Airborne Lidar Measurements of the 2026 Black River Snowpack

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Salt River Project

March 19, 2026

Acknowledgments

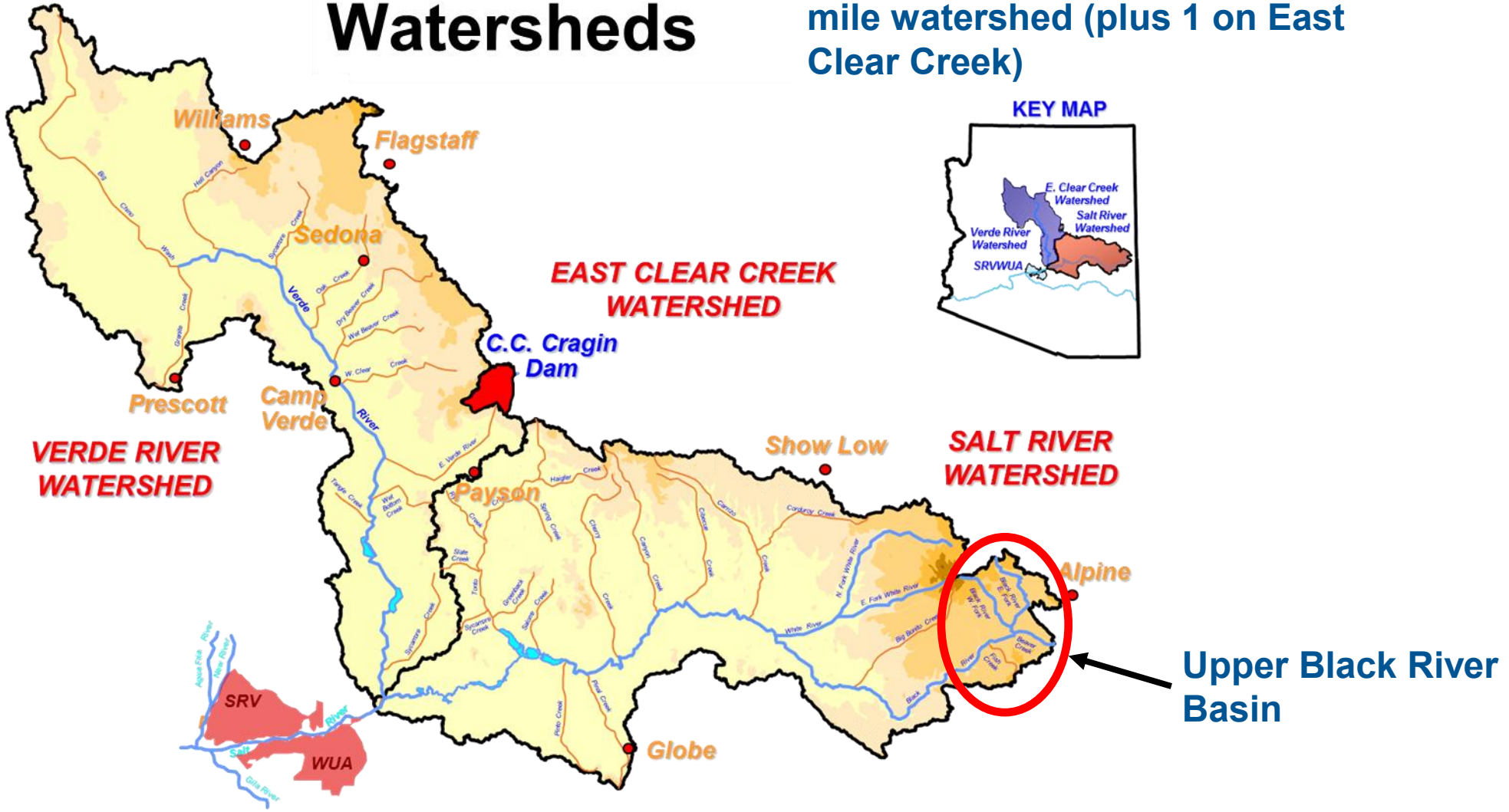
- U.S. Bureau of Reclamation
- Arizona State University
  - Enrique Vivoni, Jay Famiglietti, Zhaocheng Wang, Ravindra Dwivedi, and Luke Fredenberg
- Salt River Project
- Airborne Snow Observatories, Inc.

