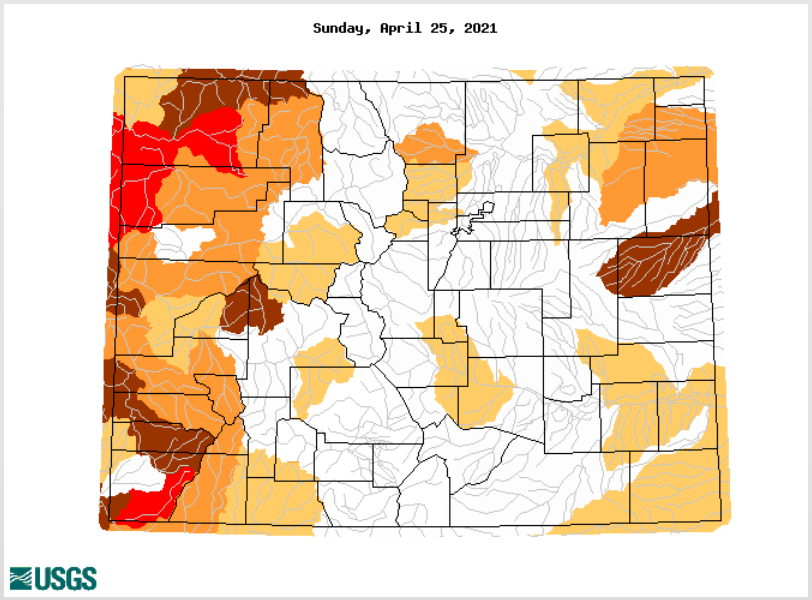
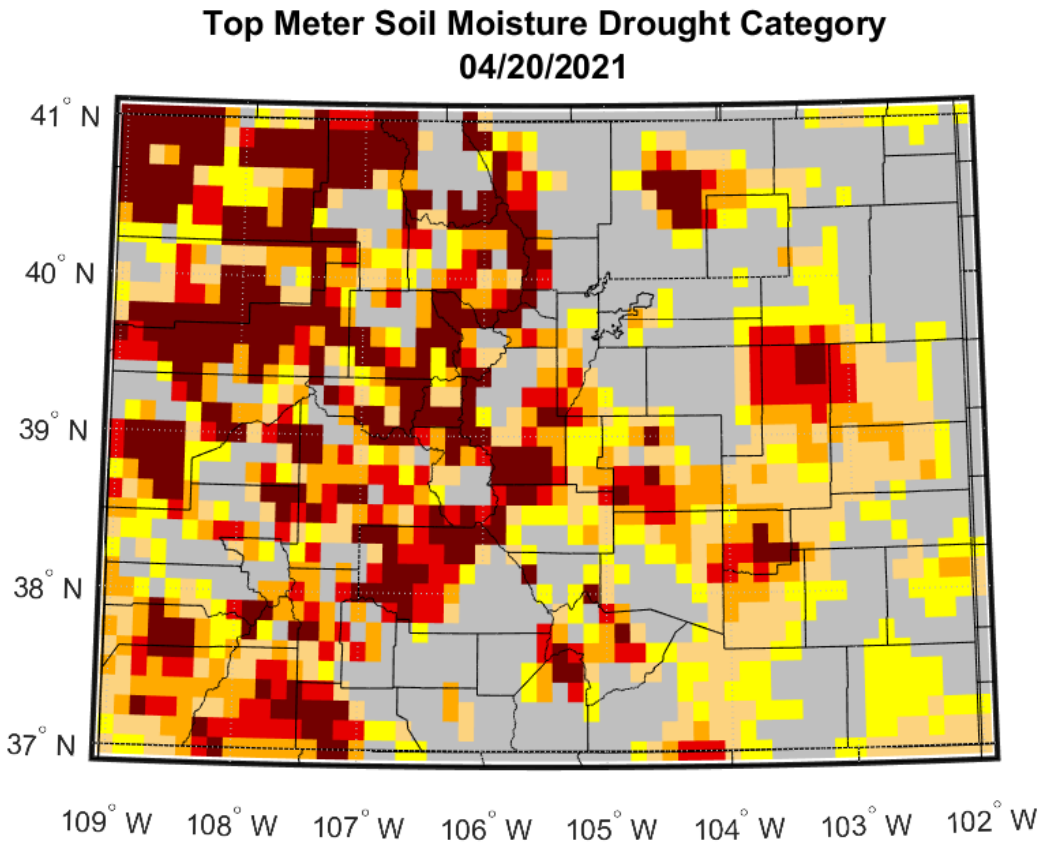
2021 SW CO Fire Season Outlook

April 29, 2021



Map of below normal 28-day average streamflow compared to historical streamflow for the day of year (Colorado, USGS WaterWatch)

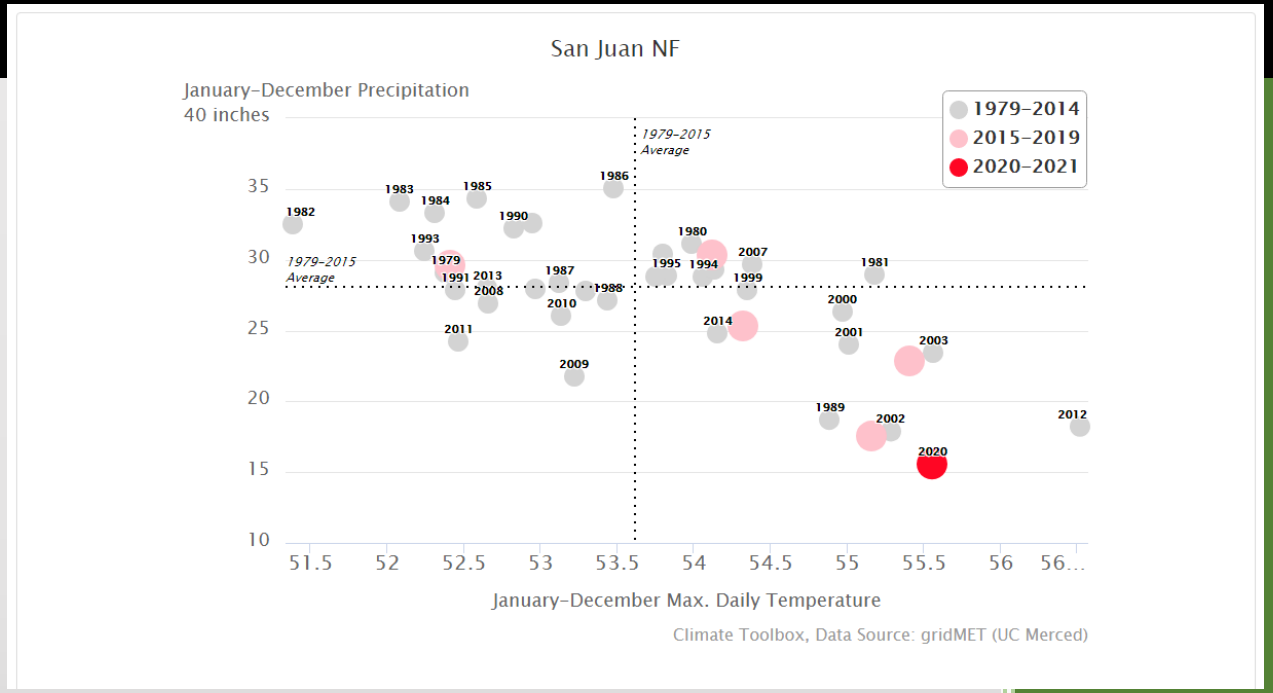


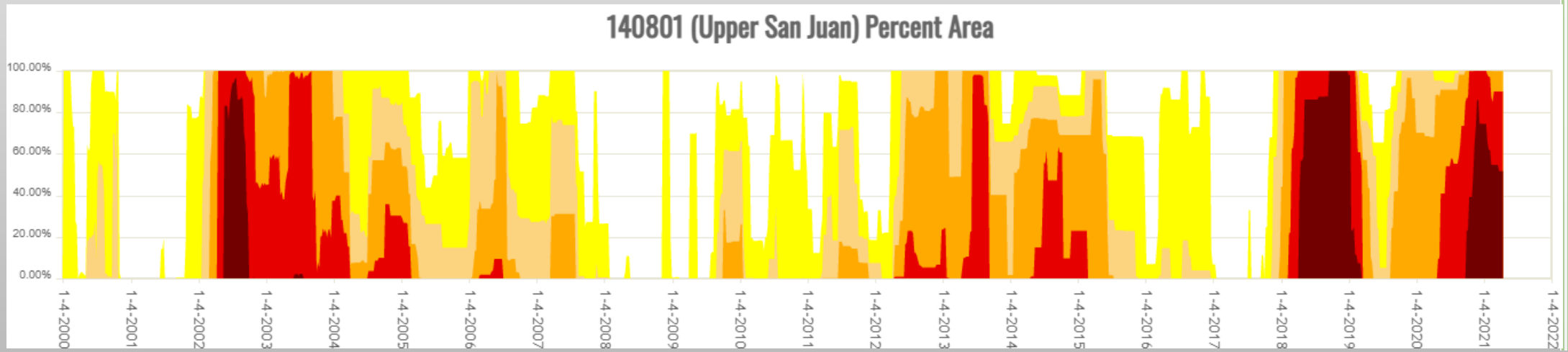
Extensive areas of D3/D4 equivalent soil moisture drought categories across the Durango Dispatch Area

