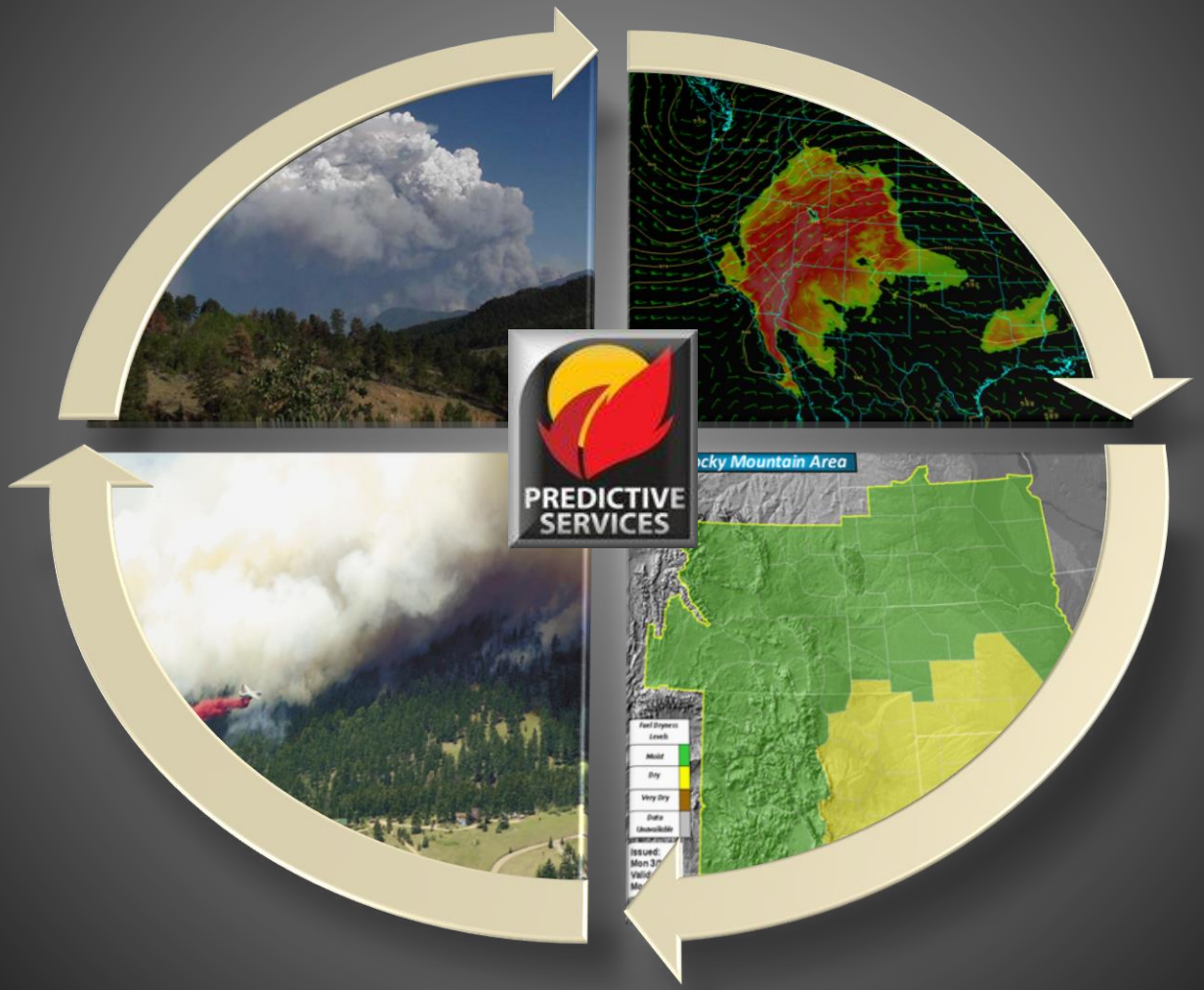
# Rocky Mountain Area 120 Day Large Fire Potential Outlook…Issued 4/29/20



# 120 Day Fire Potential Outlook Considerations and Discussion

## Antecedent Considerations

- Weather Patterns of Early Spring 2020
- Temperature Anomalies
- Precipitation and Drought Comparisons
- Fuel Moisture and Fuel Loading
- Large Fire History

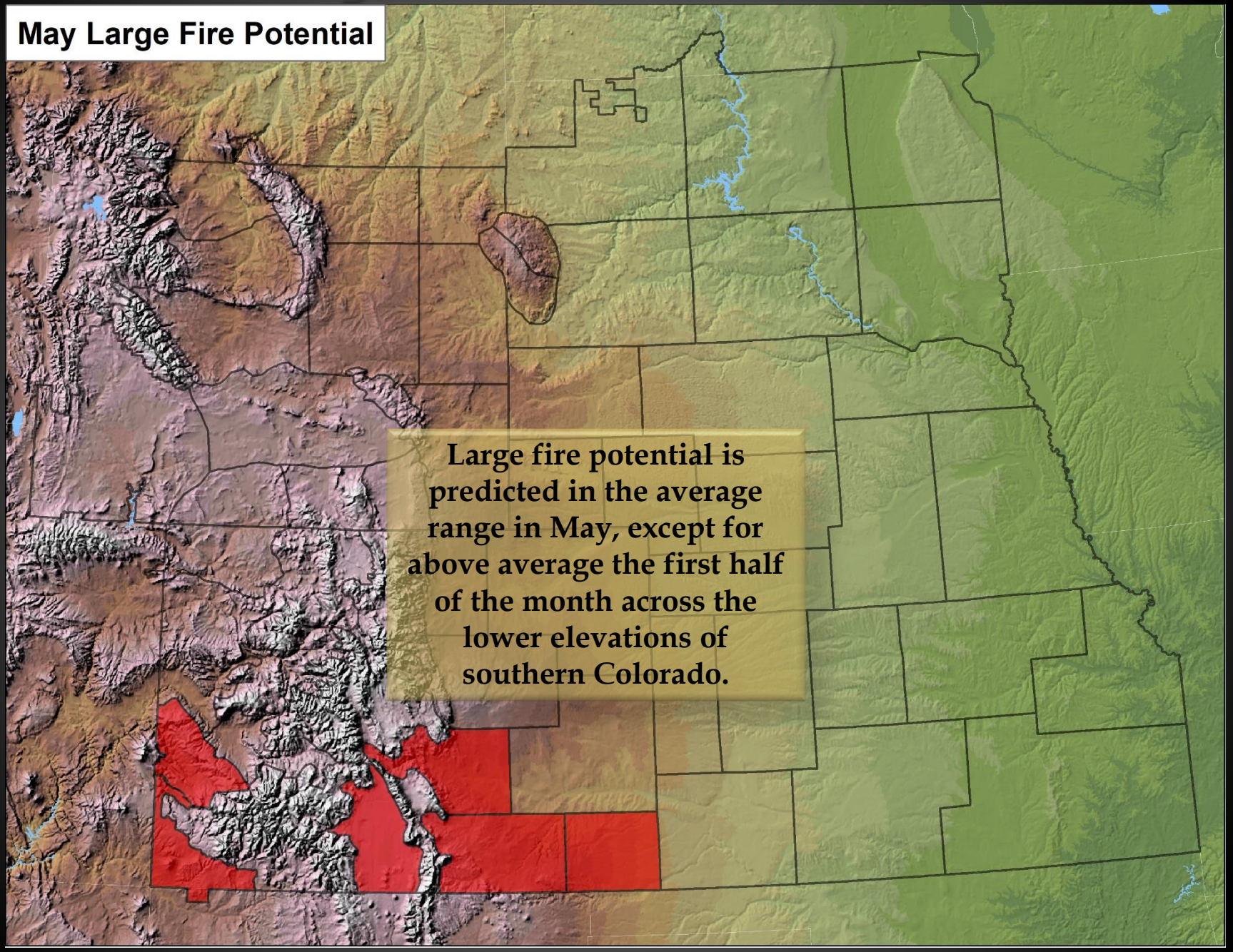
## Prediction Considerations

- Recent Climate Trends
- Sea Surface Temperature Anomalies and Predictions (El Nino, La Nina)
- Short Term and Long Term Model Forecast Charts
- Climate Prediction Center Forecasts and Predictive Services Temperature/Precipitation Anomaly Forecasts
- Final Thoughts and Considerations for Spring-Summer 2020

## Considerations and May-August Fire Potential Outlook

As a result of a delayed and less vigorous green-up across southern Colorado in combination with dry, warm, and windy conditions forecast in the short term, the large fire potential early in May is forecast to be above average in the lower elevations of southern CO. Otherwise, CPC long range forecasts show a wetter than average regime across the RMA (closer to average in southwest CO) in May, then with the wetter conditions gradually shifting into mainly far eastern portions of the area during the summer as drier than average conditions expand in western WY and west-northwest CO. As a result of a better chance of precipitation in short-term and long term forecasts by the second half of May combined with an expanding green-up (albeit stunted), the large fire risk in the second half of May is forecast be closer to average for this time of year. However, above average risk is predicted to gradually re-emerge and expand into the middle elevations across southwest and south-central CO during June through the first half of July. Although the southwest monsoon is not expected to be wetter than average, surges of limited tropical moisture are predicted to bring the large fire risk back into the average range during the second half of July in south-central and southwest CO, while conversely above average risk expands across west-northwest Colorado.

