Real-Time Spatial Estimates of Snow-Water Equivalent (SWE)
Western United States Region
February 1, 2026

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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.

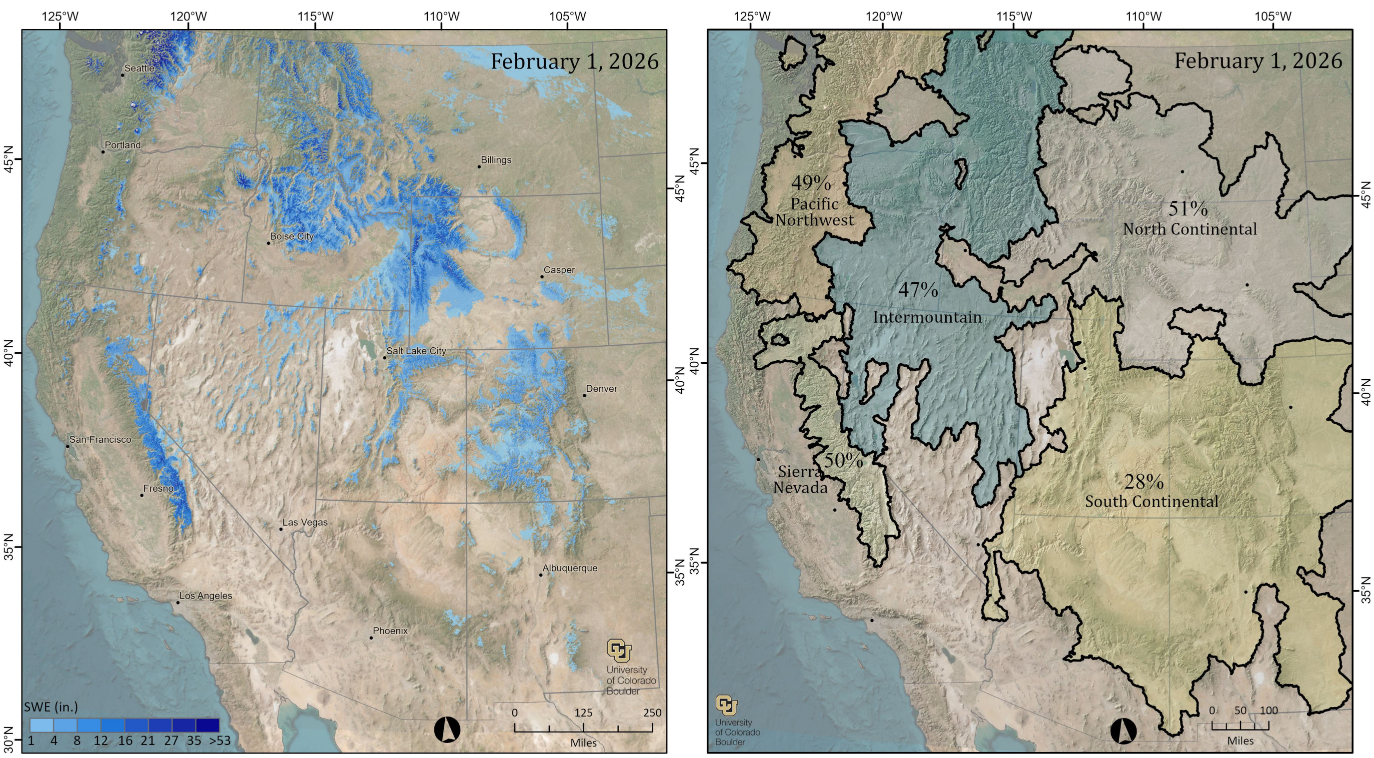

Figure 1. Estimated SWE and % of Average SWE across the Western U.S. SWE amounts across the entire Western region of the United States (left) and percent of long-term average (2001-2025) by five regions (right). Region boundaries are delineated based on Snowpack regimes of the Western United States (Trujillo 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/].