Prepared by: Brad Pietruszka, Fuels Program Manager, SJNF

Antecedent Conditions

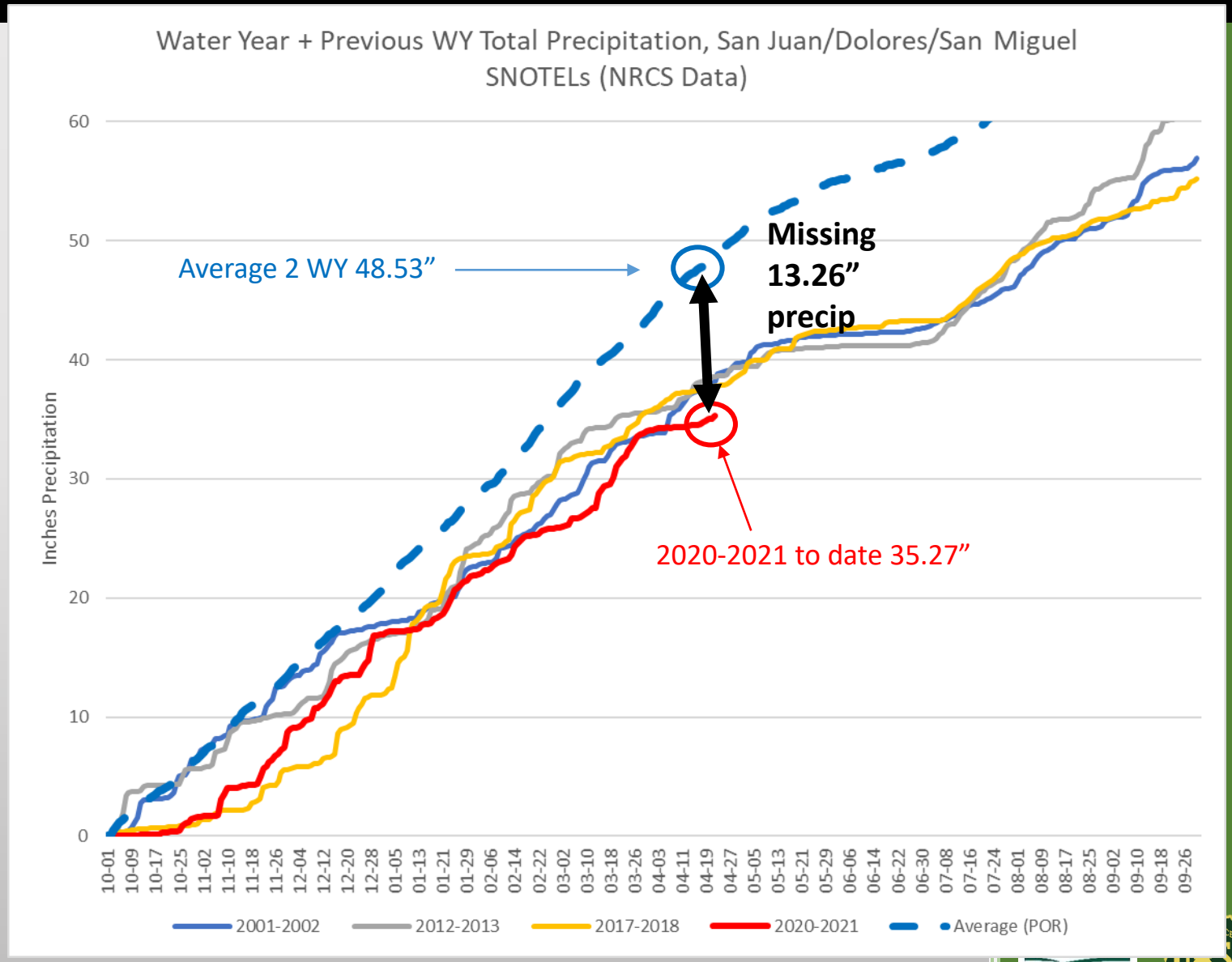
- 2020 was a bad year in a number of ways, but also in terms of precipitation and evaporative demand
- We ended 2020 about 12” behind in mountain level precipitation – the monsoon that wasn’t
- D4 drought as we entered winter – super, super rare in the long term, but happened in 2019 – with wildly different results
- Very little improvement through winter





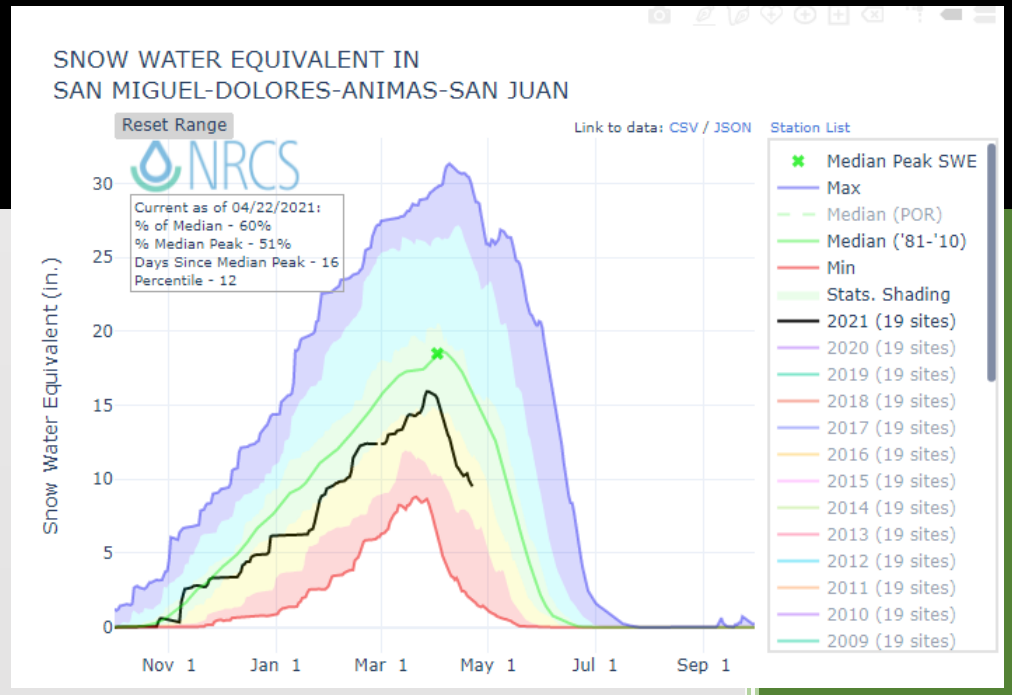
How is 2020 still affecting us?

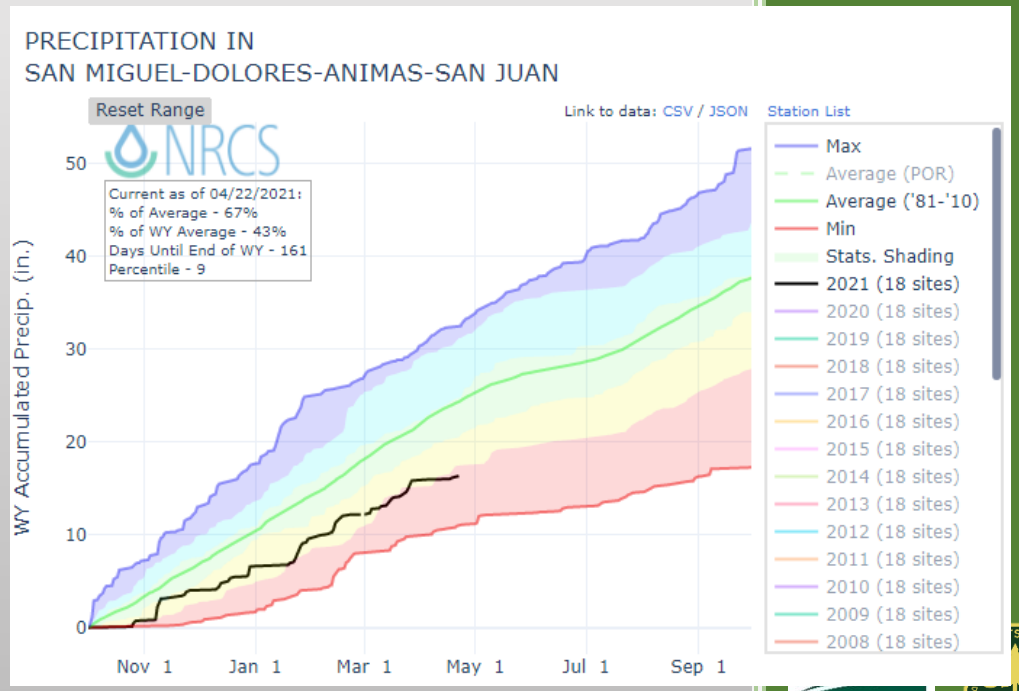
- We're used to only being concerned with the calendar or water year (10/1-9/30
- But what happens when you stack one of the worst water years on top of another?
- It turns out 2020-2021 is the driest to date 2 year period since at least 2001