# Large Fire Potential Forecast



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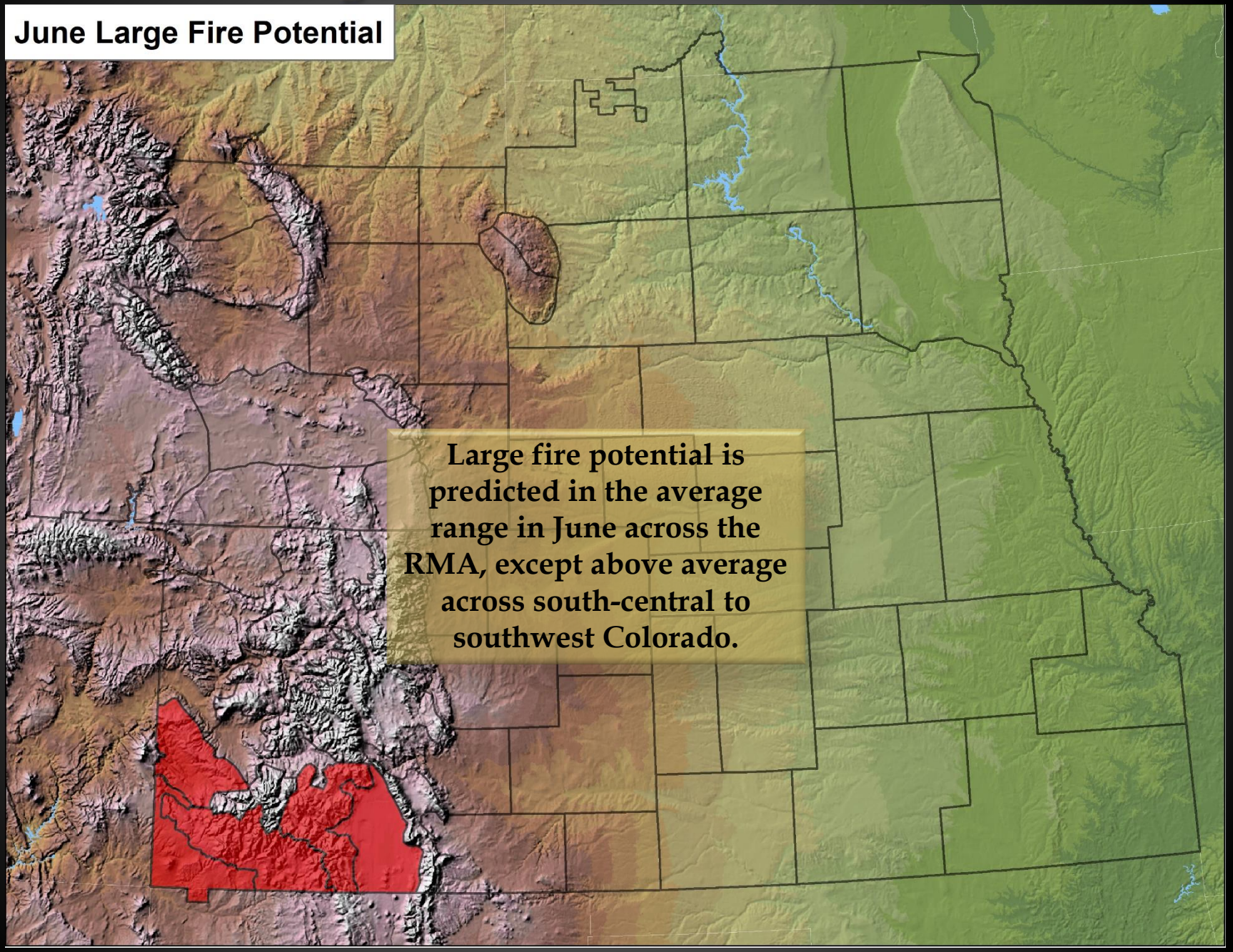

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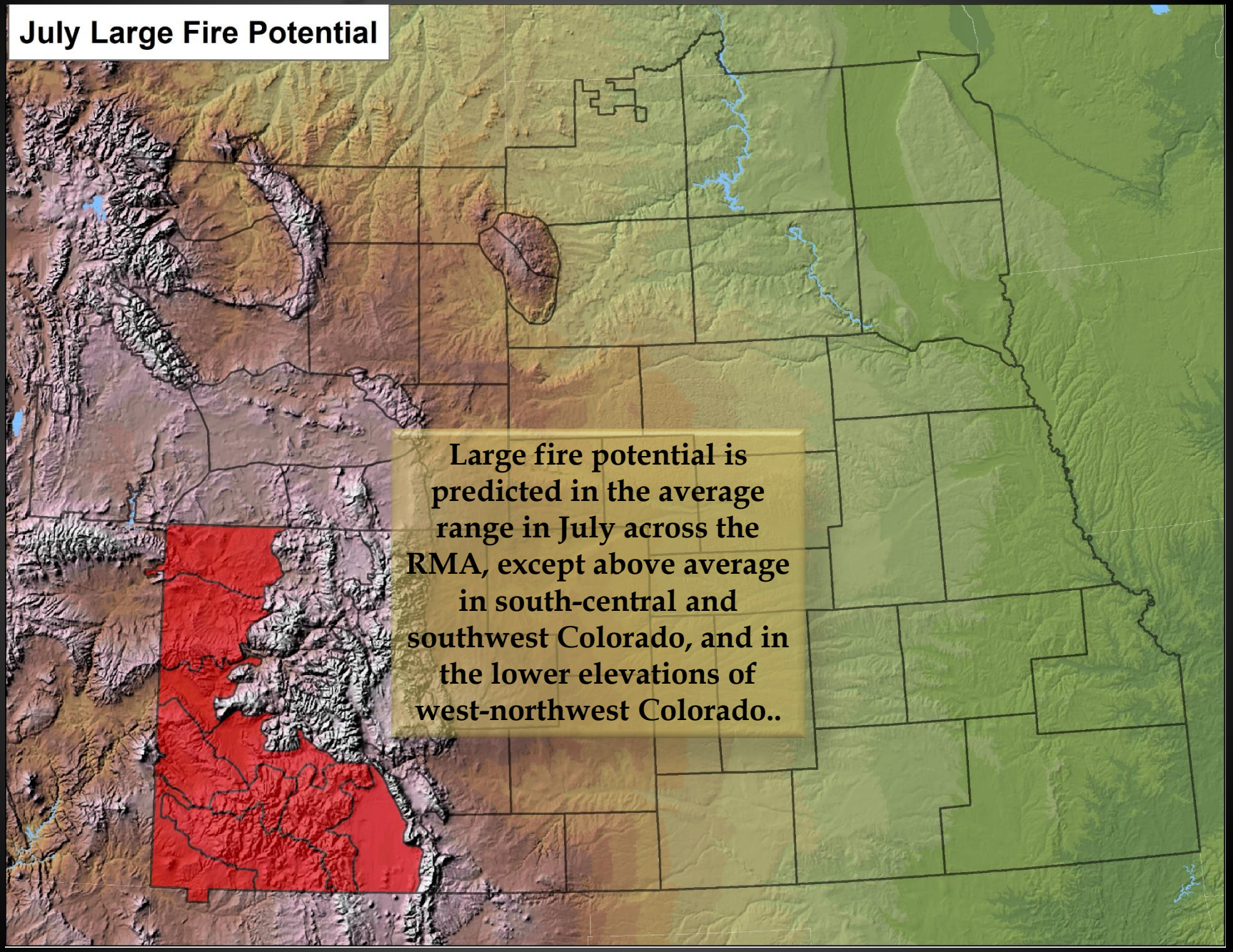

