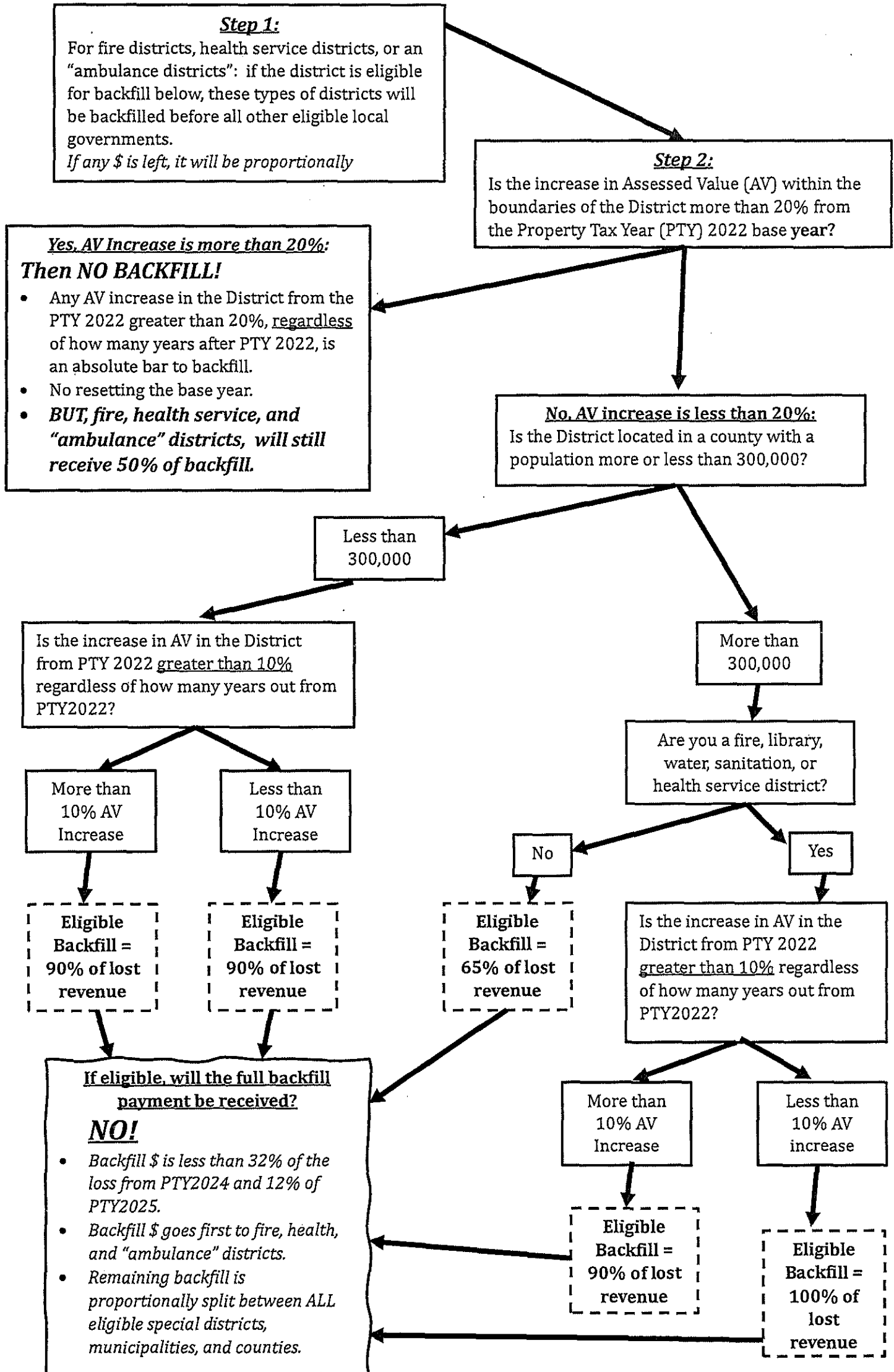


SB23-303 Back Fill Flow Chart

Does my District get any of the following backfill?:

- Property Tax Year 2024 (\$ in 2025) = **\$161.3 M backfill** (or 32% of the \$510.0 M of lost revenue)
 - Property Tax Year 2025 (\$ in 2026) = **\$71.7 M backfill** (or 12% of the \$619.9 M of lost revenue)
- May 22, 2023



Property Tax Assessment Rate Changes pursuant to SB22-238
June 27, 2022

Type of Property		Assessment Rates – For property tax years 2022 (payable in 2023) Created under SB21-293	Assessment Rates – For property tax year 2023 (payable in 2024) Created under SB22-238	Assessment Rates – For property tax year 2024 (payable in 2025) Created under SB22-238	Assessment Rates – For property tax year 2025 (payable in 2026) & thereafter
Non-residential	Hotels, motels and B &Bs – 'lodging properties'	29%	27.9% (Reduce first \$30,000 of Actual Value)	29%	29%
	Renewable Energy Production	26.4%	26.4%	26.4%	29%
	Agricultural Property	26.4%	26.4%	26.4%	29%
	Commercial, Vacant, Industry	29%	27.9% <i>(For improved commercial only: reduce first \$30,000 of Actual Value)</i>	29%	29%
	Oil & Gas	87.5%	87.5%	87.5%	87.5%
Residential	Multi-family housing (i.e. apartments)	6.80%	6.765% (Reduce first \$15,000 of Actual Value)	6.8%	7.15%
	All other residential property	6.95%	6.765% (Reduce first \$15,000 of Actual Value)	TBD (set at a level to hit a total revenue reduction over the 2023 & 2024 property tax years of \$700 million)	7.15%

Backfill for Property Tax Year 2023 (3 tiers). (There is **NO** backfill for property tax year 2022 and 2024)

1.) Local governments in counties with over 300,000 people will be made whole for 65% of their lost revenue.

9 counties: Adams, Arapahoe, Boulder, Denver, Douglas, El Paso, Jefferson, Larimer and Weld

*Fire, library, sanitation & water districts, health service districts & municipalities within these counties will receive a higher percentage backfill. Those with an assessed valuation of more than 10% will be made whole for 90% of their lost revenue. Those with an assessed valuation of less than 10% will be made whole for 100% of their lost revenue.

2.) Local governments in counties with a.) under 300,000 people and b.) an assessed valuation growth of over 10% will be made whole for 90% of their lost revenue.

10 counties: Chaffee, Eagle, Elbert, Grand, Gunnison, Lake, Montrose, Park, San Miguel and Summit

3.) Local governments in counties with a.) under 300,000 and b.) an assessed valuation growth of under 10% will be made whole for 100% of their lost revenue.

Remaining 45 counties

Backfill for Property Tax Years 2024 – 2033:

- No backfill for local government’s whose ‘real property’ assessed value has increased by more than 20% from 2022 assessed valuation numbers (referred to as ‘20% trigger’).
- The total amount available for backfill for non-school local governments is equal to 20% of the available dollars in the HH fund.
- Fire, EMS and Health Districts are first in line for backfill. Assuming there is sufficient funding, these entities will be made whole first and all other local governments will receive a portion of whatever remains. Fire, EMS and Health Districts who exceed the 20% trigger will receive 50% of their lost revenue.
- Only local governments in counties with less than 300,000 in population can become re-eligible for backfill in future years after hitting the 20% trigger.

Backfill for Property Tax Year 2023 - 2033 (3 tiers – initially established in SB22-238).

1.) Local governments in counties with over 300,000 people will be made whole for 65% of their lost revenue.

9 counties: Adams, Arapahoe, Boulder, Denver, Douglas, El Paso, Jefferson, Larimer and Weld

*Fire, library, sanitation & water districts, health service districts & municipalities within these counties will receive a higher percentage backfill. Those with an assessed valuation of more than 10% will be made whole for 90% of their lost revenue. Those with an assessed valuation of less than 10% will be made whole for 100% of their lost revenue.

2.) Local governments in counties with a.) under 300,000 people and b.) an assessed valuation growth of over 10% will be made whole for 90% of their lost revenue.

3.) Local governments in counties with a.) under 300,000 and b.) an assessed valuation growth of under 10% will be made whole for 100% of their lost revenue.

Senior Homestead Exemption:

- \$140,000 (rather than \$100,000) in actual value reduction for those qualifying for the senior homestead exemption. (This amount includes the \$40k listed above.)
- Allow exemption to be portable

Participatory Taxation:

- Revenue growth tagged to inflation UNLESS governing body votes to override the cap.
- Does not apply to schools and other voter-approved mill levies.

State Revenue Debrucing Provision:

- Seek voter approval in 2023 to allow state revenues to grow by inflation + population + 1% for 10 years.
- 80% of revenue will be used to backfill schools. The remaining 20% will be used to partially backfill local governments.
- Partial debrucing may continue beyond 10 years if legislature maintains or lowers assessment rates further.



Child Care Facility
 Affordable Housing Authority
 Reaching Center
 Regional Transportation Authority

Property Tax Assessment Rate Changes pursuant to SB23-303
 (Contingent on the passage of Prop HH on November 7, 2023)

May 19, 2023

Type of Property		Assessment Rates For property tax years 2022 (payable in 2023) Created under SB21-293	Assessment Rates For property tax year 2023 (payable in 2024) Created under SB22-238	Assessment Rates For property tax year 2024 (payable in 2025) Created under SB22-238	Assessment Rates For property tax year 2025 (payable in 2026)	Assessment Rates For property tax year 2026 (payable in 2027)	Assessment Rates For property tax year 2027 (payable in 2028)	Assessment Rates For property tax year 2028 (payable in 2029)	Assessment Rates For property tax year 2029 (payable in 2030)	Assessment Rates For property tax year 2030 (payable in 2031)	Assessment Rates For property tax year 2031 (payable in 2032)	Assessment Rates For property tax year 2032 (payable in 2033)
Non-residential	Hotels, motels and B & Bs - 'lodging properties'	29%	27.9%-27.85% (Reduce first \$30,000 of Actual Value)	29% 27.85%	29% 27.85%	29% 27.85%	29% 27.65%	29% 27.65%	29% 26.9%	29% 26.9%	29% 25.9% or 26.9%* (*if growth trigger is met)	29% 25.9% or 26.9%* (*if growth trigger is met)
	Renewable Energy Production	26.4%	26.4%	26.4%	29% 26.4%	29% 26.4%	29% 26.4%	29% 26.4%	29% 26.4%	29% 26.4%	29% 25.9% or 26.4%*	29% 25.9% or 26.4%*
	Agricultural Property	26.4%	26.4%	26.4%	29% 26.4%	29% 26.4%	29% 26.4%	29% 26.4%	29% 26.4%	29% 26.4%	29% 25.9% or 26.4%*	29% 25.9% or 26.4%*
	Renewable Energy & Ag Properties	N/A	N/A	21.9%	21.9%	21.9%	21.9%	21.9%	21.9%	21.9%	21.9%	21.9%
	Commercial, Vacant, Industry	29%	27.9%-27.85% (For improved commercial only: reduce first \$30,000 of Actual Value)	29% 27.85%	29% 27.85%	29% 27.85%	29% 27.65%	29% 27.65%	29% 26.9%	29% 26.9%	29% 25.9% or 26.9%*	29% 25.9% or 26.9%*
	Oil & Gas	87.5%	87.5%	87.5%	87.5%	87.5%	87.5%	87.5%	87.5%	87.5%	87.5%	87.5%
Residential	Multi-family housing (i.e. apartments)	6.80%	6.765%-6.7% (Reduce first \$15,000 \$50,000 of Actual Value)	6.8% 6.7% (Reduce first \$40,000 of Actual Value)	7.15%-6.7% (Reduce first \$40,000 of Actual Value)	7.15%-6.7% (Reduce first \$40,000 of Actual Value)	7.15%-6.7% (Reduce first \$40,000 of Actual Value)	7.15%-6.7% (Reduce first \$40,000 of Actual Value)	7.15%-6.7% (Reduce first \$40,000 of Actual Value)	7.15%-6.7% (Reduce first \$40,000 of Actual Value)	7.15%-6.7% (Reduce first \$40,000 of Actual Value)	7.15%-6.7% (Reduce first \$40,000 of Actual Value)
	All other residential property (i.e. condo, single family home, townhomes etc.)	6.95%	6.765%-6.7% (Reduce first \$15,000 \$50,000 of Actual Value)	FBD 6.976% 6.7% (set at a level to hit a total revenue reduction over the 2023 & 2024 property tax years of \$700 million) (Reduce first \$40,000 of Actual Value)	7.15%-6.7% (owner-occupied rate & reduce \$40,000 of Actual Value) 6.7% (Investment properties rate)	7.15%-6.7% (owner-occupied rate & reduce \$40,000 of Actual Value) 6.7% (Investment properties rate)	7.15%-6.7% (owner-occupied rate & reduce \$40,000 of Actual Value) 6.7% (Investment properties rate)	7.15%-6.7% (owner-occupied rate & reduce \$40,000 of Actual Value) 6.7% (Investment properties rate)	7.15%-6.7% (owner-occupied rate & reduce \$40,000 of Actual Value) 6.7% (Investment properties rate)	7.15%-6.7% (owner-occupied rate & reduce \$40,000 of Actual Value) 6.7% (Investment properties rate)	7.15%-6.7% (owner-occupied rate & reduce \$40,000 of Actual Value) 6.7% (Investment properties rate)	7.15%-6.7% (owner-occupied rate & reduce \$40,000 of Actual Value) 6.7% (Investment properties rate)

27.9% is SB 238 only one year

SB 238 only effective FY 2023

SB 238

SB 238

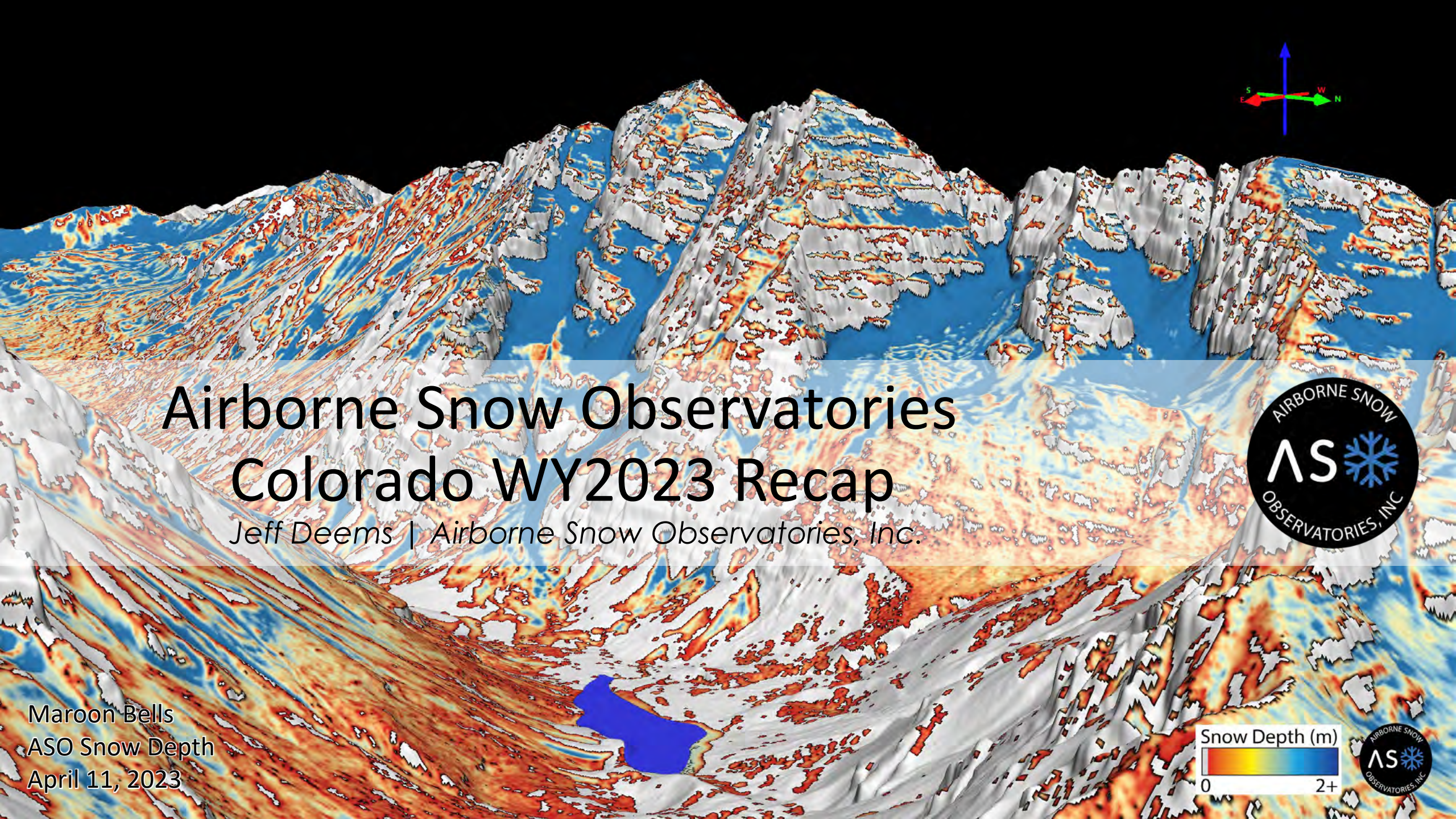
SB 238

27.9 - 27.85 = .05 / 27.9 = .002%
 .2%
 .2%

SB 238
 6.80 - 6.765 = .035
 .035 / 6.80 = .5%

6.765 - 6.700 = .065
 .065 / 6.765 = .9%

SB 238
 6.95 - 6.765 = .185
 .185 / 6.95 = 2.7%

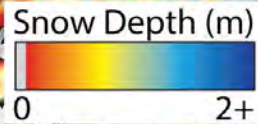


Airborne Snow Observatories Colorado WY2023 Recap

Jeff Deems | Airborne Snow Observatories, Inc.