2021 Snowpack & Precipitation

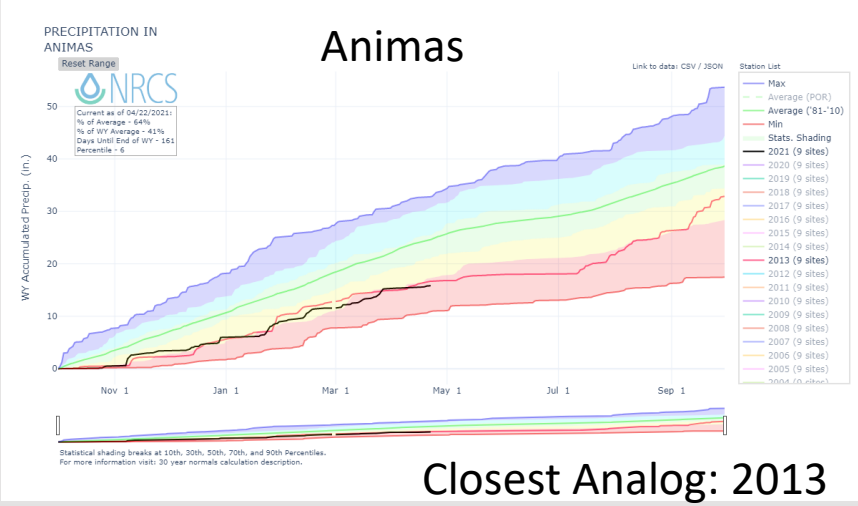
- 60% of median Basin wide SWE and 67% normal precip as of 4/22/21
  - % of normal isn't a great metric.
- SWE is the 12th percentile
  - 2021 is the 4th lowest snowpack since 1987
- WYTD precip is the 9th percentile – only 2002 and 2018 water years have been drier to date since 1987
- But averaging all basins doesn't show the whole story…





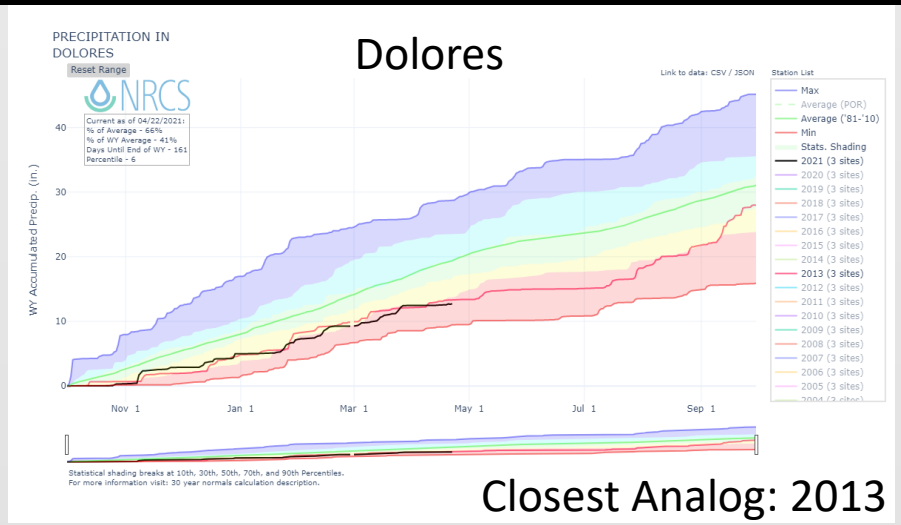
2021 Precipitation Analogs by Basin

Animas



Closest Analog: 2013

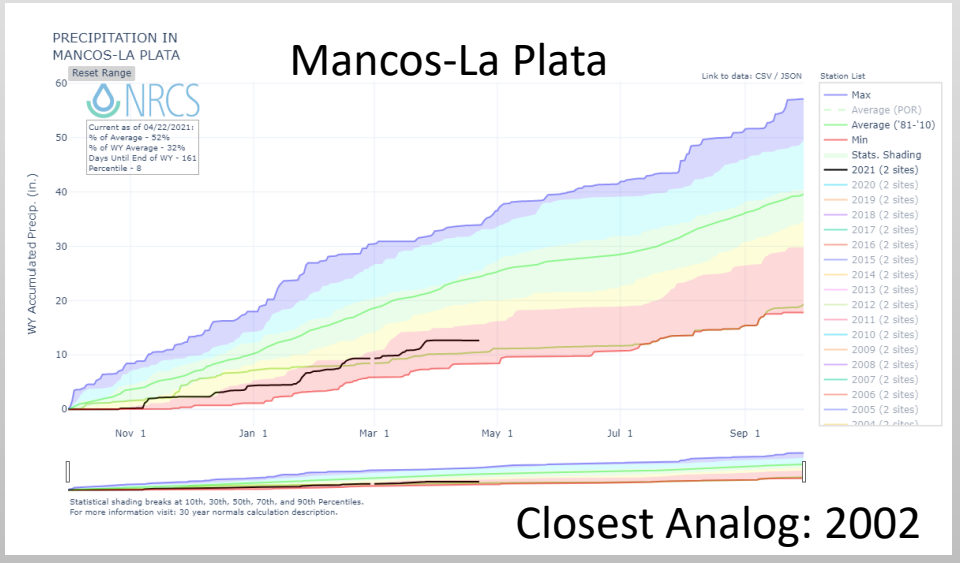
Dolores



Closest Analog: 2013

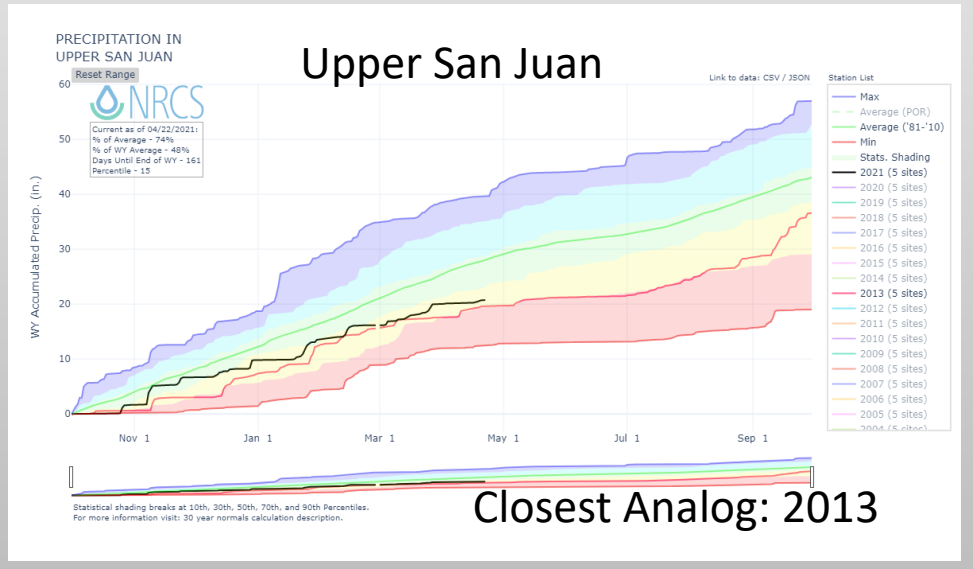
Analogs were selected based on observed WYTD precipitation and climate outlooks