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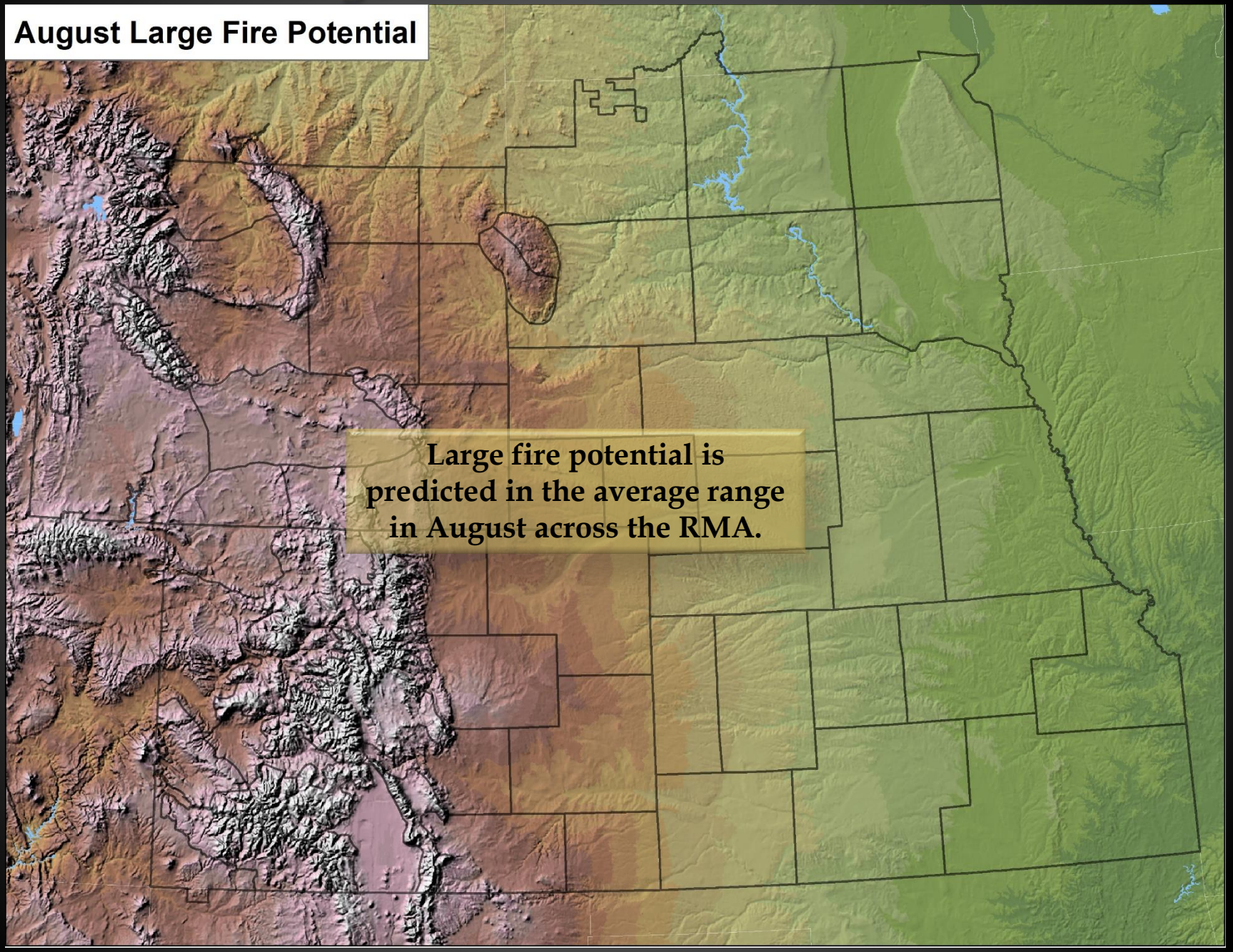
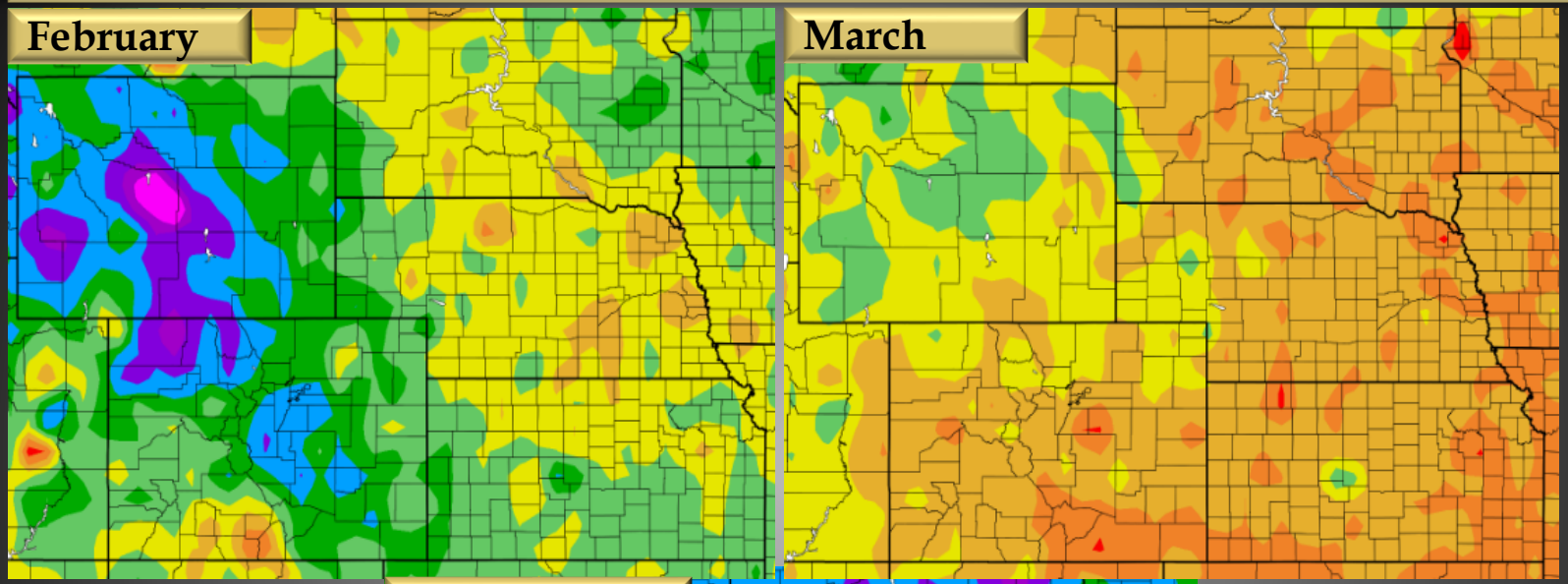
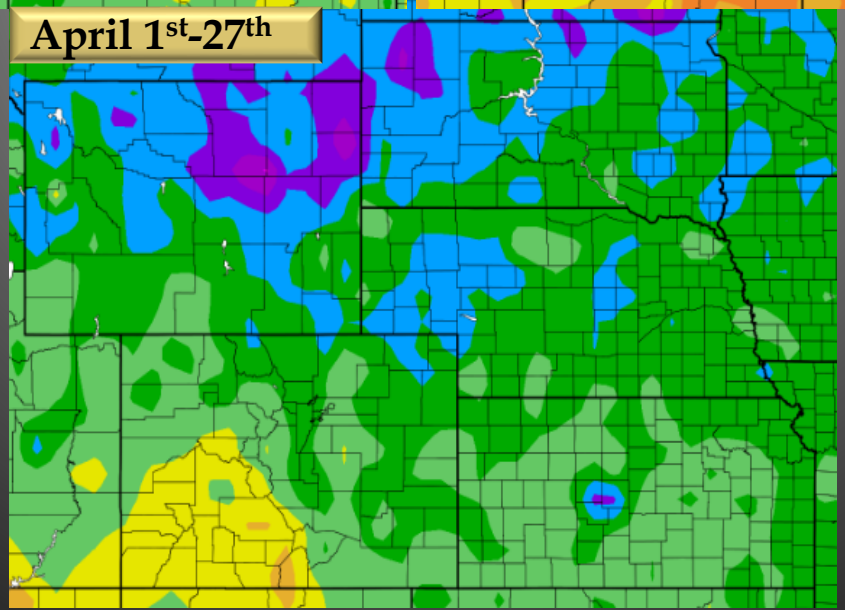
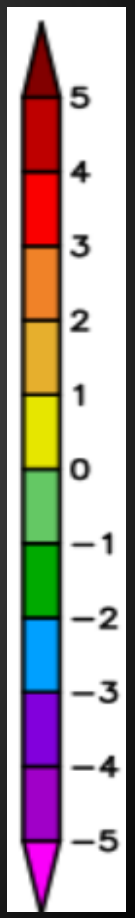


# Temperature Anomalies

**In February a cold pattern expanded, especially in CO and WY, then by March there was a warmer than average regime in the first half of the month before cooling off the second half through April.**