Maroon Bells
ASO Snow Depth
April 11, 2023



Snowmelt runoff forecasts with sparse data & increasing variability

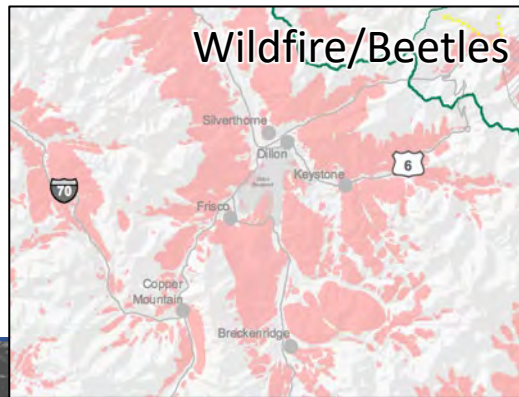
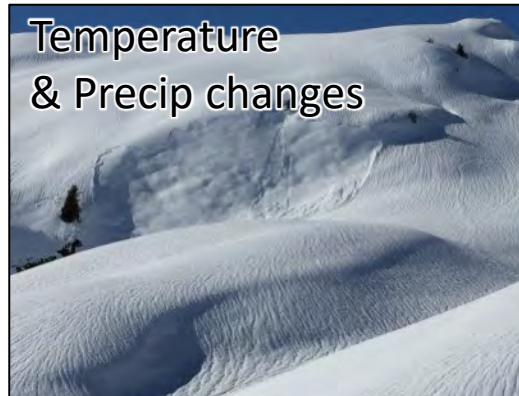
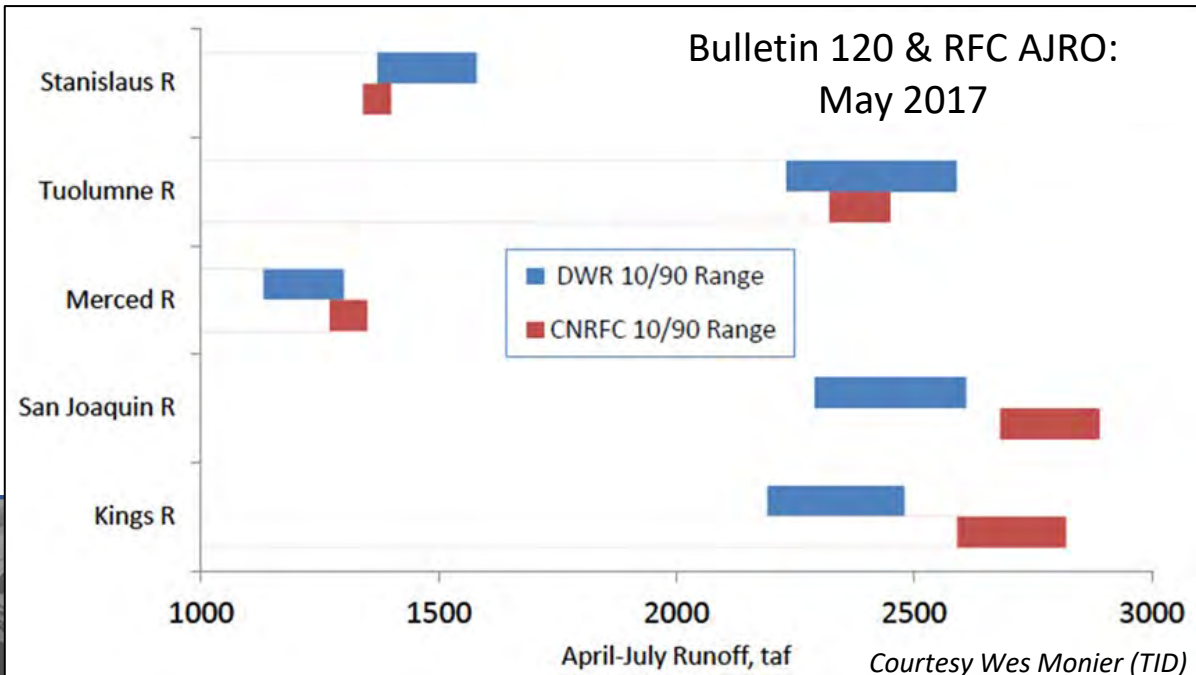


Elk Range
ASO Snow Depth
April 2019



History is an increasingly poor guide to the present

- forecasts based on historic data assume that calibrations apply to current conditions
- forecast uncertainty requires a wide margin
- accurate & complete SWE mapping is a foundation for reduced forecast uncertainty



	April Forecast	Obs Inflow	% Difference
1999	120	197	-39%
2000	155	159	-2%
2001	150	146	3%
2002	59	57	4%
2003	170	173	-2%
2004	100	78	28%
2005	125	120	4%
2006	210	176	19%
2007	150	177	-15%
2008	200	195	2%
2009	180	192	-6%
2010	120	142	-15%
2011	225	272	-17%
2012	100	64	56%
2013	100	134	-25%
2014	250	242	3%
2015	166	202	-18%
2016	167	157	7%
2017	195	184	6%
2018	137	117	17%

Airborne Snow

Forecast > 10% Low Forecast > 10% High

Airborne Snow Observatories, Inc.

mapping the two most critical snow properties to forecast runoff volume & timing

Snow Water Equivalent

Snow depth from lidar elevation
SWE from coupling with obs & modeled density

Snow Albedo

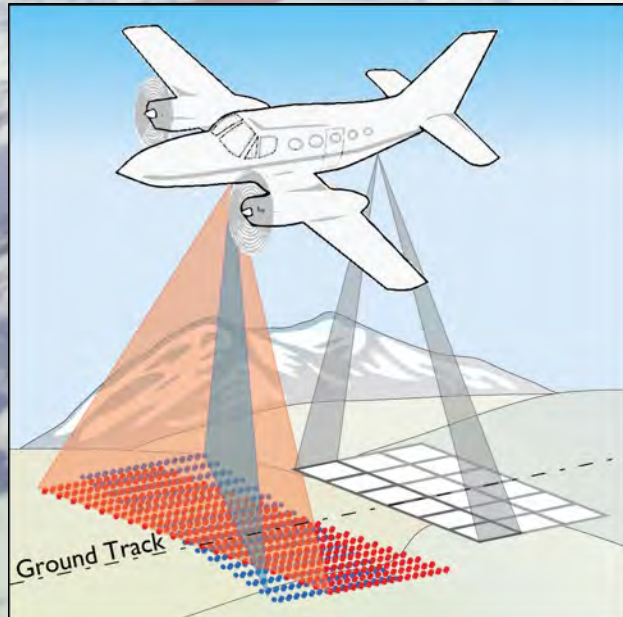
HySpex VSWIR spectrometers
Albedo & surface properties

Operations

Unique high-altitude operations
Unique rapid product turnaround

Physical Modeling

Coupled lidar & spectrometer
Physical snowpack & runoff modeling



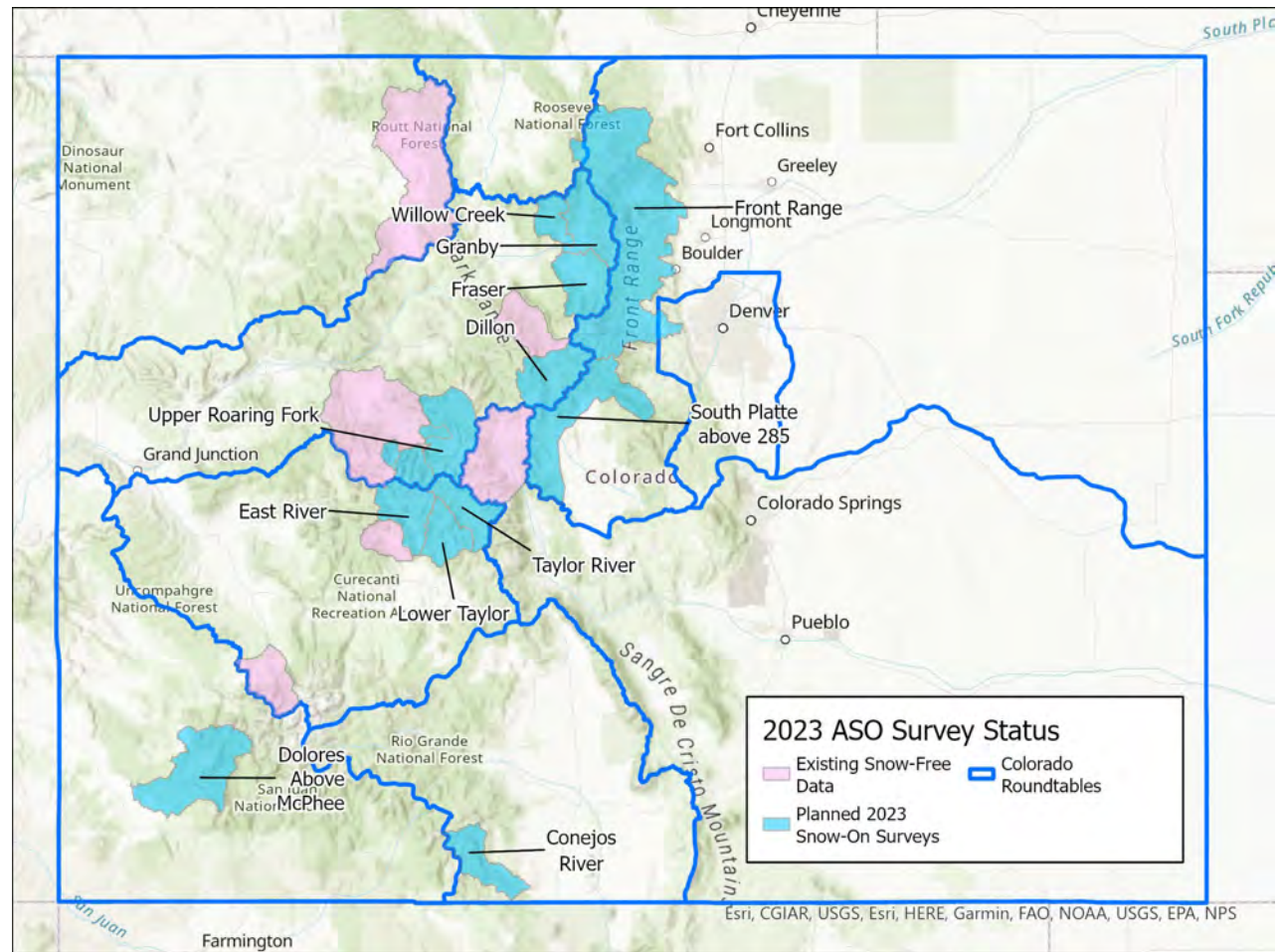
JPL



Water Year 2023 Colorado ASO Program

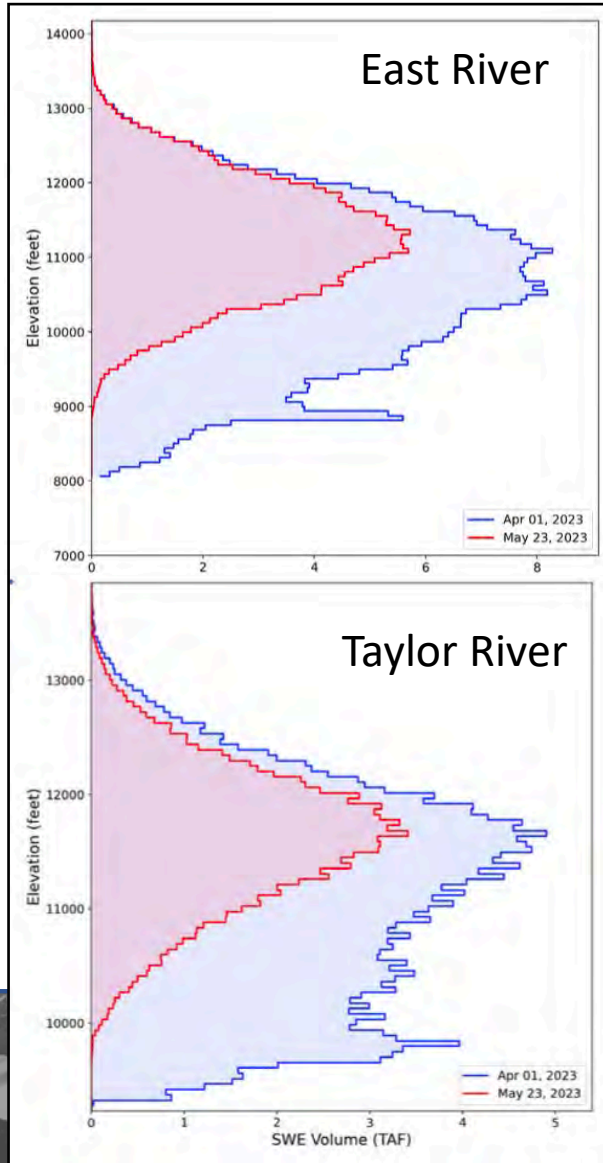
20 Water Year 2023 Snow Surveys:

East River:	<i>April 1 & May 23</i>
Taylor River:	<i>April 1 & May 23</i>
Dolores River:	<i>April 6 & May 25</i>
Roaring Fork Headwaters:	<i>April 11/12 & May 28</i>
Upper South Platte:	<i>April 16 & May 26</i>
CO River @ Windy Gap:	<i>April 16 & May 27</i>
Blue River/Dillon Res:	<i>April 16 & May 29</i>
Conejos River:	<i>May 5</i>
Clear Ck:	<i>May 9</i>
Boulder Ck:	<i>May 9</i>
St Vrain R. & Left Hand Ck:	<i>May 21</i>
Big & Little Thompson Rs.	<i>May 21</i>
Poudre R.	<i>May 22</i>



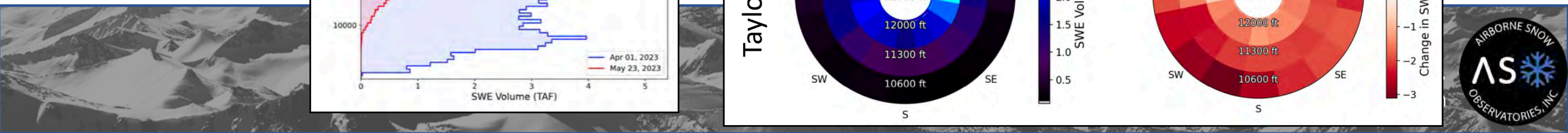
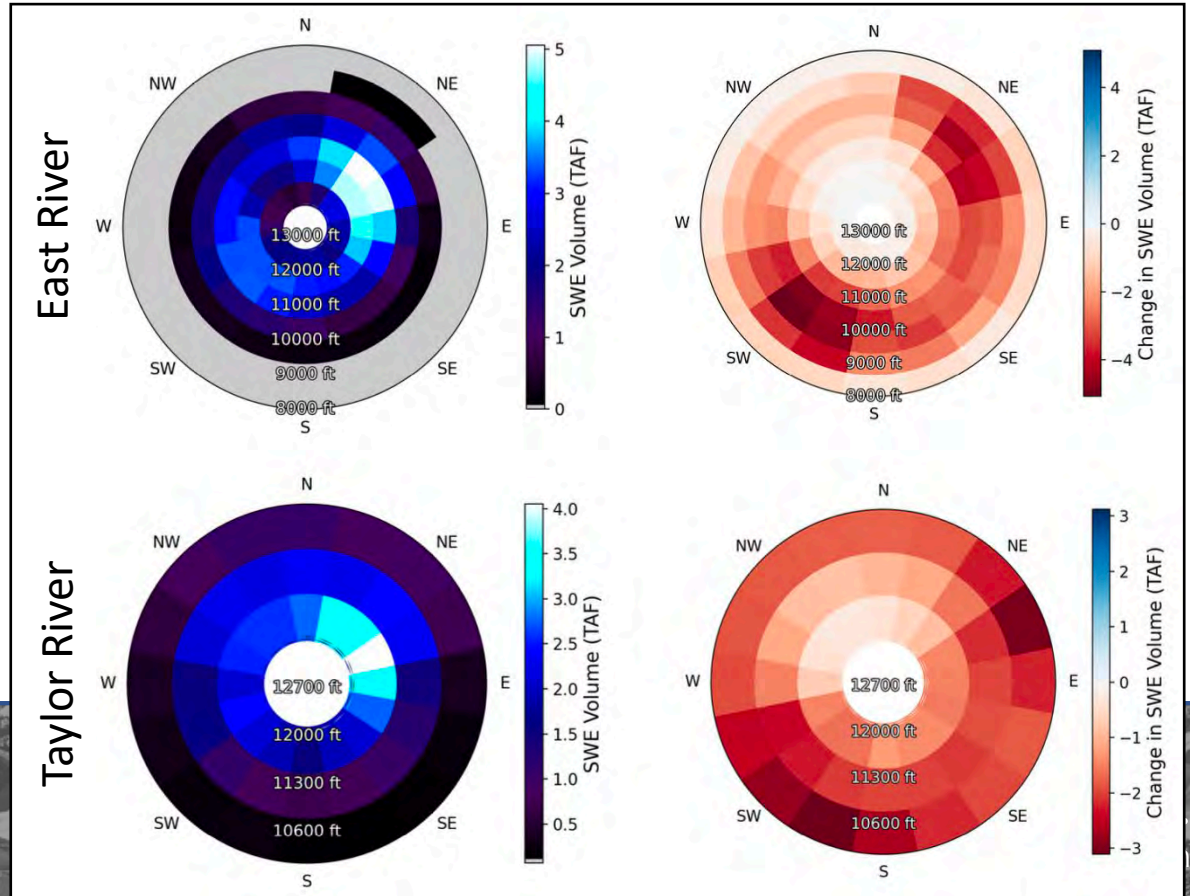


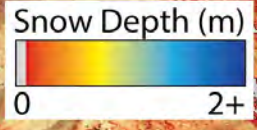
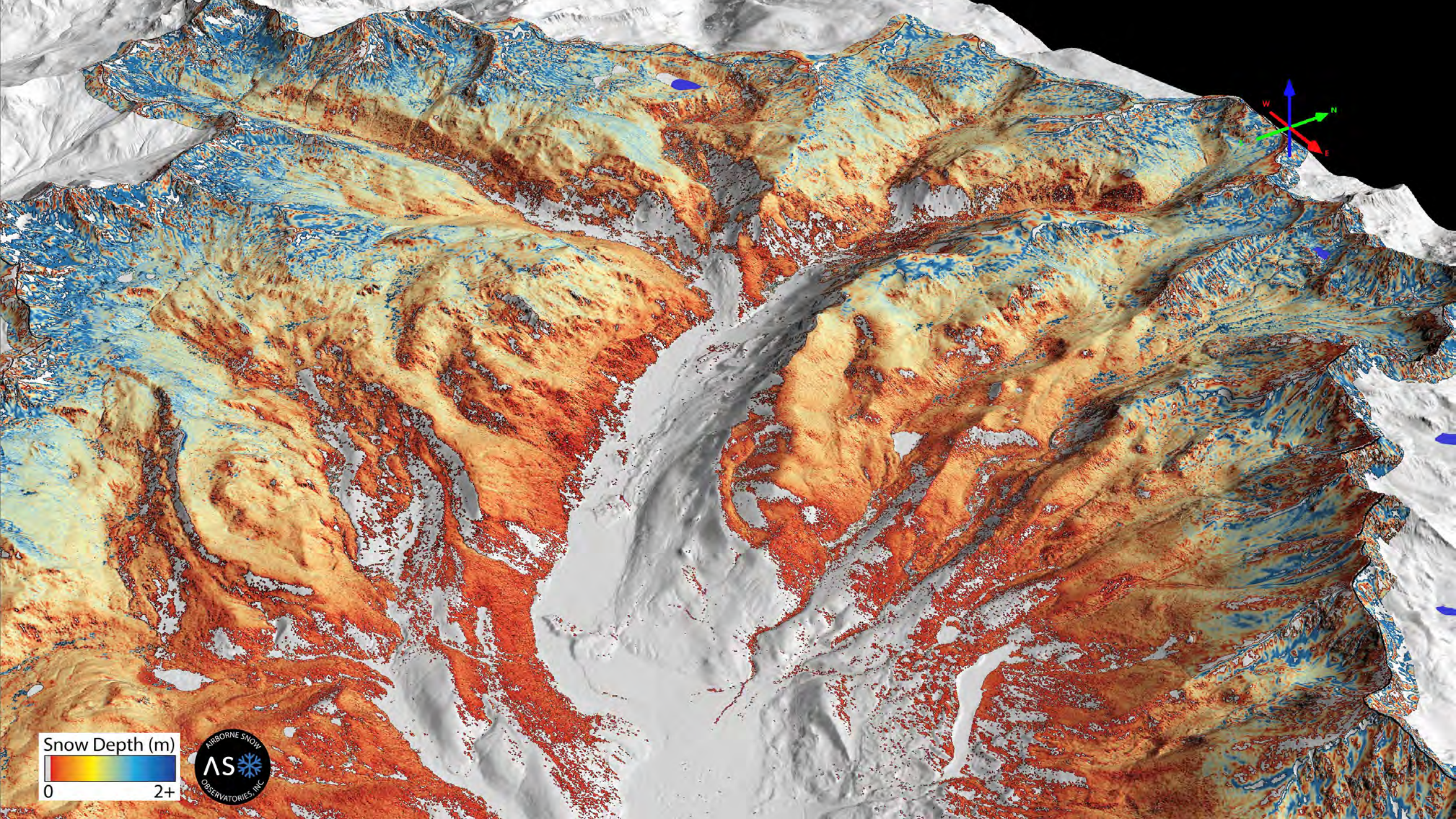
East & Taylor Rivers