Mancos-La Plata



Closest Analog: 2002

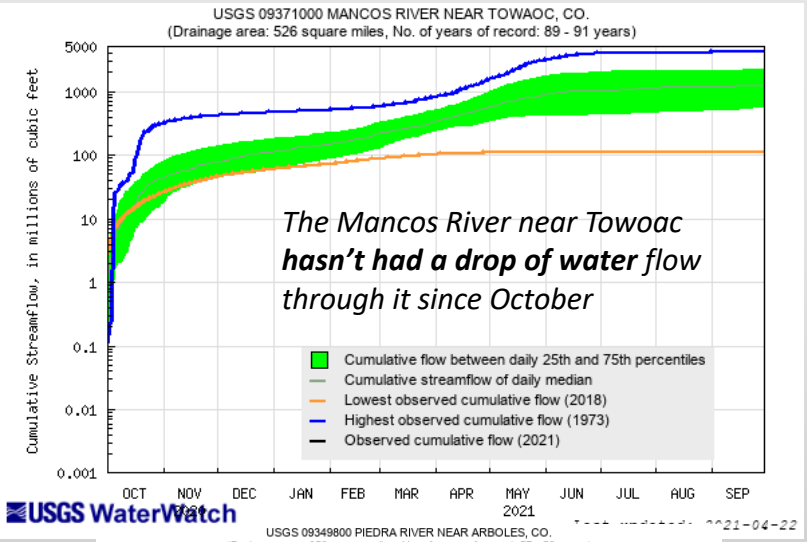
Upper San Juan

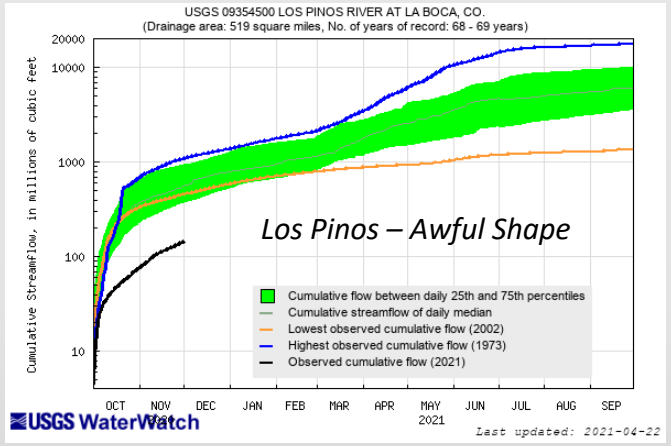


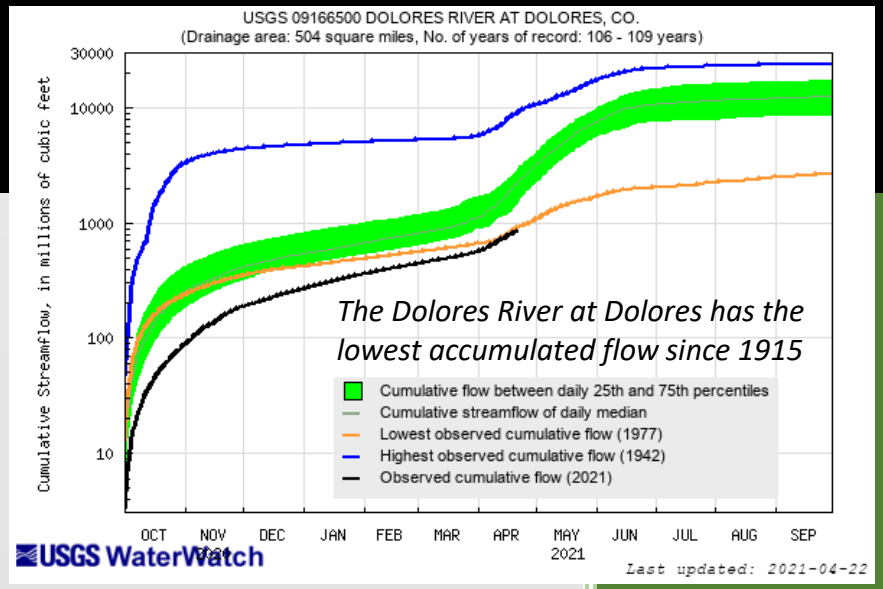
Closest Analog: 2013

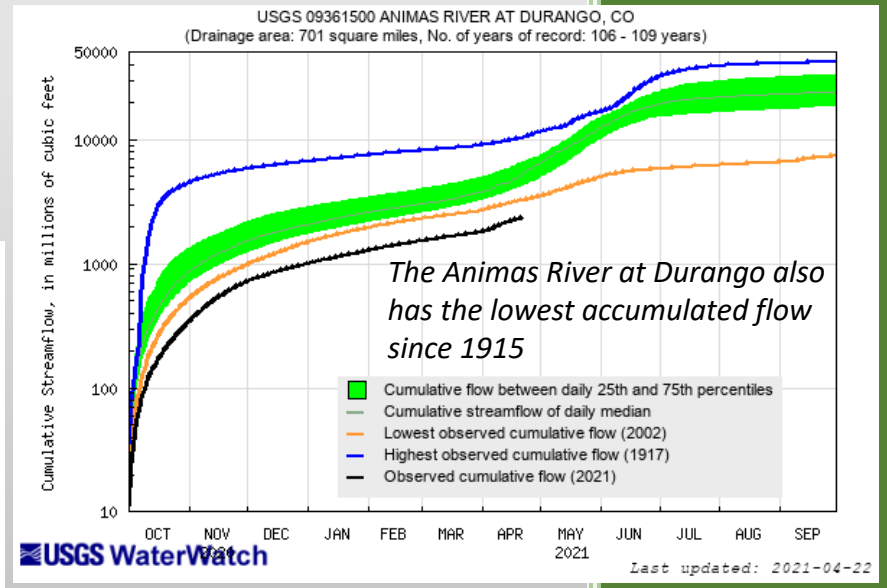
2021 Streamflow Summary

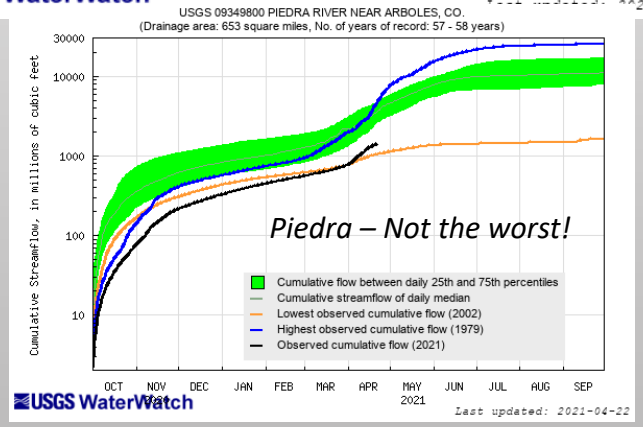
- Again, it's a record setting dry year, and this is borne out by stream gauges, many dating back over 100 years

