Real-Time Spatial Estimates of Snow-Water Equivalent (SWE)

Western United States Region

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Introduction

Figure 1 below displays estimated SWE amounts across the Western United States. Detailed SWE maps (in JPG format) and summaries of SWE (in Excel format) by individual basin and elevation band accompany the report and are publicly available here. Please note that the basin-wide percent of long-term average from the spatial SWE estimates is not directly comparable with the SNOTEL basin-wide percent of average. A better comparison might be made with the percent of average in the elevation banded tables (linked below) that contain SNOTEL sites.

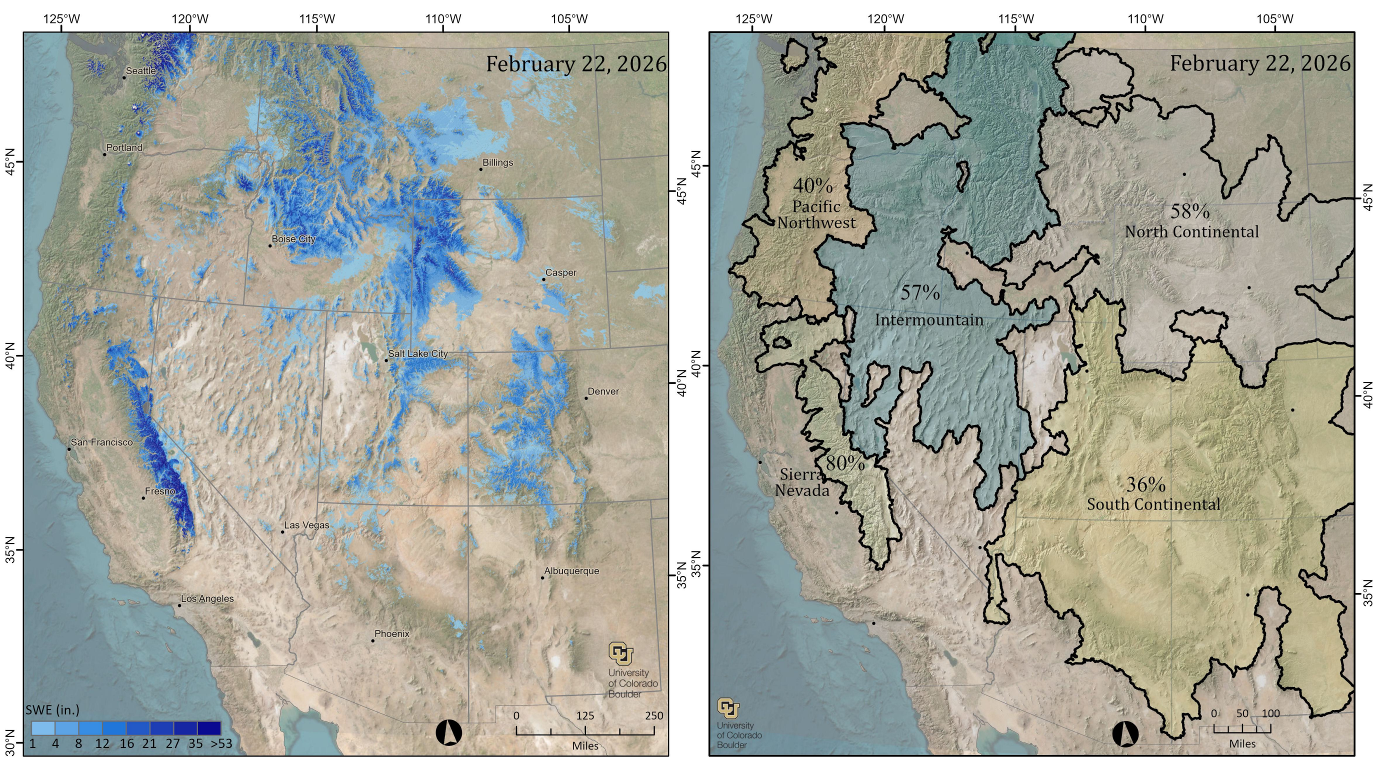

Figure 1. Estimated SWE and % of Average SWE across the Western U.S. SWE amounts across the entire Western region of the United States (left) and percent of long-term average (2001-2025) by five regions (right). Region boundaries are delineated based on Snowpack regimes of the Western United States (Trujillo and Molotch, 2014) and the Commission for Environmental Cooperation (CEC) Ecological Regions of North America, Level III [Commission for Environmental Cooperation, 2009, available at http://www.cec.org/north-american-environmental-atlas/terrestrial-ecoregions-level-iii/].

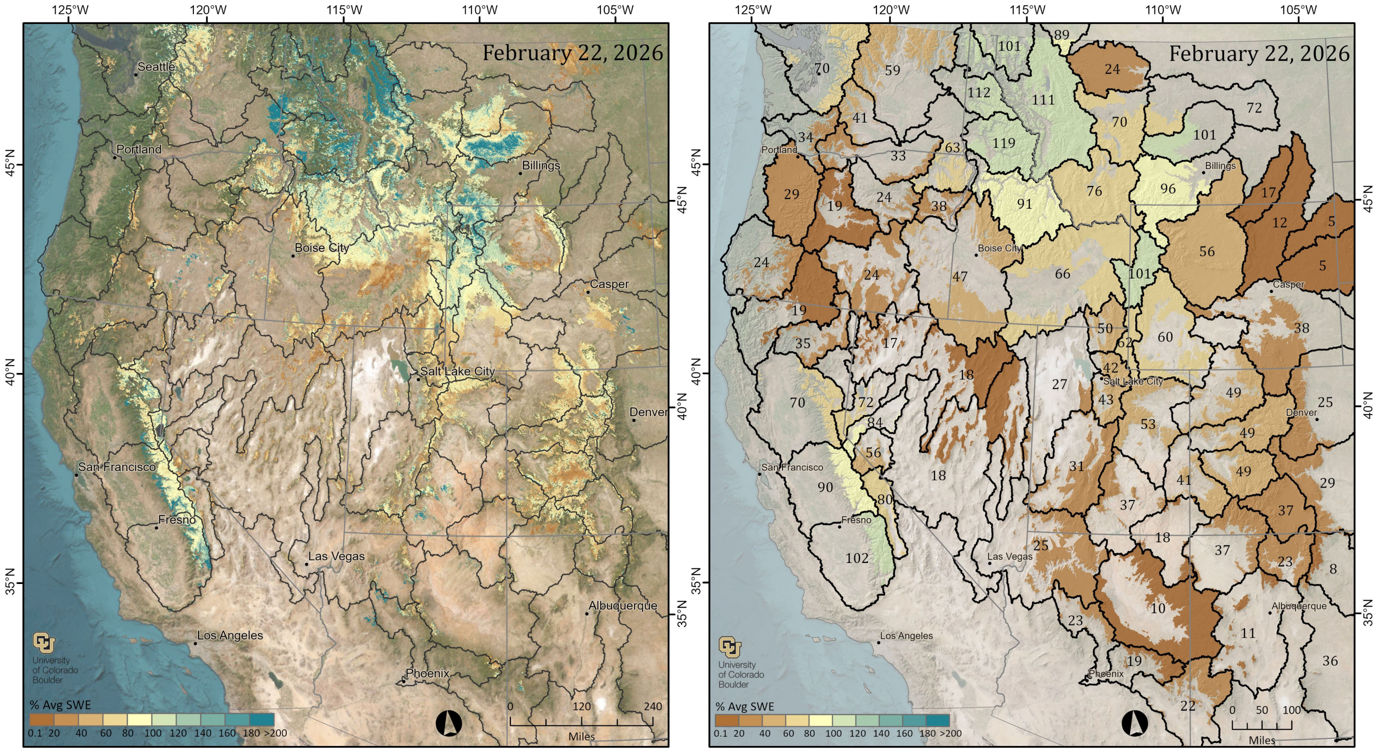

Figure 2. Estimated % of Average SWE across the Western U.S. Percent of long-term average (2001-2025) from the spatial SWE calculated for each pixel (left) and by HUC-6 basin (right); integer within each watershed represents the percent of average SWE for the report date. Shaded areas (right) correspond to the elevation bands used in the tables below.