Outline

- Salt-Verde and SRP overview
- Wet Fall
- Dry Winter
- Lidar Measurements of the 2026 Black River Snowpack

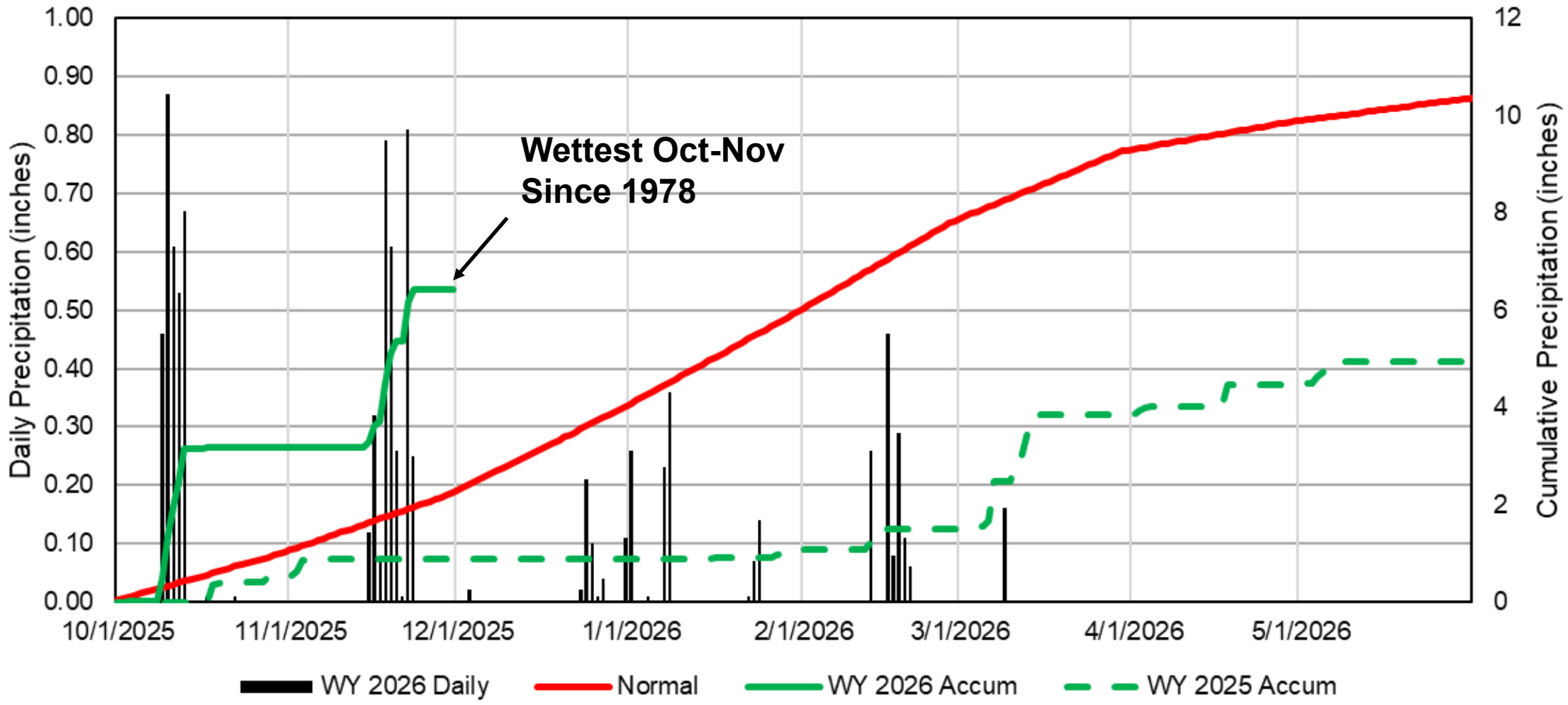
Salt and Verde Watersheds

SRP manages seven reservoirs; 6 on the Salt (4) and Verde (2) rivers in Arizona for a 13,000 sq. mile watershed (plus 1 on East Clear Creek)