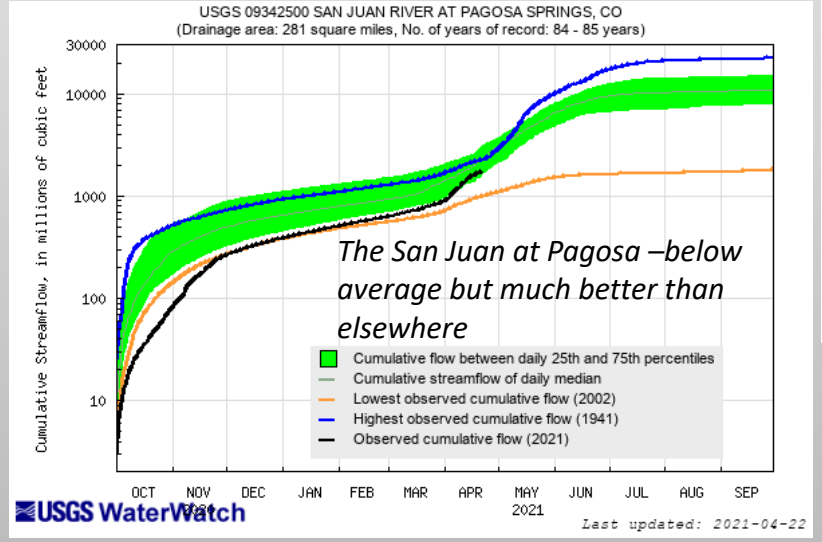




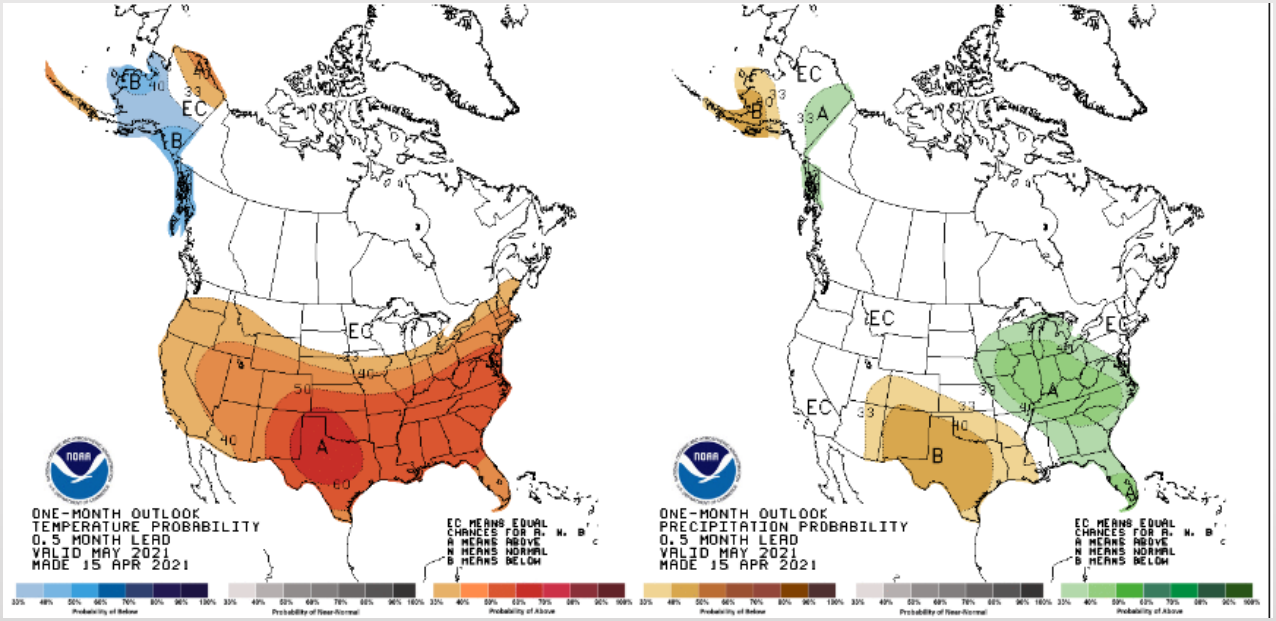




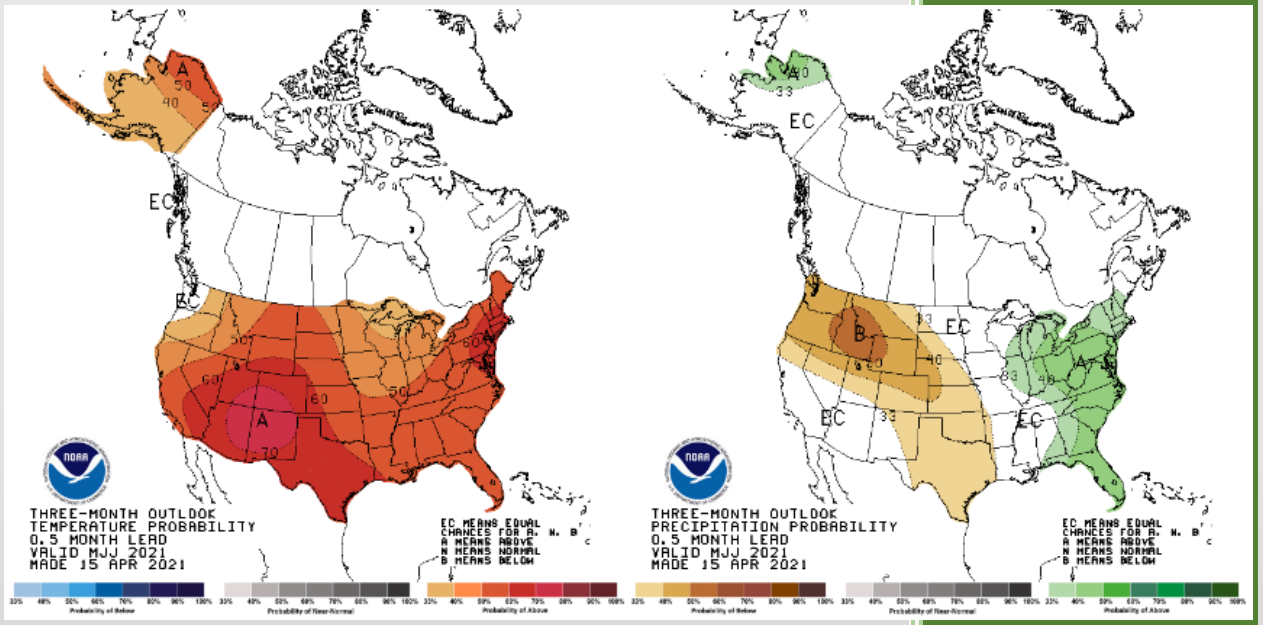




CPC Forecasts



1 Month

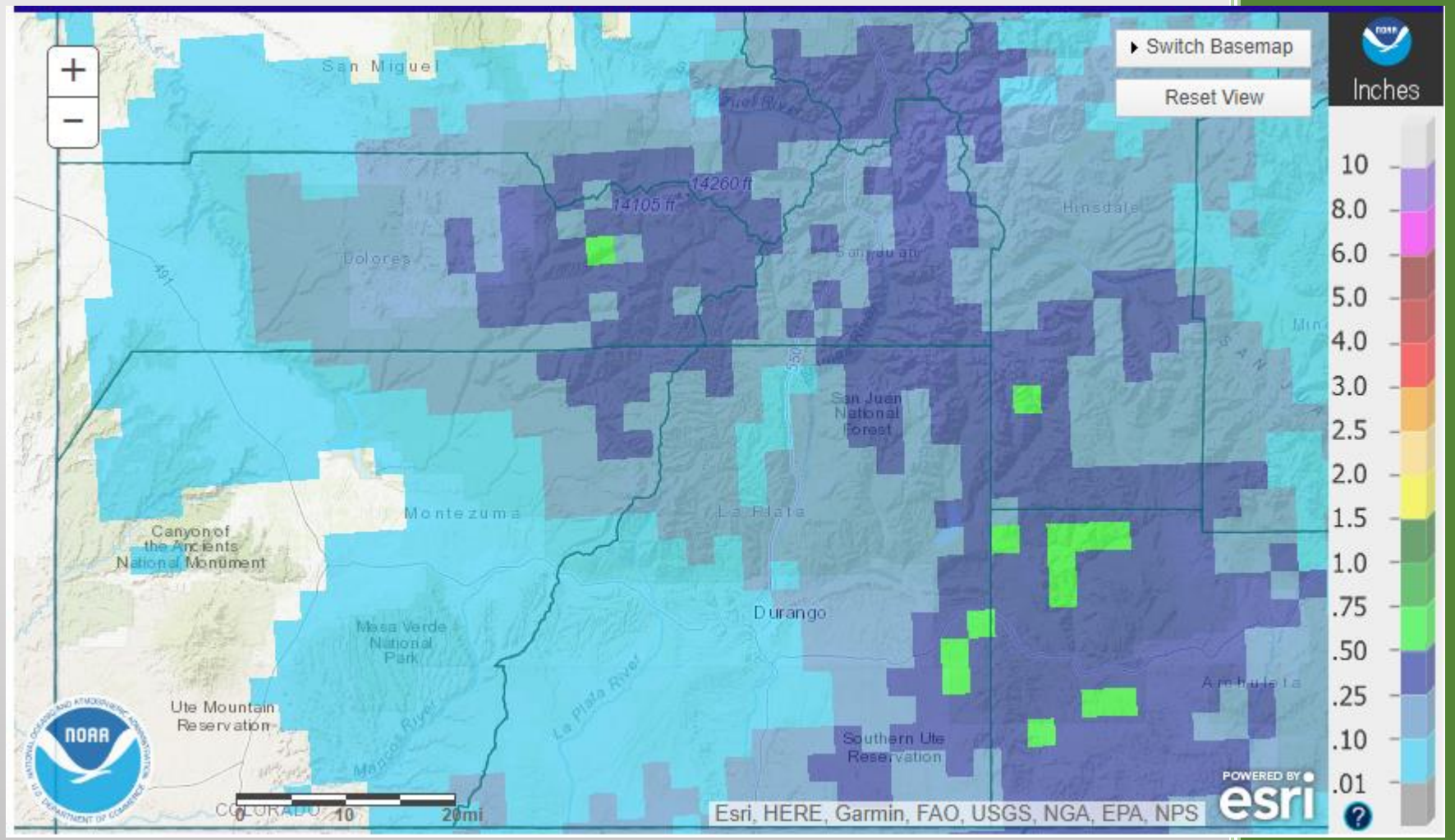


3 Months

Odds favoring warmer and drier than normal conditions through July. Not ideal.

But it rained!

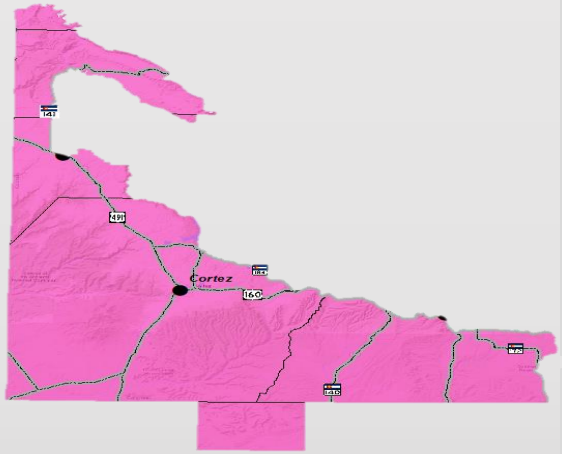
- Yes, it did rain on Tuesday
- Unfortunately amounts were generally between 0.1” and 0.25”, a little higher to the east, and will have absolutely no impact on long term drought conditions
- But this will help us get some prescribed fire on the ground before fuels become too dry, so there is a benefit to even a little moisture!