For detailed maps and tabular summaries of SWE and snowpack water storage volumes for specific regions and watersheds, click on the links below:

Pacific Northwest
North Continental
South Continental
Intermountain
Sierra Nevada
Elevation Banded SWE Tables

About this report

This is an experimental research product that provides near-real-time estimates of snow-water equivalent (SWE) at a spatial resolution of 500 meters for the Western region of the United States from mid-winter through the melt season. The report is typically released within a week of the date of data acquisition at the top of the report. A similar report covering the Sierra Nevada has been distributed to water managers in California since 2012.

The spatial SWE data fusion (SWE-fusion) analysis method for the Western U.S. uses the following data as inputs:

- In-situ SWE from all operational NRCS and CDEC snow pillow sites, and the CoCoRaHS network when appropriate
- Fractional snow-covered area (fSCA) data from recent cloud-free satellite images
- Physiographic information (elevation, latitude, upwind mountain barriers, slope, etc.)
- Historical daily SWE patterns (1985-2021) retrospectively generated using historical fSCA data and an energy-balance model that back-calculates SWE given the fSCA time-series and meltout date for each pixel
- Satellite-observed daily mean fractional snow-covered area (DMFSCA)

For more details see the *Methods* section below. Please be sure to read the *Data Issues / Caveats* section for a discussion of persistent challenges or flagged uncertainties of the SWE-fusion product.

Data availability for reporting

Snow pillows located throughout the Western U.S. region are input as the dependent variable in the SWE-fusion system. 799 Natural Resources Conservation Service (NRCS) Snow Telemetry (SNOTEL) sites and 131 California Department of Water Resources (CA-DWR) California Data Exchange Center (CDEC) are potentially available for each model run. In addition, the Community Collaborative Rain, Hail and Snow (CoCoRaHS, https://www.cocorahs.org/) network provides over 500 snow measurements across the modeling domain.

Maps and Tables by Region

Maps and tables for each of the five western regions (Figure 1b) are shown below. Note that the basin-wide averages may reflect variable conditions across the elevation bands; see banded-elevation tables (linked below). Basin-wide percent of average is calculated across all model pixels inside a given basin and base elevation. Basin base elevations vary anywhere between sea level and 7,000’. Base elevations are dependent on long-term snow coverage. For example, a base elevation in the north could be lower as compared to a base elevation in the south.

Pacific Northwest

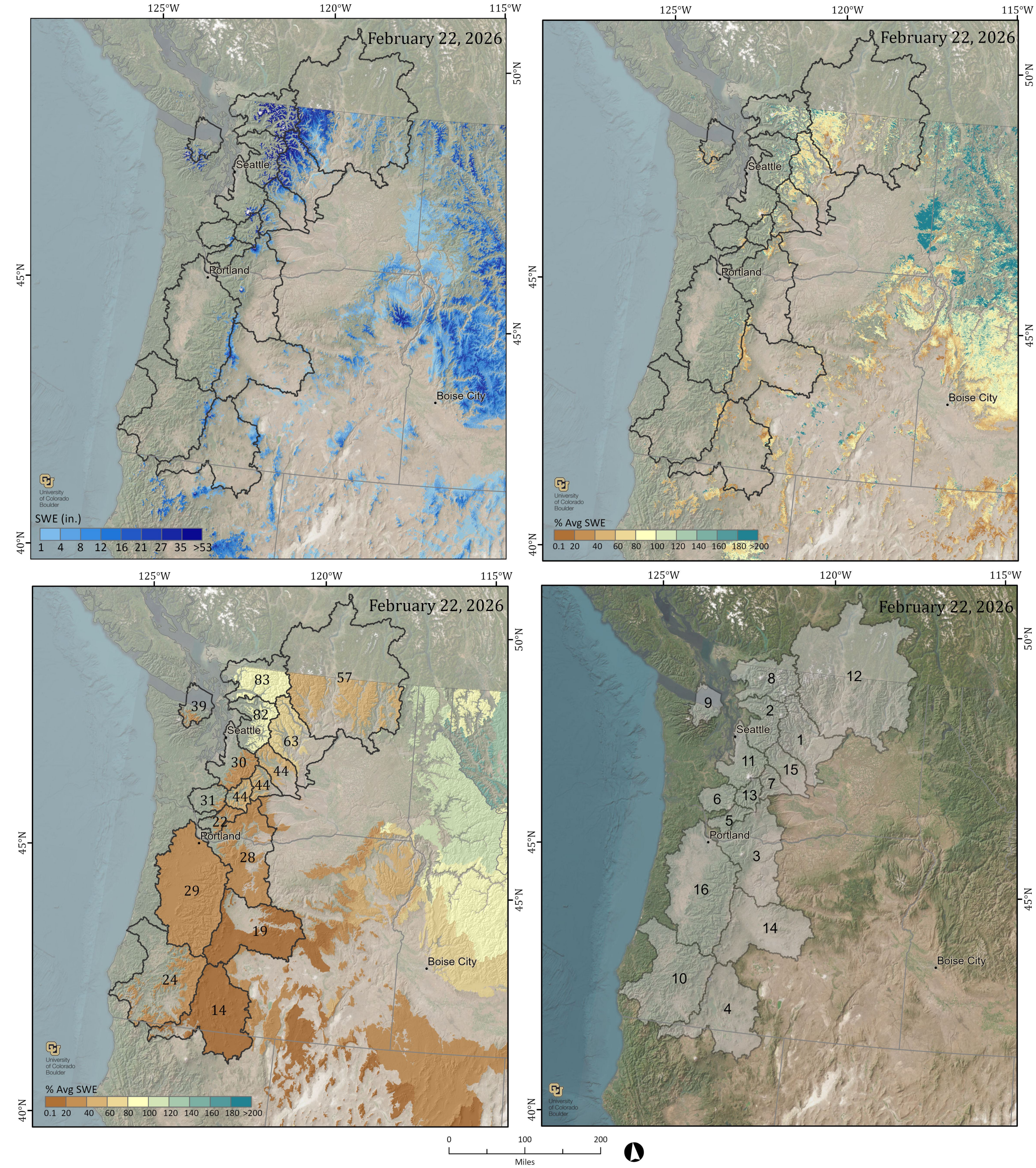

Figure 3. Estimated SWE and % of Average SWE across the Pacific Northwest Region. SWE amounts (upper left), percent of long-term average (2001-2025) SWE calculated for each pixel (upper right), basin-wide percent of long-term average (lower left) shaded areas correspond to the elevation bands used in the banded-elevation tables, and basin identification numbers that correspond to Table 1 below (lower right). The North Puget Sound and Upper Columbia basin portions that are inside Canada do not contain SWE-fusion model data due to lack of data availability needed to run the model in Canada.