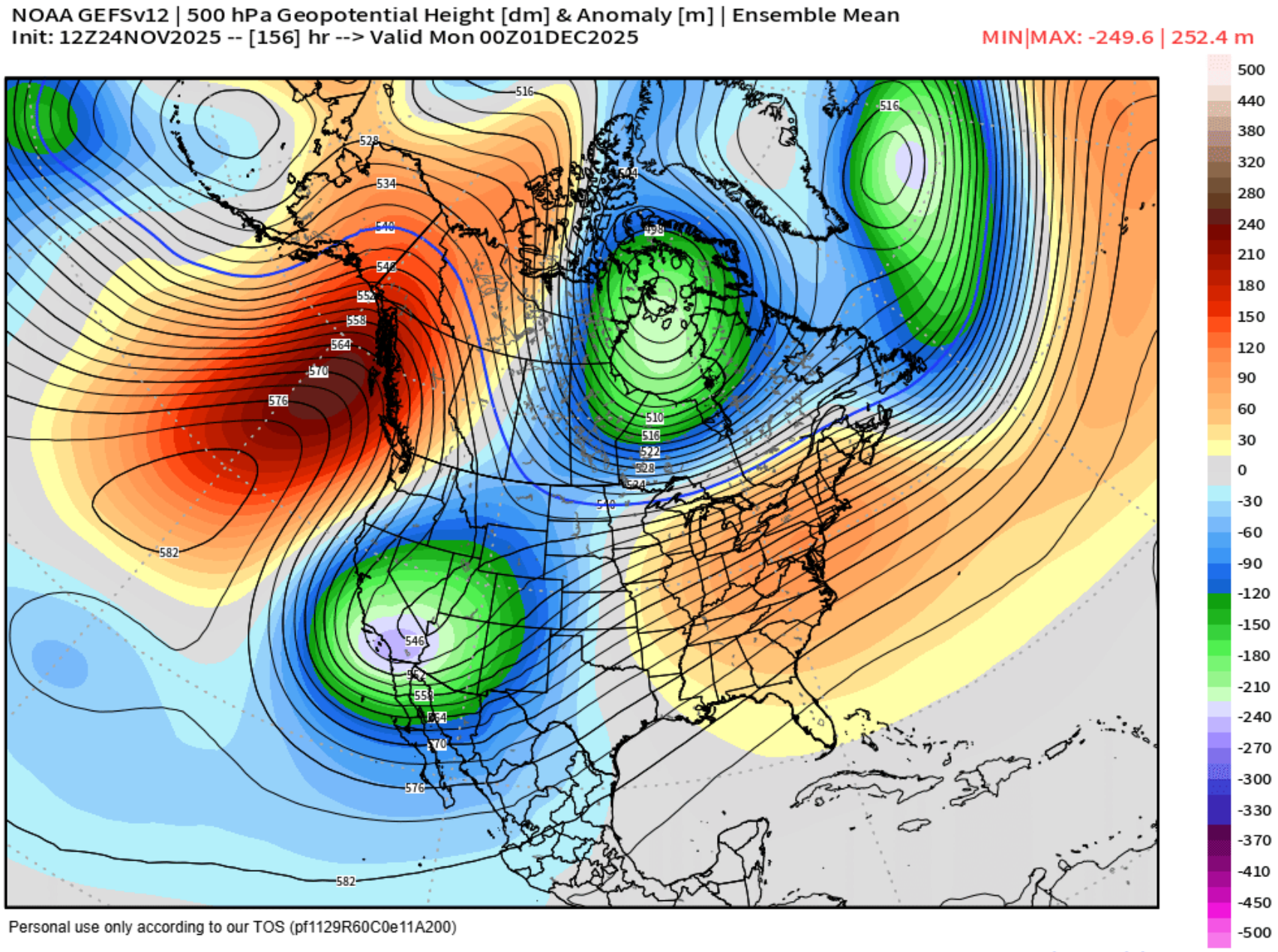


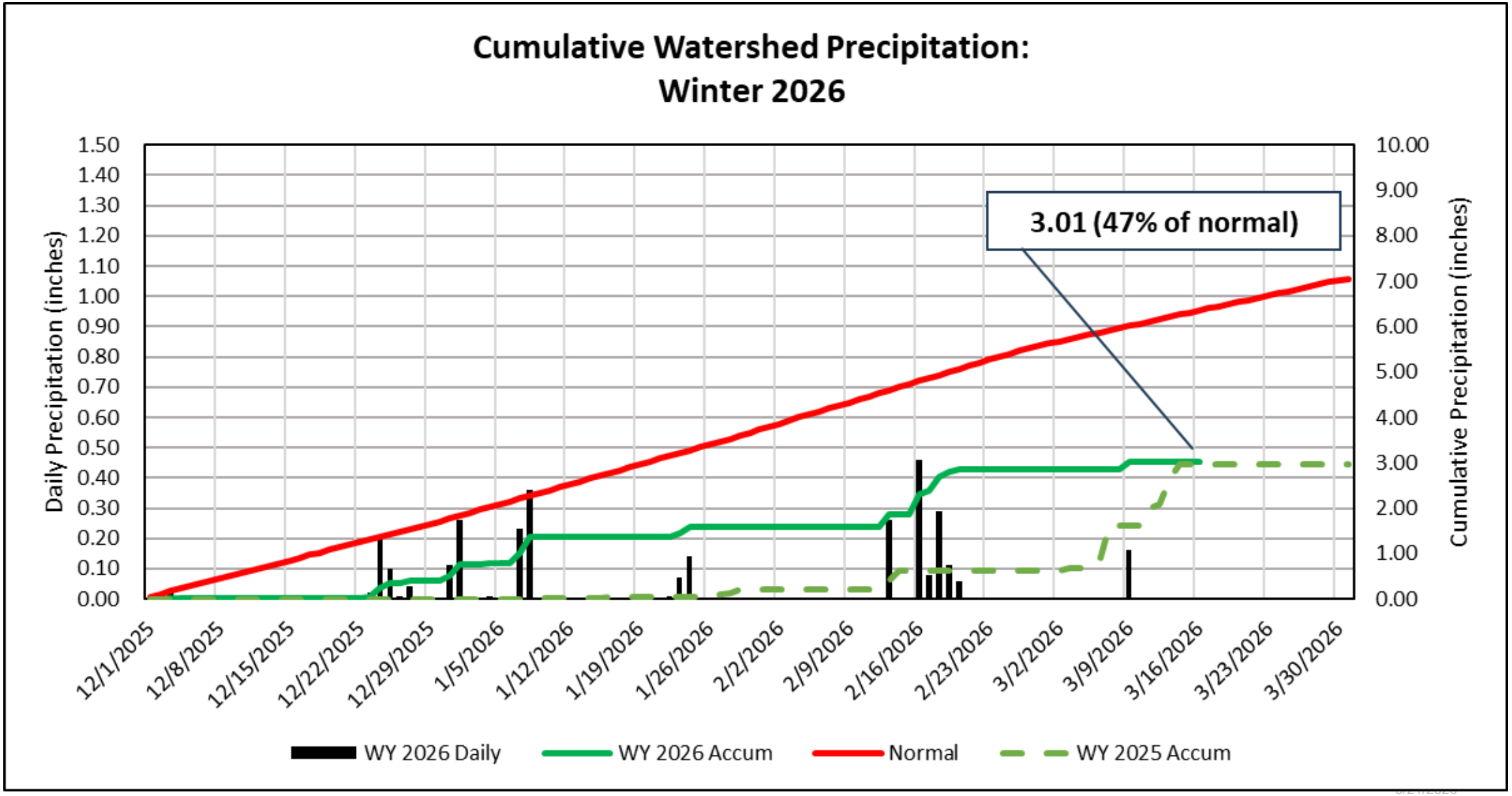
Upper Black River Basin

Cumulative Watershed Precipitation: Fall-Winter-Spring (WY 2026)



After the Nov. storms, weather models favored early snowpack development in AZ




Cumulative Watershed Precipitation:
Winter 2026
Daily Precipitation (inches)
Cumulative Precipitation (inches)
1.50
1.40
1.30
1.20
1.10
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
3.01 (47% of normal)
12/1/2025
12/8/2025
12/15/2025
12/22/2025
12/29/2025
1/5/2026
1/12/2026
1/19/2026
1/26/2026
2/2/2026
2/9/2026
2/16/2026
2/23/2026
3/2/2026
3/9/2026
3/16/2026
3/23/2026
3/30/2026
WY 2026 Daily
WY 2026 Accum
Normal
WY 2025 Accum

ASO Survey Report

Upper Black River, AZ

Survey Date: March 12, 2026

Airborne Snow Observatories, Inc. is a public benefit corporation with a mission to provide high-quality, timely, and accurate snow measurement, modeling, and runoff forecasts to empower the world's water managers to make the best possible use of our planet's precious water.