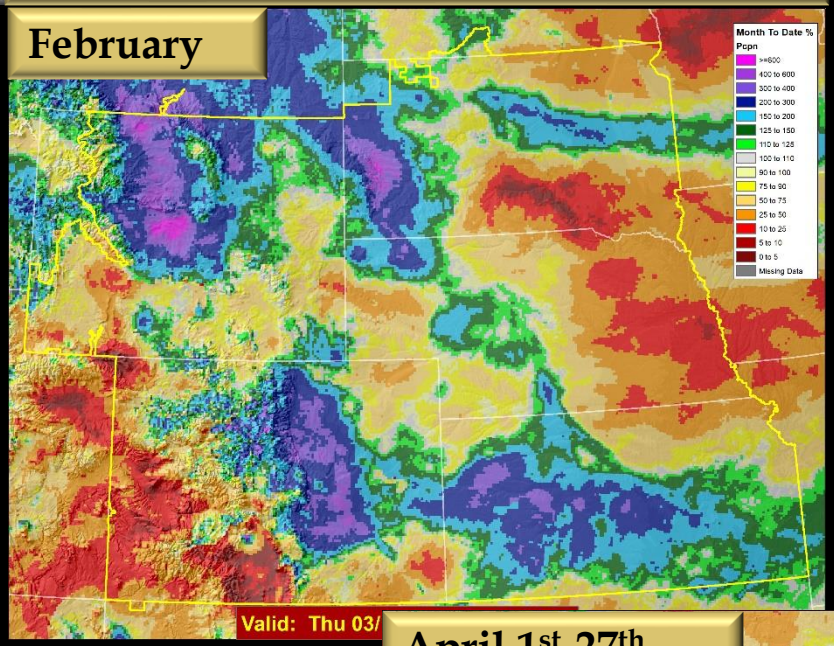



# Percent of Average Precipitation

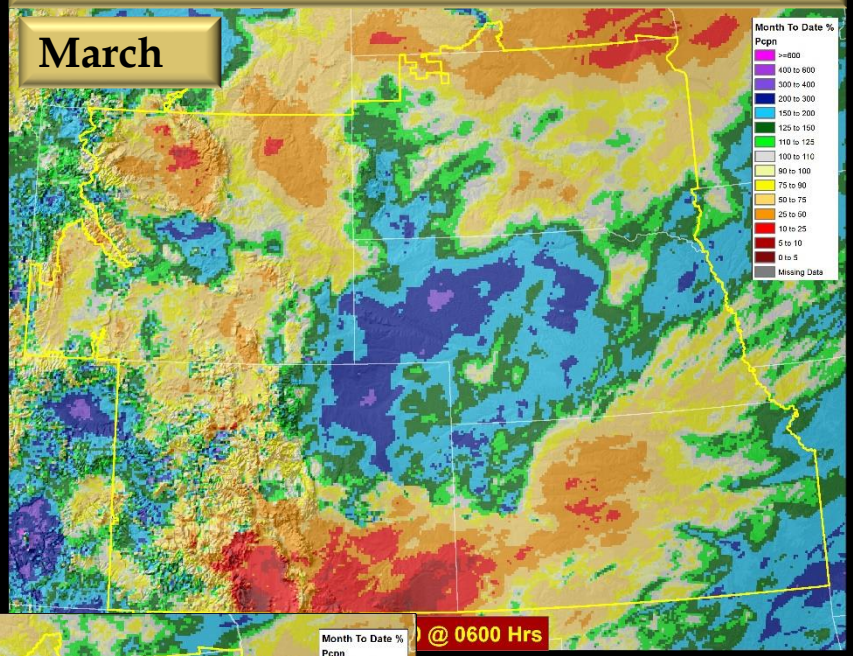
West-southwest CO was in a dry pattern in February, and also across portions of eastern SD and eastern NE.

Dryness expanded in March across southeast CO, while elsewhere there were spotty areas with deficits.

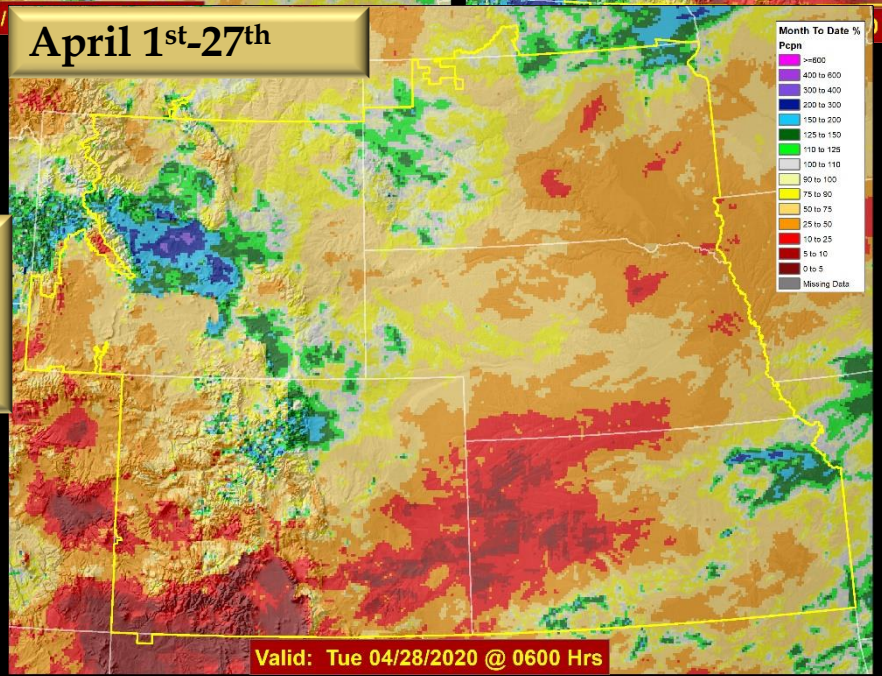
## February




## March




## April 1st-27th

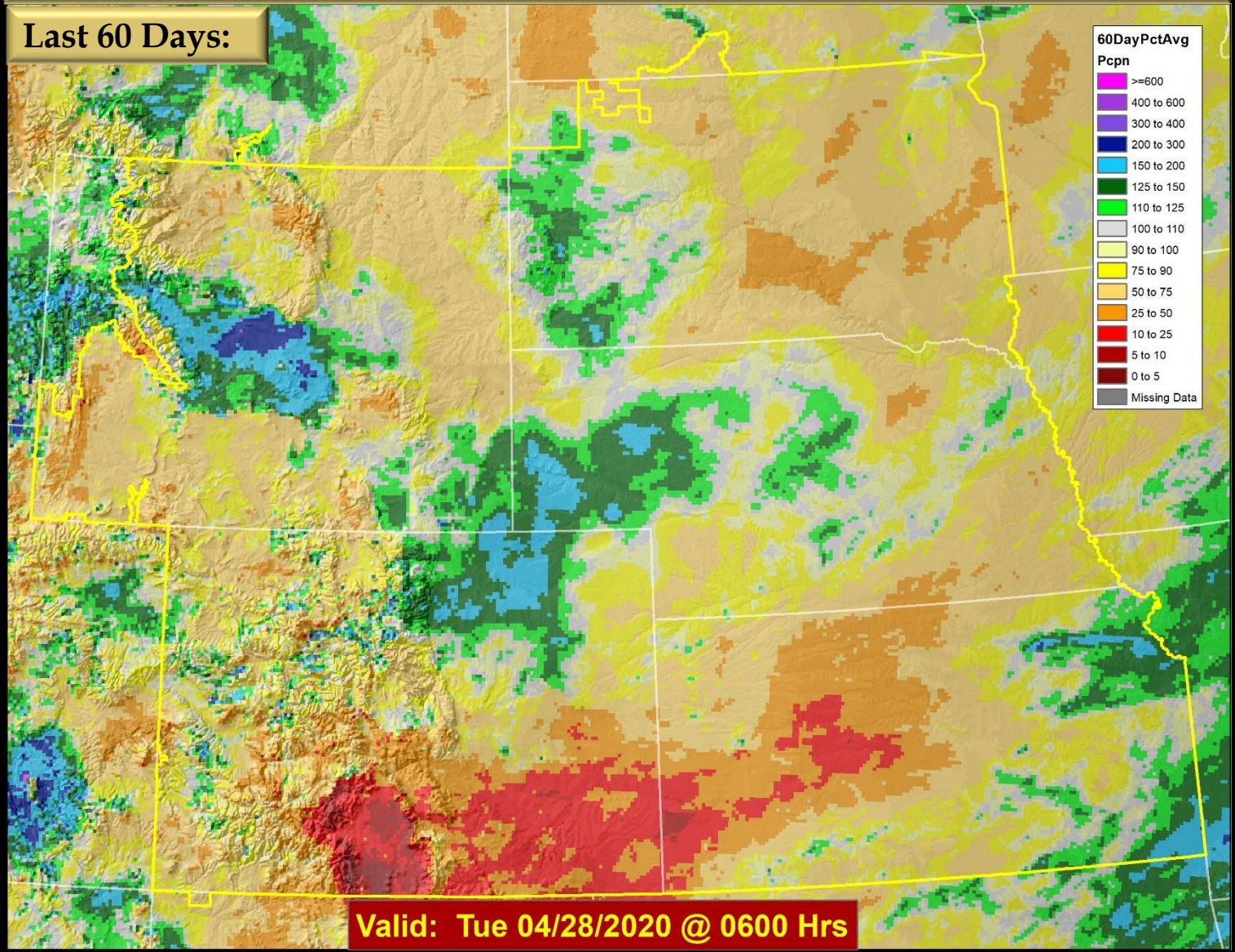



A more widespread dry pattern emerged in April, especially southern CO and western KS.