Table 1. SWE by watershed. Shown are percent of average SWE to date for the current date (2001-2025 as derived from the regression model), mean SWE for the current report, current percent of snow-covered area, current SWE volume (acre-feet), the area (mi²) inside each basin that contains data pixels (not including cloud-covered pixels, lakes or other satellite no data pixels), first of the month snow surveys, and current snow pillow sensors (the number of stations are in parentheses), for those areas collected, summarized for each basin. *SWE tables by banded elevation are here.*

Pacific Northwest SWE Report for 2/22/2026										
	% of Average		SWE (in)					Pillows		SNODAS* (in)
Basin	2/15	2/22	2/15	2/22	SCA	Vol. (AF)	Area (mi²)	2/15	2/22	2/22
1. Central Columbia	80	63	10.3	11	58.1	1,248,194	2,129.50	17.2 (6)	17.1 (6)	20.1
2. Central Puget Sound	119	82	7	7.5	31.4	497,135	1,246.10	14.5 (5)	15.9 (5)	17.5
3. Hood-Sandy-Lower Deschutes	28	28	0.6	0.7	7.7	194,012	5,083.40	5.2 (10)	6.8 (11)	4.1
4. Klamath	11	14	0.5	0.7	9.4	281,950	7,543.00	3.0 (16)	4.1 (16)	1.7
5. Lewis	26	22	0.8	0.9	7	27,360	583.2	9.3 (7)	11.2 (7)	8.1
6. Lower Cowlitz	32	31	2.2	2.5	23.4	25,310	190.5	5.0 (2)	7.4 (2)	5.5
7. Naches	49	44	3.3	3.8	34.1	123,658	614	15.2 (4)	16.5 (4)	13.5
8. North Puget Sound	116	83	7.4	8	33	1,000,912	2,342.10	22.3 (9)	22.9 (9)	24.7
9. Olympic	50	39	7.2	8	40.3	100,306	236.4	9.9 (3)	10.3 (3)	15.7
10. Rogue-Umpqua	20	24	0.6	0.8	7.3	151,636	3,388.60	1.1 (6)	2.5 (6)	2.4
11. South Puget Sound	37	30	1.4	1.5	10.2	93,974	1,146.00	6.5 (12)	7.0 (13)	10.1
12. Upper Columbia	63	57	5.1	5.6	42.3	1,646,901	5,486.20	9.5 (7)	9.9 (7)	8.9
13. Upper Cowlitz	56	44	2.5	2.8	15.7	108,292	717.7	11.5 (3)	12.8 (3)	14.4
14. Upper Deschutes-Crooked	14	19	0.6	1	11.5	291,630	5,681.70	5.3 (7)	6.3 (7)	2.1
15. Upper Yakima	52	44	4.3	4.6	37	253,045	1,031.70	7.4 (3)	7.6 (3)	7.8
16. Willamette	27	29	0.3	0.3	3.2	212,084	11,470.90	2.5 (18)	3.7 (18)	1.3

‡ Basin boundaries were derived from a combination of NRCS and HUC8 boundaries.

* This is a comparison to the SNODAS (SNOw Data Assimilation System) nationwide product from the National Weather Service.

North Continental

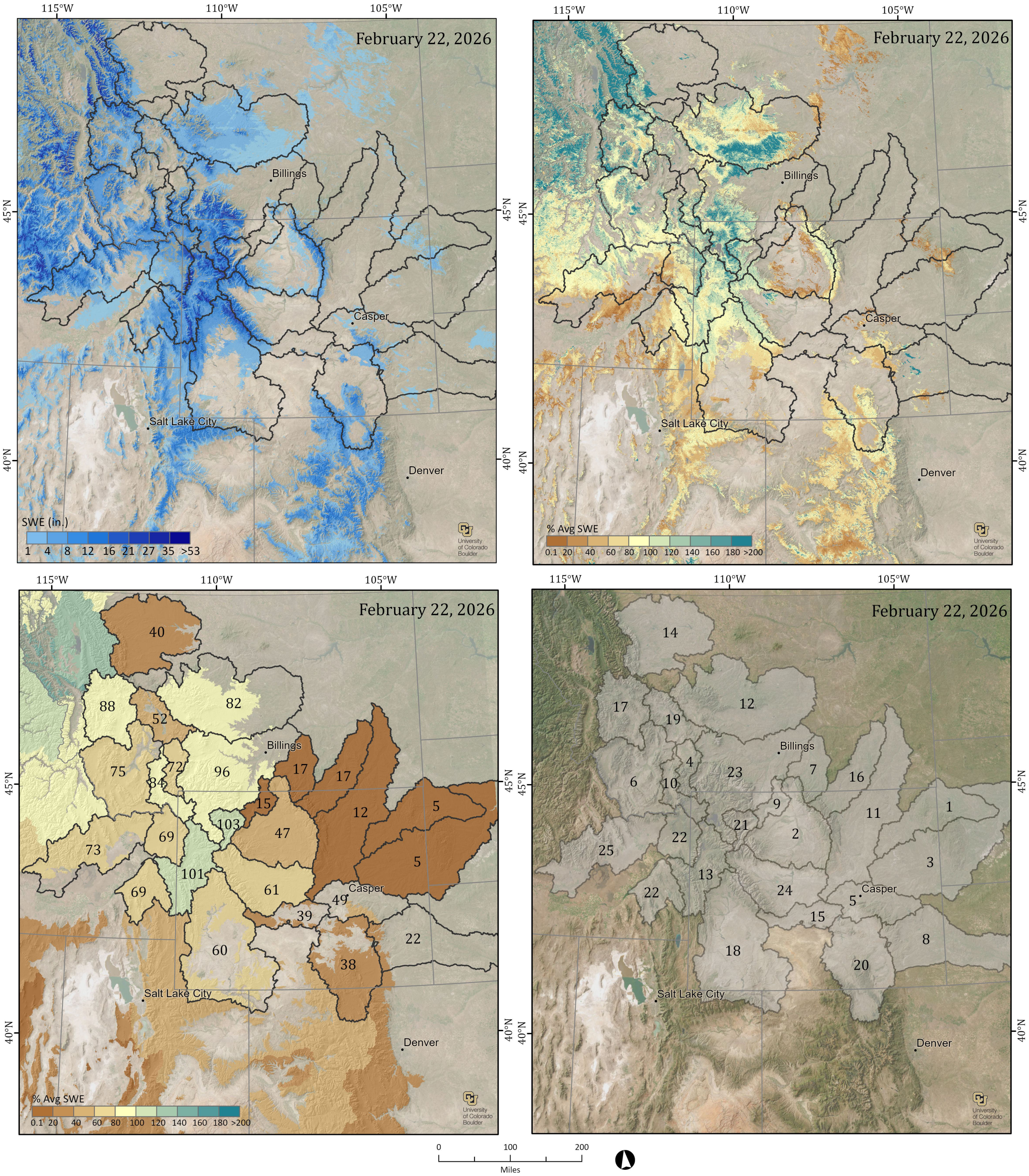

Figure 4. Estimated SWE and % of Average SWE across the North Continental Region. SWE amounts (upper left), percent of long-term average (2001-2025) SWE calculated for each pixel (upper right), basin-wide percent of long-term average (lower left) shaded areas correspond to the elevation bands used in the banded-elevation tables, and basin identification numbers that correspond to Table 2 below (lower right).

Table 2. SWE by watershed. Shown are percent of average SWE to date for the current date (2001-2025 as derived from the regression model), mean SWE for the current report, current percent of snow-covered area, current SWE volume (acre-feet), the area (mi²) inside each basin that contains data pixels (not including cloud-covered pixels, lakes or other satellite no data pixels), first of the month snow surveys, and current snow pillow sensors (the number of stations are in parentheses), for those areas collected, summarized for each basin. [*SWE tables by banded elevation are here.*]()