Historical data and reports can be found at:
data.airbornesnowobservatories.com

Photo Credit: Zhaocheng Wang, Arizona State University

Survey Results from Feb. 23

UPPER BLACK RIVER
FEBRUARY 23, 2026 SURVEY

Survey date: February 23, 2026
Survey # of Water Year 2026: 2
Report delivery date: February 27, 2026

Full basin SWE: 9.5 ± 0.4 TAF
Δ SWE since previous survey: +0.4 TAF
Estimated snowline: 8470 ft

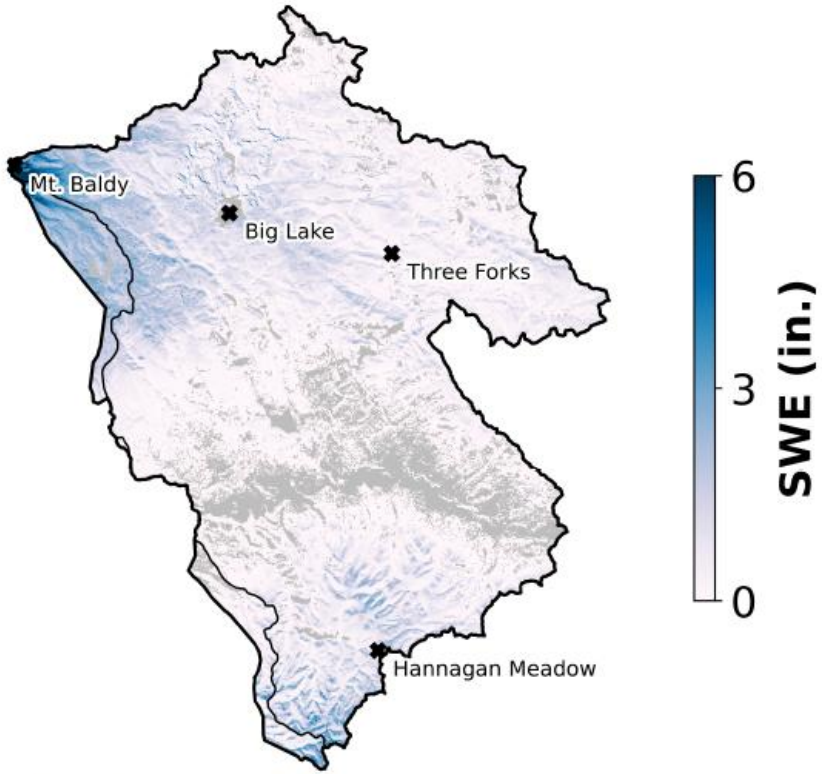
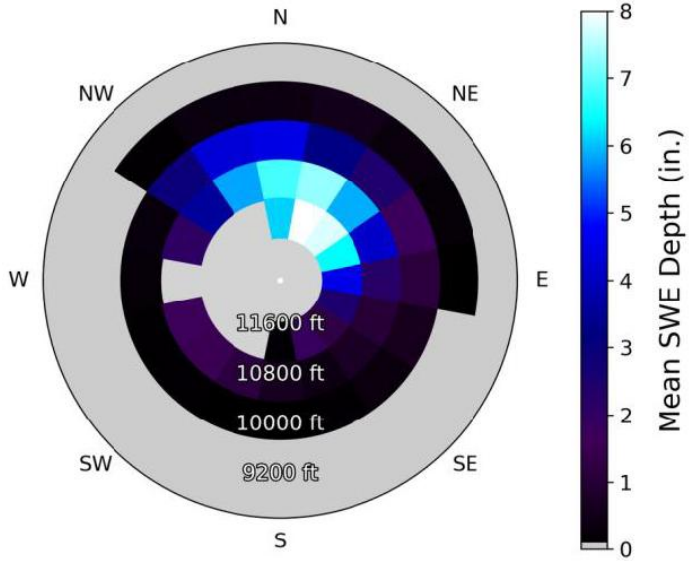
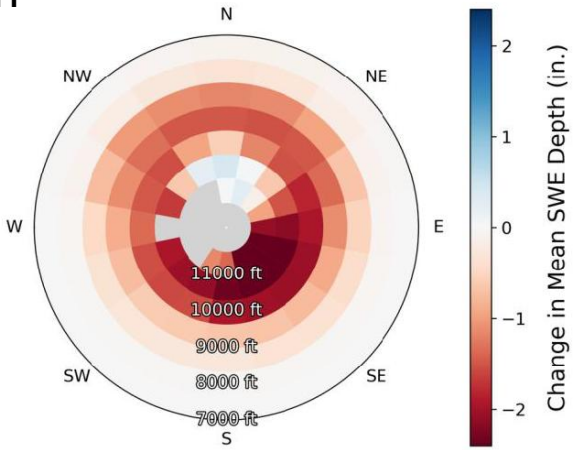