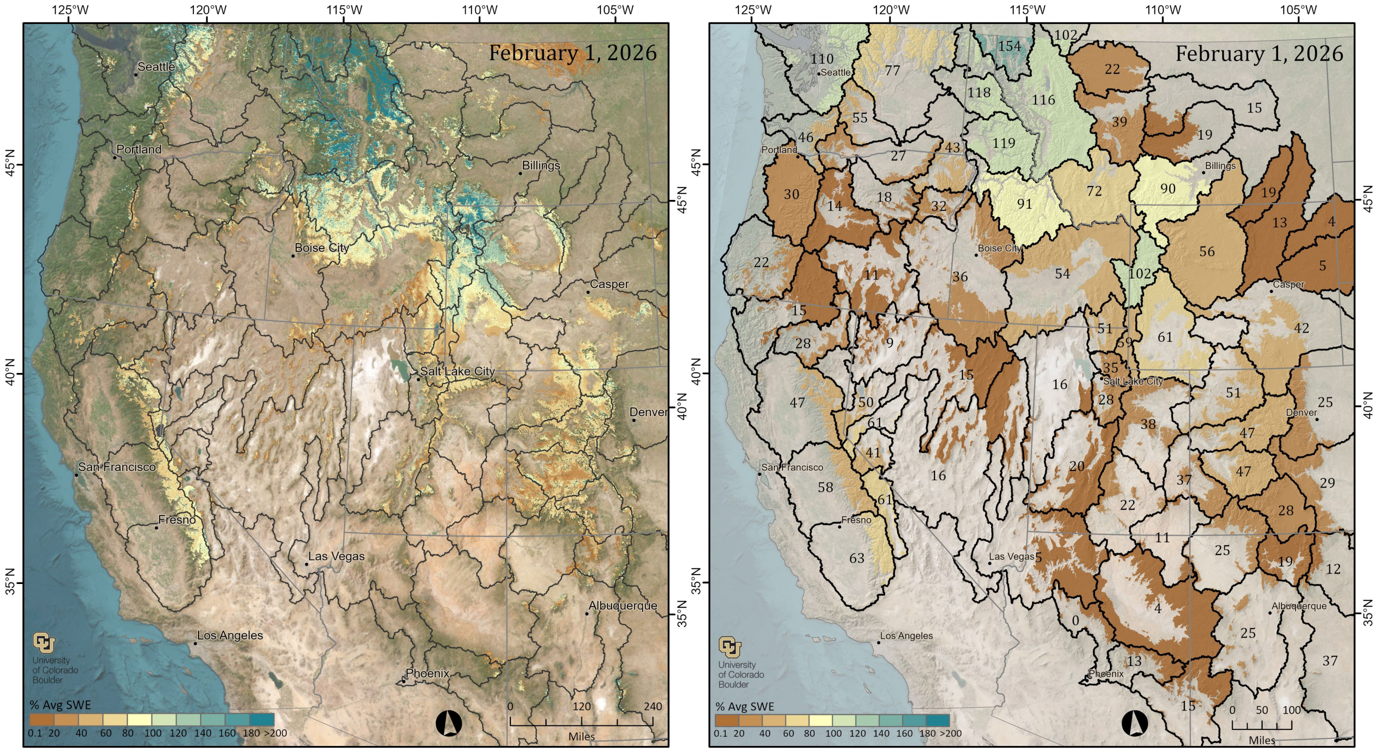

Figure 2. Estimated % of Average SWE across the Western U.S. Percent of long-term average (2001-2025) from the spatial SWE calculated for each pixel (left) and by HUC-6 basin (right); integer within each watershed represents the percent of average SWE for the report date. Shaded areas (right) correspond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

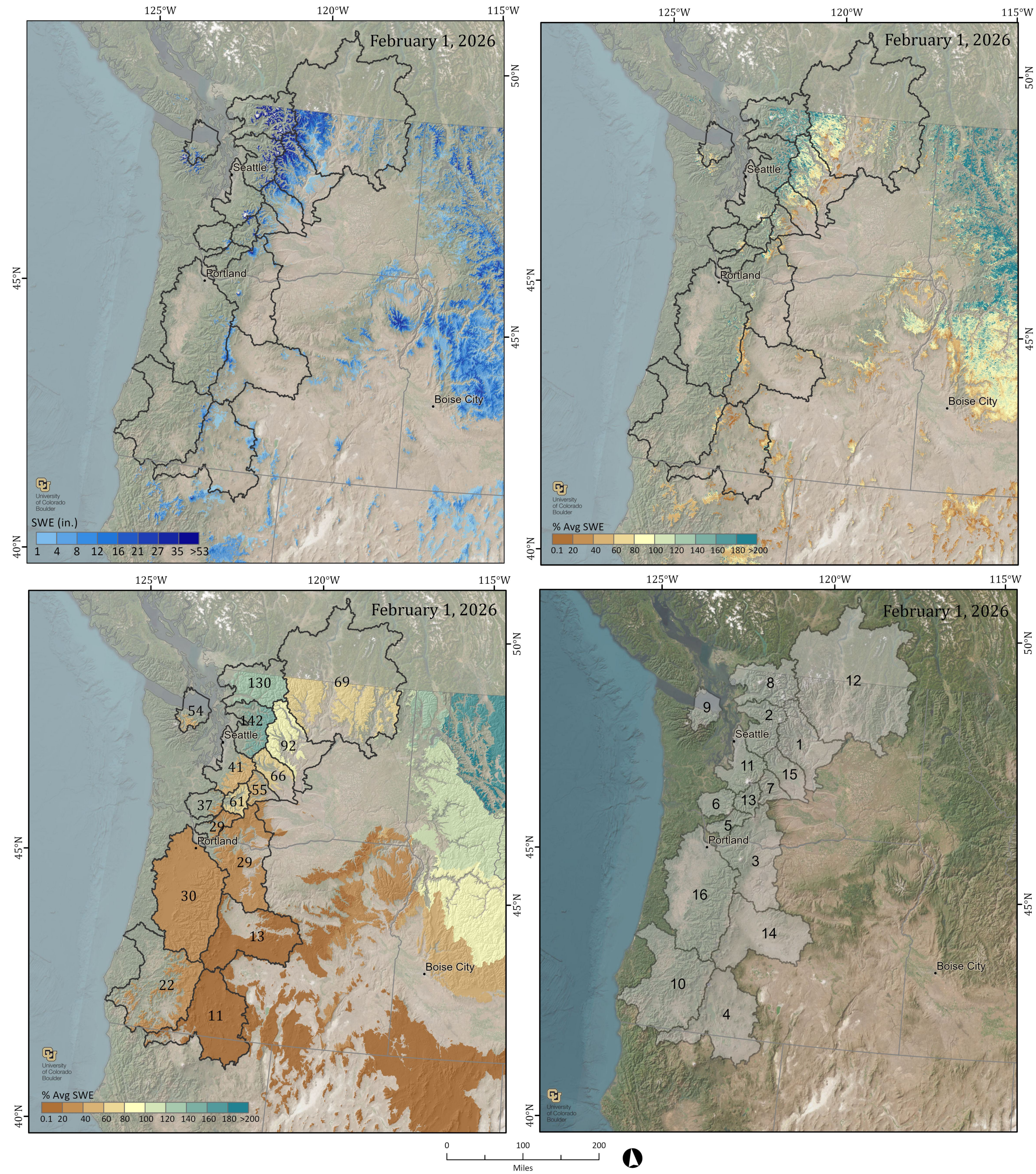

Figure 3. Estimated SWE and % of Average SWE across the Pacific Northwest Region. SWE amounts (upper left), percent of long-term average (2001-2025) SWE calculated for each pixel (upper right), basin-wide percent of long-term average (lower left) shaded areas correspond to the elevation bands used in 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 (mi^2) 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 2/1/2026