North Continental SWE Report for 2/22/2026										
	% of Average		SWE (in)					Pillows		SNODAS* (in)
Basin	2/15	2/22	2/15	2/22	SCA	Vol. (AF)	Area (mi²)	2/15	2/22	2/22
1. Belle Fourche	3	5	0.1	0.2	13.1	87,253	7,233.40	1.7 (1)	1.8 (1)	0.1
2. Bighorn	38	47	1.4	1.7	48.8	783,859	8,864.60	7.5 (7)	6.9 (8)	1.1
3. Cheyenne	3	5	0	0.1	4.3	68,436	15,359.30	3.7 (2)	3.8 (2)	0.2
4. Gallatin	66	72	4	4.6	41.5	457,324	1,848.40	12.3 (4)	13.2 (4)	5.3
5. Glendo	37	49	2.7	4.1	57.2	154,950	714.1	2.6 (4)	3.2 (4)	0.7
6. Jefferson	62	75	3.8	4.8	48.8	2,237,634	8,812.20	8.7 (14)	9.4 (14)	3.6
7. Lower Bighorn	16	17	0.3	0.4	8.2	72,995	3,259.10	NA	NA	0.3
8. Lower No Platte	7	22	0.4	1.4	29	60,855	824	NA	NA	0.3
9. Lower Shoshone	8	15	0.2	0.3	11.8	23,007	1,474.60	NA	NA	0.0
10. Madison Headwaters in WY	76	84	4.9	5.8	54.3	787,370	2,557.60	11.3 (7)	12.6 (7)	8.0
11. Powder	11	12	0.2	0.3	8.9	201,513	13,397.20	3.9 (5)	4.0 (5)	0.3
12. Smith-Judith-Musselshell	66	82	2.9	3.9	71.5	1,722,140	8,339.80	8.0 (9)	8.3 (9)	0.8
13. Snake	97	101	9.2	10	89	3,071,202	5,741.50	14.1 (11)	15.1 (11)	11.5
14. Sun-Teton-Marias	30	40	0.8	1.2	12.3	667,166	10,541.30	5.6 (5)	5.8 (5)	1.6
15. Sweetwater	34	39	2.1	2.3	33.4	149,081	1,201.20	6.4 (2)	7.6 (2)	1.0
16. Tongue	16	17	0.4	0.4	6	124,158	5,405.20	3.3 (6)	3.6 (5)	0.4
17. Upper Clark Fork	68	88	3.6	4.9	52.6	1,575,415	6,006.90	9.2 (11)	9.9 (11)	5.6
18. Upper Green	51	60	3.7	4.7	47.7	2,389,710	9,583.60	8.2 (21)	9.0 (21)	3.7
19. Upper Missouri	35	52	1.5	2.3	30.6	356,597	2,956.30	4.3 (2)	5.1 (2)	1.7
20. Upper No Platte	31	38	2	2.6	35.2	1,053,557	7,590.10	10.8 (16)	11.8 (16)	2.9

‡ Basin boundaries were derived from a combination of NRCS and HUC8 boundaries.
* This is a comparison to the SNODAS (SNOw Data Assimilation System) nationwide product from the National Weather Service.

North Continental SWE Report for 2/22/2026										
	% of Average		SWE (in)					Pillows		SNODAS* (in)
Basin	2/15	2/22	2/15	2/22	SCA	Vol. (AF)	Area (mi²)	2/15	2/22	2/22
21. Upper Shoshone	105	103	6.8	7.2	53.8	579,080	1,505.30	9.8 (4)	10.2 (4)	8.2
22. Upper Snake Basins	60	69	3.9	4.8	62.3	1,787,016	6,974.50	7.4 (10)	10.6 (11)	4.7
23. Upper Yellowstone	91	96	4.6	5.2	47.8	3,117,971	11,233.00	11.1 (20)	11.6 (20)	6.0
24. Wind	56	61	2.1	2.4	24.9	1,006,174	7,750.00	7.2 (9)	7.9 (9)	2.5
25. Wood and Lost Basins	52	73	3.8	5.5	65.1	2,183,377	7,420.10	8.6 (16)	9.8 (16)	4.1

‡ Basin boundaries were derived from a combination of NRCS and HUC8 boundaries.

* This is a comparison to the SNODAS (SNOw Data Assimilation System) nationwide product from the National Weather Service.

South Continental

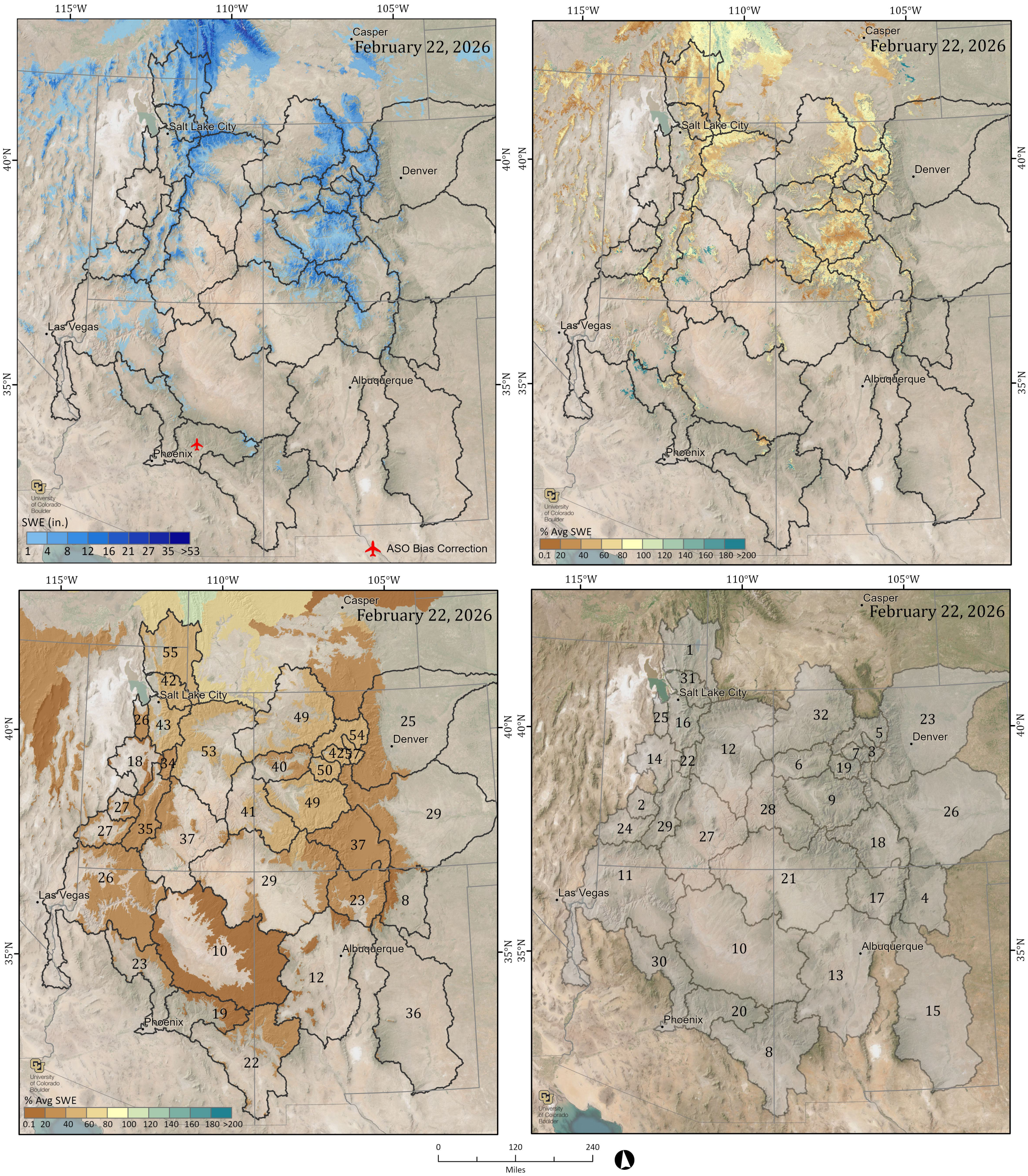

Figure 5. Estimated SWE and % of Average SWE across the South Continental Region. SWE amounts with red airplane markers indicating upper basin areas where the model was bias-corrected by Airborne Snow Observatories data (upper left), percent of long-term average (2001-2025) SWE calculated for each pixel (upper right), basin-wide percent of long-term average (lower left) shaded areas correspond to the elevation bands used in the banded-elevation tables, and basin identification numbers that correspond to Table 3 below (lower right).

Table 3. SWE by watershed. Shown are percent of average SWE to date for the current date (2001-2025 as derived from the regression model), mean SWE for the current report, current percent of snow-covered area, current SWE volume (acre-feet), the area (mi²) inside each basin that contains data pixels (not including cloud-covered pixels, lakes or other satellite no data pixels), first of the month snow surveys, and current snow pillow sensors (the number of stations are in parentheses), for those areas collected, summarized for each basin. [SWE tables by banded elevation are here.]

