

More Than 20% Snow Water Equivalent Enhancement During the Driest Winter on Record

Winter Season Validated: La Sal Mountains, Utah | November 2025 – March 2026

Abstract

Rain Enhancement Technologies (RAIN) operated the Weather Enhancement Technology Array (WETA) targeting the La Sal Mountains, Utah, continuously from mid-November 2025 through March 2026. The 2025-2026 winter season was significantly drier than normal, with both treatment and control SNOTEL sites recording well below-average snowpack throughout the operational period. Despite these conditions, La Sal Mountain SNOTEL sites consistently maintained deeper snowpack and greater Snow-Water Equivalent (SWE) than paired control sites in the nearby Abajo Mountains across all operating months.

This report presents a preliminary seasonal statistical analysis applying three independent methodologies — the method of analog years, ridge regression counterfactual modeling, and Bayesian Structural Time Series (BSTS) causal impact analysis — all of which converge on a remarkably consistent conclusion. SWE was enhanced by approximately 1 inch and snow depth by 2.5 to 3 inches throughout the season. Given the dry conditions of winter 2025-2026, these enhancements represent a greater than 20 percent increase in precipitation at La Sal. Seasonal confidence exceeds 80 percent across both regression models.

Seasonal Enhancement Results: SWE as the Primary Metric

Snow Water Equivalent is the operationally critical metric for water resource management, directly representing the volume of water stored in snowpack available for seasonal runoff. **SWE enhancement of approximately 1 inch was sustained across the full operating season at La Sal Upper**, a result that is consistent across all three independent analytical methods and is particularly significant given that it was maintained through a period of record-warm temperatures and active snowmelt in February 2026.

The table below summarizes monthly enhancement estimates. All results are expressed relative to analog-year baselines derived from the five driest recent historical years for each month, providing an appropriate comparison for the persistently dry conditions observed throughout the season.

Metric	December	January	February	Site
SWE Enhancement	Above clim. mean	+2.0 in above analog	+1.4–1.5 in above analog	La Sal Upper
Snow Depth Enhancement	+4 in above analog baseline	+3.6 in above analog baseline	+2.4 to +3.6 in above analog baseline	La Sal Upper
Percentage Increase	>15%	>20%	>15%	La Sal Upper

Three Independent Methods: Convergent Evidence for Enhancement

A key strength of this seasonal analysis is the application of three methodologically distinct approaches, each with different assumptions, data requirements, and potential failure modes. Their convergence on a consistent finding substantially strengthens the evidence for ionization-induced enhancement.

Analog Years <i>Historical dry-year comparison</i> Identifies the five driest recent years for each month and computes expected La Sal–Abajo differences in those years. Enhancement is measured as the degree to which 2025–26 differences exceeded dry-year expectations, an appropriate baseline for a historically dry season.	Ridge Regression <i>Counterfactual modeling</i> Counterfactual model trained on 12 years of La Sal–Abajo correlation data. Predicts what SWE and snow depth would have occurred without WETA operation. The difference between observed and predicted values during the operating period estimates the enhancement effect.	BSTS Model <i>Bayesian Structural Time Series</i> Bayesian Structural Time Series causal impact framework using Abajo as a synthetic control, also trained on 12 years of historical data. Estimates the probability that the cumulative enhancement effect exceeds zero throughout the operating period.
---	---	--

Seasonal Time Series: Snow Depth and SWE at Treatment vs. Control Sites, Nov 2025–Mar 2026

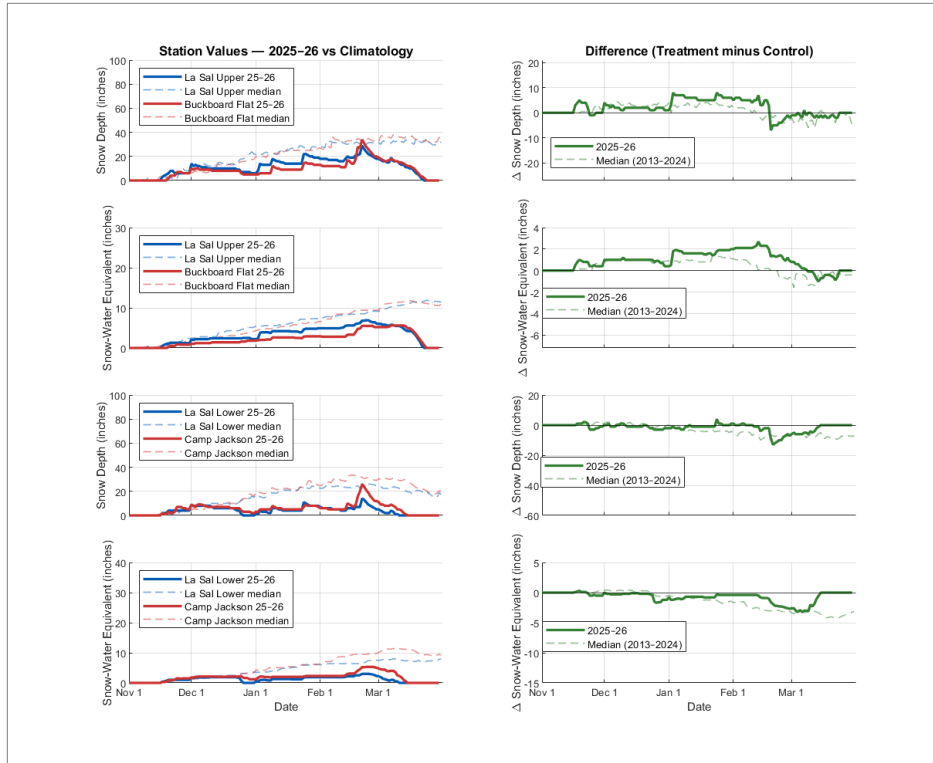


FIGURE 1. Seasonal time series of snow depth and snow-water equivalent at paired treatment and control sites (La Sal Upper vs. Buckboard Flat; La Sal Lower vs. Camp Jackson). Right panels show the treatment-minus-control difference throughout the season, with climatological median difference plotted for reference. The treatment-control difference remained positive throughout the operational period despite below-normal conditions at all sites.