	% of Average	SWE (in)				Pillows	Surveys	SNODAS* (in)
Basin	2/1	2/1	SCA	Vol. (AF)	Area (mi^2)	2/1	2/1	2/1
1. Central Columbia	92	10	63.3	1,131,029	2,129.50	14.3 (7)	NA	18.5
2. Central Puget Sound	142	6.4	30.4	423,377	1,246.10	13.3 (5)	14.7 (1)	16.4
3. Hood-Sandy-Lower Deschutes	29	0.5	7	145,283	5,083.40	4.8 (11)	4.8 (2)	3.2
4. Klamath	11	0.5	10.3	185,778	7,543.00	2.8 (16)	3.5 (5)	0.8
5. Lewis	29	0.7	6.5	21,039	583.2	8.7 (7)	NA	5.9
6. Lower Cowlitz	37	1.9	22.2	18,999	190.5	4.9 (2)	NA	2.8
7. Naches	55	3.1	34.6	99,986	614	13.5 (4)	NA	10.7
8. North Puget Sound	130	6.7	30.6	831,697	2,342.10	21.0 (9)	27.2 (1)	22.0
9. Olympic	54	6.7	40.1	84,522	236.4	9.1 (3)	NA	12.2
10. Rogue-Umpqua	22	0.5	5.4	96,389	3,388.60	1.3 (6)	1.0 (11)	0.8
11. South Puget Sound	41	1.3	10.5	79,978	1,146.00	6.2 (14)	1.5 (2)	9.2
12. Upper Columbia	69	4.9	42.1	1,441,721	5,486.20	9.0 (7)	4.0 (8)	7.6
13. Upper Cowlitz	61	2.3	14.8	86,812	717.7	10.2 (3)	NA	12.3
14. Upper Deschutes-Crooked	13	0.6	9.1	179,719	5,681.70	4.3 (7)	0.4 (3)	1.2
15. Upper Yakima	66	4.5	48.3	245,719	1,031.70	6.8 (3)	NA	6.9
16. Willamette	30	0.2	2.8	148,411	11,470.90	2.2 (18)	NA	0.5

‡ 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.

North Continental

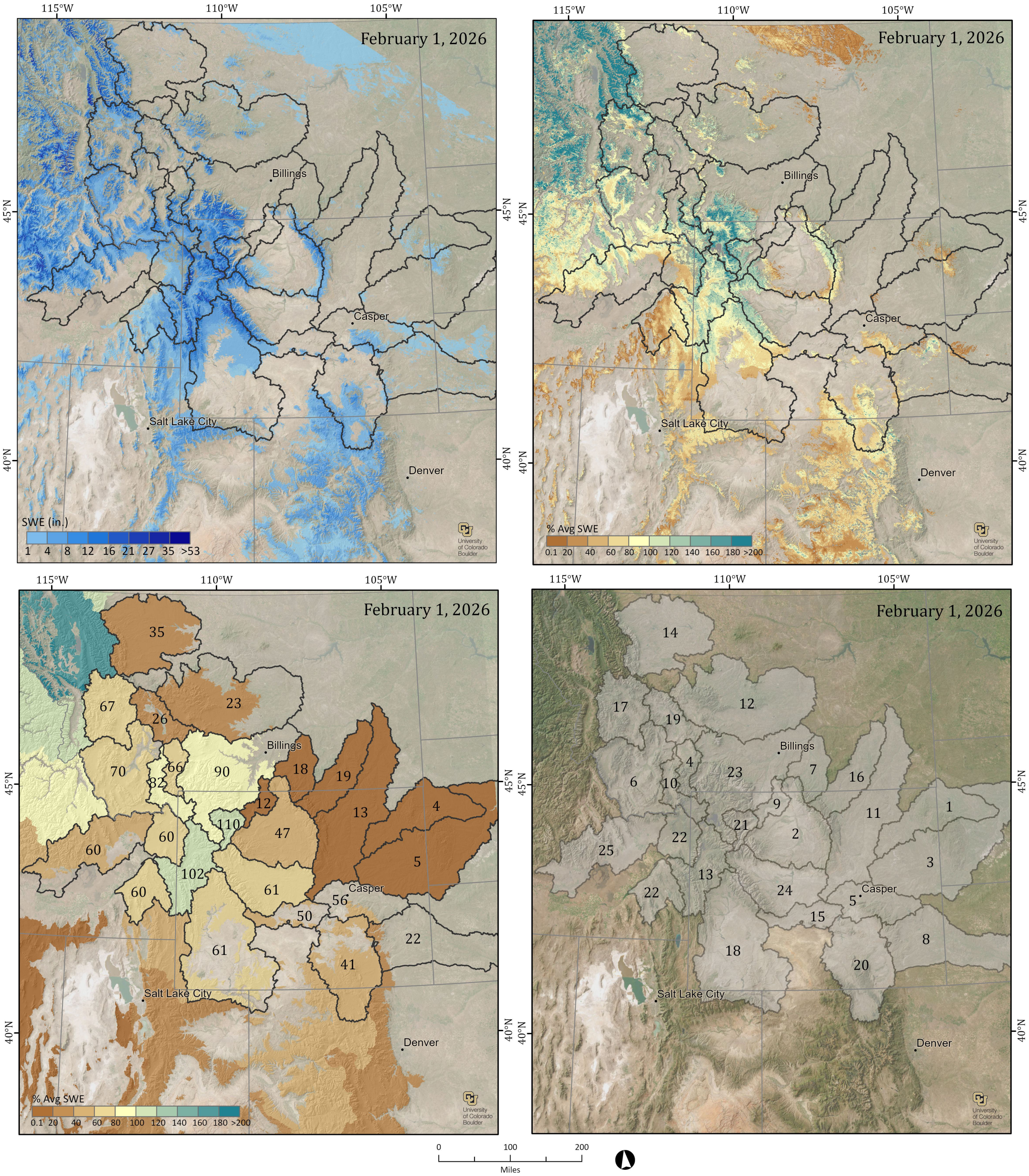

Figure 4. Estimated SWE and % of Average SWE across the North Continental Region. SWE amounts (upper left), percent of long-term average (2001-2025) SWE calculated for each pixel (upper right), basin-wide percent of long-term average (lower left) shaded areas correspond to the elevation bands used in 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 2/1/2026