South Continental SWE Report for 2/22/2026										
	% of Average		SWE (in)					Pillows		SNODAS* (in)
Basin	2/15	2/22	2/15	2/22	SCA	Vol. (AF)	Area (mi²)	2/15	2/22	2/22
1. Bear	47	55	3.8	4.8	63.4	1,632,090	6,323.40	8.5 (17)	9.8 (18)	4.3
2. Beaver	17	27	0.5	0.9	15.5	40,953	835.5	6.3 (1)	5.7 (2)	1.7
3. Blue	51	57	4.3	5.5	65.7	200,389	683.9	5.7 (5)	6.6 (5)	5.0
4. Canadian	4	8	0.1	0.2	6.3	14,686	1,265.80	3.2 (2)	4.4 (2)	0.5
5. Colorado Headwaters	48	54	3.8	4.8	61.7	742,944	2,906.10	6.3 (13)	7.1 (13)	4.6
6. Colorado Headwaters-Plateau	36	40	2.7	3.2	44.3	313,222	1,813.00	4.9 (1)	6.0 (1)	2.7
7. Eagle	35	42	2.9	3.8	45.9	184,775	918	4.6 (3)	5.6 (3)	4.9
8. Gila	10	22	0	0.1	2.2	25,840	4,926.30	0.9 (6)	1.0 (6)	0.1
9. Gunnison	45	49	3.4	4.2	63.9	1,446,591	6,459.70	5.7 (11)	7.3 (11)	4.6
10. Little Colorado	1	10	0	0.1	3.6	73,332	16,398.00	2.7 (5)	4.3 (5)	0.3
11. Lower Colorado Mainstream	3	26	0	0.5	27.4	290,231	10,697.40	2.7 (5)	6.6 (5)	0.8
12. Lower Green	33	53	2.5	4.2	54	1,262,252	5,693.80	4.8 (24)	6.4 (24)	3.5
13. Lower Rio Grande	8	12	0.2	0.3	6	24,027	1,796.70	2.5 (6)	2.7 (6)	0.5
14. Lower Sevier	10	18	0.5	0.8	12.1	39,910	906.4	3.7 (3)	4.8 (4)	1.9
15. Pecos	24	36	0.9	1.5	28.4	25,867	332.1	1.5 (2)	1.5 (2)	1.6
16. Provo-Utah Lake-Jordan	25	43	1.8	3.2	44.4	455,808	2,694.10	7.9 (16)	9.7 (18)	3.3
17. Rio Chama-Upper Rio Grande	17	23	0.5	0.7	16.2	203,794	5,227.90	3.7 (13)	4.3 (13)	1.5
18. Rio Grande Headwaters	27	37	1.2	1.7	24.7	680,717	7,613.30	4.3 (14)	5.6 (14)	2.1

‡ Basin boundaries were derived from a combination of NRCS and HUC8 boundaries.

* This is a comparison to the SNODAS (SNOw Data Assimilation System) nationwide product from the National Weather Service.

** The Animas Basin is part of the San Juan Basin. The values present in the San Juan Basin include those of the Animas by either a summation or weighted average based on the area that is referenced in the table.

§ Data in all ASO-collected basins have been bias-corrected using ASO data and therefore the SWE changes might not represent snowmelt/accumulation but rather an update to the SWE estimates based on airborne data.

South Continental SWE Report for 2/22/2026										
	% of Average		SWE (in)					Pillows		SNODAS* (in)
Basin	2/15	2/22	2/15	2/22	SCA	Vol. (AF)	Area (mi²)	2/15	2/22	2/22
19. Roaring Fork	44	50	4.3	5.4	64.2	392,126	1,360.30	6.3 (7)	8.0 (7)	6.4
20. Salt§	7	19	0.1	0.2	10.4	27,022	2,360.60	1.0 (8)	1.8 (8)	0.5
21. San Juan**	17	32	0.9	1.6	28.3	558,269	6,425.50	5.0 (14)	7.3 (15)	2.4
22. San Pitch	23	34	1.4	2.1	22.5	95,810	859.5	5.4 (6)	7.1 (6)	2.1
23. South Platte	20	25	0.9	1.1	12.3	337,656	5,641.90	5.0 (21)	5.6 (21)	1.4
24. Southwestern Utah	11	27	0.2	0.8	28.3	62,090	1,446.90	1.7 (5)	4.4 (5)	1.7
25. Toole Valley-Vernon Creek	10	26	0.3	0.9	14.5	42,233	902.1	2.7 (4)	4.0 (4)	0.8
26. Upper Arkansas	23	29	0.8	1.1	14	331,371	5,892.20	3.1 (7)	3.8 (7)	0.8
27. Upper Colorado-Dirty Devil	18	37	0.8	1.9	33	261,006	2,608.00	3.2 (7)	4.6 (7)	2.6
28. Upper Colorado-Dolores	28	41	1.7	2.5	48	462,080	3,453.30	6.0 (9)	8.3 (9)	3.4
29. Upper Sevier	18	35	0.9	1.8	33	362,380	3,767.80	3.2 (16)	5.1 (16)	2.5
30. Verde	0	23	0	0.5	18.4	43,951	1,820.70	0.3 (7)	2.3 (7)	0.8
31. Weber-Ogden	28	42	2.4	3.8	53.4	415,519	2,046.60	6.9 (16)	8.2 (17)	3.7
32. White-Yampa	43	49	3.5	4.2	54.6	1,329,751	5,952.40	9.2 (15)	10.3 (15)	4.0
33. Animas	31	50	2.6	4.3	56.9	211,402	922.5	5.5 (6)	7.9 (6)	5.6

‡ Basin boundaries were derived from a combination of NRCS and HUC8 boundaries.

* This is a comparison to the SNODAS (SNOw Data Assimilation System) nationwide product from the National Weather Service.

** The Animas Basin is part of the San Juan Basin. The values present in the San Juan Basin include those of the Animas by either a summation or weighted average based on the area that is referenced in the table.