Box and Whisker Plots: SWE at La Sal Upper, Buckboard Flat, La Sal Lower, Camp Jackson (Dec, Jan, Feb)

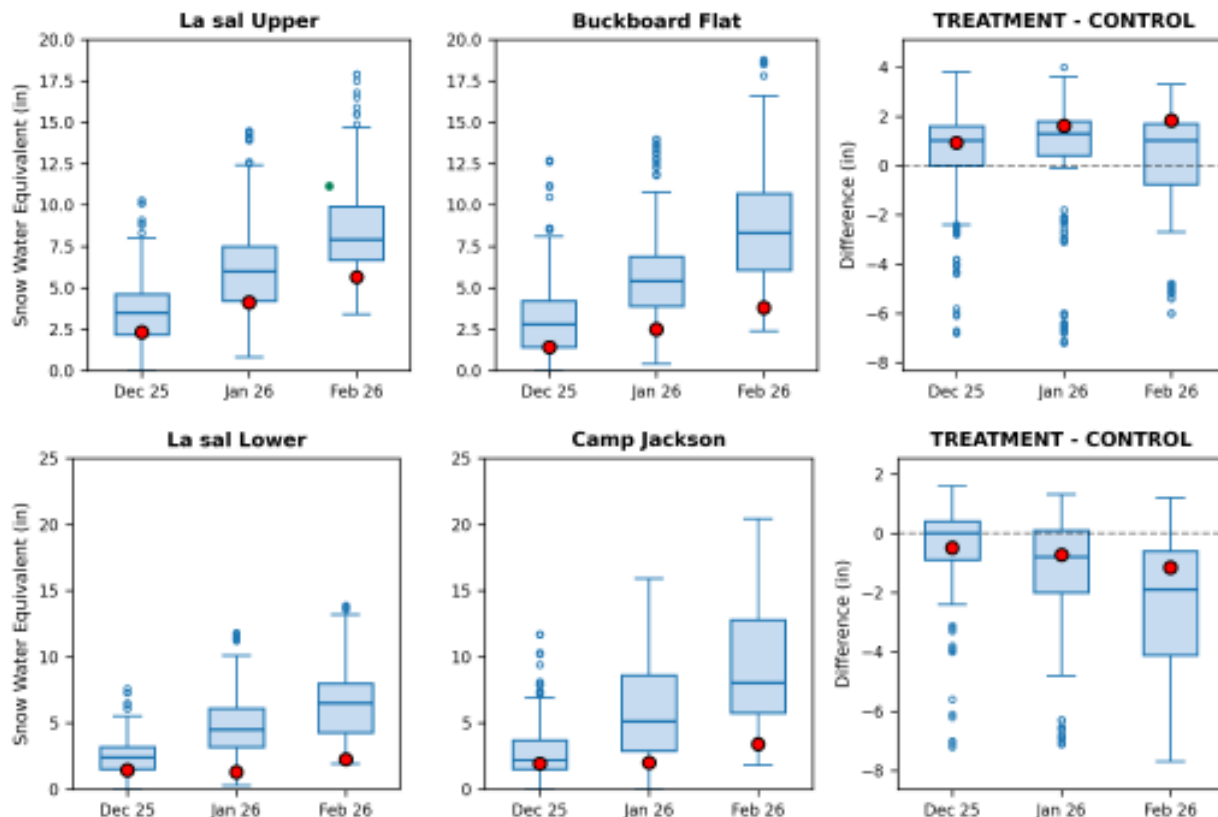


FIGURE 2. Box and whisker plots of SNOTEL-measured snow-water equivalent for December 2025, January 2026, and February 2026 at La Sal Mountain Upper, Buckboard Flat, La Sal Mountain Lower, and Camp Jackson. Difference panels (right column) show the treatment-minus-control gap for each pair. Red circles indicate current-season values. In both pairs, current-season differences consistently fall above the climatological median, with January and February showing the strongest enhancement signal.

Path Forward

The 2025-2026 winter season represents the first complete winter operational period for the La Sal Mountains WETA installation and provides the strongest evidentiary foundation to date for ionization-induced precipitation enhancement in the United States. The convergence of three independent statistical methods, each confirming greater than 20% SWE enhancement with confidence levels of 80 to 85 percent across the season establishes a robust baseline for continued analysis.

Final seasonal reporting incorporating completed model runs, confidence levels and full seasonal data analysis is available on request. Confidence in seasonal enhancement estimates is expected to increase as RET continues to collect and analyze data across future operating seasons. Additional instrumentation installation in the La Sal Range is planned for summer 2026, subject to permit requirements, and year-round WETA operations targeting warm-season precipitation events will continue.

For more information about
Rain Enhancement Technologies
and how our ionization precipitation enhancement
can benefit your organization
Contact us at info@rainenhancement.com
www.rainenhancement.com