	% of Average	SWE (in)				Pillows	Surveys	SNODAS* (in)
Basin	2/1	2/1	SCA	Vol. (AF)	Area (mi²)	2/1	2/1	2/1
1. Belle Fourche	4	0.2	7.8	60,540	7,233.40	1.6 (1)	2.3 (4)	0.1
2. Bighorn	47	1.4	17.8	673,697	8,864.60	6.4 (8)	4.8 (4)	0.8
3. Cheyenne	5	0.1	6.8	62,658	15,359.30	3.6 (2)	0.5 (2)	0.1
4. Gallatin	66	3.4	31.8	333,859	1,848.40	11.0 (4)	7.3 (1)	4.0
5. Glendo	56	3.8	62.4	143,176	714.1	2.5 (4)	NA	0.3
6. Jefferson	70	3.7	40.8	1,726,682	8,812.20	7.7 (14)	3.8 (3)	2.4
7. Lower Bighorn	18	0.4	6.2	62,838	3,259.10	NA	NA	0.2
8. Lower No Platte	22	1.1	13.7	49,225	824	NA	NA	0.0
9. Lower Shoshone	12	0.2	3	16,427	1,474.60	NA	NA	0.0
10. Madison Headwaters in WY	82	4.5	45.5	615,202	2,557.60	10.3 (7)	5.6 (3)	6.3
11. Powder	13	0.3	4	180,828	13,397.20	3.7 (5)	NA	0.2
12. Smith-Judith-Musselshell	23	0.8	12.1	374,898	8,339.80	7.2 (9)	2.4 (1)	0.4
13. Snake	102	8.2	84.6	2,509,312	5,741.50	12.9 (11)	7.3 (11)	9.3
14. Sun-Teton-Marias	35	0.9	8.8	489,955	10,541.30	5.5 (5)	5.1 (1)	1.0
15. Sweetwater	50	2.6	35.3	167,077	1,201.20	6.2 (2)	6.1 (1)	0.6
16. Tongue	19	0.4	8.1	109,784	5,405.20	3.3 (6)	5.0 (3)	0.4
17. Upper Clark Fork	67	3	33.6	957,561	6,006.90	7.7 (12)	3.2 (13)	3.3
18. Upper Green	61	3.9	39.9	1,980,932	9,583.60	7.8 (21)	10.9 (1)	2.9
19. Upper Missouri	26	1	11.6	154,730	2,956.30	3.8 (2)	2.8 (3)	0.4
20. Upper No Platte	41	2.3	33.7	938,025	7,590.10	9.7 (16)	7.1 (9)	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.

North Continental SWE Report for 2/1/2026								
	% of Average	SWE (in)				Pillows	Surveys	SNODAS* (in)
Basin	2/1	2/1	SCA	Vol. (AF)	Area (mi²)	2/1	2/1	2/1
21. Upper Shoshone	110	5.9	48.3	474,712	1,505.30	8.9 (4)	NA	6.7
22. Upper Snake Basins	60	3.6	57.1	1,324,891	6,974.50	8.3 (11)	7.6 (13)	3.7
23. Upper Yellowstone	90	3.8	33	2,271,968	11,233.00	10.0 (20)	5.0 (2)	4.8
24. Wind	61	2	19.4	841,568	7,750.00	6.9 (9)	3.9 (7)	1.8
25. Wood and Lost Basins	60	3.8	44	1,522,111	7,420.10	8.0 (16)	5.5 (4)	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.