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Intermountain

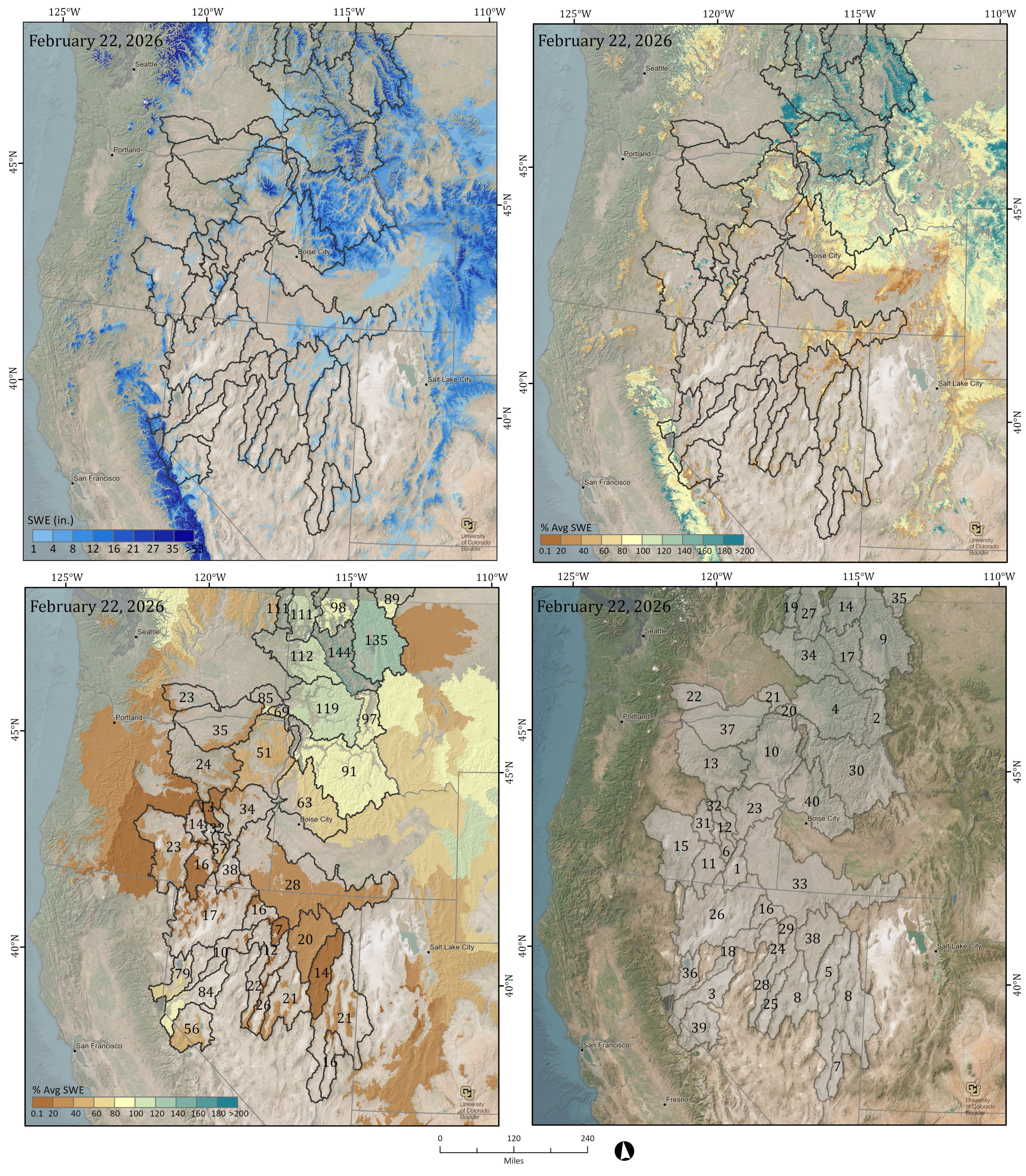

Figure 6. Estimated SWE and % of Average SWE across the Intermountain Region. SWE amounts (upper left), percent of long-term average (2001-2025) SWE calculated for each pixel (upper right), basin-wide percent of long-term average (lower left) shaded areas correspond to the elevation bands used in the banded-elevation tables, and basin identification numbers that correspond to Table 4 below (lower right).

Table 4. SWE by watershed. Shown are percent of average SWE to date for the current date (2001-2025 as derived from the regression model), mean SWE for the current report, current percent of snow-covered area, current SWE volume (acre-feet), the area (mi²) inside each basin that contains data pixels (not including cloud-covered pixels, lakes or other satellite no data pixels), first of the month snow surveys, and current snow pillow sensors (the number of stations are in parentheses), for those areas collected, summarized for each basin. *SWE tables by banded elevation are here.*

Intermountain SWE Report for 2/22/2026

	% of Average		SWE (in)					Pillows		SNODAS* (in)
Basin	2/15	2/22	2/15	2/22	SCA	Vol. (AF)	Area (mi²)	2/15	2/22	2/22
1. Alvord Lake	19	38	1.2	2.7	32.9	46,356	322.7	NA	NA	1.2
2. Bitterroot	85	97	5.3	6.2	50.8	643,490	1,955.00	10.3 (4)	11.3 (4)	8.8
3. Carson	55	84	2.6	4.5	56.7	334,193	1,407.70	10.0 (7)	14.9 (7)	5.2
4. Clearwater Basin	93	119	3.7	4.9	48.8	1,937,516	7,475.20	12.3 (10)	13.8 (10)	8.7
5. Clover Valley and Franklin	10	14	0.3	0.5	19.1	115,525	4,115.00	3.9 (2)	4.9 (2)	0.6
6. Donner und Blitzen	35	57	3.6	6.4	65.5	74,822	219.9	4.5 (2)	5.2 (2)	2.4
7. Dry Lake Valley	10	16	0.3	0.7	15	11,305	296.3	NA	NA	0.9
8. Eastern Nevada	16	21	0.6	1.1	21.4	246,563	4,375.20	3.6 (8)	5.4 (8)	1.3
9. Flathead	130	135	4.5	5.1	39.5	2,087,019	7,644.30	12.9 (12)	15.7 (13)	9.5
10. Grande Ronde-Burnt-Powder-Imnaha	31	51	2.3	3.8	45.5	1,075,299	5,316.00	5.8 (10)	6.5 (11)	3.0
11. Guano	2	16	0.1	0.4	7.7	42,901	2,062.90	0.0 (1)	0.4 (1)	0.3
12. Harney-Malheur Lakes	4	32	0.2	1.7	24.5	25,151	280.6	NA	NA	0.5
13. John Day	16	24	1.1	1.7	18.9	133,489	1,504.70	3.1 (2)	3.5 (2)	2.0
14. Kootenai	92	98	3.3	3.7	29.2	333,074	1,671.80	11.7 (5)	13.4 (5)	9.8
15. Lake County-Goose Lake	14	23	0.7	1.2	17.8	236,334	3,623.70	4.2 (2)	5.8 (2)	1.1
16. Little Humboldt	10	16	0.6	1.1	14.4	24,234	420.8	2.5 (2)	3.3 (3)	1.1
17. Lower Clark Fork	121	144	5.7	7	58.9	552,097	1,474.70	19.2 (4)	27.7 (4)	12.7
18. Lower Humboldt	5	10	0.2	0.4	6.7	6,142	272.6	0.0 (1)	1.1 (1)	0.6
19. Lower Pend Oreille	98	111	6.5	7.4	57.9	52,704	133.4	10.8 (1)	11.5 (1)	15.5

‡ Basin boundaries were derived from a combination of NRCS and HUC8 boundaries.

* This is a comparison to the SNODAS (SNOw Data Assimilation System) nationwide product from the National Weather Service.

Intermountain SWE Report for 2/22/2026										
	% of Average		SWE (in)					Pillows		SNODAS* (in)
Basin	2/15	2/22	2/15	2/22	SCA	Vol. (AF)	Area (mi²)	2/15	2/22	2/22
20. Lower Snake-Asotin	32	69	0.9	2.3	48.1	41,560	333.7	0.3 (1)	0.2 (1)	1.9
21. Lower Snake-Tucannon	53	85	3.2	5.7	88.5	32,966	108.3	NA	NA	6.9
22. Lower Yakima	20	23	1.1	1.3	16.6	33,150	485	7.5 (2)	8.3 (2)	3.8
23. Malheur	21	34	1.4	2.5	32.8	132,456	989.2	2.8 (3)	3.5 (3)	2.1
24. Middle Humboldt	6	12	0.2	0.6	14.6	19,687	633	NA	NA	0.9
25. Northern Big Smoky Valley	22	26	1	1.6	31.5	47,874	572.8	NA	NA	1.7
26. Northern Great Basin	7	17	0.3	0.9	16.7	109,005	2,224.90	1.4 (2)	2.3 (2)	1.3
27. Panhandle Basins	101	111	3.8	4.4	39.8	388,159	1,644.60	14.8 (3)	17.1 (3)	9.8
28. Reese	18	22	1	1.4	24.3	38,198	496.9	3.1 (2)	4.8 (2)	1.6
29. Rock	2	7	0.1	0.3	8.8	14,339	835.5	5.5 (1)	7.3 (1)	0.3
30. Salmon Basin	83	91	6.5	7.4	69.7	4,725,051	11,950.50	12.9 (11)	13.9 (11)	9.2
31. Silver	2	14	0.1	0.7	11	16,074	444.3	NA	NA	0.4
32. Silvies	5	13	0.3	0.8	13.8	54,925	1,317.40	1.8 (2)	2.3 (2)	0.5
33. Southern Snake Basins	10	28	0.4	1.3	23.2	871,734	12,552.70	3.1 (11)	3.7 (12)	0.5
34. Spokane	80	112	2.2	3.2	38.4	532,812	3,142.80	6.2 (8)	7.5 (8)	5.6
35. St. Mary	89	89	5.3	6.1	42.9	215,973	668.1	1.6 (1)	2.6 (1)	8.1
36. Truckee	50	79	2.8	4.8	40.5	369,426	1,443.60	10.4 (9)	15.4 (9)	6.2
37. Umatilla-Walla Walla-Willow	11	35	0.3	1.2	20.2	91,121	1,434.30	4.0 (7)	5.0 (7)	1.2
38. Upper Humboldt	13	20	0.6	1.1	32.5	288,446	5,035.80	3.2 (8)	4.8 (8)	0.8
39. Walker	44	56	2.2	3.3	62	345,257	1,942.90	11.9 (7)	16.4 (7)	4.7
40. West Central Basins	49	63	4.9	6.5	66.8	1,971,252	5,702.10	9.8 (15)	10.7 (16)	7.2

‡ Basin boundaries were derived from a combination of NRCS and HUC8 boundaries.