Basin	Estimated SWE (TAF) April 1	Estimated SWE (TAF) May 23
East River Basin	344	178
<i>Uncertainty Range</i>	333 - 355	172 - 184

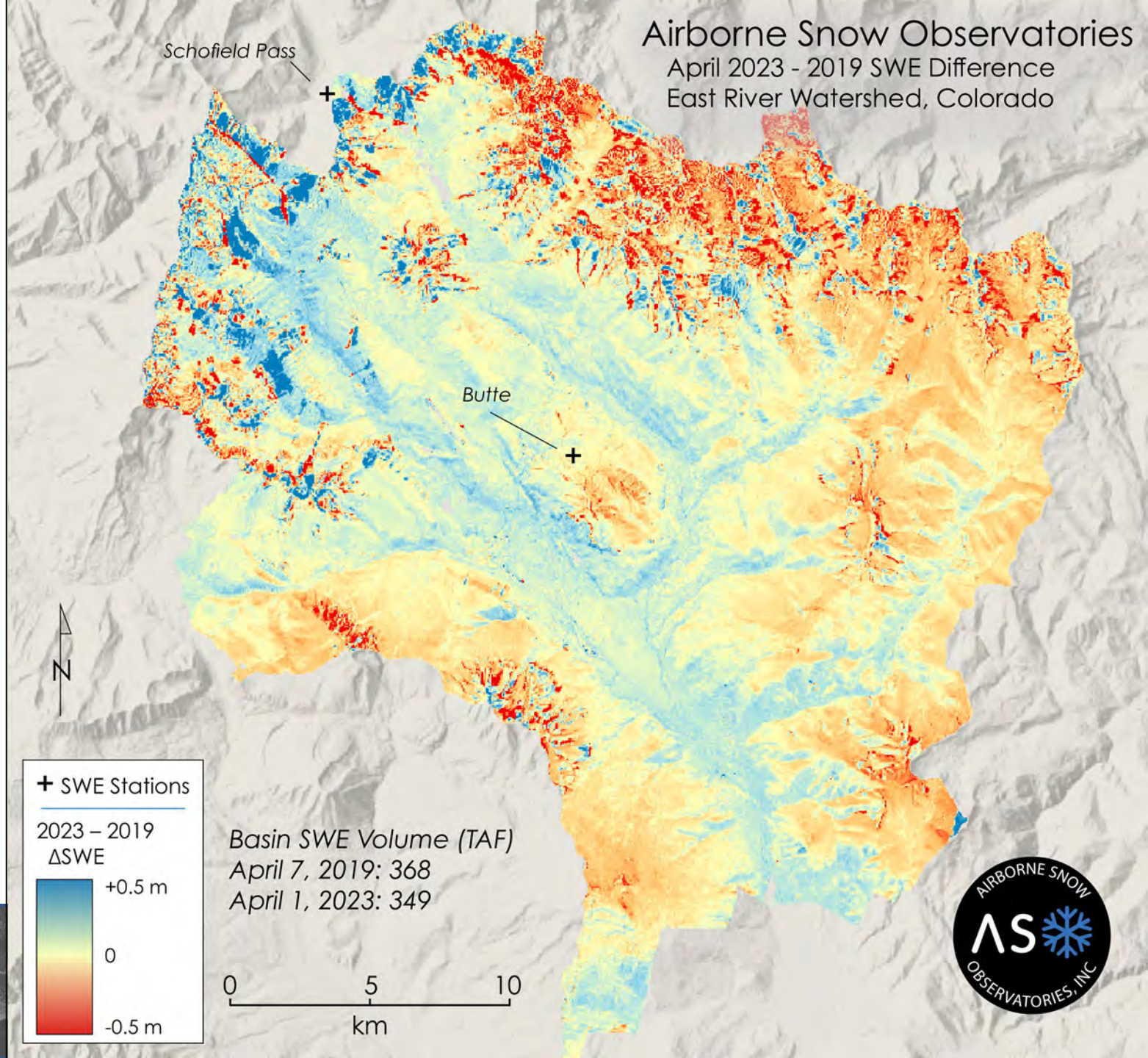
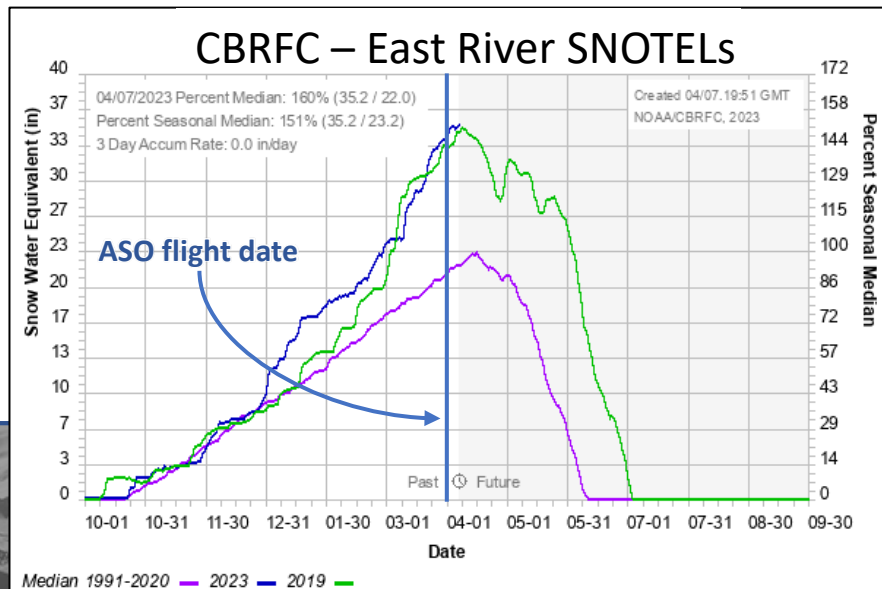
Basin	Estimated SWE (TAF) April 1	Estimated SWE (TAF) May 23
Taylor River Basin	207	91
<i>Uncertainty Range</i>	201 - 213	85 - 97
Lottis Creek	19	7





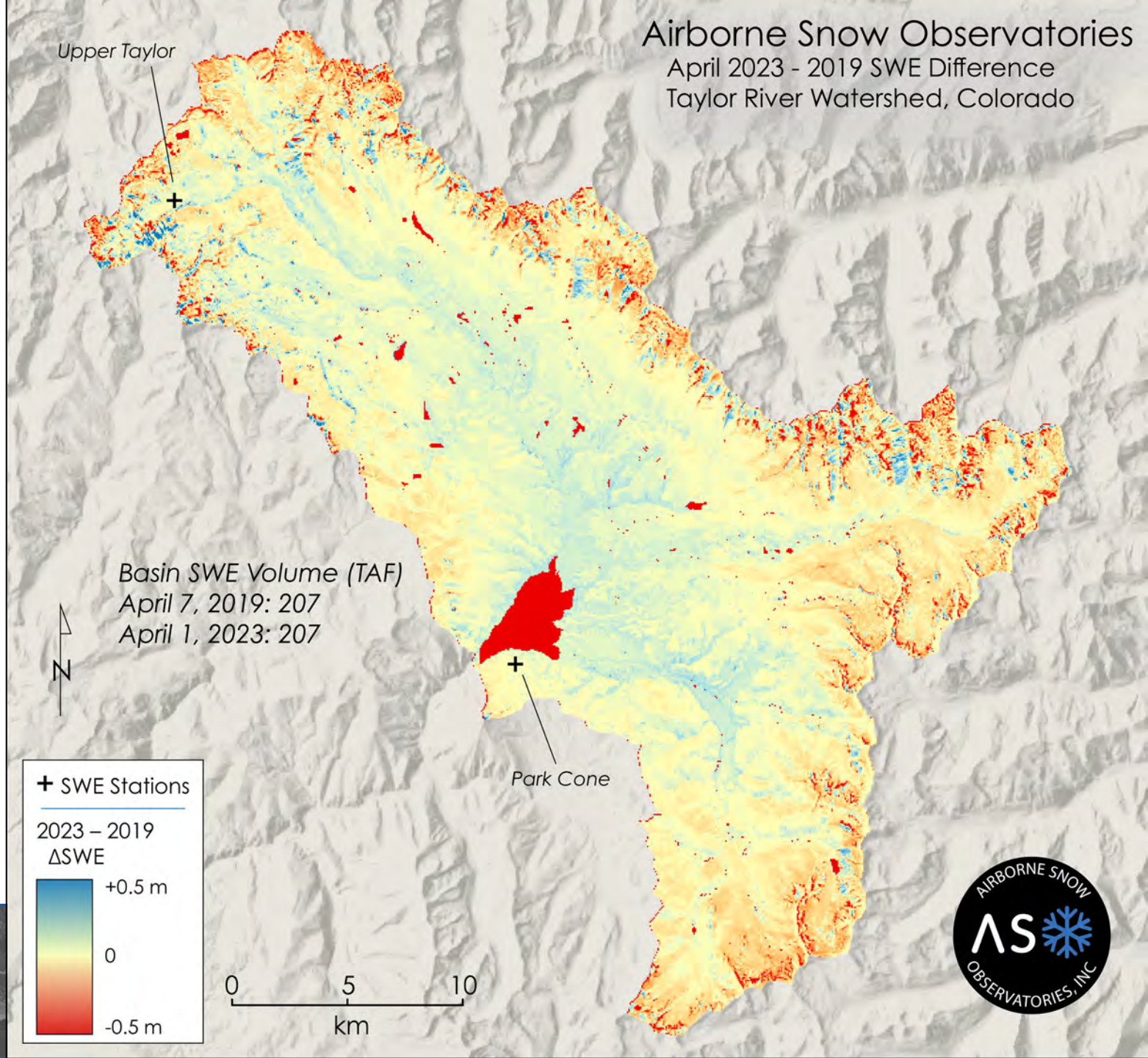
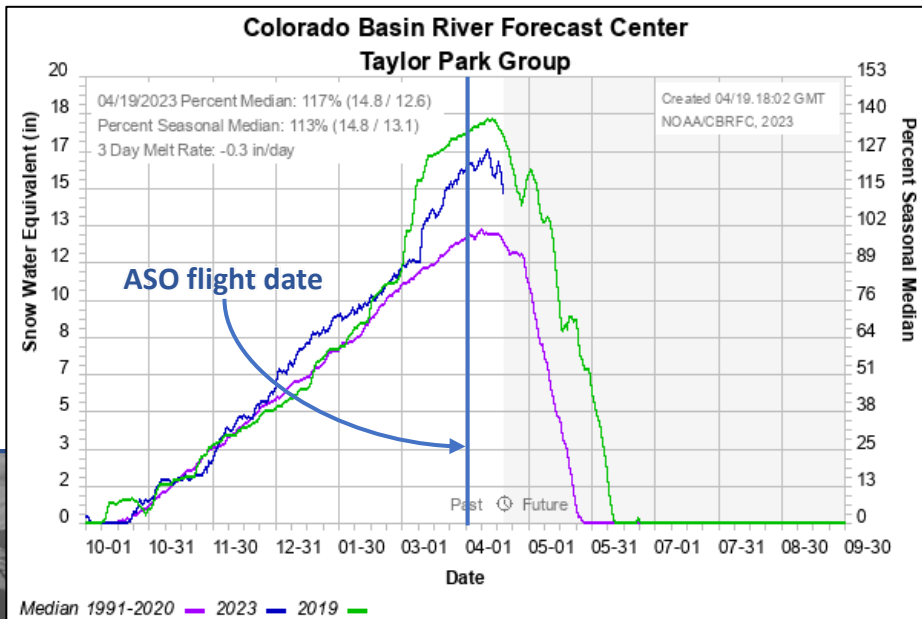
East River comparison: 2023 vs 2019

- nearly identical SNOTEL SWE
- similar basin SWE (2019 +5%)
- large differences in SWE pattern
 - elevation
 - avalanches
 - wind redistribution

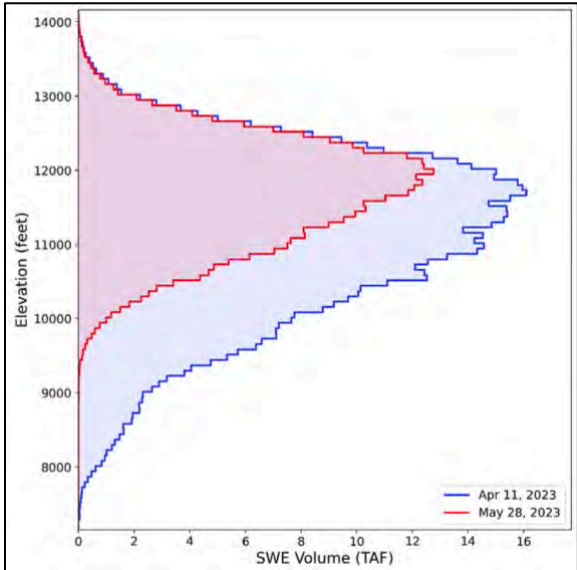
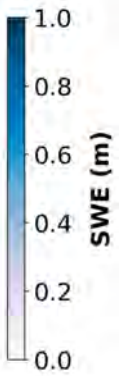
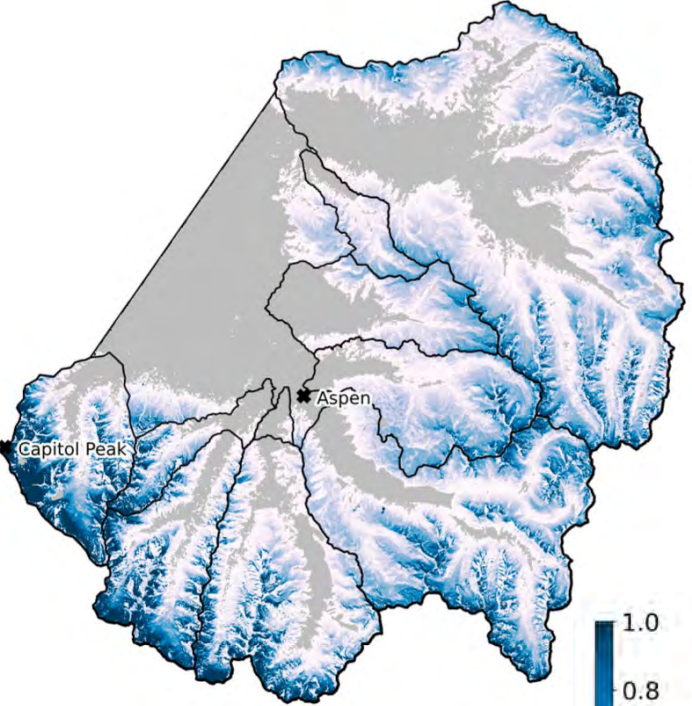


Taylor River comparison: 2023 vs 2019

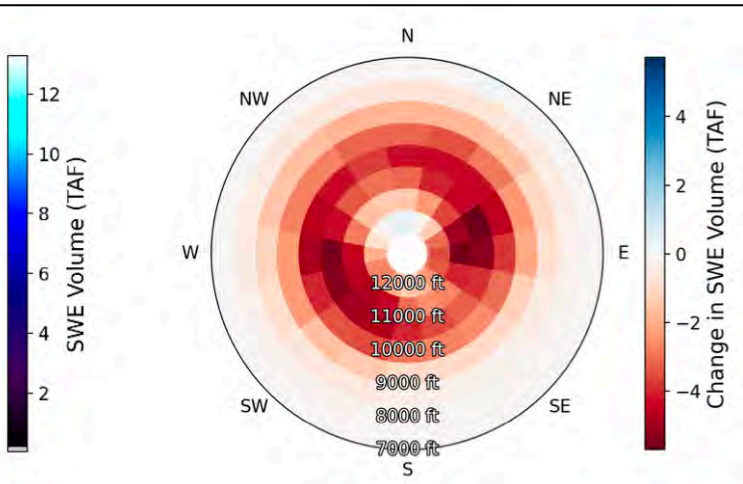
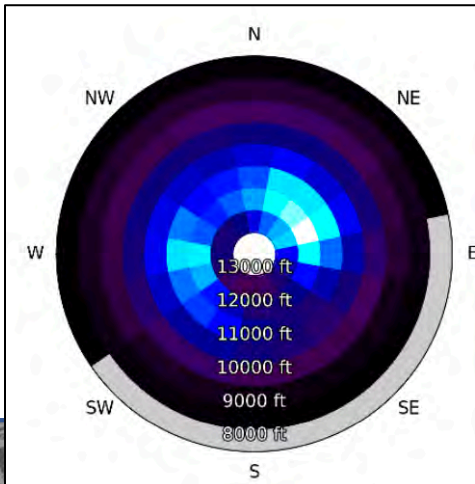
- 120% vs 140% SNOTEL SWE
- identical basin SWE (2019 +5%)
- differences in SWE pattern
 - elevation
 - avalanches
 - wind redistribution