South Continental

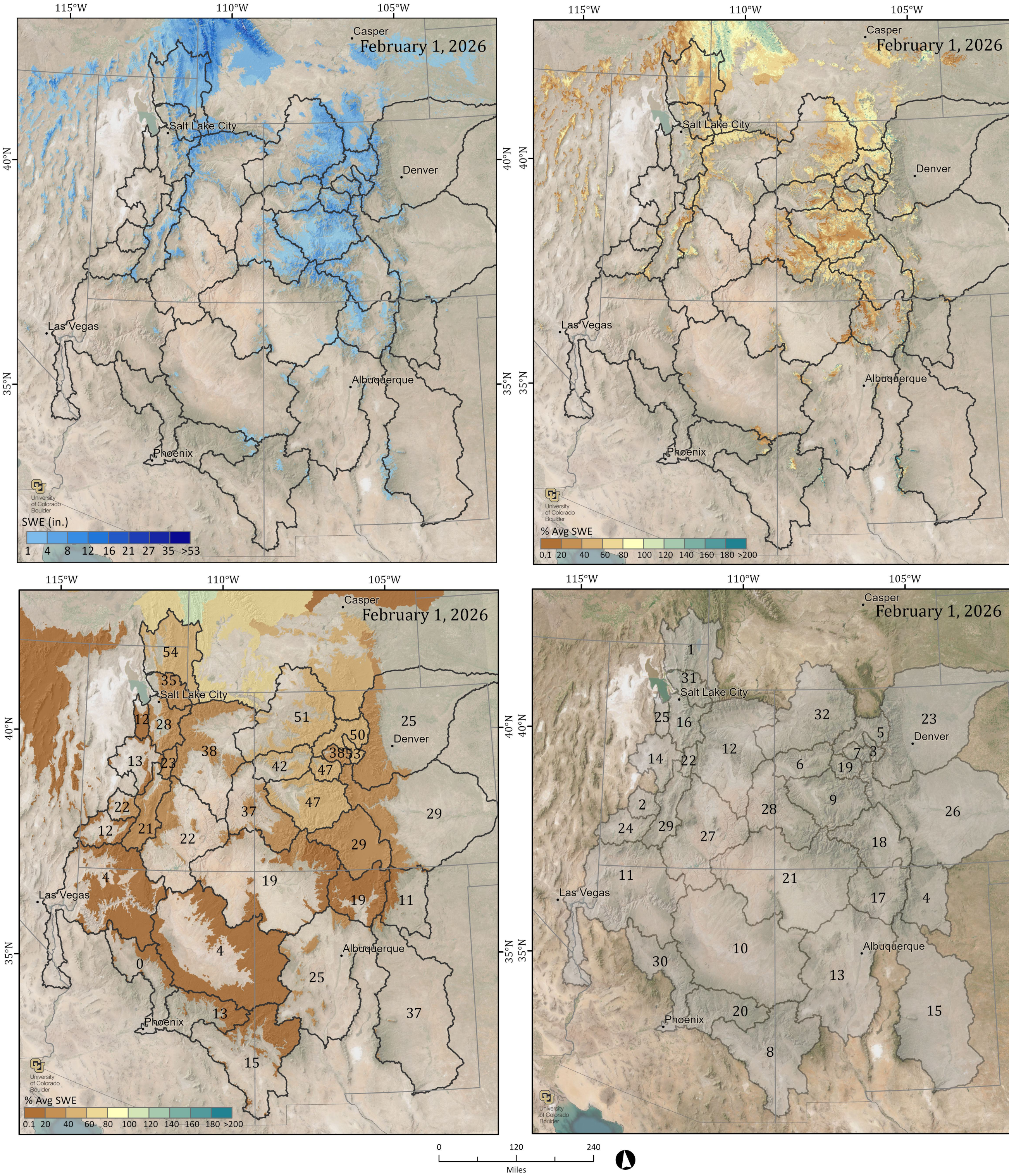

Figure 5. Estimated SWE and % of Average SWE across the South Continental Region. SWE amounts (upper left), percent of long-term average (2001-2025) SWE calculated for each pixel (upper right), basin-wide percent of long-term average (lower left) shaded areas correspond to the elevation bands used in the banded-elevation tables, and basin identification numbers that correspond to Table 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 2/1/2026

	% of Average	SWE (in)				Pillows	Surveys	SNODAS* (in)
Basin	2/1	2/1	SCA	Vol. (AF)	Area (mi²)	2/1	2/1	2/1
1. Bear	54	4	55.2	1,345,187	6,323.40	7.4 (18)	10.3 (1)	3.1
2. Beaver	22	0.6	10.6	28,413	835.5	4.8 (2)	NA	0.6
3. Blue	53	3.9	58.2	142,772	683.9	5.2 (5)	NA	3.5
4. Canadian	11	0.3	9.5	20,050	1,265.80	2.9 (2)	NA	0.3
5. Colorado Headwaters	50	3.5	56.6	543,912	2,906.10	5.5 (13)	NA	3.2
6. Colorado Headwaters-Plateau	42	2.8	48	274,170	1,813.00	4.2 (1)	NA	1.5
7. Eagle	38	2.7	39.9	132,721	918	4.1 (3)	NA	3.3
8. Gila	15	0.1	3.8	25,721	4,926.30	0.9 (6)	3.4 (1)	0.1
9. Gunnison	47	3.3	67.1	1,125,384	6,459.70	5.0 (11)	NA	3.0
10. Little Colorado	4	0.1	2.7	48,833	16,398.00	2.3 (5)	NA	0.0
11. Lower Colorado Mainstream	4	0	1.1	26,426	10,697.40	2.6 (5)	NA	0.0
12. Lower Green	38	2.5	32.1	752,635	5,693.80	4.4 (24)	NA	2.1
13. Lower Rio Grande	25	0.6	19.4	55,669	1,796.70	2.5 (6)	NA	0.2
14. Lower Sevier	13	0.6	11.6	29,405	906.4	2.6 (4)	NA	0.8
15. Pecos	37	1.3	32.9	22,527	332.1	2.2 (2)	NA	1.8
16. Provo-Utah Lake-Jordan	28	1.8	24.8	260,057	2,694.10	6.2 (18)	NA	2.1
17. Rio Chama-Upper Rio Grande	19	0.7	26.2	186,603	5,227.90	3.3 (13)	NA	1.0
18. Rio Grande Headwaters	29	1.2	21.3	499,789	7,613.30	3.9 (14)	NA	1.1
19. Roaring Fork	47	4	61.8	289,843	1,360.30	5.6 (7)	NA	4.2

‡ 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.