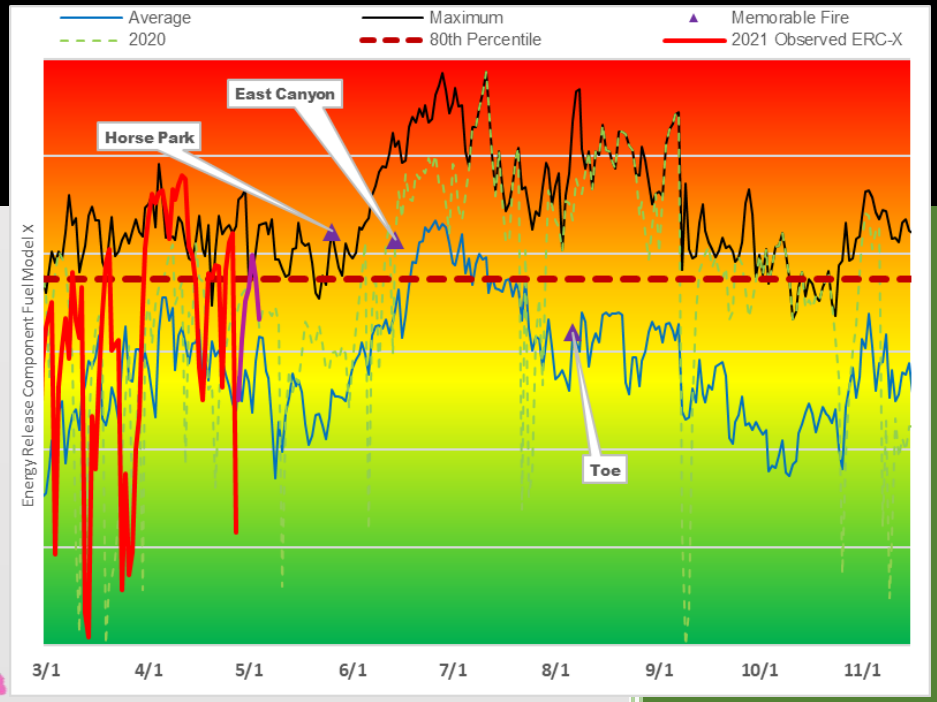
Fire Danger

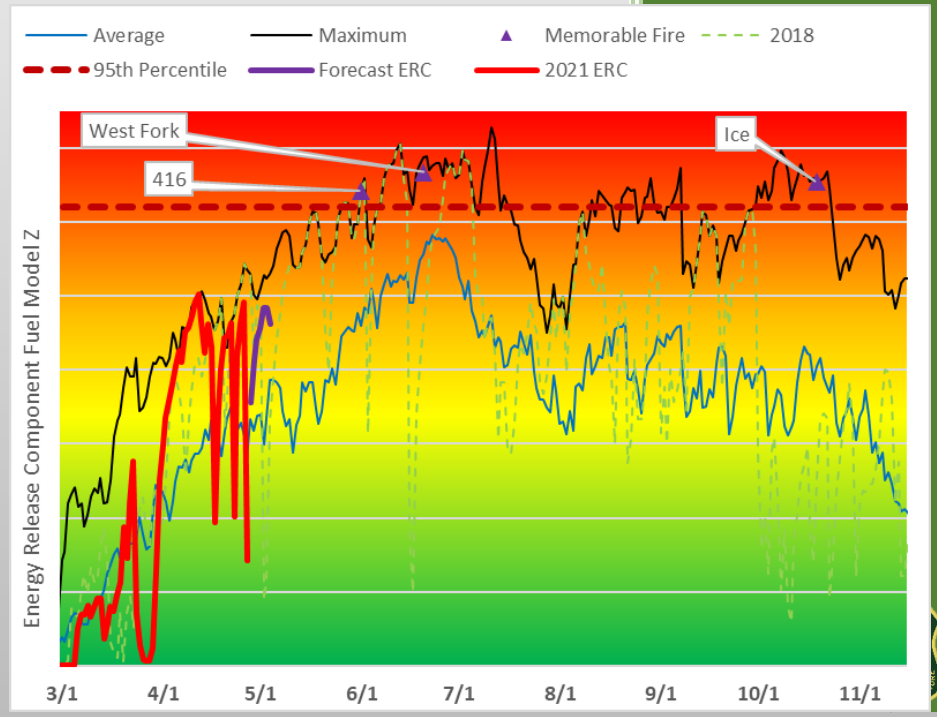
- New Fuel Models being tested to evaluate fire danger locally – include many improvements from older methods

- Fuel Model X – Brush - Lower FDRA
  - Really good at capturing pre-greenup fire danger in lower elevations
  - Hitting record levels already – as greenup progresses, these levels will hopefully decrease temporarily until late May



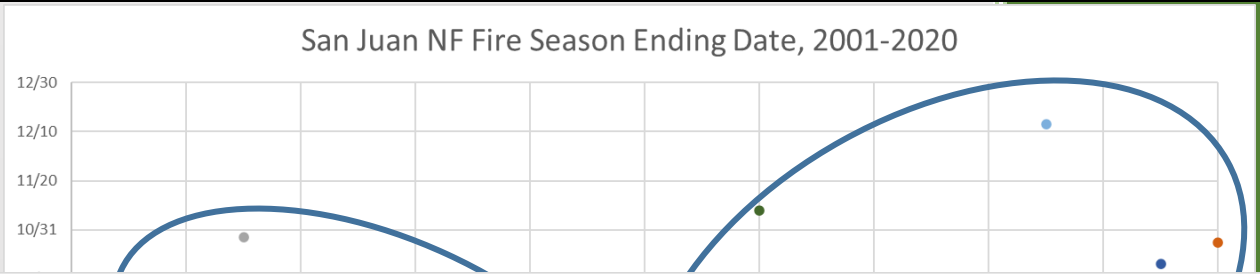
- Fuel Model Z – Slash/Blowdown - Upper FDRA
  - Great correlation with historic fire activity
  - Effects of drought are evident – quick spike to near maximum values earlier this month

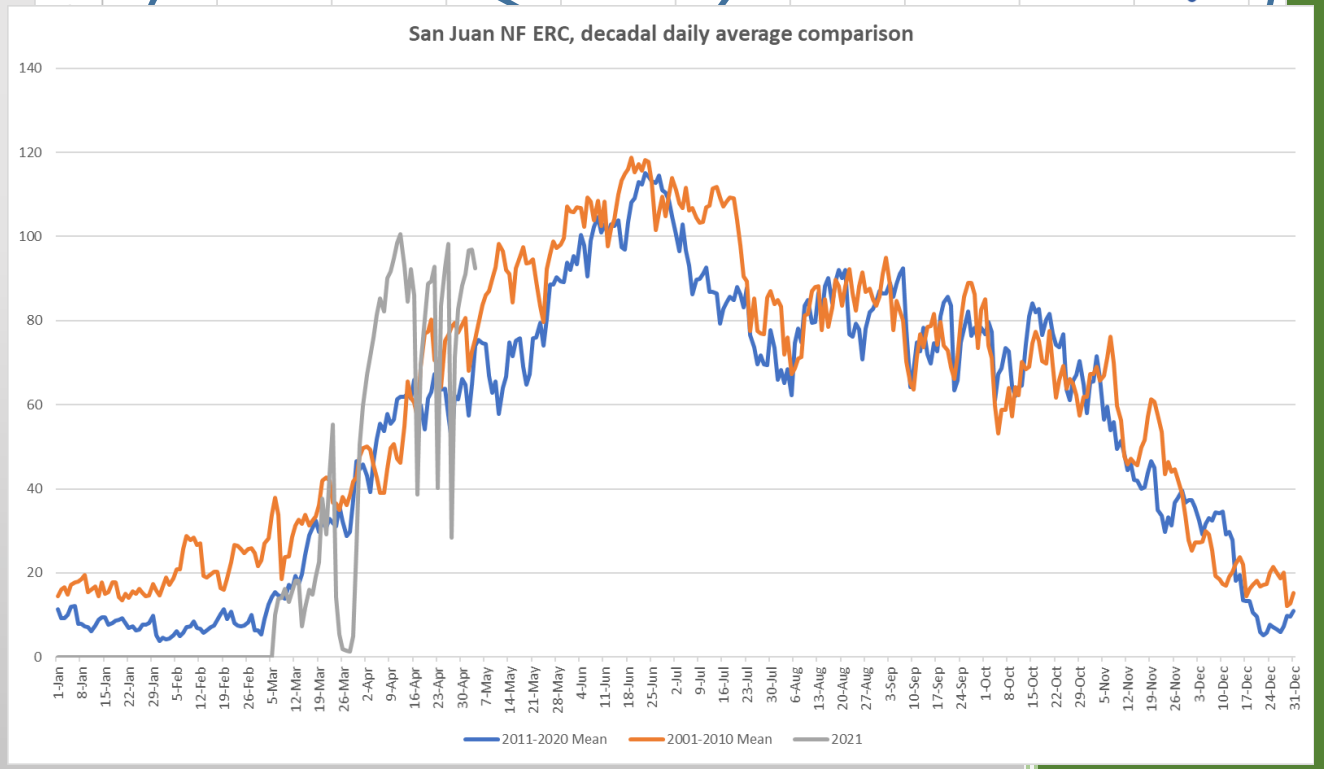




Fire Season Length

- We all hear fire seasons are becoming longer, is that true locally?
- While the season onset date hasn't changed that much, there's a pretty noticeable change on the tail end – about an extra 11 days on average per decade
- Drought years will always see an early onset to fire season, wet years will always have a late onset
  - *Spring/Summer 2015 was so wet that it didn't have a defined onset or end date – serious outlier!*
- We can also see increasing length and severity in average Energy Release Component charts when we compare decades
- We can thank below average monsoons since 2017 for this trend – hopefully 2021 is different!