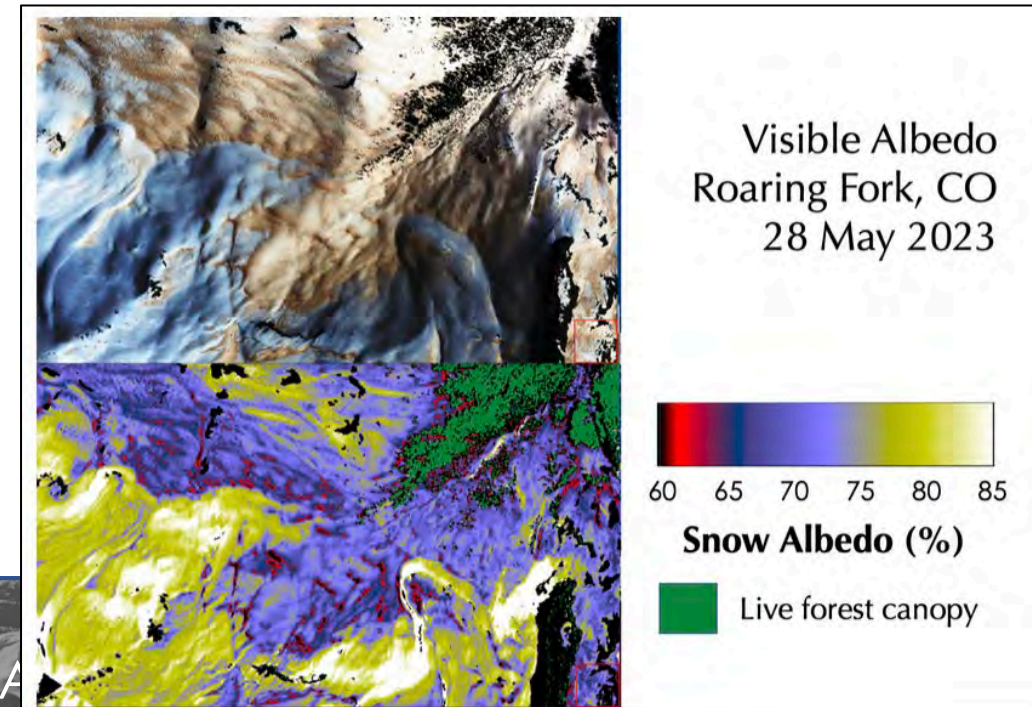
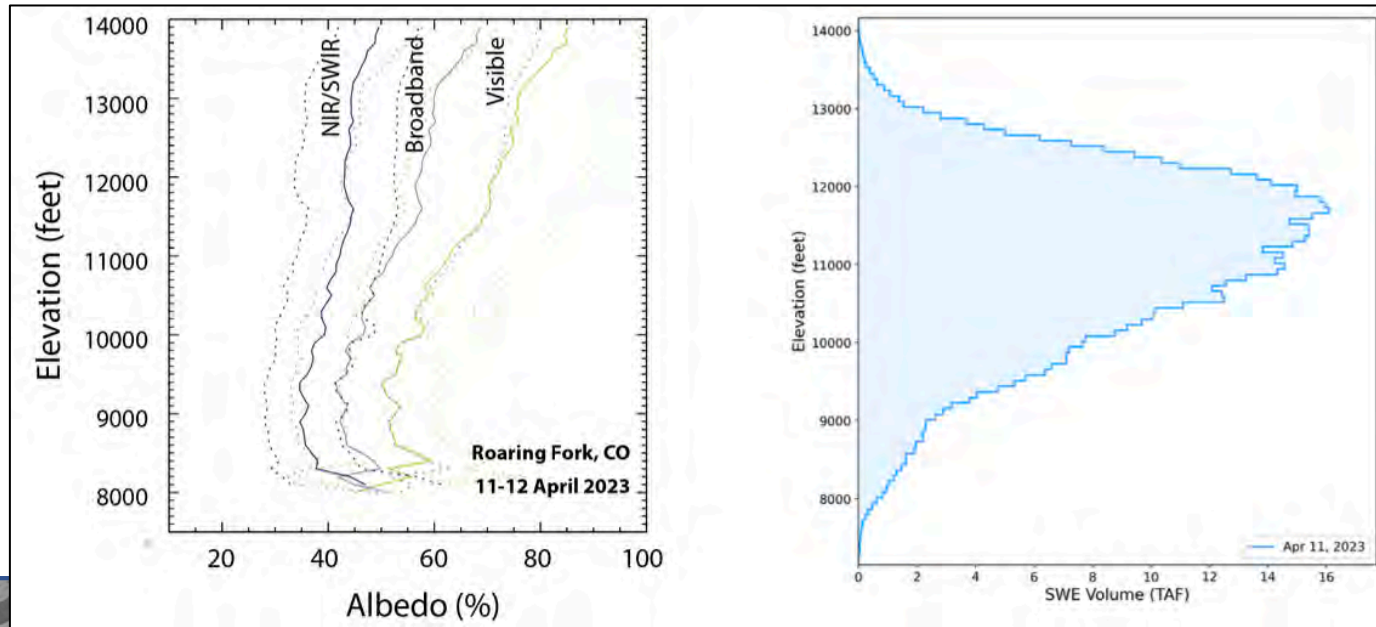
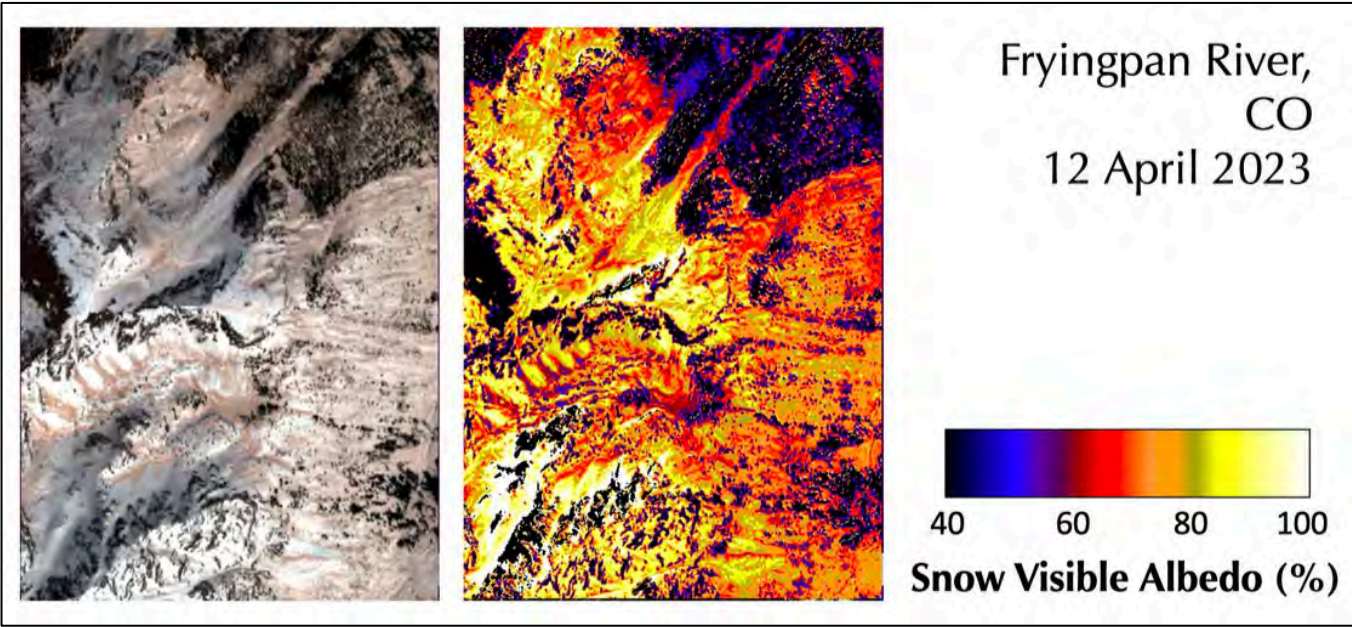
Roaring Fork Headwaters



Basin	Estimated SWE (TAF) April 11-12	Estimated SWE (TAF) May 28
Roaring Fork & Fryingpan Headwaters	589	315
<i>Uncertainty Range</i>	<i>562 - 616</i>	<i>293 - 337</i>
Castle Creek above Aspen Diversion	66	37
Castle Creek at Highway 82	67	37
Fryingpan River above Reudi	187	86
Hunter Creek at Aspen	39	22
Maroon Creek above Aspen Diversion	58	35
Maroon Creek at Highway 82	74	45
Roaring Fork near Aspen	94	62
Rocky Fork Creek	10	4
Snowmass Creek	61	42
Woody Creek below Collins Creek	25	11

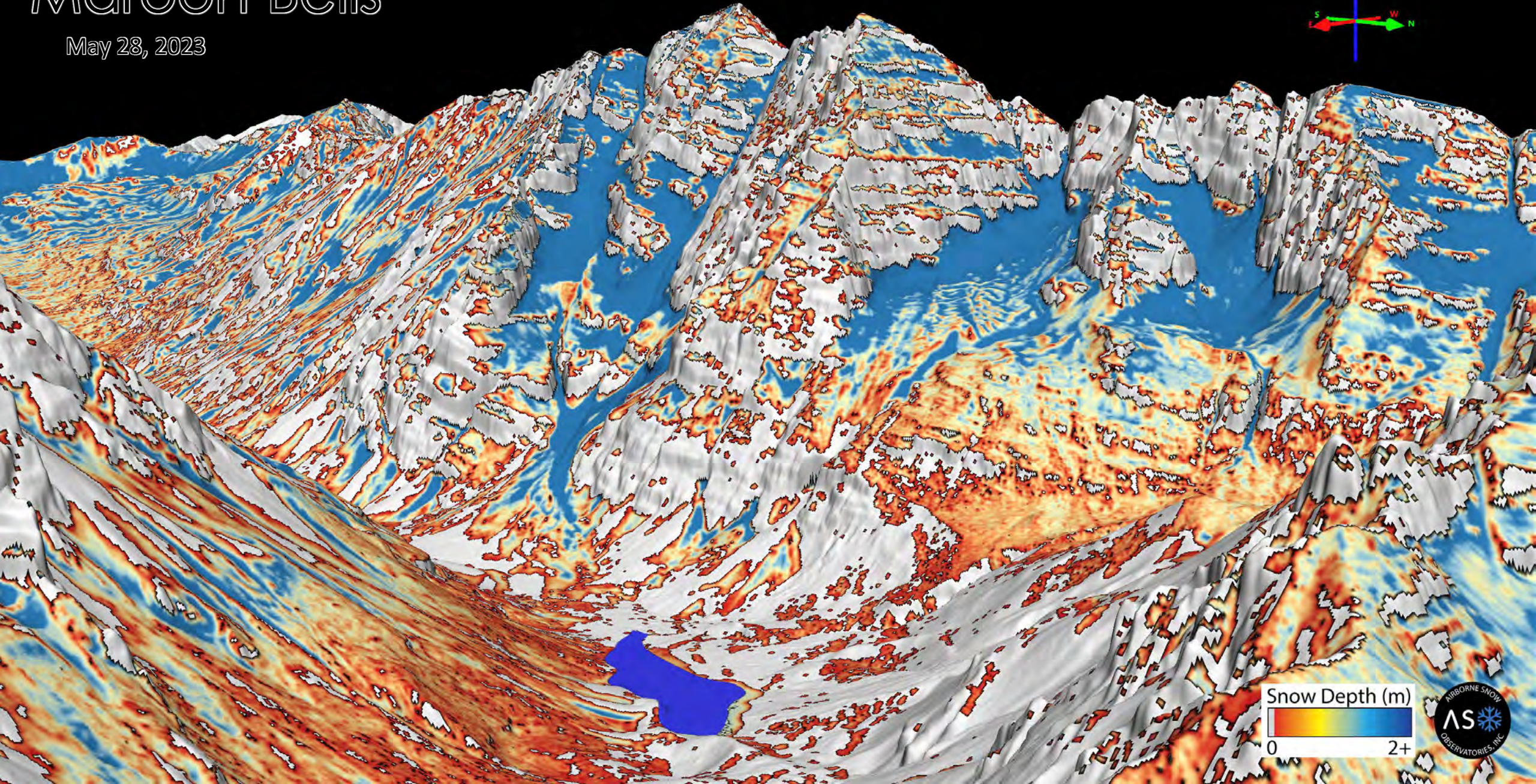
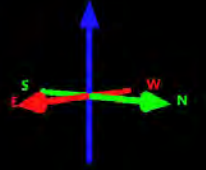


Roaring Fork Headwaters



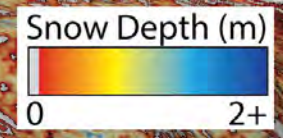
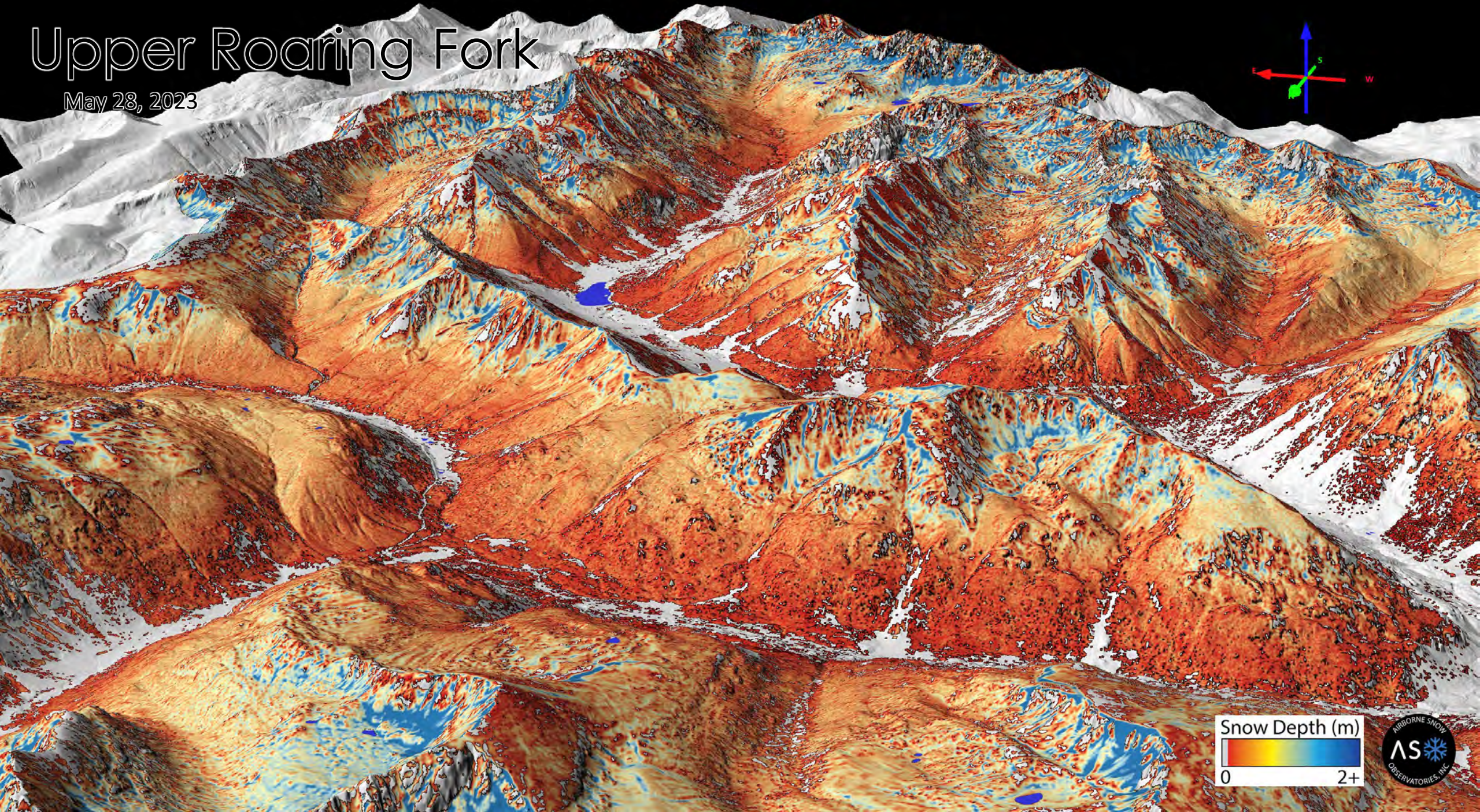
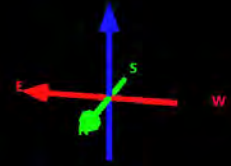
Maroon Bells

May 23, 2023

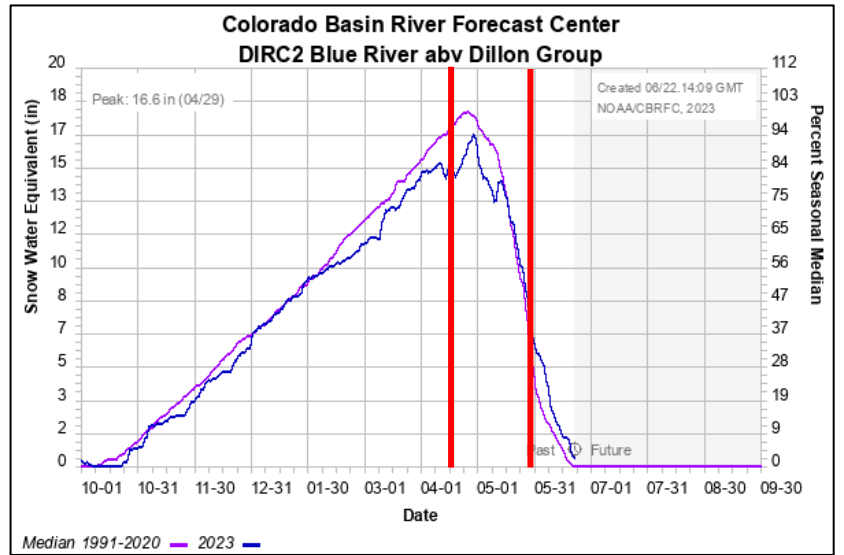
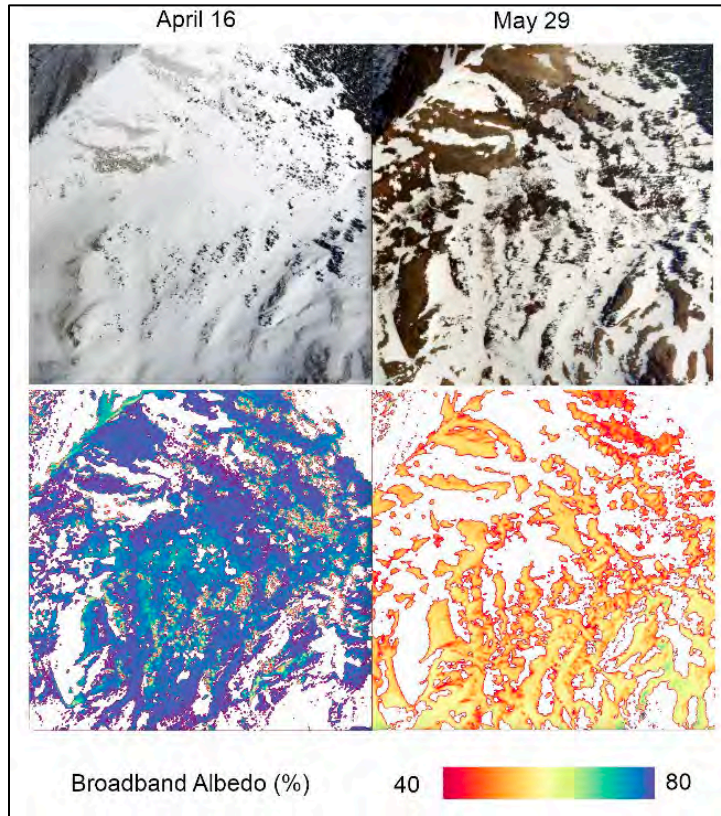
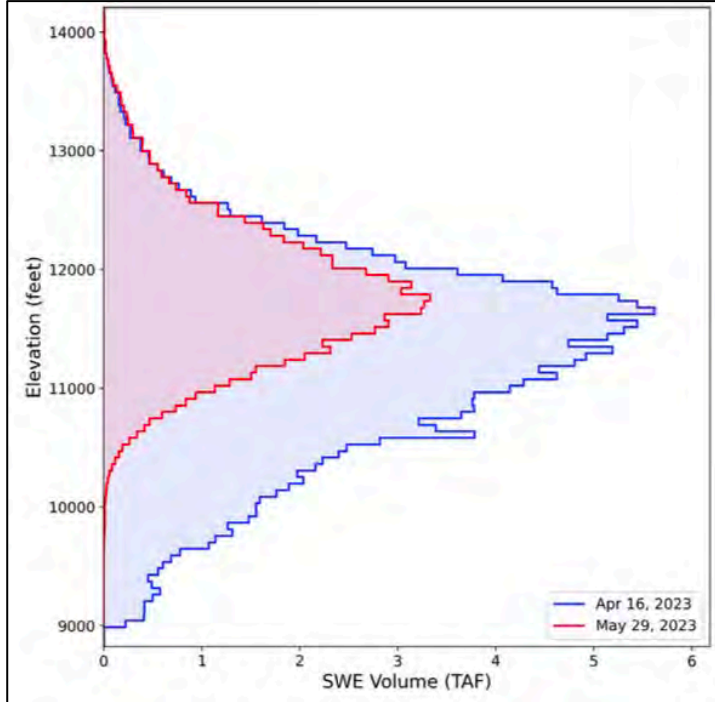