# Percent of Average Precipitation for the Last 60 Days

**Precipitation for the last 60 days widely varied from above to below average, with deficits most notable in southeast CO.**

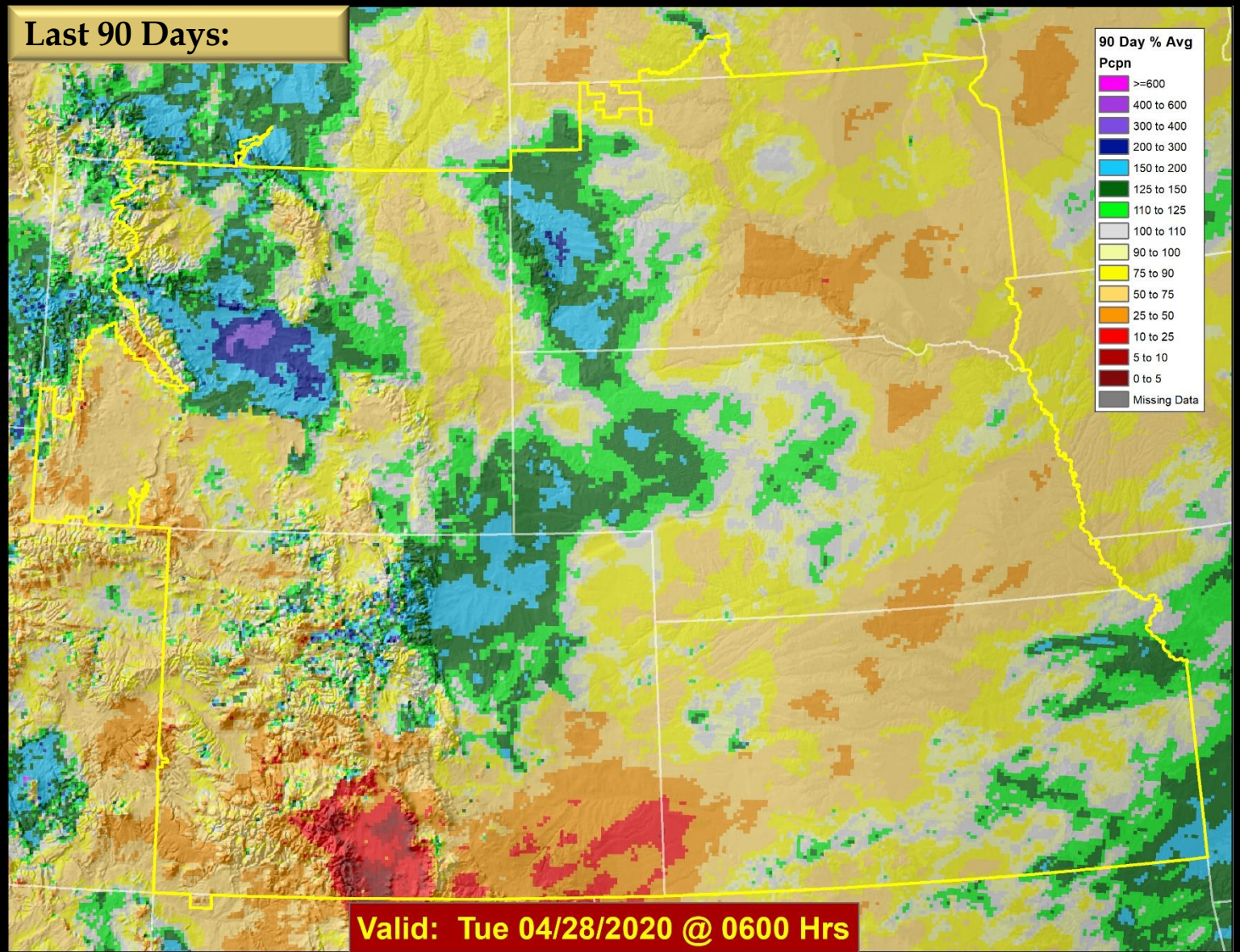
**Last 60 Days:**



# Long Term Percent of Average Precipitation

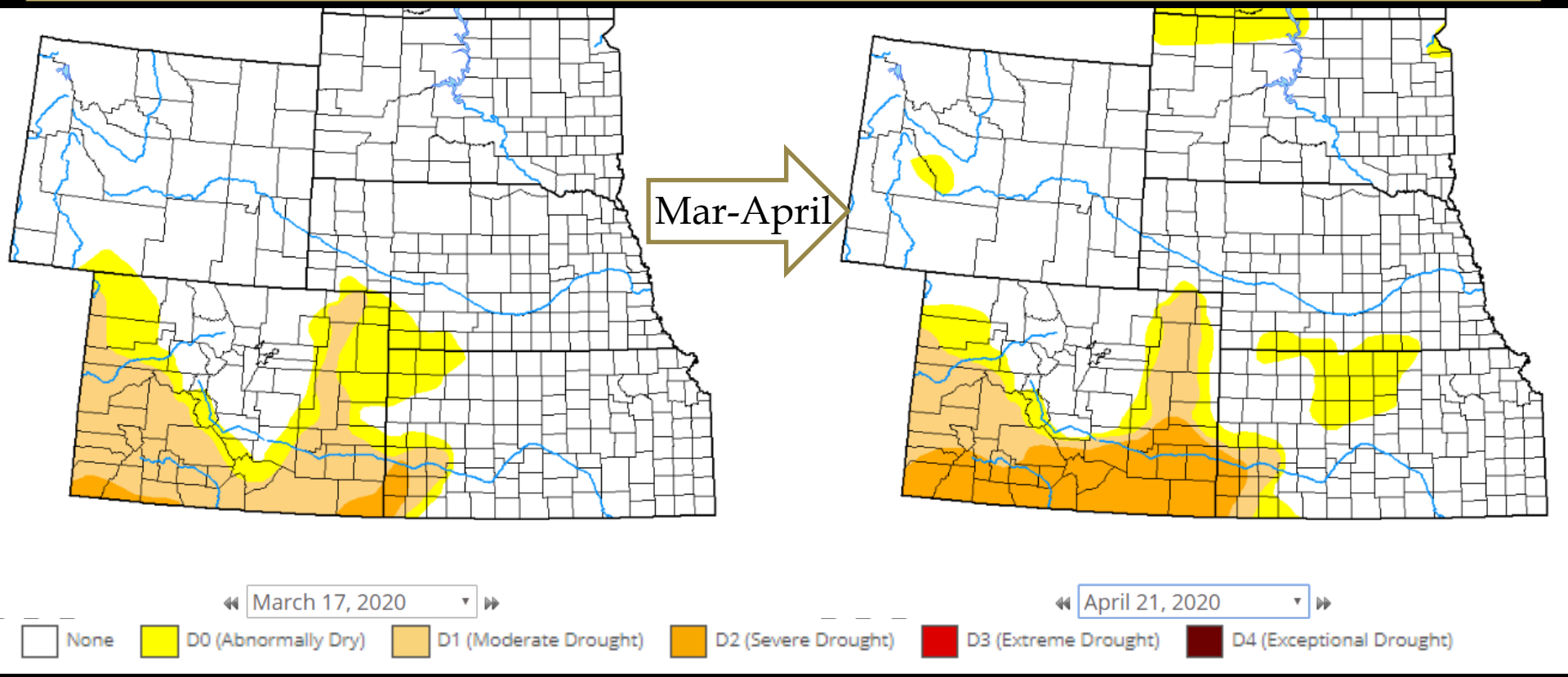
**Precipitation for the last 90 days widely varied from above to below average, with deficits most notable in southeast CO.**