** 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.

South Continental SWE Report for 2/1/2026								
	% of Average	SWE (in)				Pillows	Surveys	SNODAS* (in)
Basin	2/1	2/1	SCA	Vol. (AF)	Area (mi²)	2/1	2/1	2/1
20. Salt	13	0.2	9.7	31,291	2,360.60	1.2 (8)	NA	0.4
21. San Juan**	22	1.1	21.4	359,205	6,425.50	4.4 (15)	NA	1.1
22. San Pitch	23	1.3	19.9	60,112	859.5	4.7 (6)	NA	1.1
23. South Platte	25	0.9	15.1	279,184	5,641.90	4.6 (21)	2.0 (1)	0.9
24. Southwestern Utah	12	0.2	4.4	18,448	1,446.90	1.5 (5)	NA	0.2
25. Toole Valley-Vernon Creek	12	0.4	5	18,216	902.1	2.5 (4)	NA	0.3
26. Upper Arkansas	29	0.9	16.7	286,432	5,892.20	2.8 (7)	NA	0.5
27. Upper Colorado-Dirty Devil	22	0.9	14.2	128,951	2,608.00	2.8 (7)	9.2 (1)	1.3
28. Upper Colorado-Dolores	37	2.1	53.6	387,230	3,453.30	5.3 (9)	NA	1.7
29. Upper Sevier	21	1	18.9	207,025	3,767.80	3.1 (16)	NA	1.0
30. Verde	0	0	0.1	245	1,820.70	0.7 (7)	NA	0.0
31. Weber-Ogden	35	2.7	37	290,640	2,046.60	5.7 (17)	NA	2.4
32. White-Yampa	51	3.6	57.2	1,155,312	5,952.40	8.0 (15)	12.0 (1)	2.6
33. Animas	37	2.6	36.8	128,440	922.5	4.8 (6)	NA	2.7

‡ 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.

Intermountain

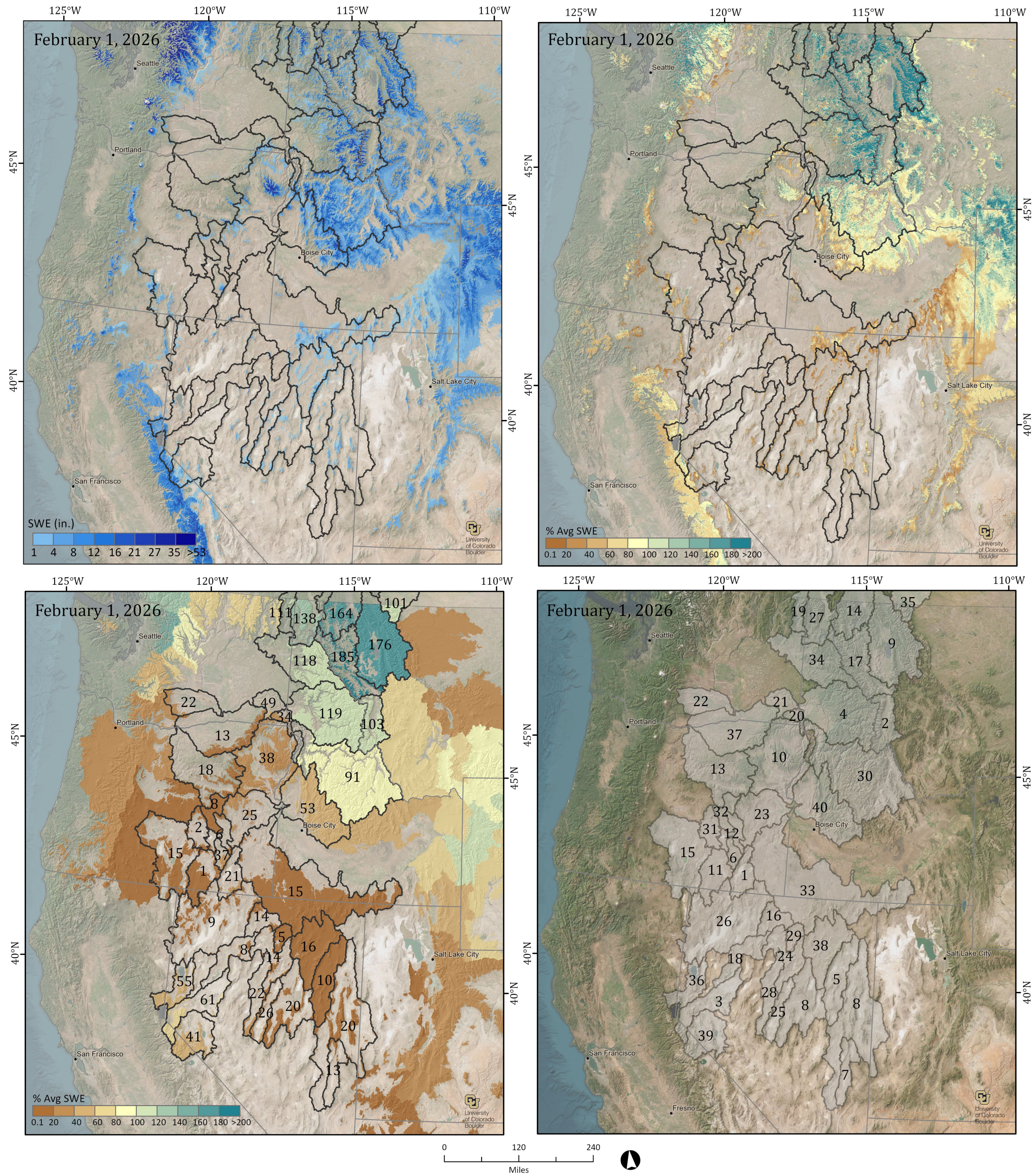

Figure 6. Estimated SWE and % of Average SWE across the Intermountain Region. SWE amounts (upper left), percent of long-term average (2001-2025) SWE calculated for each pixel (upper right), basin-wide percent of long-term average (lower left) shaded areas correspond to the elevation bands used in the 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 2/1/2026