Upper Roaring Fork

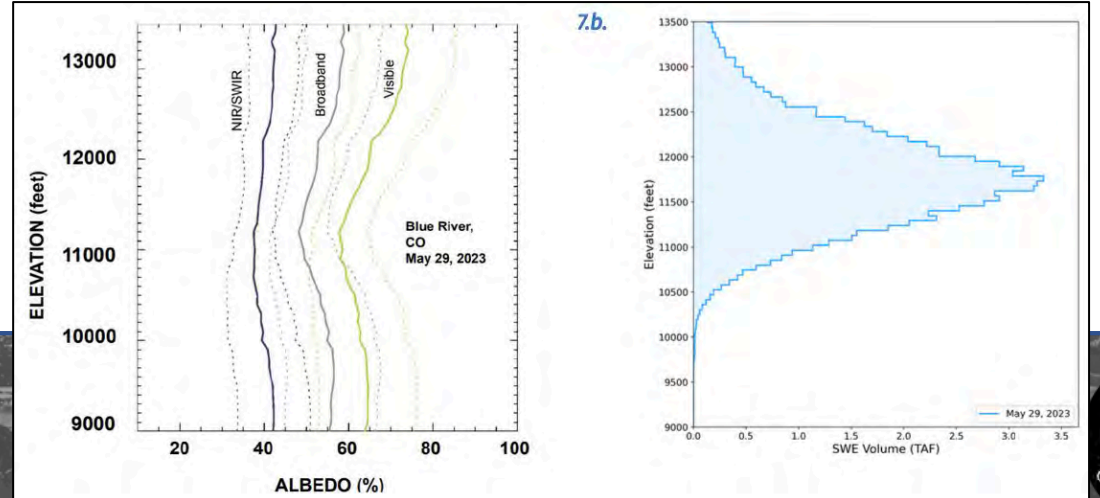
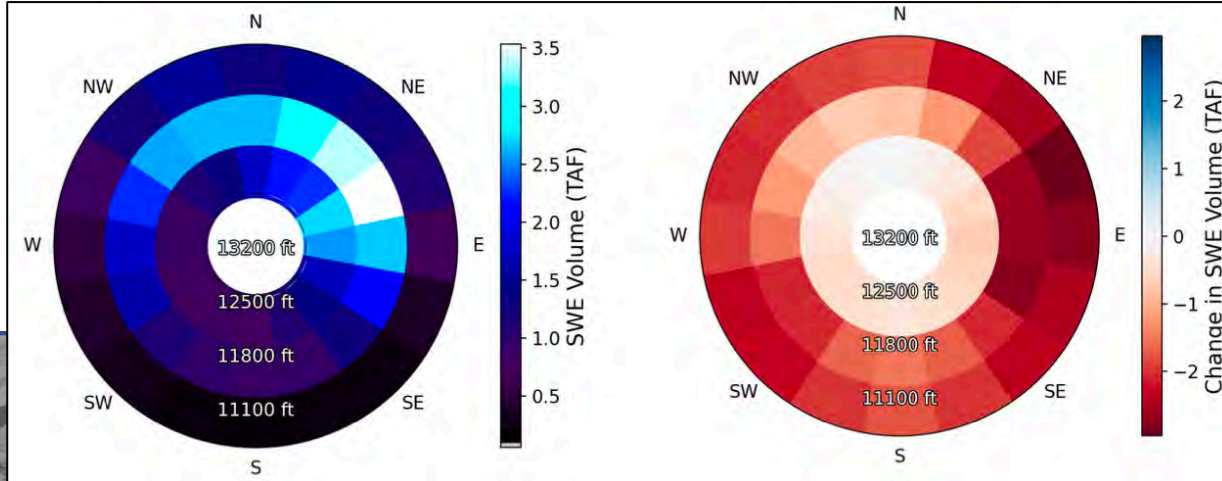
May 23, 2023

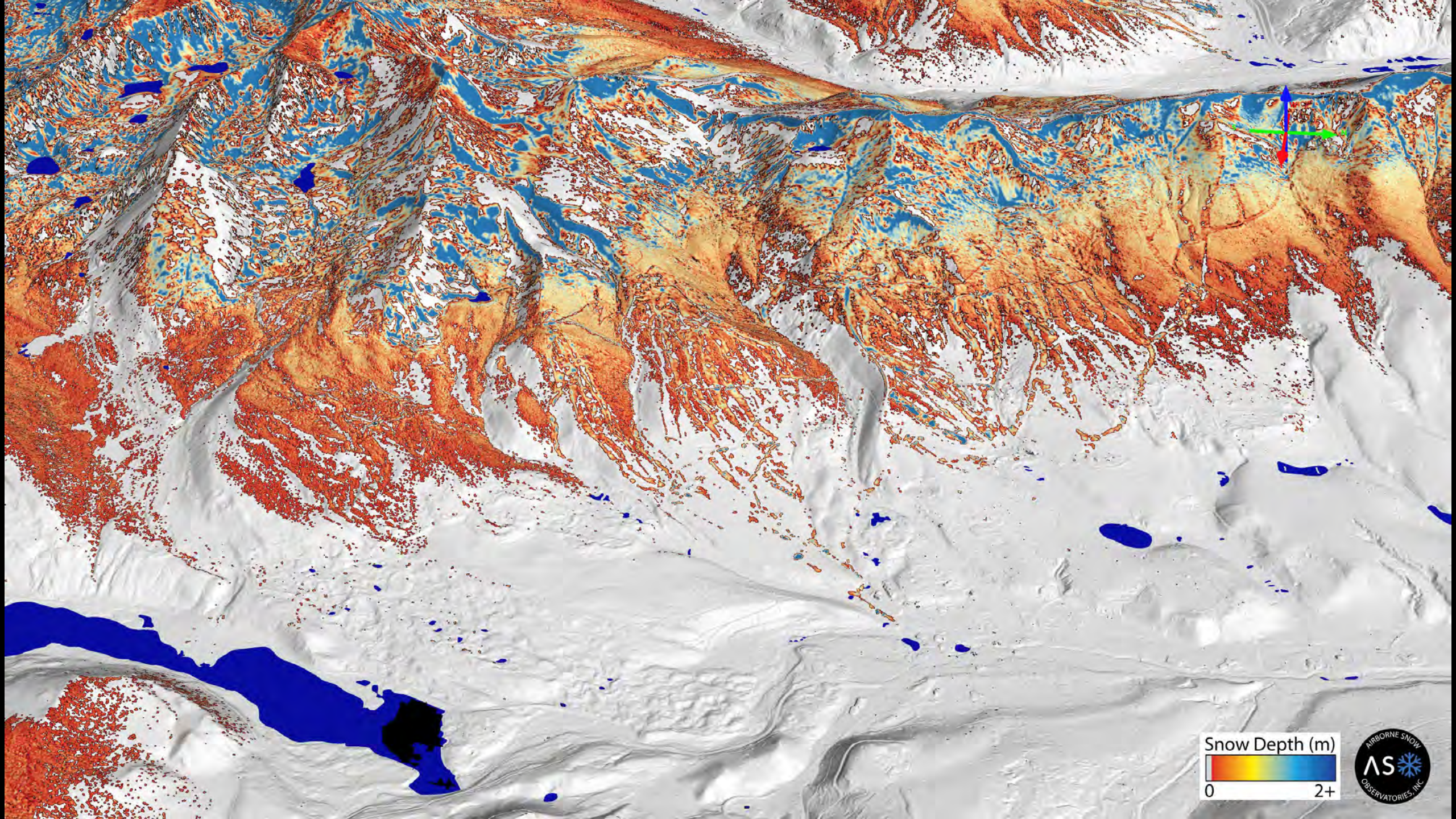


Blue River



Basin	Estimated SWE (TAF) April 16	Estimated SWE (TAF) May 29
Blue River Basin	183	78
Uncertainty Range	177 - 190	73 - 83







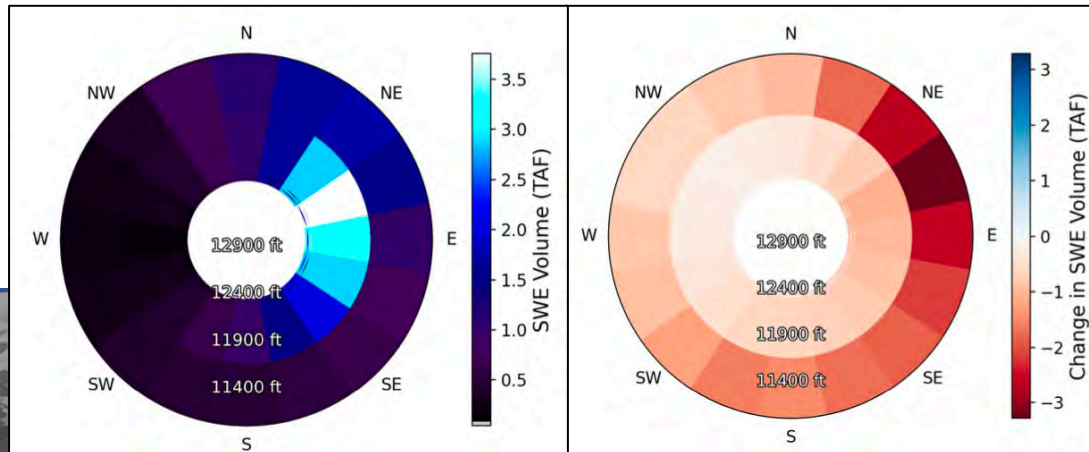
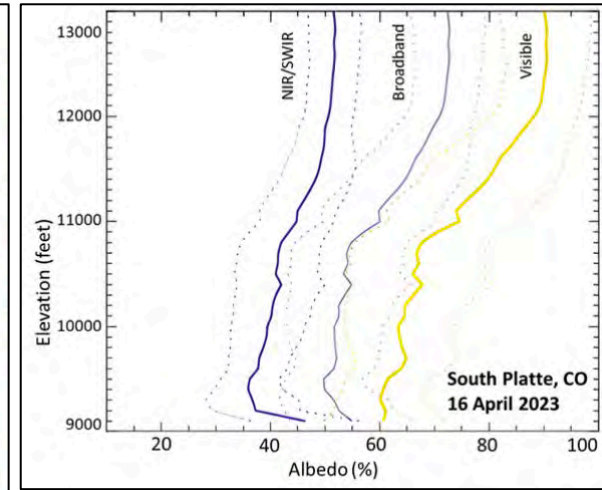
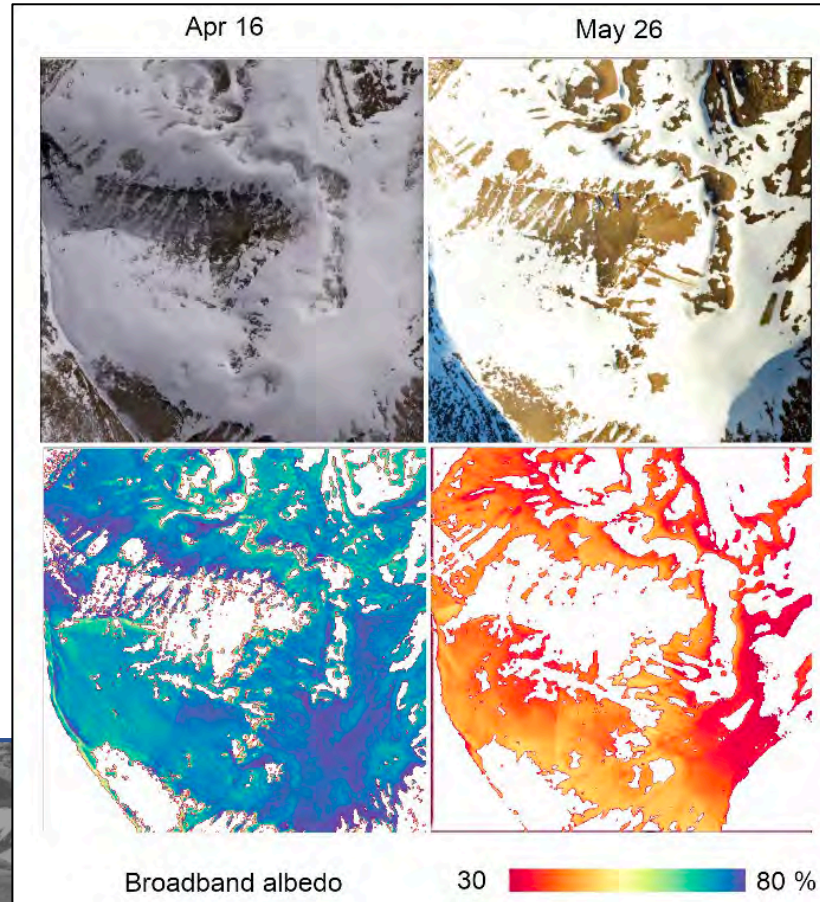
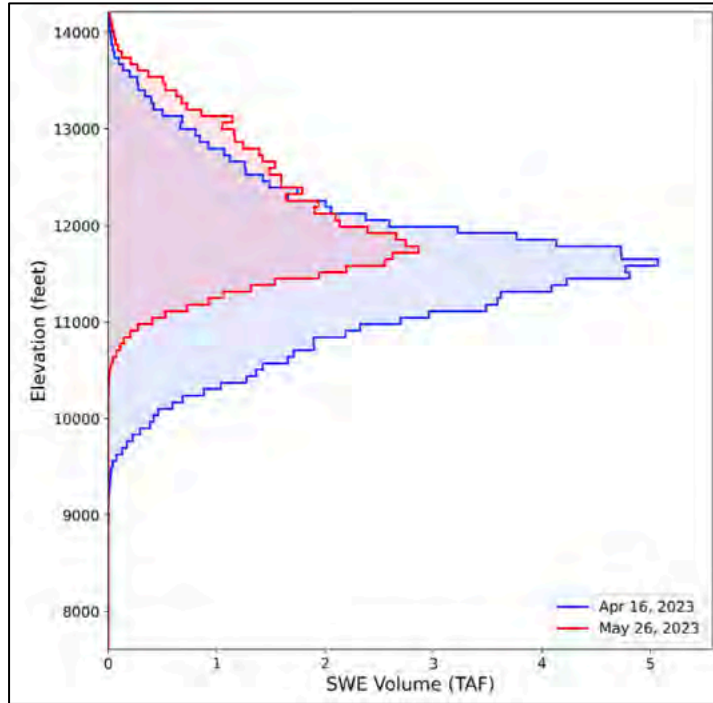
Blue River ASO – SNOTEL and ASO

	First Flight 2022 (SWE, acre-feet)	First Flight 2023 (SWE, acre-feet)
SNOTEL SWE average (four stations)	15.2 inches	15.0 inches
ASO Measured SWE	150,000 acre-feet	183,000 acre-feet

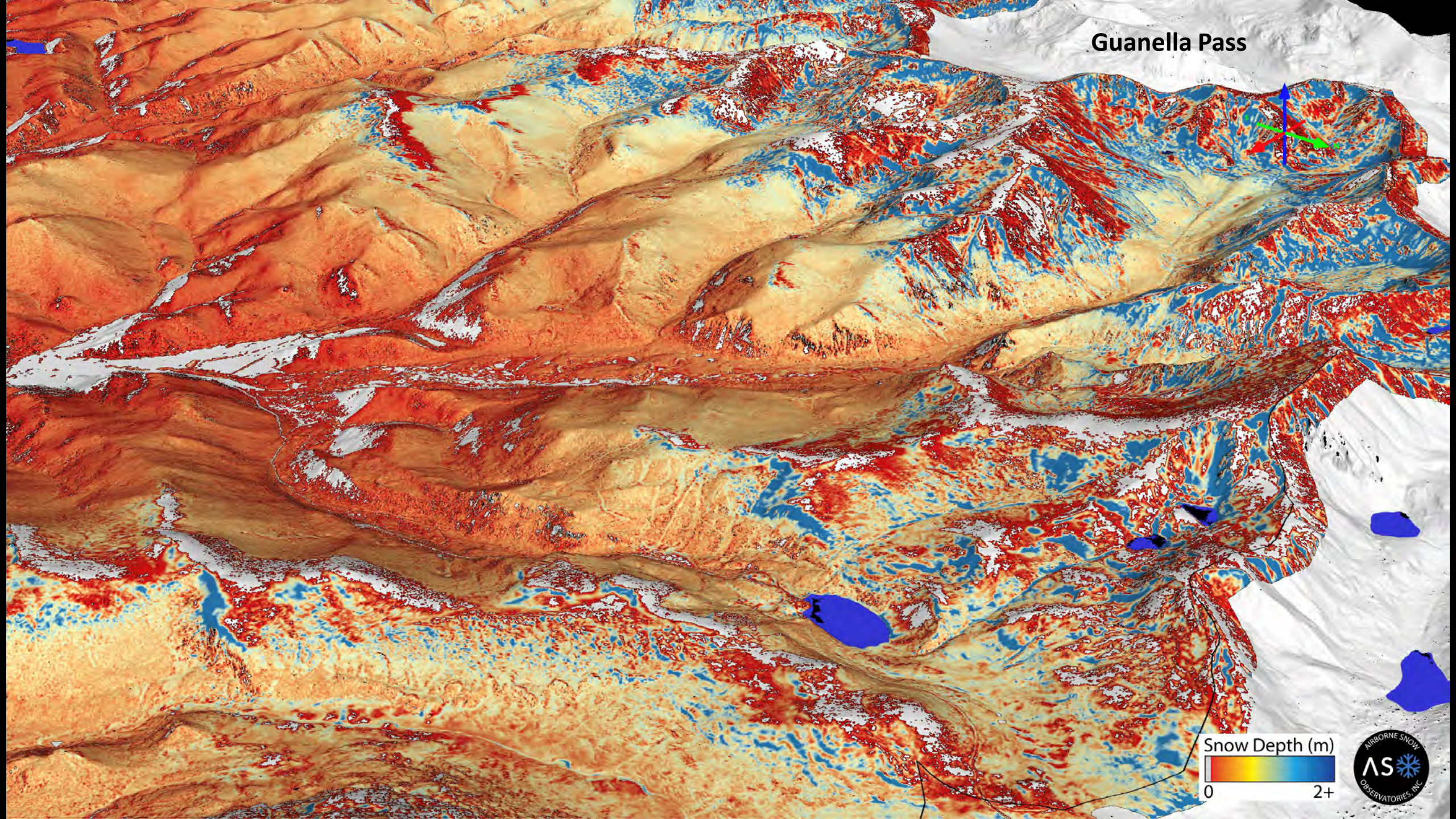


Upper South Platte

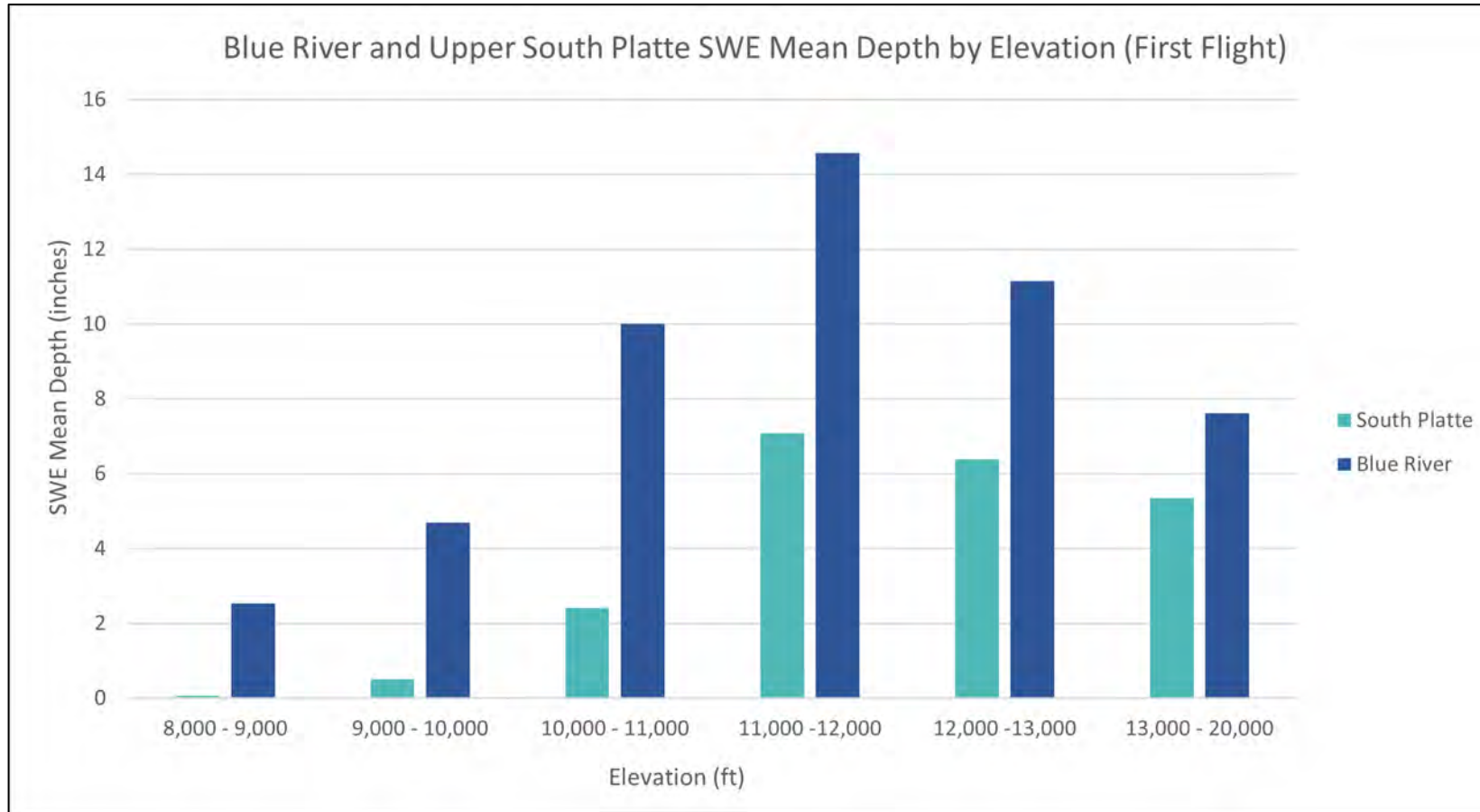
Basin	Estimated SWE (TAF) April 16	Estimated SWE (TAF) May 26
Full Basin	106	59
<i>Uncertainty Range</i>	100 - 116	55 - 63
Middle Fork	26	19
North Fork	33	18
South Fork	27	11
Tarryall Creek	22	11



Guanella Pass



Across the Divide...