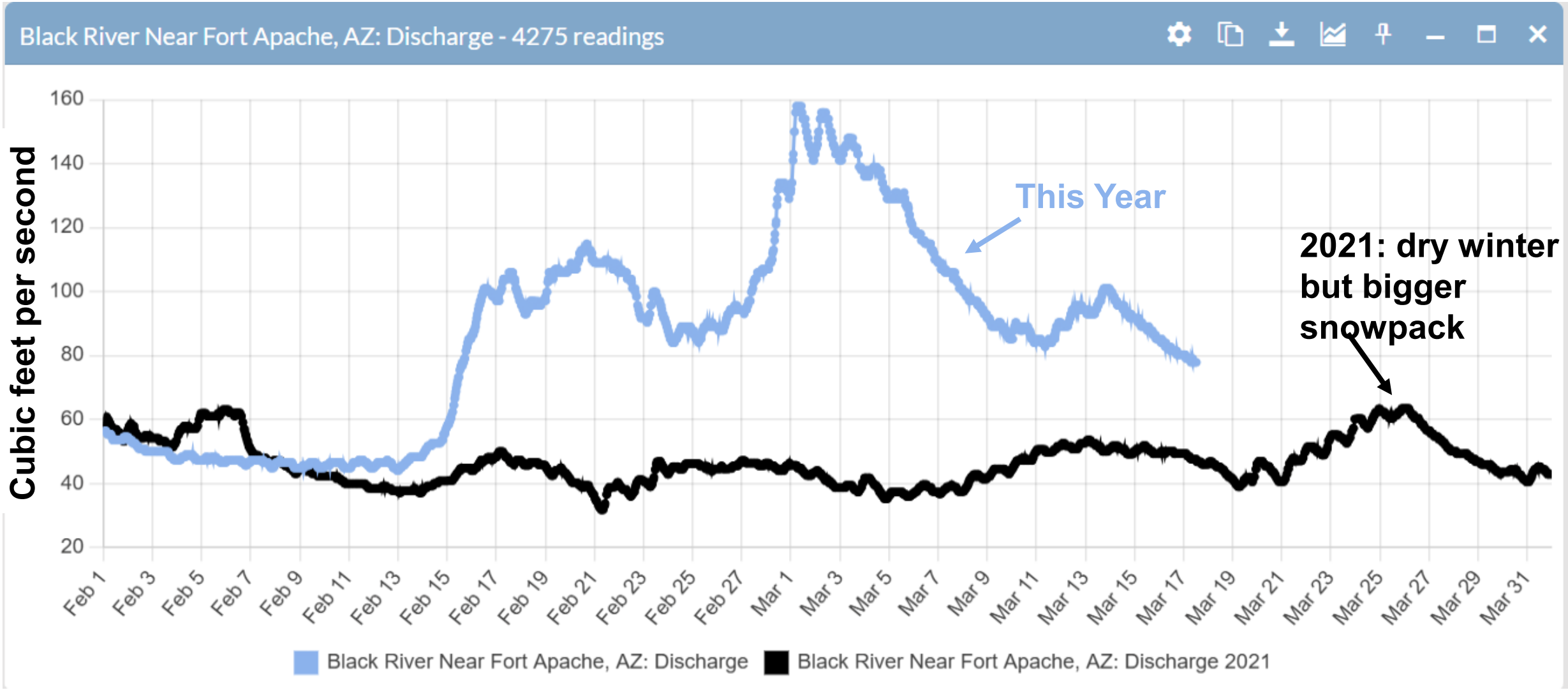
Figure 1. Spatial distribution of Snow Water Equivalent depth (in).