**Last 90 Days:**



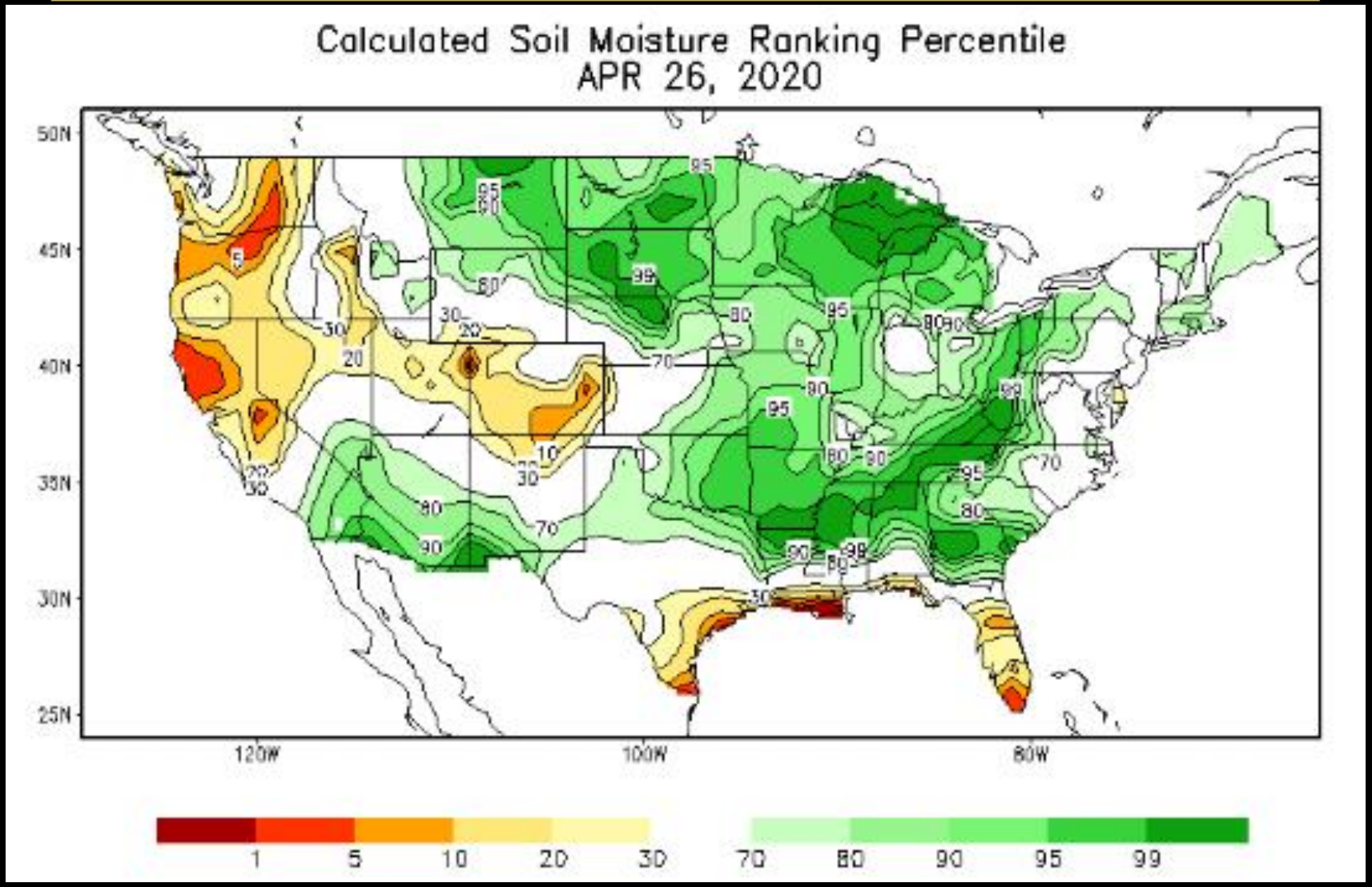
# Long Term Drought Analysis from the National Drought Mitigation Center

**The Drought Mitigation Center portrays an intensification of drought across southern CO during the last 30 days.**



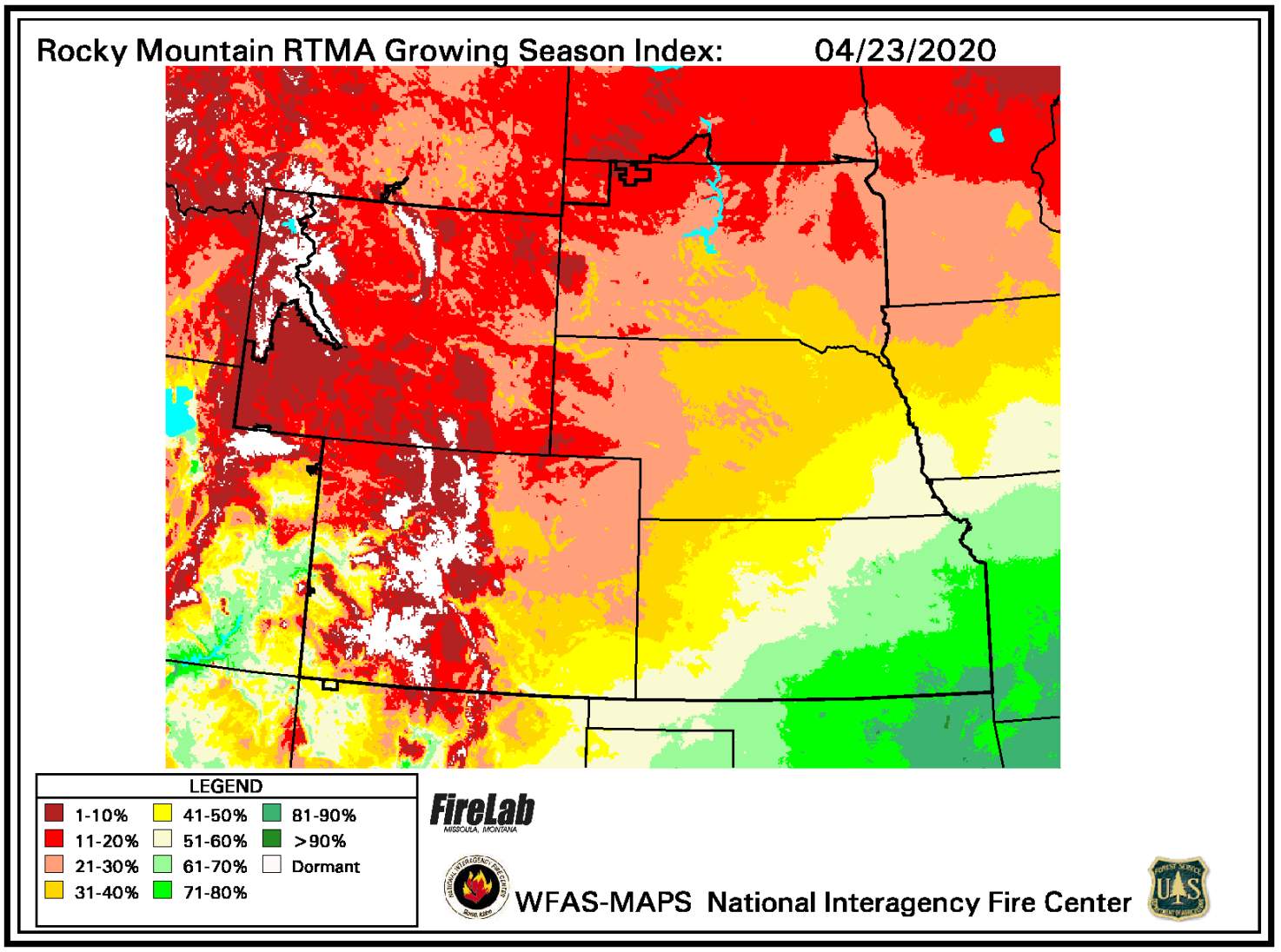
# Soil Moisture Calculations

**Soil moisture calculations are below the 30th percentile across a large portion of CO, especially in the southern and western portions of the state with values as low as the 5th and 10th percentiles.**