WRF-Hydro/ASO Ensemble Seasonal Water Supply Forecasting for the Colorado Airborne Snow Measurement Program: WY 2023

D. Gochis, Y. Zhang, M. Casalli, J. Grim, A. Gaydos
Research Applications Lab

July 11, 2023



Overview: Improving Water Cycle Predictions in High Mountain Watersheds...California and Colorado Seasonal Water Supply Prediction

Project Milestones:

- Conducted first full-season assessment of gap-filling radar on seasonal water supply forecast in Colorado (2016...RIO-SNO-FLOW)
 - Provided ground validation data for NSSL radar QPE
 - Conducted WRF-Hydro based ensemble water supply predictions
 - Assimilated airborne-lidar based snowpack estimates into WRF-Hydro for comparison against "open-loop" forecasts
- Provided scientific basis for new permanent X-band radar in Alamosa, CO and utilized data during first year of operations (WY 2020-2021)
- Installed 9 new high elevation snow monitoring stations in Conejos and Taylor River basins....use data for model evaluation and assimilation (2018-2021)
- Conducted first-in-time real-time snow data assimilation of airborne lidar snowpack estimates in Colorado for ensemble seasonal water supply forecasting (WY2020-2021)**
- Expanded strategic forecasting partnership work for ASO Inc. providing airborne lidar assimilated snowpack forecasts for the States of Colorado (CASM) and California (WY 2021-2022)**

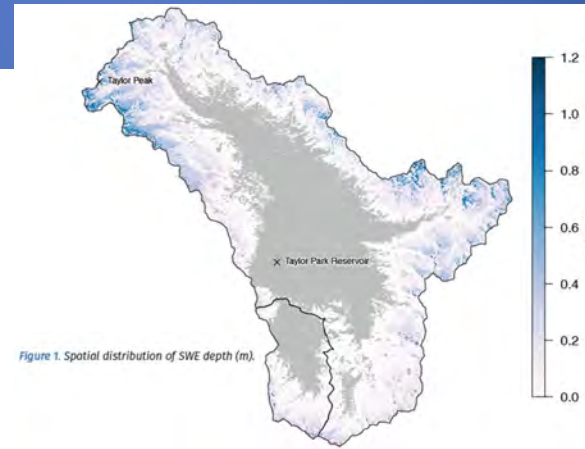
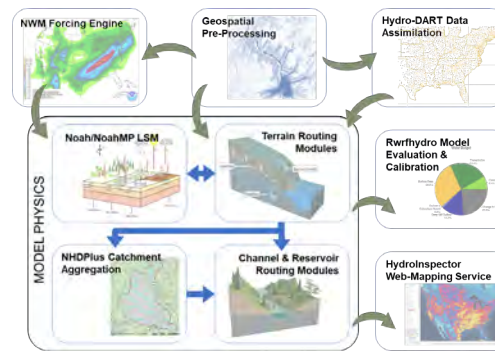
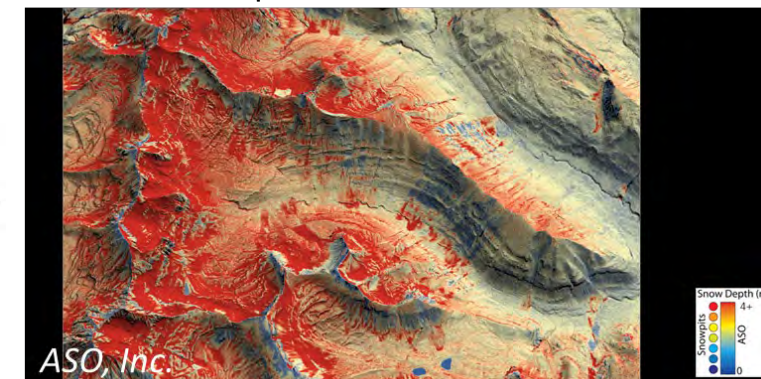
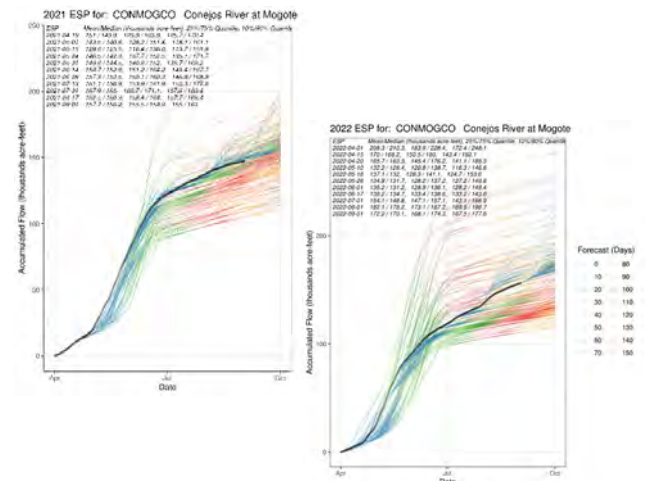


Figure 1. Spatial distribution of SWE depth (m).

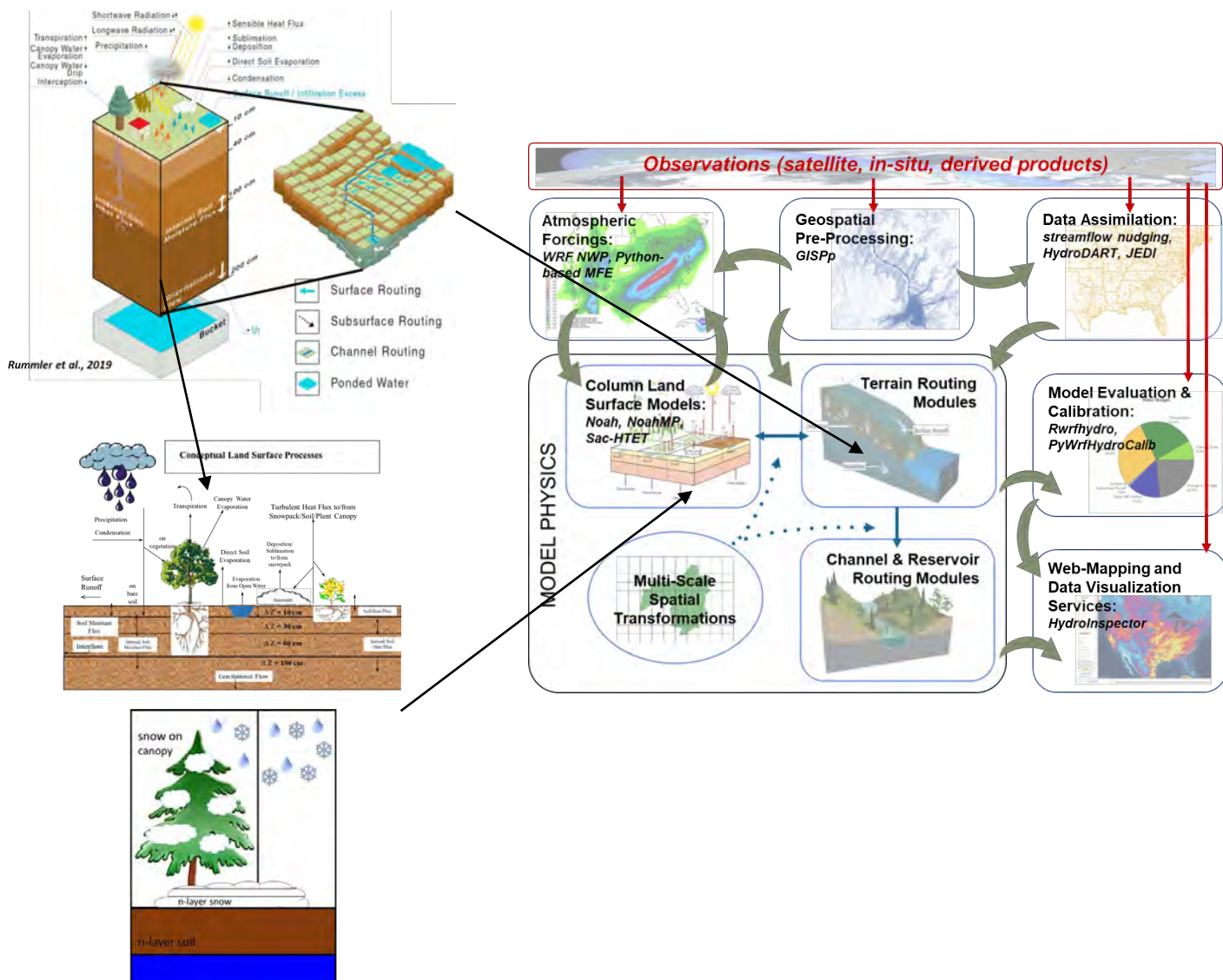


Airborne Snowpack Measurements





WRF-Hydro based forecast process:



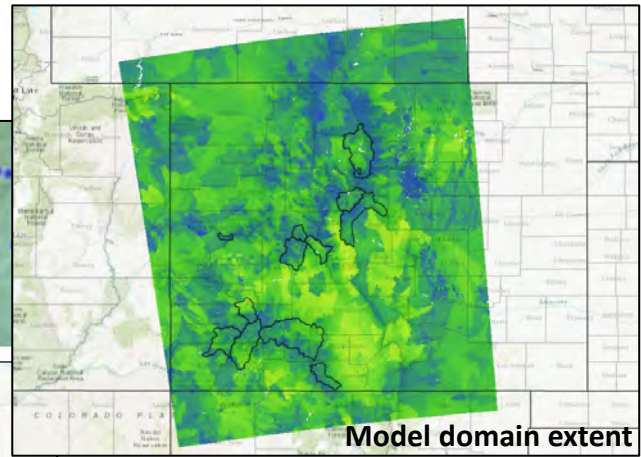
Assimilation-Prediction Workflow:

1. Downscale and bias correct long-term meteorological data records (hourly downscaled NLDAS2 OR NOAA/AORC)
2. Calibrate model to hourly streamflow at over *unregulated* stations across CO/CA headwater basins
3. Regionalize model parameters from calibration basins to rest of CA/CO domains
4. Execute long-term retrospective run for spin-up and for statistical referencing
5. Execute operational and research ensemble water supply forecasts

WRF-Hydro Colorado ESP: WY2023 Seasonal Water Supply Forecast Plots



HydroInspector:
WRF-Hydro Web-based Water Mapping Service
Project Home Realtime ESP - Colorado



- Channel Output
 - Channel Flow
 - Channel Velocity
- ASO Basin Output
 - SWE average
 - WY SWE average
 - Soil Sat average
 - WY Soil Sat average

Model Configuration

Analysis Long Range

Forecast Cycle: N/A

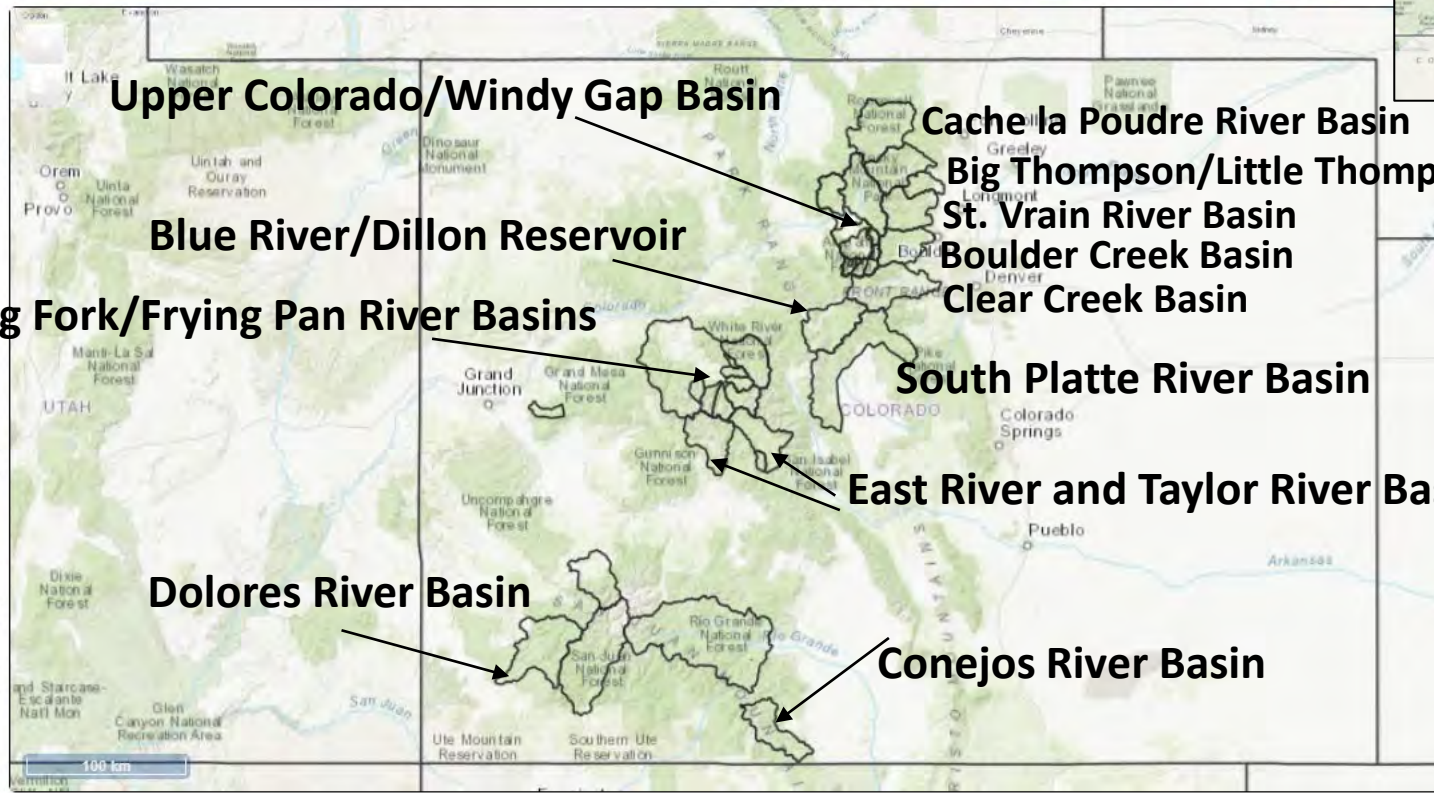
Version

Open Loop ASO

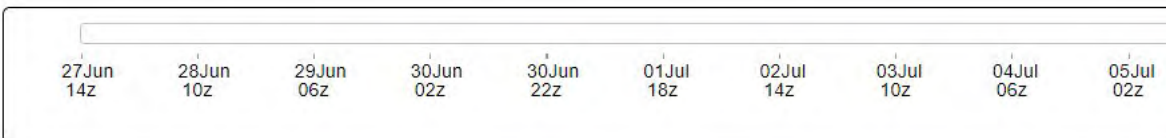
Jul 07, 2023 14:34

Reset to current

Navigation controls: Previous, Play, Next, Capture, Playback speed (slow to fast), 1 hour