Survey Results from March 12



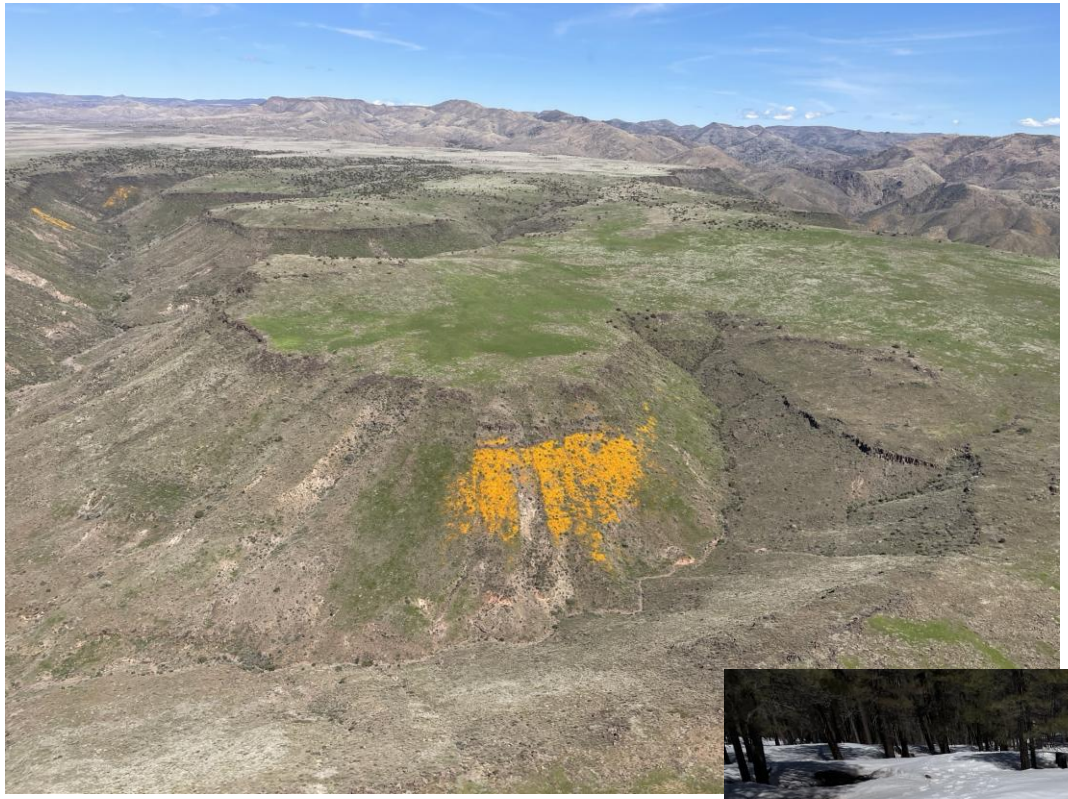
Feb. 23 to March 12 change. Snowpack decreased everywhere but the highest elevation north aspects




Black River Near Fort Apache, AZ: Discharge - 4275 readings
Cubic feet per second
160
140
120
100
80
60
40
20
This Year
2021: dry winter but bigger snowpack
Feb 1
Feb 3
Feb 5
Feb 7
Feb 9
Feb 11
Feb 13
Feb 15
Feb 17
Feb 19
Feb 21
Feb 23
Feb 25
Feb 27
Mar 1
Mar 3
Mar 5
Mar 7
Mar 9
Mar 11
Mar 13
Mar 15
Mar 17
Mar 19
Mar 21
Mar 23
Mar 25
Mar 27
Mar 29
Mar 31
Black River Near Fort Apache, AZ: Discharge
Black River Near Fort Apache, AZ: Discharge 2021

Summary

- Wet fall but dry winter and historically small snowpack
- Airborne lidar and on-ground measurements produced high resolution maps of the Upper Black River snowpack
- The wet fall likely aided the minimal snowmelt in producing a streamflow response in the Black River.
    - Providing an extreme case to test hydrologic models



Questions?