# Growing Season Index

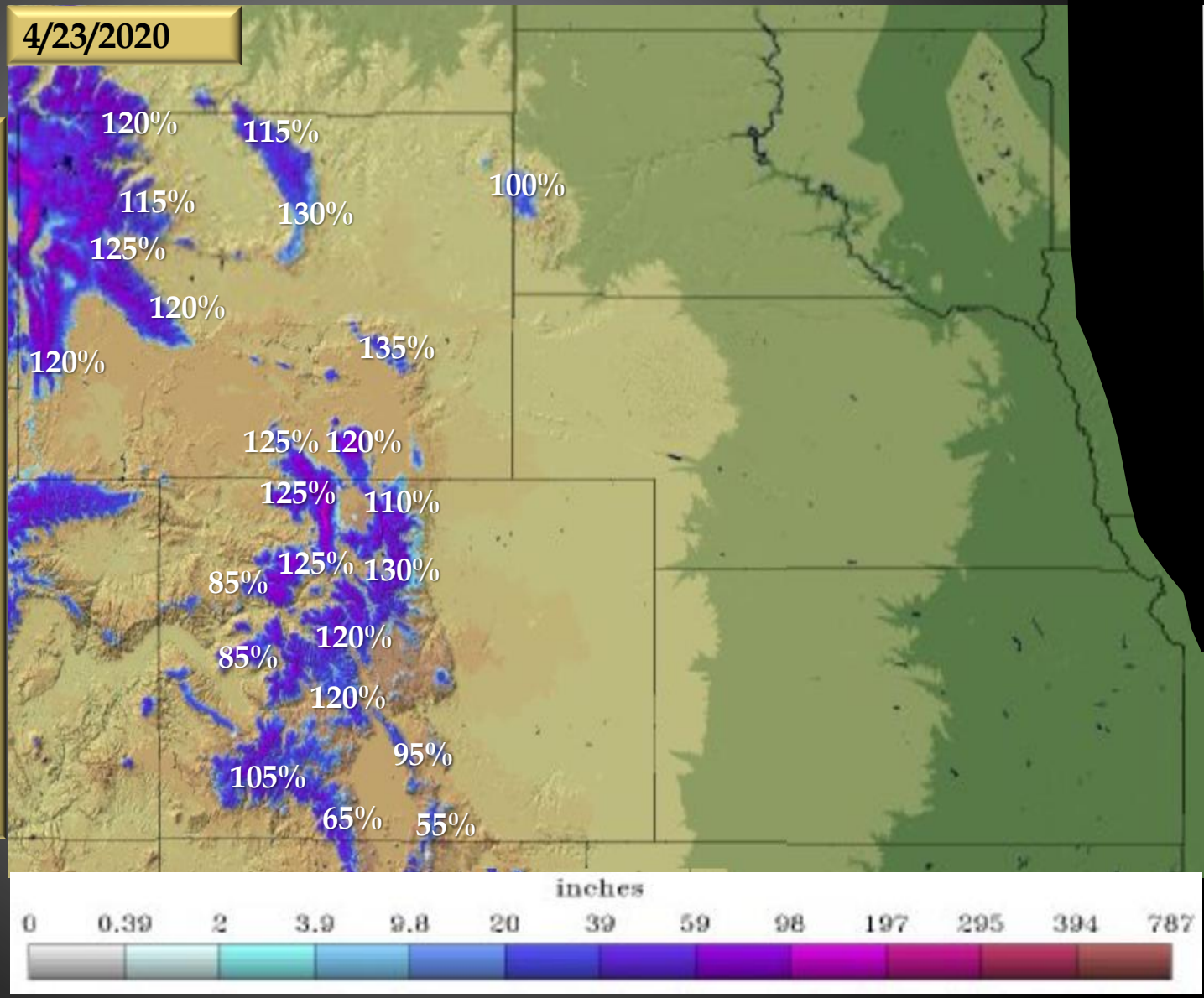
**The GSI indicates a delay in green-up across the lower elevations of southern CO, shown by the yellow and brown colors. The browns and reds further north are not an indication drought, but more the result of the seasonal progression of green-up from south to north and also a cooler than average early spring.**



# Snow Depth and Snow Water Equivalent (SWE) Percent of Median

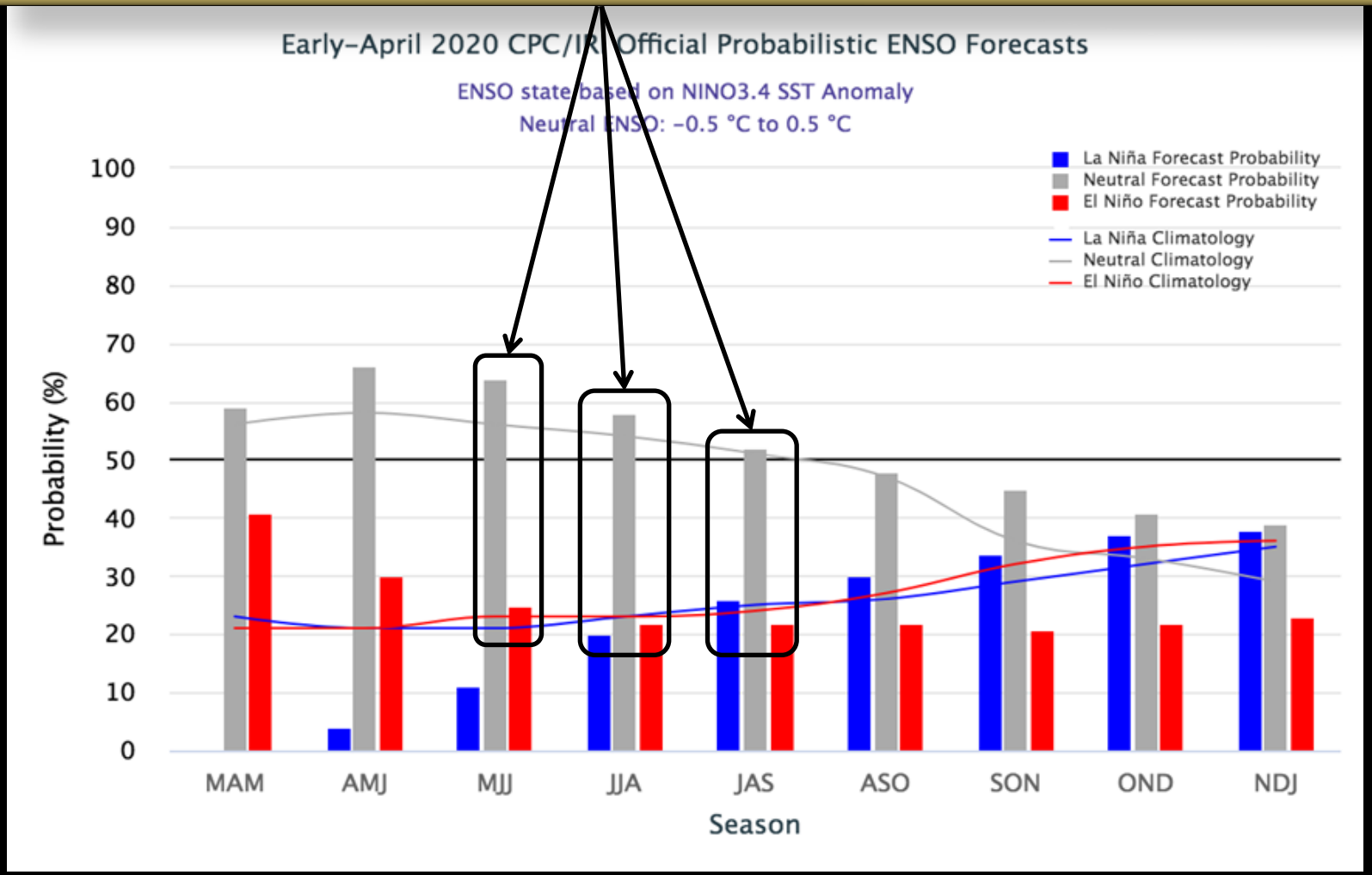
*Snow Depth Analysis Map (NOAA, Office of Water Prediction) with Overlaid Snow Water Equivalent (Snowpack) Percent of Median.*

**Snowpack percent of median shows the greatest deficits over far southern CO in the 50%-70% range and 80%-90% in far west-central CO. Otherwise, values across the geographic area are at or above the median for this time of year.**