	% of Average	SWE (in)				Pillows	Surveys	SNODAS* (in)
Basin	2/1	2/1	SCA	Vol. (AF)	Area (mi²)	2/1	2/1	2/1
1. Alvord Lake	21	1.3	10.6	21,885	322.7	NA	0.8 (4)	0.1
2. Bitterroot	103	5.1	49.4	533,940	1,955.00	9.5 (4)	3.4 (1)	7.2
3. Carson	61	2.5	31.1	189,777	1,407.70	9.7 (7)	3.3 (1)	2.9
4. Clearwater Basin	119	3.7	39.2	1,471,174	7,475.20	11.8 (9)	3.1 (1)	6.6
5. Clover Valley and Franklin	10	0.3	10	70,144	4,115.00	4.1 (2)	6.5 (1)	0.1
6. Donner und Blitzen	37	3.3	31.8	38,400	219.9	3.2 (2)	NA	0.3
7. Dry Lake Valley	13	0.5	9.4	7,225	296.3	NA	NA	0.0
8. Eastern Nevada	20	0.8	18.5	188,244	4,375.20	3.6 (8)	NA	0.4
9. Flathead	176	4	37.4	1,627,768	7,644.30	13.4 (13)	9.6 (9)	7.3
10. Grande Ronde-Burnt-Powder_Imnaha	38	2.5	28.7	697,082	5,316.00	5.0 (11)	4.1 (5)	2.0
11. Guano	1	0	0.3	3,806	2,062.90	0.0 (1)	0.1 (2)	0.0
12. Harney-Malheur Lakes	6	0.2	4.5	3,713	280.6	NA	0.0 (2)	0.0
13. John Day	18	1	12.4	81,185	1,504.70	2.6 (2)	NA	1.0
14. Kootenai	164	3.7	34.9	329,970	1,671.80	11.0 (5)	17.8 (1)	8.0
15. Lake County-Goose Lake	15	0.7	14.1	140,211	3,623.70	3.6 (2)	1.5 (7)	0.2
16. Little Humboldt	14	0.8	10.5	18,426	420.8	2.1 (3)	NA	0.1
17. Lower Clark Fork	185	5.6	53.9	442,995	1,474.70	23.2 (3)	13.2 (2)	9.7
18. Lower Humboldt	8	0.3	4	4,078	272.6	0.0 (1)	NA	0.0
19. Lower Pend Oreille	111	6.1	53.7	43,581	133.4	9.6 (1)	NA	12.0

‡ 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 2/1/2026								
	% of Average	SWE (in)				Pillows	Surveys	SNODAS* (in)
Basin	2/1	2/1	SCA	Vol. (AF)	Area (mi²)	2/1	2/1	2/1
20. Lower Snake-Asotin	34	1.1	23.1	18,883	333.7	1.7 (2)	NA	0.9
21. Lower Snake-Tucannon	49	2.8	51.9	15,990	108.3	NA	NA	3.8
22. Lower Yakima	22	1.1	17.1	28,299	485	7.4 (2)	NA	2.3
23. Malheur	25	1.6	25.3	85,756	989.2	3.0 (3)	0.3 (2)	1.4
24. Middle Humboldt	14	0.6	11.1	20,858	633	NA	NA	0.0
25. Northern Big Smoky Valley	26	1.2	26.7	37,096	572.8	NA	NA	0.4
26. Northern Great Basin	9	0.4	6.4	51,551	2,224.90	1.2 (2)	0.0 (1)	0.0
27. Panhandle Basins	138	3.7	38.3	324,799	1,644.60	13.5 (3)	5.2 (1)	7.5
28. Reese	22	1.2	27.4	31,342	496.9	2.8 (2)	NA	0.3
29. Rock	5	0.2	2.1	8,153	835.5	4.9 (1)	NA	0.0
30. Salmon Basin	91	6.1	68.6	3,864,553	11,950.50	11.6 (11)	12.2 (1)	7.4
31. Silver	2	0.1	1.4	2,366	444.3	NA	NA	0.0
32. Silvies	8	0.4	7.8	27,378	1,317.40	1.5 (2)	NA	0.1
33. Southern Snake Basins	15	0.7	10.4	444,514	12,552.70	2.6 (13)	0.1 (7)	0.2
34. Spokane	118	2.4	34.4	403,808	3,142.80	5.8 (7)	NA	3.5
35. St. Mary	101	4.7	42.3	166,447	668.1	2.9 (1)	NA	7.2
36. Truckee	55	2.7	31.3	210,916	1,443.60	10.2 (9)	NA	3.4
37. Umatilla-Walla Walla-Willow	13	0.4	10	31,433	1,434.30	3.7 (7)	NA	0.5
38. Upper Humboldt	16	0.7	15.6	196,651	5,035.80	3.4 (8)	2.1 (6)	0.4
39. Walker	41	1.8	48	188,107	1,942.90	11.3 (7)	NA	2.6
40. West Central Basins	53	4.7	56	1,439,700	5,702.10	8.3 (16)	4.3 (10)	5.5

‡ 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.

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.](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.