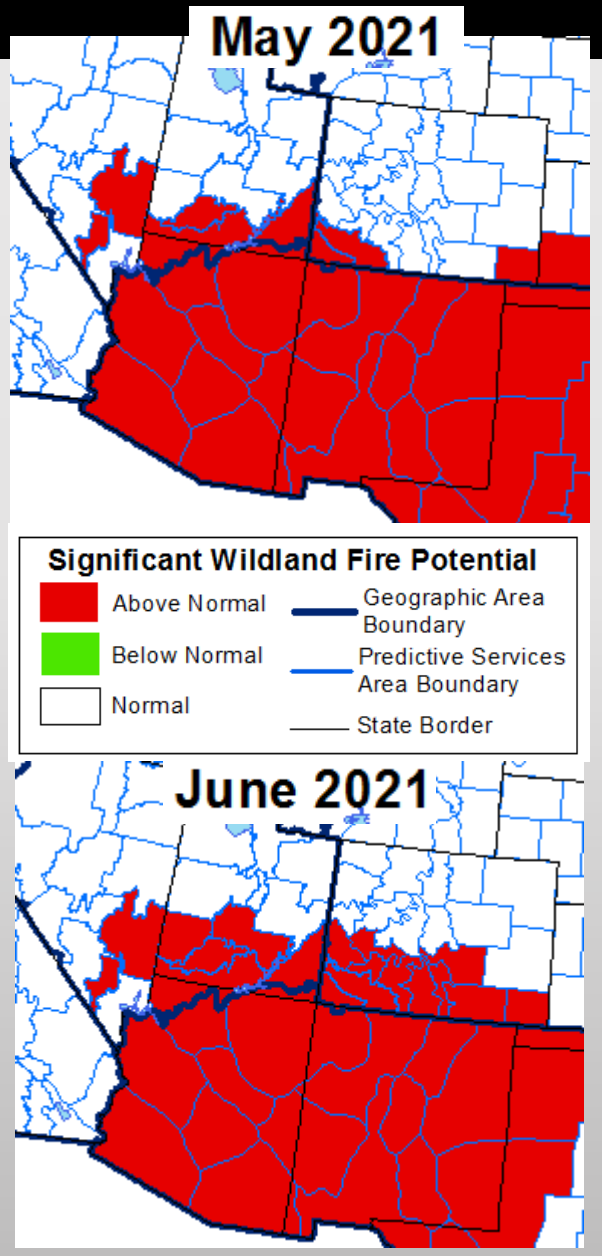
Fire Potential Outlook

- Even if we can't call it the worst winter ever, we're in a very bad spot.

- Worst Case Scenario (30%) – Fire season starts early, with large fire occurrence at all elevations much higher than average. Another below average monsoon keeps fire potential above average throughout 2021.

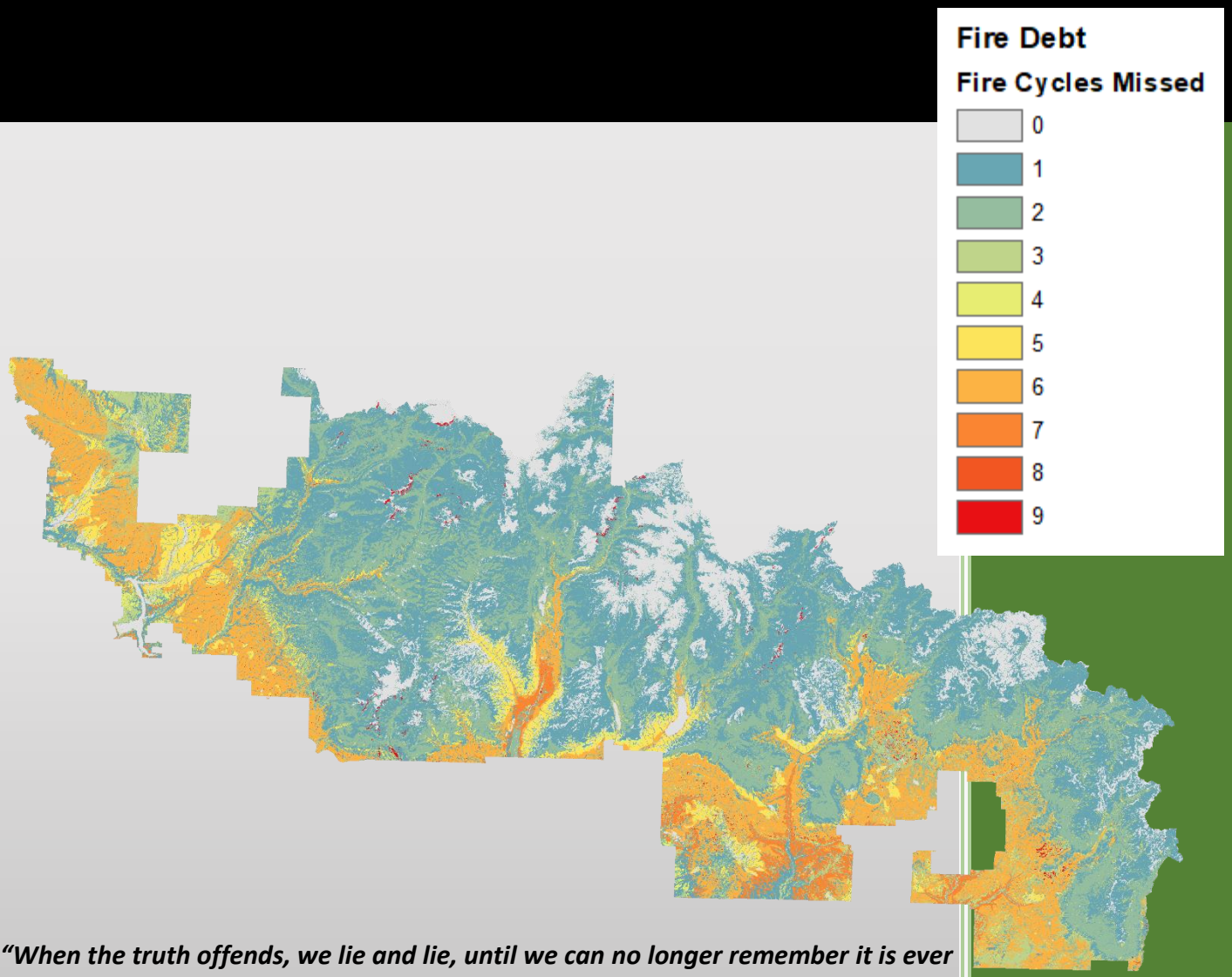
- Most Likely Scenario (65%) – Fire season starts early, with large fire occurrence at all elevations much higher than average. An average monsoon occurs, providing some relief during late summer and early fall.

- Least Likely Scenario (5%) – Above normal large fire potential is moderated by a wetter than average spring and monsoon.



How did we get here?

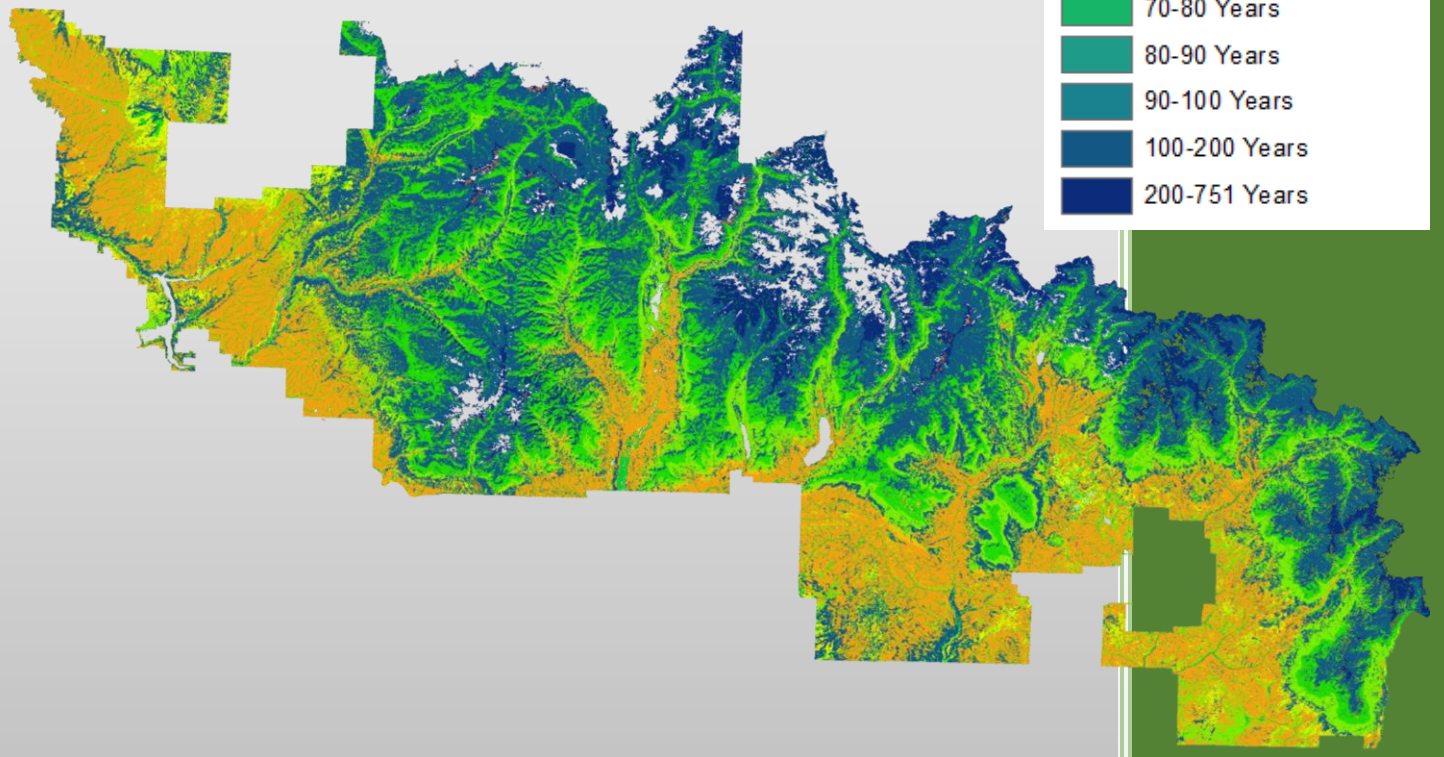
- Most forests across the country evolved with fire, the four corners area is no exception
- Fire is the primary disturbance agent across the San Juan NF, helping to regulate ecosystem function and maintain heterogeneity of fuels which leads to forest resilience
- Pre-European settlement, fires would be able to self-regulate, hitting previous fires and rates of spread slowing
- This all changed in the late 1800's with land use changes including grazing, logging, landscape fragmentation, and fire exclusion
- We're left with a legacy of our ancestors, including dealing with this in a warmer and drier climate



"When the truth offends, we lie and lie, until we can no longer remember it is ever there. But it is still there. Every lie we tell incurs a debt to the truth. Sooner or later, that debt is paid." *– Valery Legasov, in HBO's Chernobyl, helpfully describing the Western United States' struggle living with fire*

How did we get here?