* This is a comparison to the SNODAS (SNOw Data Assimilation System) nationwide product from the National Weather Service.

Sierra Nevada

There is a separate SWE report which also includes maps and tables that has a stronger focus on the Sierra Nevada, it is available here. The Sierra report incorporates additional vetting and can include bias-corrections with Airborne Snow Observatory data. Below is one of the maps from the current report.

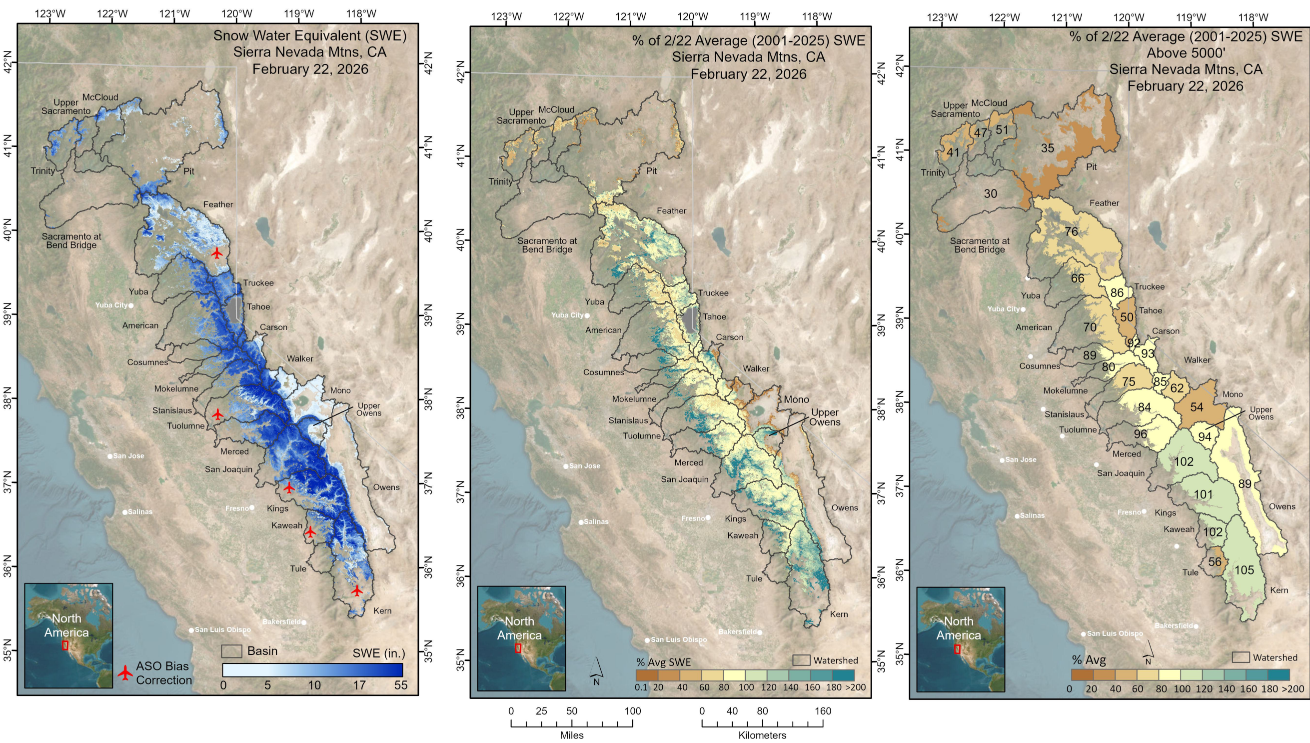

Figure 7. Estimated SWE and % of Average SWE across the Sierra Nevada. SWE amounts with red airplane markers indicating upper basin areas where the model was bias-corrected by Airborne Snow Observatories data (left), and percent of average (2001-2025) SWE for the Sierra Nevada, calculated for each pixel (middle) and basin-wide (right). Basin-wide percent of average is calculated across all model pixels >5000' elevation.

Table 5. SWE by watershed. Shown are percent of average SWE to date for the current date (2001-2025 as derived from the regression model), mean SWE for the current report, current percent of snow-covered area, current SWE volume (acre-feet), the area (mi²) inside each basin that contains data pixels (not including cloud-covered pixels, lakes or other satellite no data pixels), first of the month snow surveys, and current snow pillow sensors (the number of stations are in parentheses), for those areas collected, summarized for each basin. *SWE tables by banded elevation are here.*

Sierra Nevada SWE Report for 2/22/2026

	% of Average		SWE (in)					Pillows		SNODAS* (in)
Basin	2/15	2/22	2/15	2/22	SCA	Vol. (AF)‡	Area (mi²)	2/15	2/22	2/22
0. Trinity	28	41	4.3	7.2	61.2	124,153	321.4	4.3 (7)	7.5 (7)	8.0
1. Upper Sacramento	33	47	4.8	7.8	64.7	47,963	115.2	8.1 (2)	11.4 (2)	10.5
2. McCloud	37	51	4.5	7	75.6	61,626	164.9	10.6 (1)	15.5 (1)	16.5
3. Pit	21	35	1.2	2.2	23.9	243,337	2,086.20	7.7 (5)	10.0 (5)	5.1
4. Sacramento at Bend Bridge	21	30	2	3.3	22.7	42,561	240	NA	NA	8.9
5. Feather§	45	76	2.6	4.9	68	556,538	2,117.50	8.6 (7)	13.5 (7)	10.1
6. Yuba	33	66	4.1	9.7	67	272,739	525.6	13.2 (4)	20.8 (4)	14.2
7. American	36	70	5.4	10.8	67.1	466,773	807	9.1 (12)	15.0 (13)	13.1
8. Cosumnes	17	89	1.6	8.4	63.1	41,298	91.9	NA	NA	9.5
9. Mokelumne	42	80	6.2	12.5	73.3	212,312	317.9	12.1 (3)	20.3 (3)	14.5
10. Stanislaus	47	75	6.9	12.2	66.6	366,619	562.9	14.7 (4)	21.3 (4)	13.6
11. Tuolumne§	50	84	7.6	13.9	76.7	679,545	915	11.4 (7)	16.7 (8)	15.4
12. Merced	57	96	6.4	15	79.9	430,748	539.4	17.5 (2)	25.8 (2)	19.0
13. San Joaquin	61	102	8.9	16.1	87.3	1,052,317	1,225.40	10.8 (7)	20.0 (7)	19.1
14. Kings§	61	101	9	16	77.6	1,034,779	1,213.40	15.6 (7)	23.6 (7)	17.7
15. Kaweah§	47	102	3.7	9.6	62.1	160,887	314.4	12.1 (1)	12.7 (2)	13.7
16. Tule	20	56	1	3.1	18.1	23,053	137.6	1.4 (1)	10.4 (1)	7.6
17. Kern§+	56	105	3.5	7.4	53.5	661,399	1,682.80	11.5 (5)	18.0 (5)	8.4

* This is a comparison to the SNODAS (SNOw Data Assimilation System) nationwide product from the National Weather Service.

‡ For volume totals above Shasta Lake add Upper Sac, McCloud and Pit volumes. For volume totals above Bend Bridge add Upper Sac, McCloud, Pit and Sac at Bend Bridge volumes.

§ Data in all ASO-collected basins have been bias-corrected using ASO data and therefore the SWE changes might not represent snowmelt/accumulation but rather an update to the SWE estimates based on airborne data.

+ Recent snowpack accumulation may be under-estimated due to issues with satellite-observed fSCA.