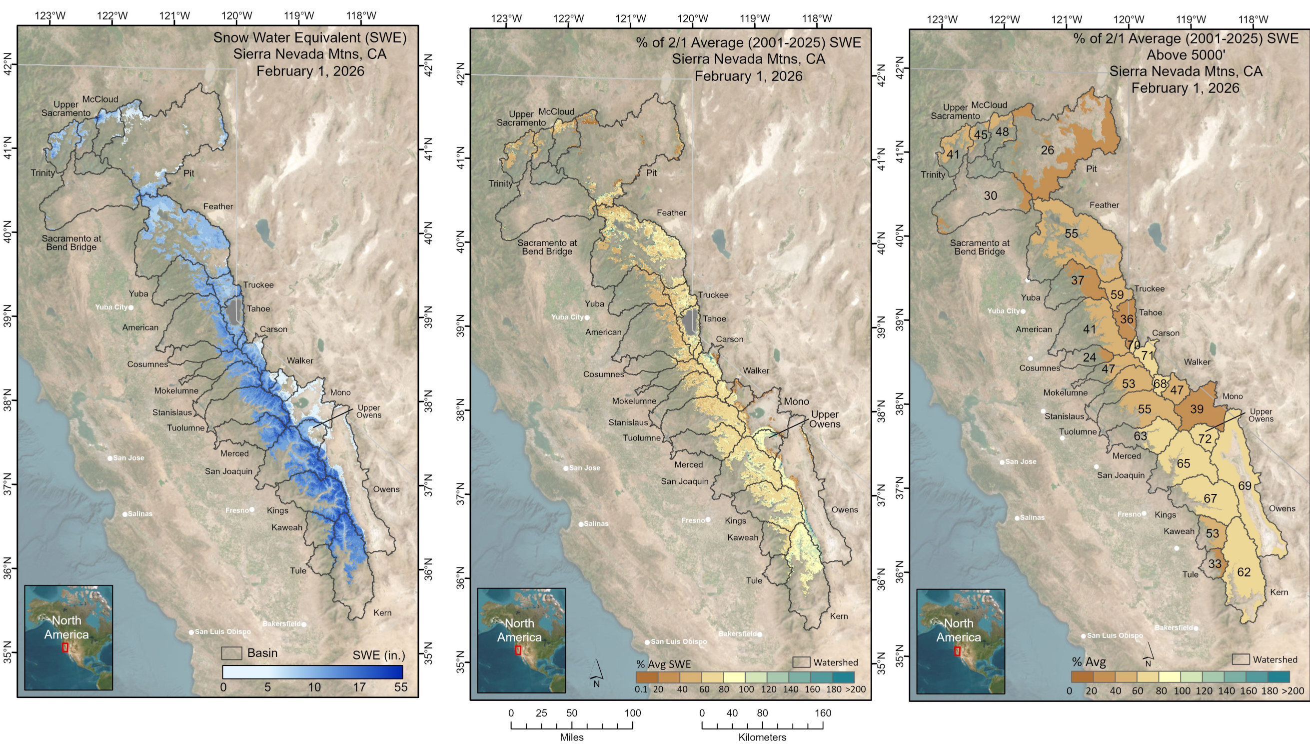

Figure 7. Estimated SWE and % of Average SWE across the Sierra Nevada. SWE amounts (left), and percent of average (2001-2025) SWE for the Sierra Nevada, calculated for each pixel (middle) and basin-wide (right). Basin-wide percent of average is calculated across all model pixels >5000’ elevation.

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 2/1/2026

	% of Average	SWE (in)				Pillows	Surveys	SNODAS* (in)
Basin	2/1	2/1	SCA	Vol. (AF)‡	Area (mi²)	2/1	2/1	2/1
0. Trinity	41	4.9	62.1	83,457	321.4	4.4 (7)	8.6 (4)	3.7
1. Upper Sacramento	45	5.5	67.0	33,499	115.2	9.9 (2)	14.3 (3)	6.9
2. McCloud	48	4.9	74.0	42,869	164.9	9.7 (1)	9.2 (2)	11.9
3. Pit	26	1.3	20.0	142,881	2,086.2	6.3 (5)	3.8 (4)	2.1
4. Sacramento at Bend Bridge	30	2.3	25.9	29,003	240.0	NA	NA	3.8
5. Feather	55	4.8	64.3	543,411	2,117.5	9.6 (7)	6.9 (18)	5.7
6. Yuba	37	4.5	48.1	126,919	525.6	11.9 (4)	10.9 (14)	7.0
7. American	41	5.4	51.7	230,866	807.0	8.0 (13)	8.5 (8)	5.8
8. Cosumnes	24	2.0	19.8	9,614	91.9	NA	NA	1.2
9. Mokelumne	47	6.1	53.0	103,000	317.9	11.4 (3)	9.4 (9)	6.7
10. Stanislaus	53	6.8	59.6	205,299	562.9	11.8 (4)	10.6 (14)	6.1
11. Tuolomne	55	7.7	56.4	373,491	915.0	9.7 (8)	11.8 (8)	7.9
12. Merced	63	7.8	61.8	225,660	539.4	16.3 (2)	13.7 (5)	9.9
13. San Joaquin	65	8.5	65.4	557,438	1,225.4	9.9 (7)	12.2 (21)	11.4
14. Kings	67	8.9	61.5	573,471	1,213.4	14.4 (7)	13.4 (22)	10.4
15. Kaweah	53	5.3	36.3	88,650	314.4	11.7 (1)	6.2 (3)	6.4
16. Tule	33	1.6	12.6	11,529	137.6	2.3 (1)	NA	1.1
17. Kern	62	5.3	35.7	476,622	1,682.8	11.5 (5)	10.2 (11)	3.6
18. Truckee	59	6.6	75.7	149,541	425.4	9.7 (6)	9.5 (1)	9.2

* 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.

Sierra Nevada SWE Report for 2/1/2026								
	% of Average	SWE (in)				Pillows	Surveys	SNODAS* (in)
Basin	2/1	2/1	SCA	Vol. (AF)‡	Area (mi²)	2/1	2/1	2/1
19. Tahoe	36	4.1	41.3	111,323	508.3	9.0 (7)	10.0 (2)	7.6
20. W Carson	70	9.1	87.4	31,677	65.3	12.3 (3)	NA	11.9
21. E Carson	71	6.6	80.7	124,993	355.2	7.7 (4)	NA	7.4
22. W Walker	68	8.4	89.8	80,908	179.8	13.1 (4)	12.5 (1)	10.6
23. E Walker	47	3.1	86.5	59,253	356.3	9.9 (1)	NA	5.3
24. Mono	39	1.7	66.0	98,196	1,085.8	NA	16.8 (4)	4.5
25. Upper Owens	72	4.7	80.2	96,195	382.7	13.2 (1)	20.0 (1)	9.4
26. Owens	69	2.5	29.0	233,396	1,772.9	8.7 (4)	12.4 (4)	2.2

* 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.

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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