- The more fire you have on a landscape adapted to frequent fire, the easier it is to live with these fires
- The less fire you have on a fire adapted landscape, the harder it is to deal with the inevitable fires
- Pre-European settlement, an average of around 38,000 acres per year would have burned across the San Juan NF
- A 38,000 acre year now would be significantly above average, and we'd probably use terms like "catastrophic" to describe it, especially when it impacts where people live
- So not only is the amount much less than what the landscape evolved with, the type of fire can often be different as well



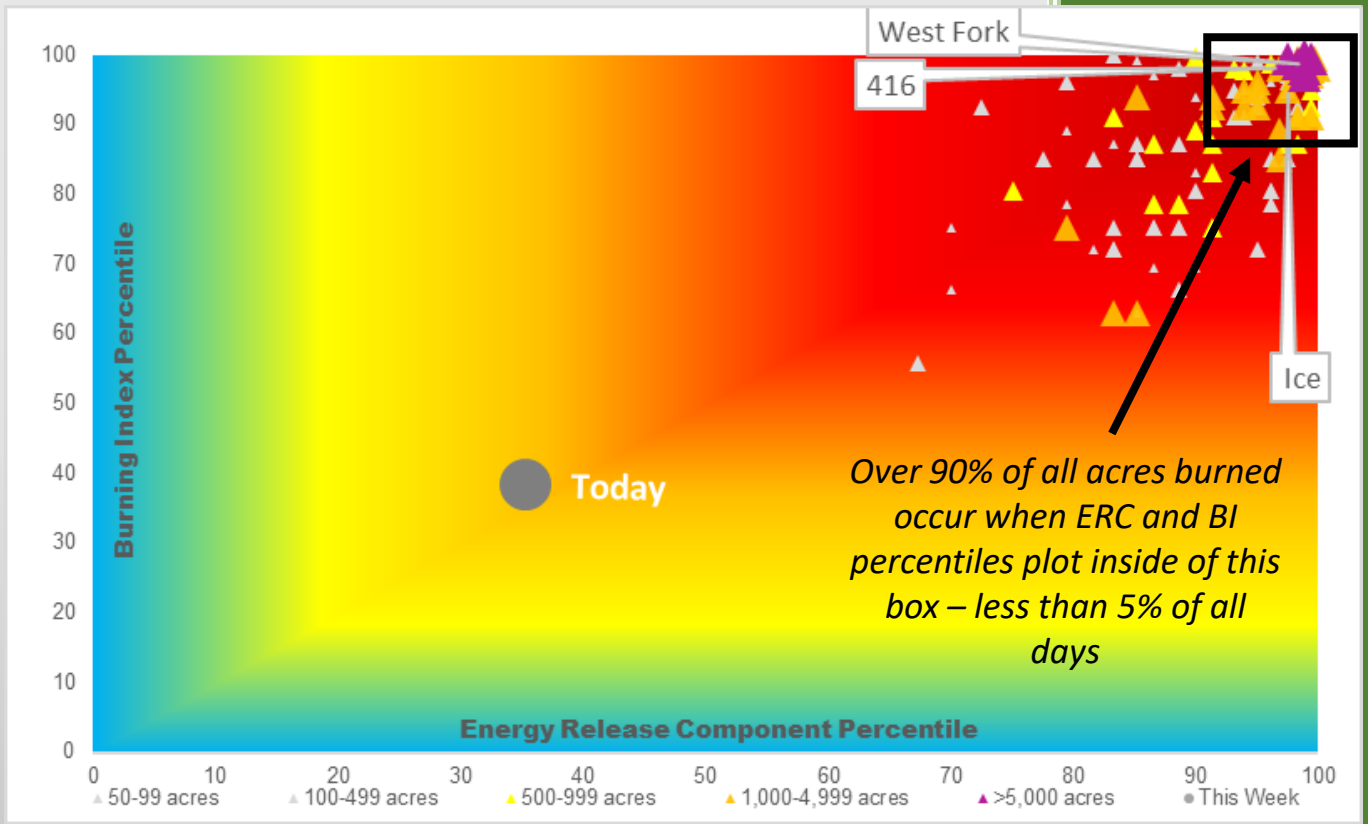
Where are we going?

- **There is no option that does not involve a lot more fire than what we've grown used to**

- We could either:
  - A: Continue past practices, accepting that we're **going** to have very large, probably very intense fires repeatedly throughout the coming decades, and there won't be much firefighters can do to stop them. Losses from fire will accelerate, and while sporadic, will be very large

Or

  - B: Dramatically increase how much active management we apply to all lands in the area, increase prescribed fire exponentially, and *encourage* lightning ignited fires burning at less than severe conditions to exist on the landscape, on our terms. **Losses are still inevitable**, but will be lower than option A.



How do we get there?

- It's pretty easy to get to option A, just wait, maybe not even for very long
- Option B is a lot harder, it takes all of us to achieve this
- Dr. Mark Finney sums this all up eloquently
  - *Emergency wildfire response is insufficient to protect natural resources and communities*
  - *Technology that reinforces the wildfire suppression paradigm will yield only marginal benefits*
  - *Investments in proactive uses of wildland fire are needed to sustain urban values and natural resources*

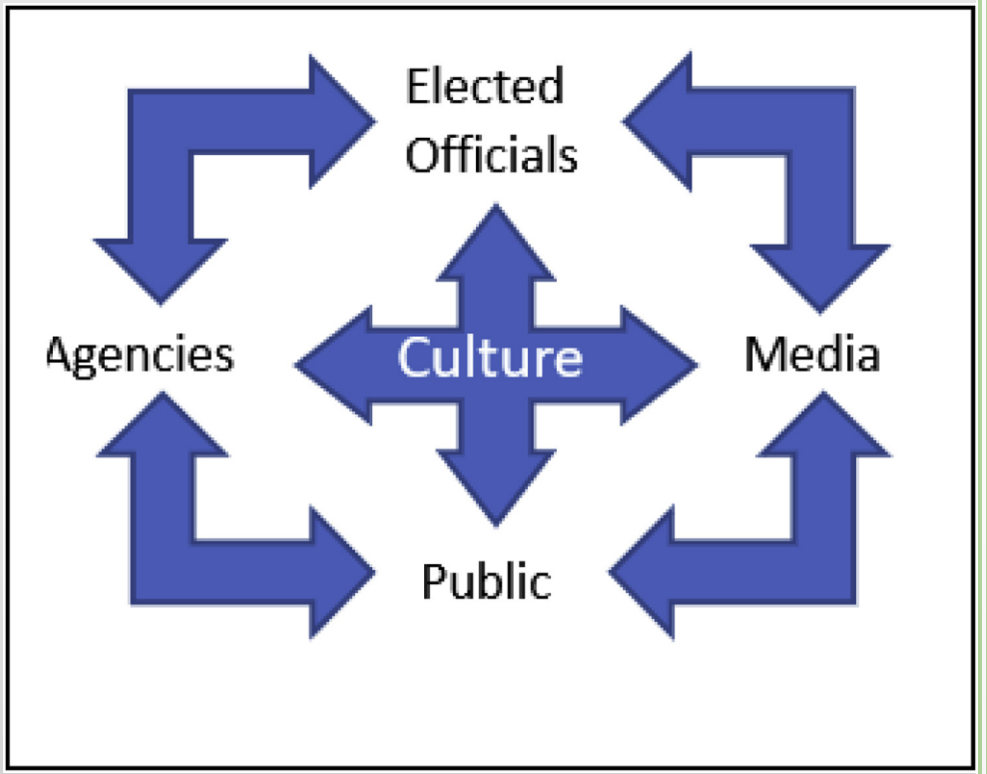


Fig. 1. Wildland fire culture is defined by interactions among land management agencies, the public, elected officials, and the media. – ***MA Finney, The wildland fire system and challenges for engineering, March 2021***

Questions?

Clockwise from Right: 2018 416 Fire, 2019 Boggy Draw Prescribed Fire, 2013 West Fork Fire (NASA)