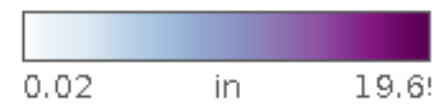
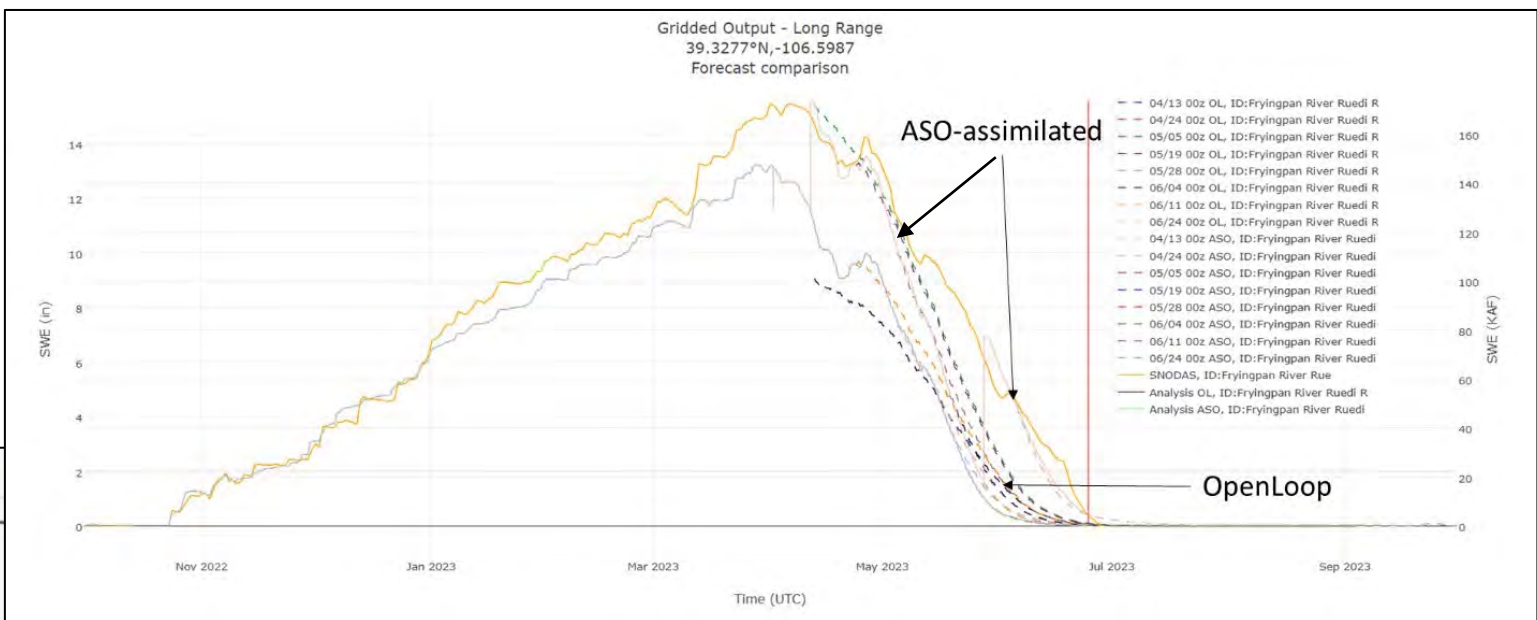
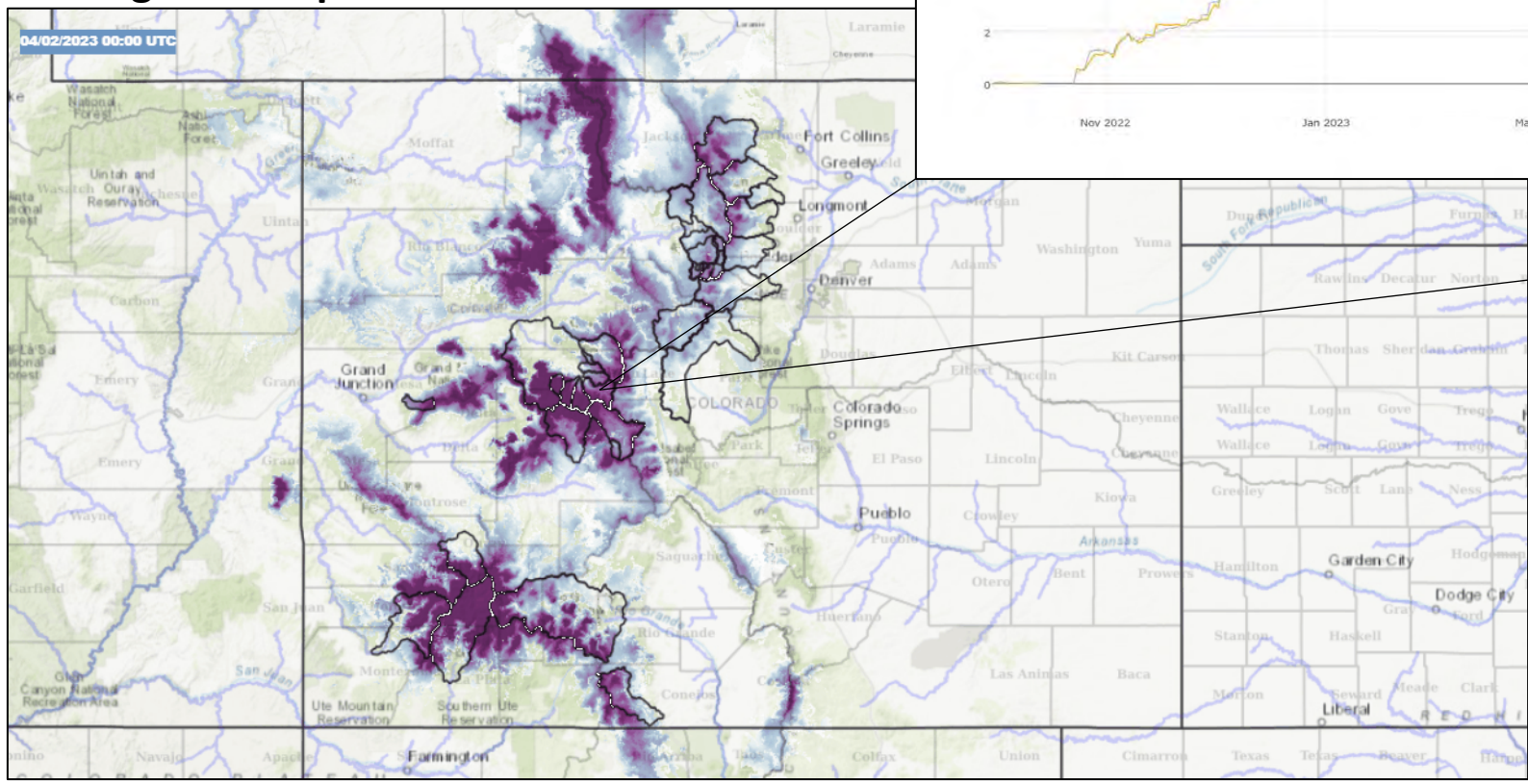
- Upper Colorado/Windy Gap Basin
- Cache la Poudre River Basin
- Big Thompson/Little Thompson River Basin
- St. Vrain River Basin
- Boulder Creek Basin
- Clear Creek Basin
- South Platte River Basin
- East River and Taylor River Basins
- Conejos River Basin
- Dolores River Basin
- Roaring Fork/Frying Pan River Basins
- Blue River/Dillon Reservoir





- **Spatially-distributed snowpack analyses and forecasts...**

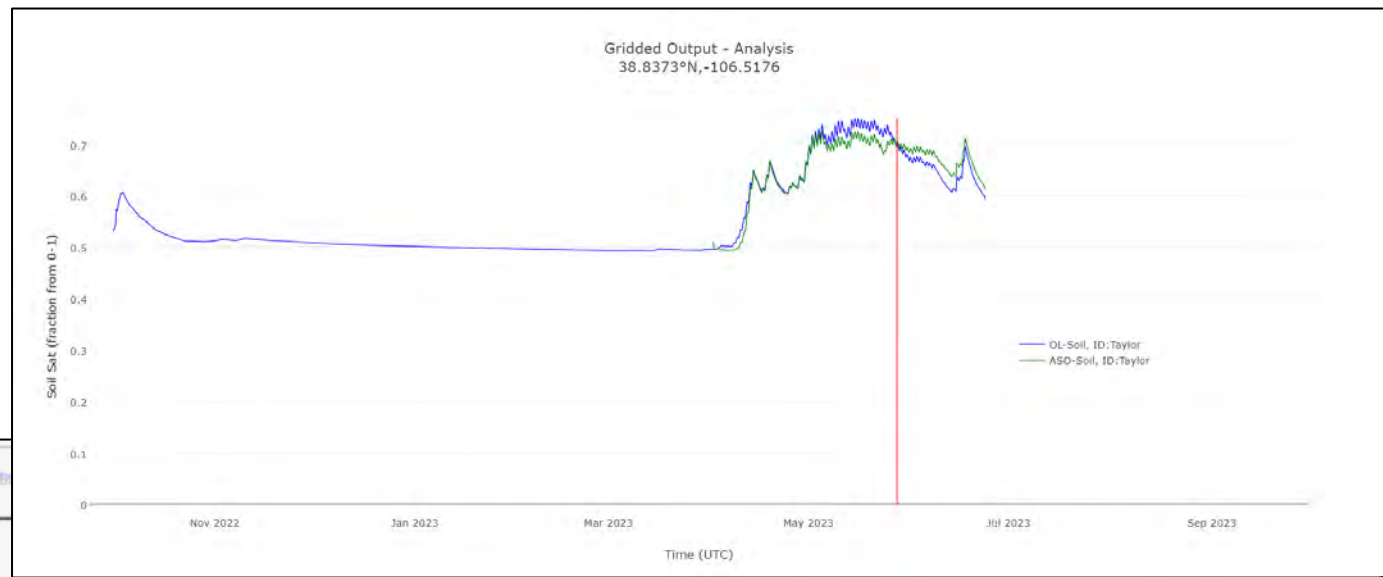
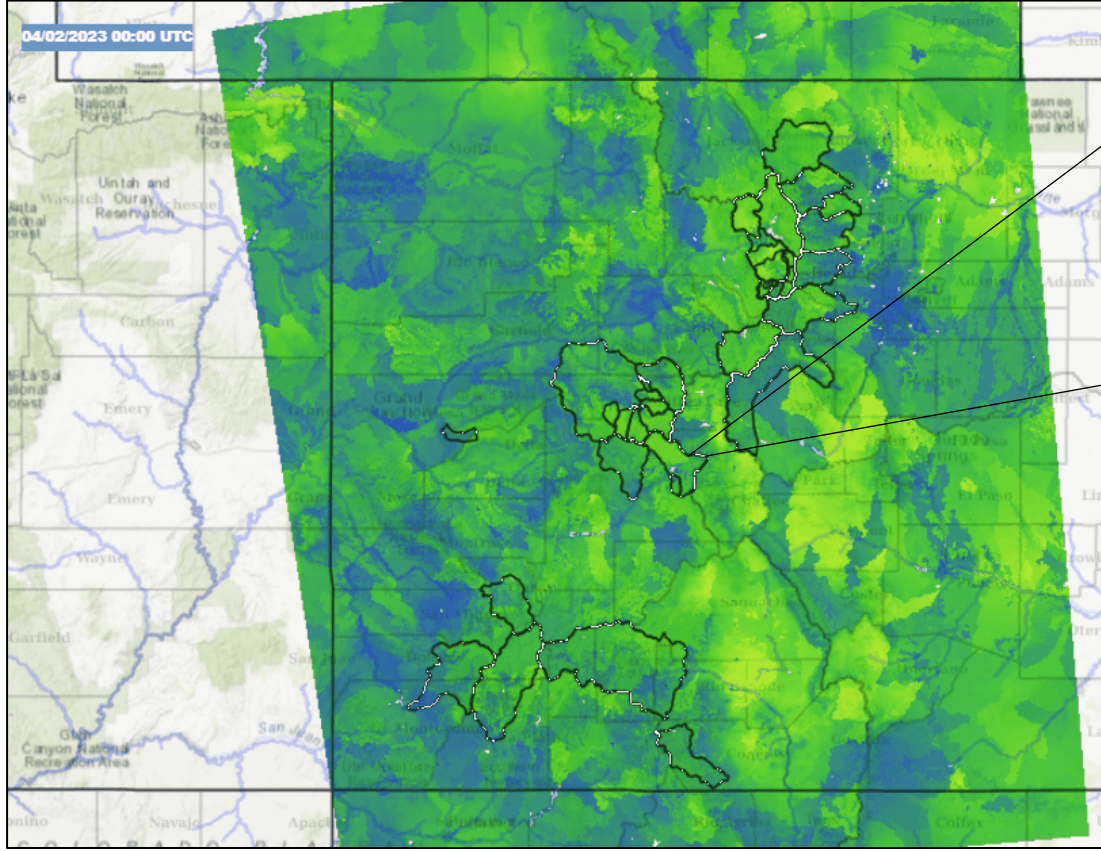
1 km gridded Apr 1 – Jun 30 SWE





- Soil moisture/saturation analysis and prediction...

1 km gridded Apr 1 – Jun 30 Soil Saturation (0-100%)



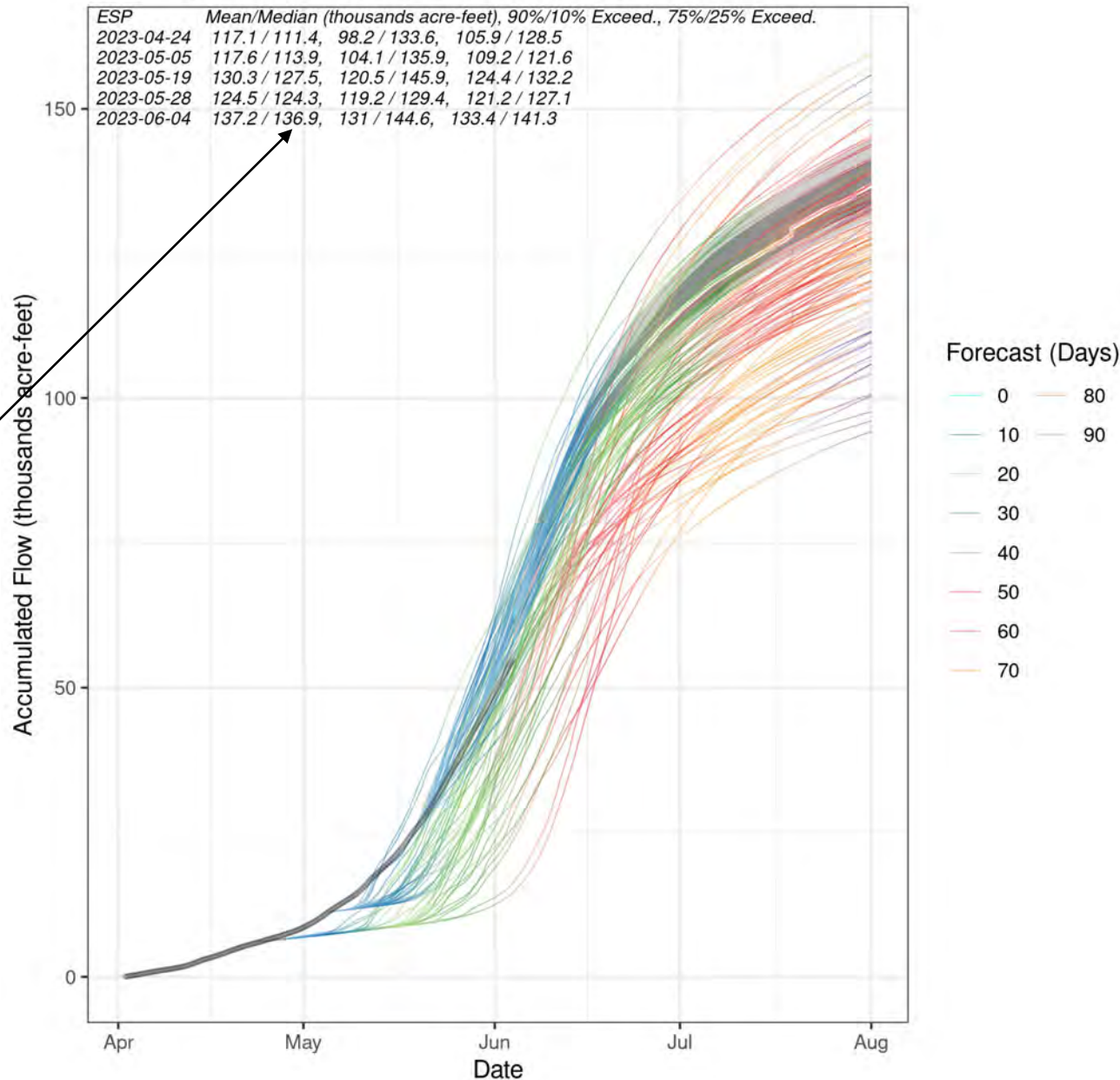


- **Lake Dillon/Blue River Basin example plots of flow accumulation forecasts...**

- **ASO flight surveys:**

- **April 16...critical for getting reliable initial snow state near peak SWE**
- **May 29...ASO data assimilation resulted in upward revision of forecast by 13 kac-ft**