Sierra Nevada SWE Report for 2/22/2026										
	% of Average		SWE (in)					Pillows		SNODAS* (in)
Basin	2/15	2/22	2/15	2/22	SCA	Vol. (AF)‡	Area (mi²)	2/15	2/22	2/22
18. Truckee	54	86	7.2	11.7	81	265,950	425.4	9.8 (6)	15.2 (6)	15.0
19. Tahoe	31	50	4.1	7.2	43.8	196,034	508.3	9.4 (7)	14.6 (7)	12.9
20. W Carson	63	92	9.8	15.8	89.9	54,976	65.3	13.1 (3)	18.7 (3)	17.1
21. E Carson	63	93	6.9	11.3	86.6	213,589	355.2	7.7 (4)	12.1 (4)	11.4
22. W Walker	63	85	9.2	14.3	89.3	137,109	179.8	13.3 (4)	18.9 (4)	16.5
23. E Walker	48	62	3.9	5.7	90	107,434	356.3	10.7 (1)	13.9 (1)	9.3
24. Mono	43	54	2.1	3	77.4	176,407	1,085.80	NA	NA	7.0
25. Upper Owens	67	94	5.3	7.9	86.6	160,643	382.7	21.2 (1)	26.9 (1)	15.6
26. Owens	67	89	2.6	4.1	42.6	387,199	1,772.90	9.5 (4)	13.7 (4)	4.5

* This is a comparison to the SNODAS (SNOw Data Assimilation System) nationwide product from the National Weather Service.

‡ For volume totals above Shasta Lake add Upper Sac, McCloud and Pit volumes. For volume totals above Bend Bridge add Upper Sac, McCloud, Pit and Sac at Bend Bridge volumes.

§ Data in all ASO-collected basins have been bias-corrected using ASO data and therefore the SWE changes might not represent snowmelt/accumulation but rather an update to the SWE estimates based on airborne data.

+ Recent snowpack accumulation may be under-estimated due to issues with satellite-observed fSCA.

Elevation Banded SWE Tables
Due to the length of the banded elevation tables (tables 6-10), that data is being hosted on our GitHub repository. Direct links to all of the tables are below. Access to the GitHub repository for the tables in CSV format is here.

- Pacific Northwest (Table 6)
- North Continental (Table 7)
- South Continental (Table 8)
- Intermountain (Table 9)
- Sierra Nevada (Table 10)

The value of spatially explicit estimates of SWE
Snowmelt makes up the large majority (~60-85%) of the annual streamflow in the Western U.S. The spatial distribution of SWE across the landscape is complex. While broad aspects of this spatial pattern (e.g., more SWE at higher elevations and on north-facing exposures) are fairly consistent, the details vary a lot from year to year, influencing the magnitude and timing of snowmelt-driven runoff.

SWE is operationally monitored at hundreds of NRCS SNOTEL and California DWR CDEC snow pillow sites spread across the Western U.S., providing a critical first-order snapshot of conditions, and the basis for runoff forecasts from the CA DWR, NRCS and NOAA. However, conditions at snow pillow sites (e.g., percent of normal SWE) may not be representative of conditions in the large areas between these point measurements, and at elevations above and below the range of the pillow sites. The spatial SWE-fusion creates a detailed picture of the spatial pattern of SWE using snow pillows, satellite, and other data, extending beyond the snow pillow sites to unmonitored areas.

Interpreting the spatial SWE estimates in the context of snow pillow sites
The spatial SWE-fusion product estimates SWE for every pixel where the fractional snow-covered area (fSCA) satellite product identifies snow-cover. Comparatively, snow pillow samples on average 8-20 points per basin within a narrower elevation range. Thus, the basin-wide percent of long-term average from the spatial SWE-fusion estimates is not directly comparable with the snow pillow basin-wide percent of average. A better comparison might be made with the % average in the elevation bands (elevation-banded tables 6-10) that contain snow pillow sites.

Location of Reports, Excel Format Tables, and JPG Maps
https://github.com/CU-Mountain-Hydrology/WestWide

Methods
The spatial SWE-fusion estimation method is described in Yang, et. al. (2022) and Schneider and Molotch (2016). The method uses a General Linear Regression Model in which the dependent variable is derived from the operationally measured in situ SWE from all online NRCS SNOTEL and CDEC snow pillow sites in the domain and when applicable the CoCoRaHS SWE values. The gridded model output is then scaled by the fractional snow-covered area (fSCA). The fSCA is a near-real-time cloud-free daily satellite image from the Snow Today fSCA image (Rittger, et. al. 2019, https://nsidc.org/snow-today) which uses the SPIReS algorithm (Bair, et al. 2021).

The following independent variables (predictors) enter into the generalized linear regression model:

- Physiographic variables that affect snow accumulation, melt, and redistribution, including elevation, latitude, upwind mountain barriers, slope, and others. See Table 1 in Yang, et. al., (2022) for the full set of these variables.
- The historical daily SWE pattern (1985-2021) retrospectively generated using historical Landsat data, and an energy-balance model that back-calculates SWE given the fractional Snow-Covered Area (fSCA) time series and meltout date for each pixel. See Fang, et. al., (2022) for details. (For computational efficiency, only one image during the 1985-2021 period that best matches the real-time snow pillow-observed pattern is selected as an independent variable.)
- Satellite-observed daily mean fractional snow-covered area (DMFSCA) derived from Rittger, et. al., (2019) data.

The real-time regression model for this date has been validated by cross-validation, whereby 10% of the snow pillow data are randomly removed and the model prediction is compared to the measured value at the removed snow pillow stations. This is repeated 30 times to obtain an average R-squared value, which denotes how closely the model fits the snow pillow data. During development of this regression method, the model was also validated against independent historical SWE data from Airborne Snow Observatory lidar data and from snow surveys at 10 locations in Colorado.

List of All Known Data Issues/Caveats

- SATELLITE FSCA – Recent snowpack accumulation particularly in the Arizona / NM region may be under-estimated due to issues with satellite-observed fSCA.
- GLACIER & NON-SEASONAL SNOW – SWE values on non-seasonal snow and glaciers need to be excluded before data analysis.
- RECENT SNOWFALL – There are occasionally problems with lower-elevation SWE estimates due to recent snowfall events that result in extensive snow-cover extending to valley locations where measurements are not available. This scenario results in an over-estimation of lower- elevation SWE.
- LIMITED SNOW PILLOW DATA – When snow at the snow pillow sites melts out, but remains at higher elevations, the model tends to overestimate SWE at the under-monitored upper elevations. This issue typically occurs late in the melt season, resulting in less accurate SWE prediction at higher elevations compared to earlier in the snow season.
- CLOUD COVER – Cloud cover can obscure satellite measurements of snow-cover. While careful checks are made, occasionally the misclassification of clouds as snow or vice versa may result in the mischaracterization of SWE or bare ground.
- POOR QUALITY SNOW SENSOR DATA – Although data QA/QC is performed, occasional SNOTEL sensor malfunction may result in localized SWE errors.
- ANOMALOUS SNOW PATTERNS – Anomalous snow years or snow distributions may cause SWE error due to the model design to search for similar SWE distributions from previous years. If no close seasonal analogue exists, the model is forced to find the most similar year, which may result in error.
- DENSE FOREST COVER – Dense forest cover at lower elevations where snow-cover is discontinuous can cause the satellite to underestimate the snow-cover extent, leading to underestimation of SWE.
- PERCENT OF AVERAGE CALCULATIONS – Data utilized to generate this report change to optimize model performance. To maintain consistency across the historical record, the percent of average values are based on our baseline algorithm and therefore there can be discrepancies between absolute SWE values and corresponding percent of averages.
- MODELING METHODS – We work to generate the best SWE estimates for each reporting date. Our methods can change from one report to another. Sometimes data changes between reports is an artifact of method changes.
- EARLY SEASON FSCA ERRORS – The gap-filled fSCA requires some cloud-free images to determine fSCA amounts. Early in the season and if it has been particularly cloudy the algorithm hasn't had time to calculate fSCA amounts in some areas, typically in the Pacific Northwest and northern areas of the domain.

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