300	2499	39.6458	-106.3823	15.3	25485.6	0.1
9065500	2621	39.6258	-106.2781	38.0	25485.6	0.1
9047700	2850	39.5944	-105.9725	23.4	25485.6	0.1
9066000	2789	39.5964	-106.2650	32.0	25485.6	0.1
9063200	2829	39.5222	-106.3236	24.7	25485.6	0.1
9063400	2718	39.5226	-106.3366	61.1	25485.6	0.2
9081600	2105	39.2326	-107.2275	434.6	25485.6	1.7
9329050	2804	38.6278	-111.6480	62.4	35257.4	0.2
9378630	2195	37.7556	-109.4765	10.4	64577.4	0.0
9352900	2410	37.4775	-107.5437	208.8	64577.4	0.3
9339900	2420	37.3897	-106.8412	170.9	64577.4	0.3
9404450	1798	37.3394	-112.6044	153.2	78412.3	0.2
9386900	2091	35.2826	-108.5530	186.1	70044.2	0.3
9423350	1719	35.2450	-115.2989	2.2	53753.8	0.0
9505350	1126	34.7286	-111.7757	373.7	34874.1	1.1
9505200	1225	34.6747	-111.6721	287.4	34874.1	0.8
9505800	1106	34.5386	-111.6940	627.6	34874.1	1.8
9508300	707	34.1609	-111.6929	94.4	34874.1	0.3
9513780	704	33.9742	-112.0990	176.3	39051.9	0.5
9497800	975	33.8431	-110.5576	749.1	34874.1	2.1
9492400	1844	33.8223	-109.8145	56.1	34874.1	0.2
9497980	975	33.8278	-110.8562	517.1	34874.1	1.5
9510200	536	33.6942	-111.5418	425.2	34874.1	1.2
9512200	428	33.3470	-112.0849	5.4	34874.1	0.0
9430600	1658	33.1667	-108.6497	191.5	39341.4	0.5
9430500	1419	33.0615	-108.5374	4803.6	39341.4	12.2
9447800	1067	32.9556	-109.5312	782.8	39341.4	2.0
9484000	829	32.3167	-110.8104	100.4	46572.4	0.2
9480000	1408	31.3554	-110.5895	209.1	46572.4	0.4