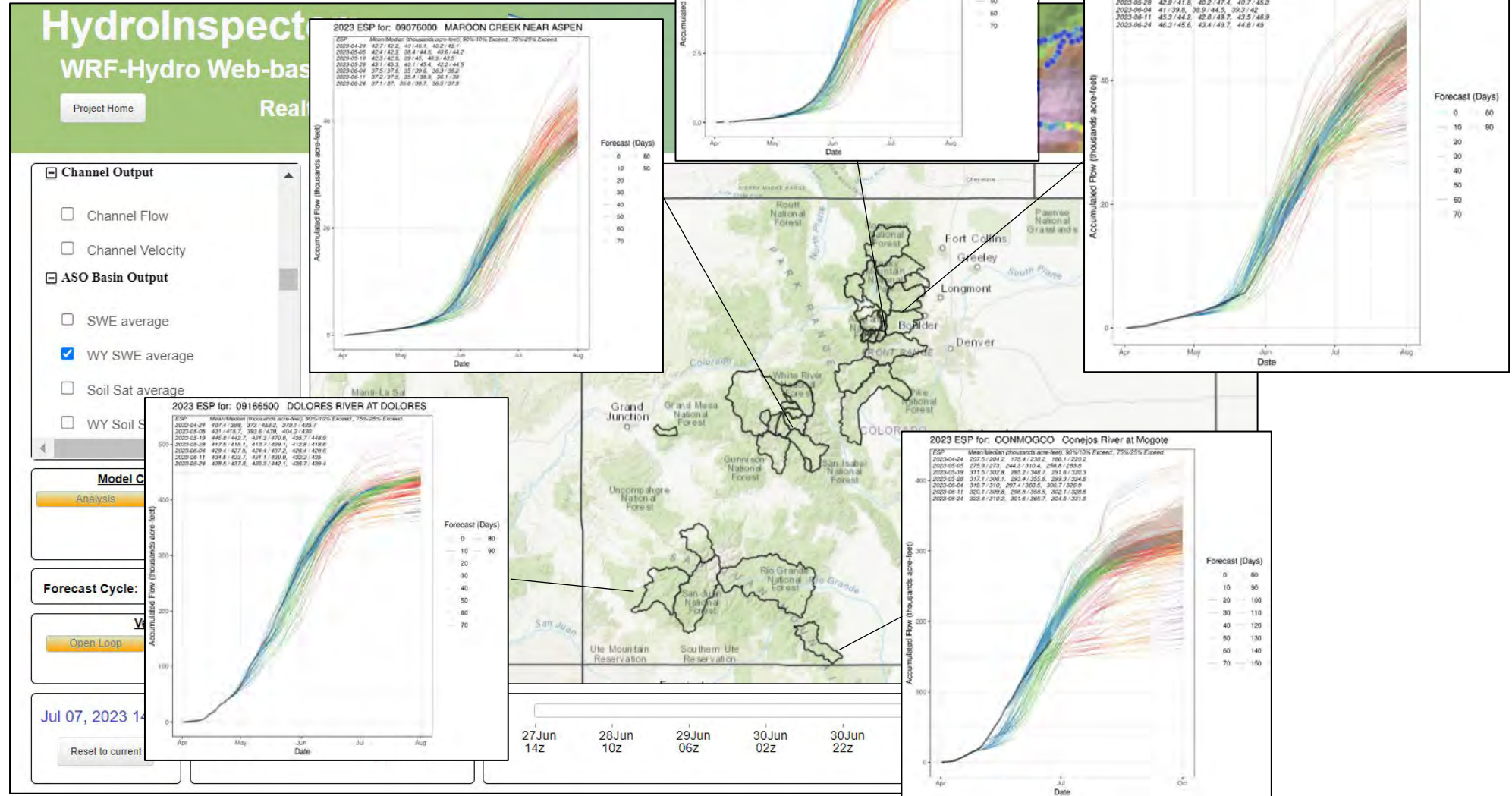
2023 ESP for: 1312051 Dillon Reservoir



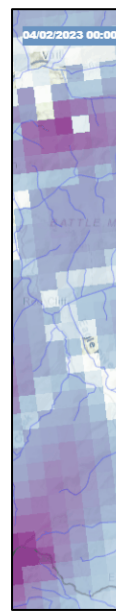
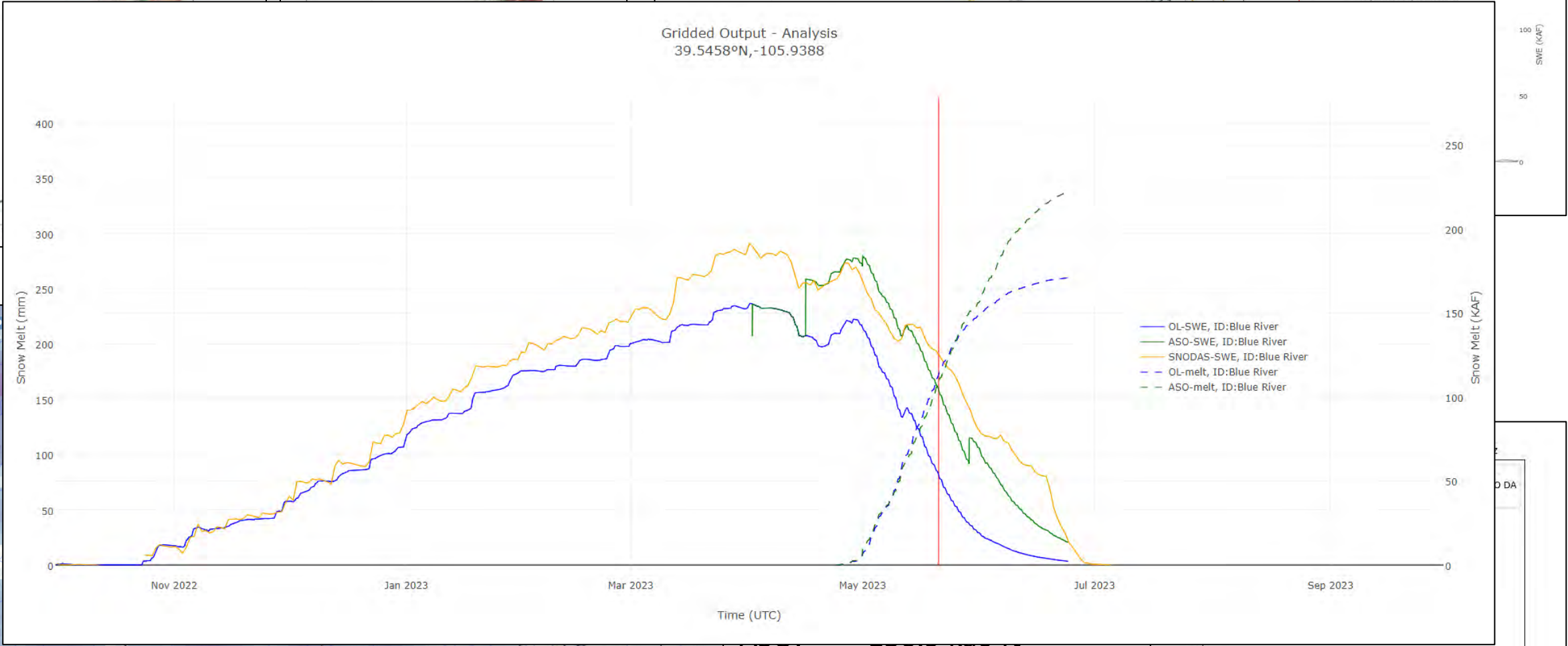
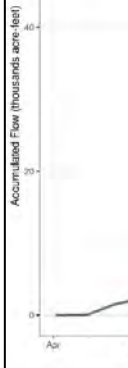
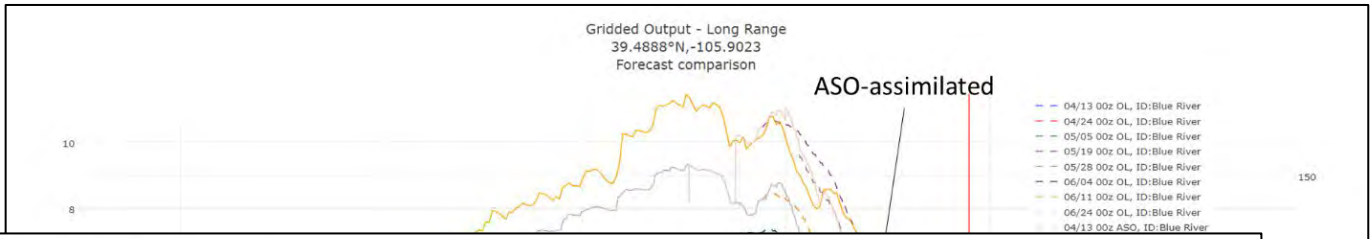
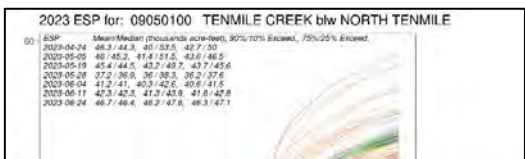


ASO Flow Forecast Summary:

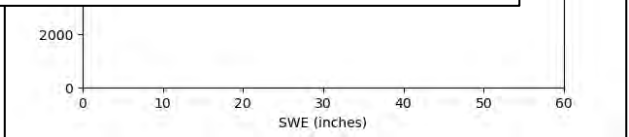
- Example plots of flow accumulation forecasts...



ASO/WRF-Hydro Deep Dive Basin Example: Lake Dillon/Blue River Basin



Current projection: 132 kac-ft





ASO/WRF-Hydro Forecast Reports:

• Example: Dolores River Basin chapter

WRF-Hydro/Airborne Snow Observatory Assimilated Hydrologic Forecasts:

Colorado

Date of report generation: June 28, 2023

[Updated for all basins each new forecast that becomes available]

Provided by: NCAR WRF-Hydro Modeling Team

D. Gochis, Y. Zhang, A. Gaydos, J. Grim, M. Casali, K. Sampson

Overview:

This report summarizes WRF-Hydro forecast results for selected major river basin forecast points across the state of Colorado. Included in each report are the following:

- Spatial maps of analyzed ASO-assimilated SWE from WRF-Hydro
- Time-series plots of basin-averaged analyzed and forecasted SWE from the WRF-Hydro OpenLoop model, WRF-Hydro ASO-assimilated model and SNODAS products
- Plots of elevation bin-averaged SWE vs. elevation from WRF-Hydro OpenLoop and ASO-Assimilated analyses and SNODAS
- Tabulations of Apr. 1 – Jul. 31 and/or Apr. 1 – Sep. 30 ensemble seasonal water supply forecasts

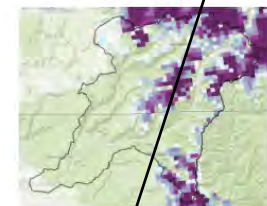
WRF-Hydro Forecasts for the Colorado Airborne Snow Measurement (CASM)

The WRF-Hydro modeling system has been employed in various seasonal water supply forecasting activities in the State of Colorado since 2015. Starting first in the Rio Grande/Conejos River basin regions new forecast basins/locations have steadily been added over time as interest in the system has grown. Currently a single model domain has been established over all of the mountain headwater regions of the state to enable snowpack and runoff predictions from key water resource generation areas. While the model integrates over all of these areas, preparation and optimization of reliable forecasts at particular locations is limited to areas where funded efforts have been made to engage in data assimilation, model evaluation and model optimization. Prior forecast domains have included the Rio/Conejos system, East/Taylor system, the Dolores basin, Blue River/Dillon Reservoir system and the Upper Colorado/Fraser/Willow Creek/Windy Gap system. The CASM mission has recently (past 2 years) contributed to this data assimilation and model optimization effort by coordinating and support Airborne Snow Observatory, Inc. surveys of snowpack and model forecasting activities. This year new forecast basins include the Roaring Fork/Frying Pan System, the Upper South Platte System and Poudre/ Big Thompson/St. Vrain/Boulder/Clear Creek Front Range systems. Implementation of these new areas along with enhanced optimization of prior domains initiated in April 2023 at the start of the new contract to

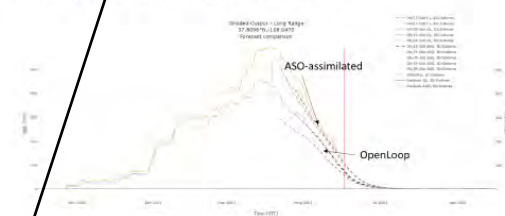
Dolores River Basin:

As of May 27 the ASO-assimilated snowpack from the WRF-Hydro model with ASO survey assimilation acquired on May 25 was approximately 129 kac-ft and dropping quickly. Snowpack ablation forecasts have tracked subsequent analyses quite well. Nearly all snowpack resided above 10,000 ft. Basin-averaged soil saturation fraction remained over 70% indicating very wet conditions though it appears values have peaked for the season.

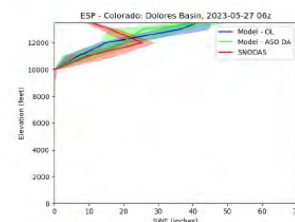
Spatial map of ASO-assimilated SWE:



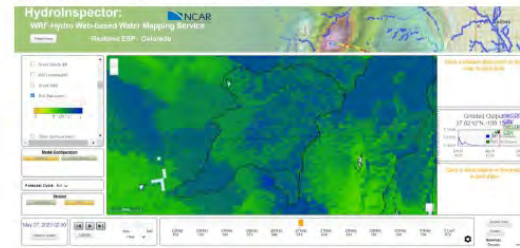
Basin-averaged analyses and forecasts of ASO-assimilated SWE:



Elevation profile of SWE for SNODAS (red), ASO-assimilated snowpack (green) and WRF-Hydro OpenLoop (blue)



Spatial map of WRF-Hydro modelled soil saturation:



Basin-averaged soil saturation values:



Dolores R. at Dolores, CO, median (Q50) runoff forecast (initialized on 5/28/2023):

Apr-Jul: 401 kac-ft *(Noted major diversion upstream to Groundhog Res.: 17.6 kac-ft and climbing...adjusted total = 418.6 kac-ft)

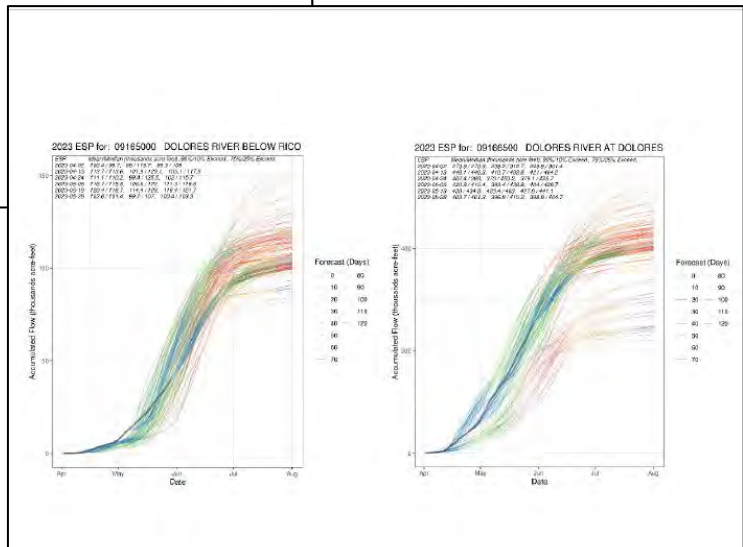
Apr-Sep: 426 kac-ft *(Noted major diversion upstream to Groundhog Res.: 17.6 kac-ft and climbing...adjusted total = 443.6 kac-ft)

Dolores R. blw Rico, CO, median (Q50) runoff forecast (initialized on 5/28/2023):

Apr-Jul: 101 kac-ft

Apr-Sep: 110 kac-ft

Sample plots for Apr-Jul ESP forecasts (ignore forecasts before 4/24):



• Summary discussion on current basin conditions....



Thank you

D. Gochis, gochis@ucar.edu

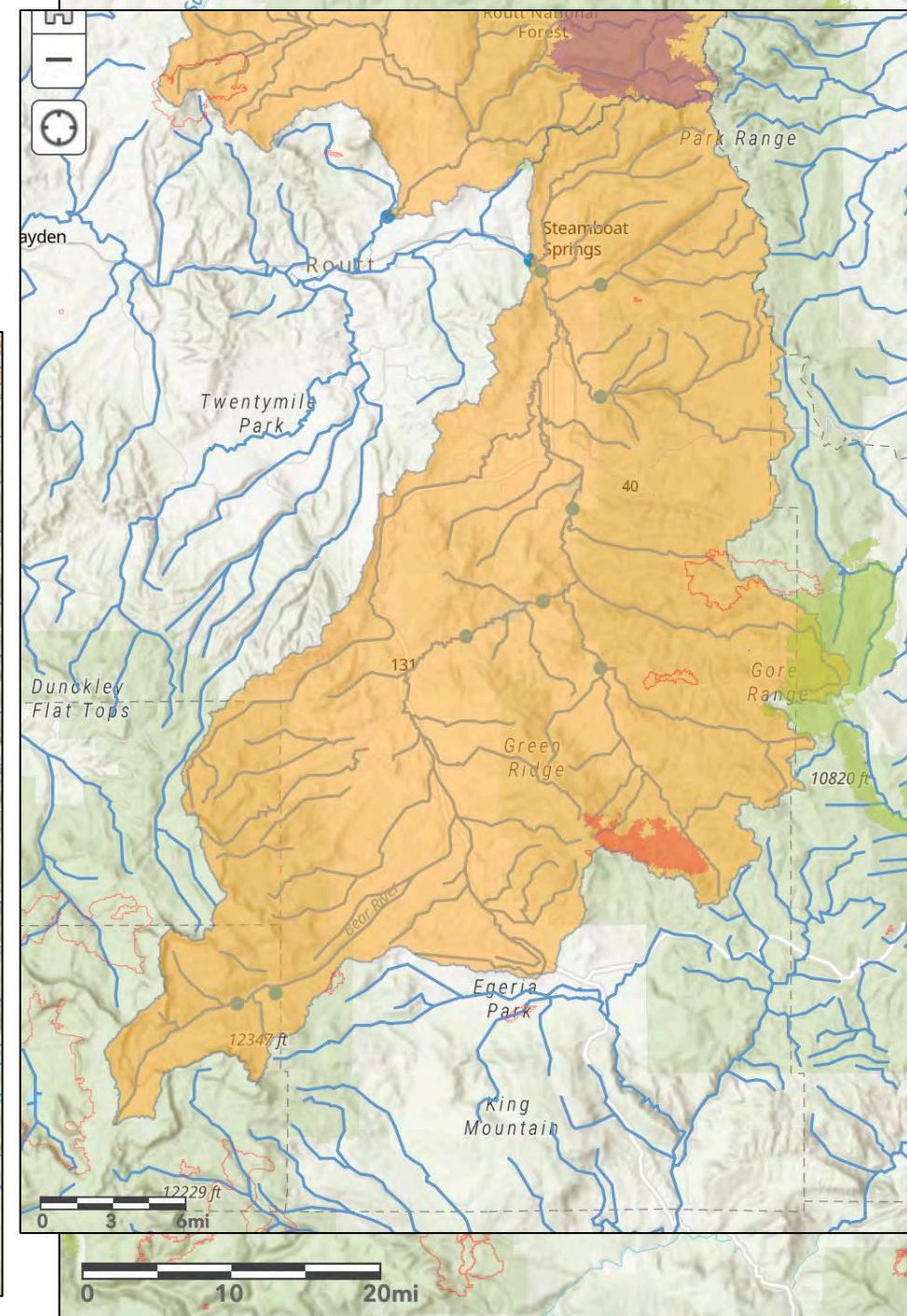
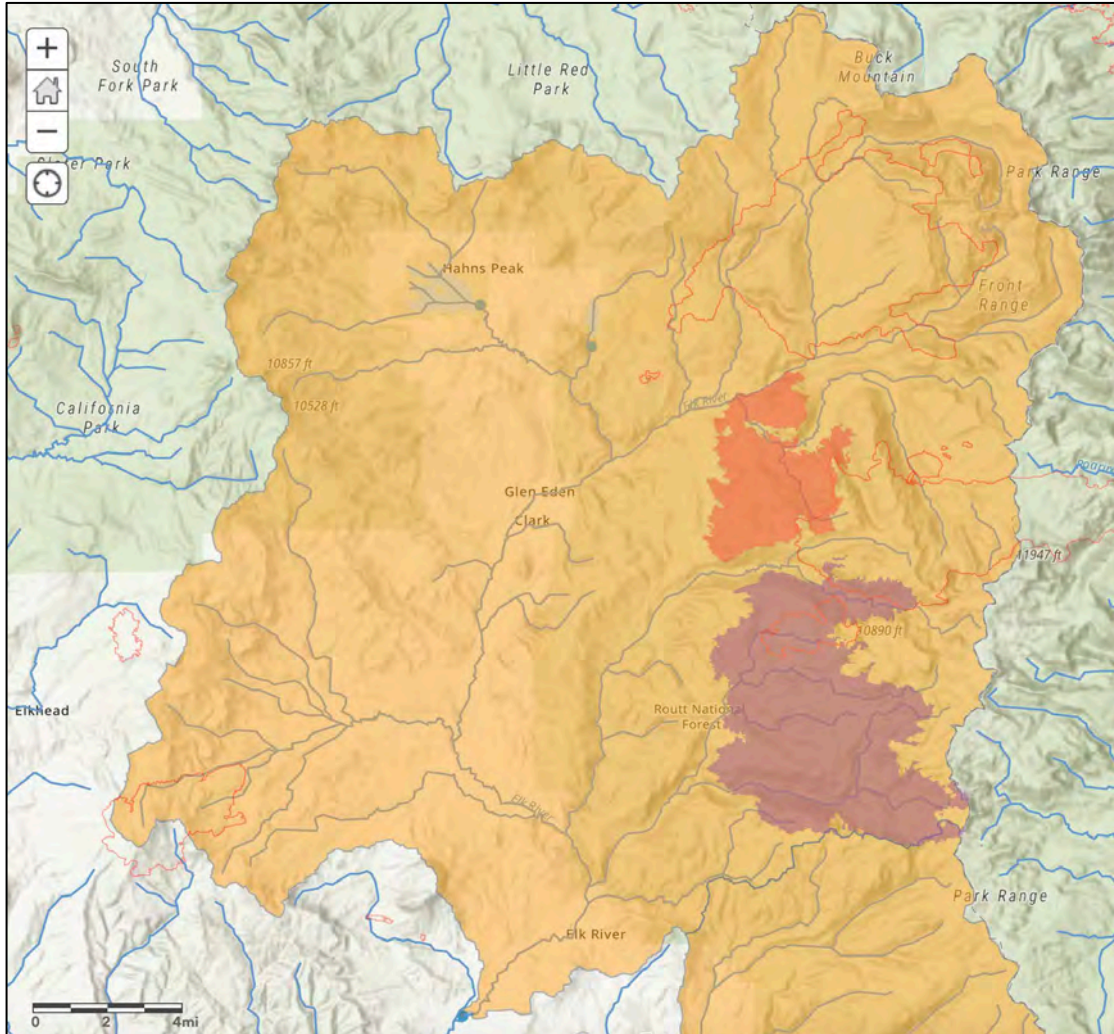




Yampa River Basin

Project Concept

- 2 ASO airborne snow surveys
- Continuous iSnobal snow modeling
- WRF-Hydro runoff forecasting
- Leveraging CASM Water Plan grant & CWCB Projects Bill
- BuRec Funding opportunity



“Accurate snowpack/SWE monitoring and streamflow forecasts are critical to Colorado's ability to meet its compact obligations on the Rio Grande.”

*Craig Cotten
Colorado Division 3 Engineer*

“What you’ve done is created new reservoir space and water supply without any impacts to the current physical or environmental paradigms.”

*Wes Monier
Chief Hydrologist - Turlock Irrigation District*

“Having used this technology, it is hard to imagine a future without it.”

*Dave Rizzardo
Chief of Snow Surveys & Water Supply
Forecasting, CA DWR*

“ASO provides invaluable information about the rate of melt that provides a real opportunity to optimize reservoir operations for water supply, flood control, and instream requirements.”

*Steve Haugen
Watermaster, Kings River Water Association*



airbornesnowobservatories.com

coloradosnow.org

deems@airbornesnowobservatories.com