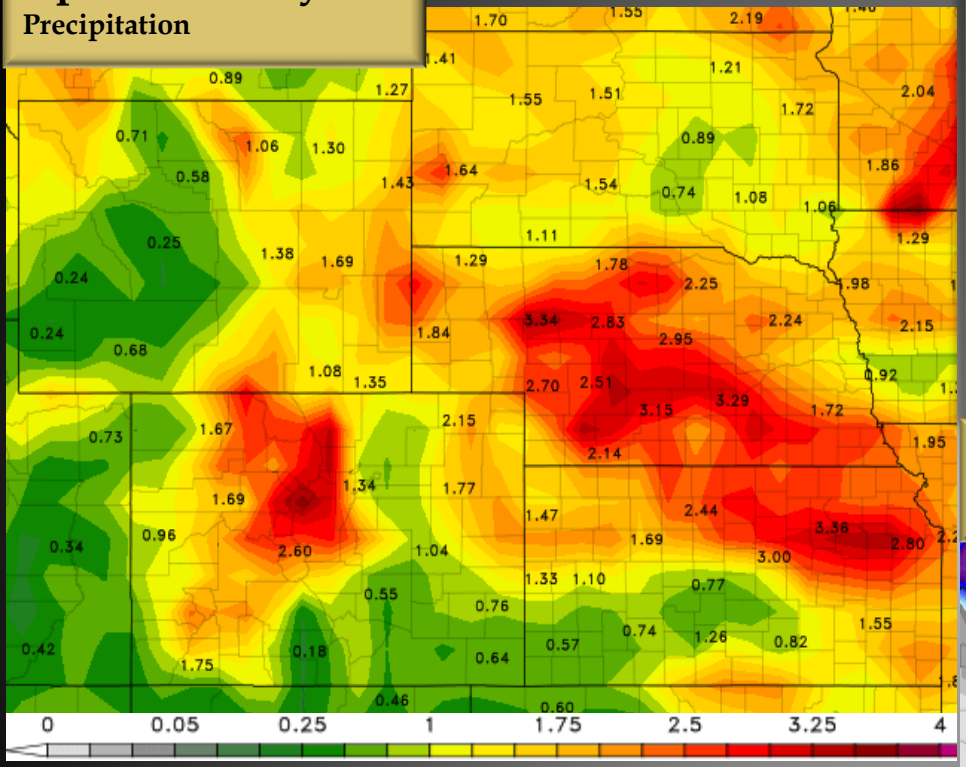
# El-Nino/La-Nina Forecast (El-Nino Southern Oscillation (ENSO))

**CPC/IRI forecasts favor a neutral phase through the spring and summer (58%-64% probability Neutral vs. 20%-24% El-Nino or La-Nina).**



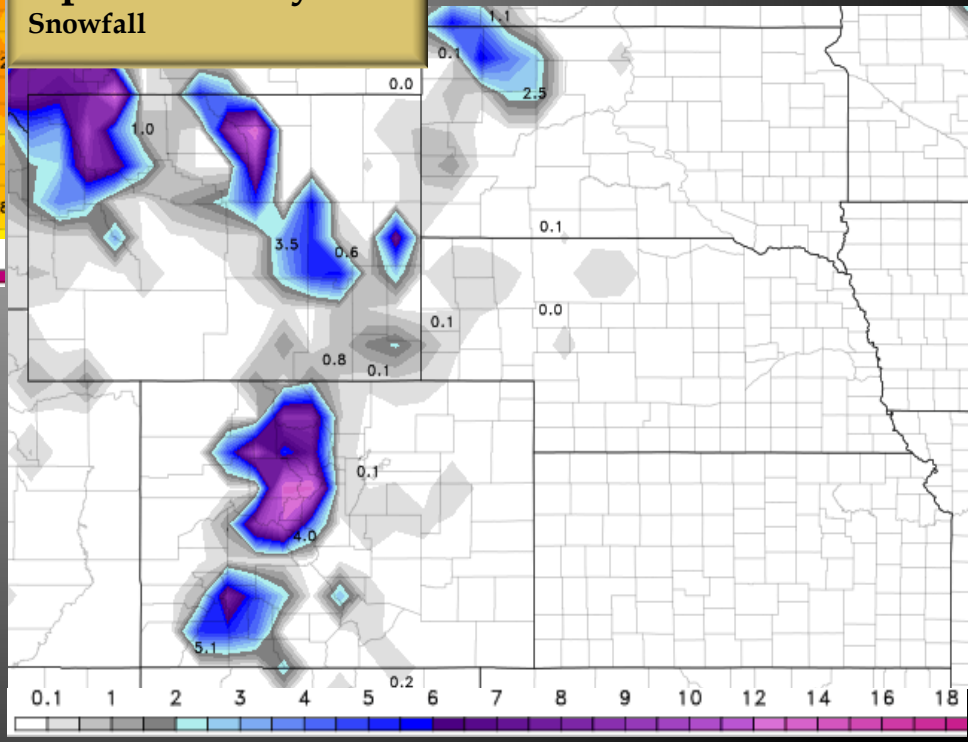
# Short Term Model Forecast Precipitation and Snowfall

## April 29th-May 14th
**Precipitation**




For late April through the first week of May forecast models indicate a progressive pattern with precipitation mainly in northern and eastern portions of the RMA; while warm, dry, and occasionally windy conditions occur in the south. By the second week of May a potentially cooler northwest flow is forecast, along with precipitation (mainly rain) pushing into the CO front range, but still dry in southwest CO until precipitation chances increase there towards mid May. *Amounts in inches.

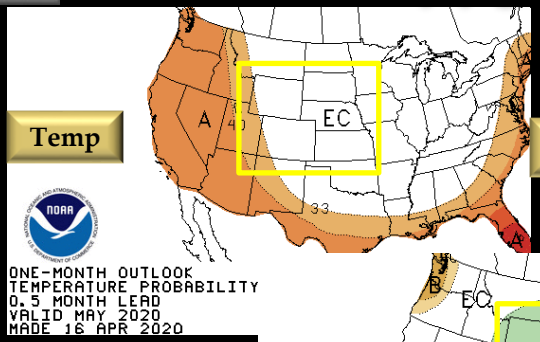
## April 29th-May 14th
**Snowfall**



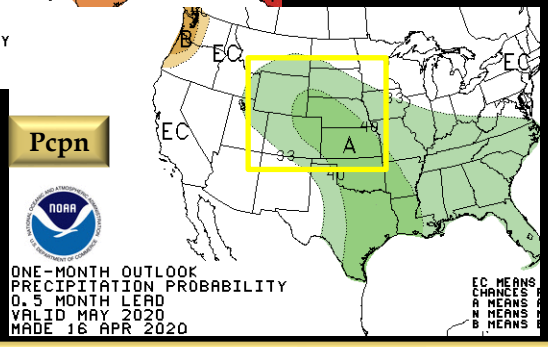
# Climate Prediction Center Temperature and Precipitation Anomaly Forecasts

Temp

May

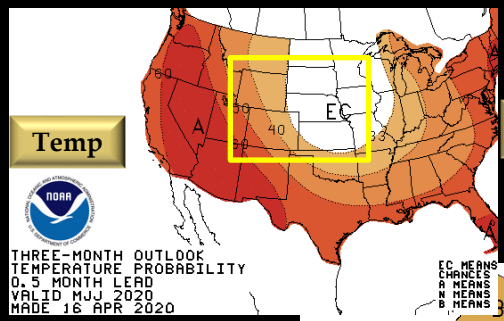



Pcpn

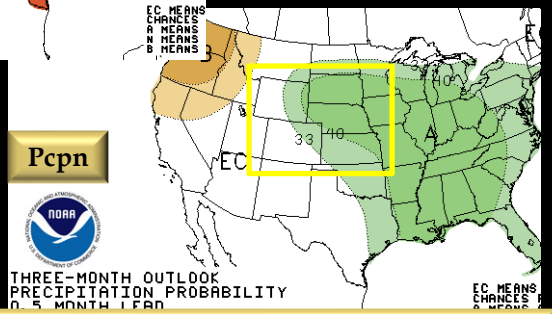



Temp

May-July



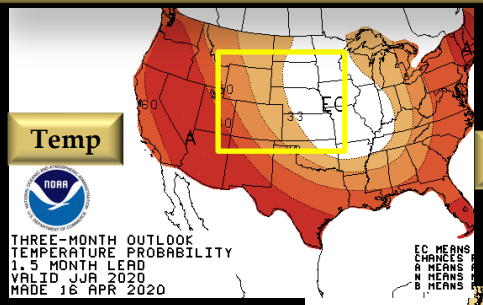

Pcpn



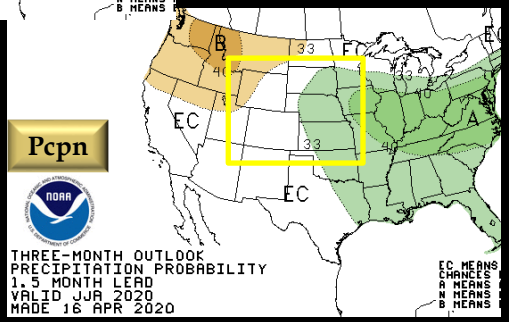

**CPC shows a wetter than average regime across the RMA in May, then gradually shifting eastward during the summer as a drier the average area expands in western WY, and to a lesser extent northwest CO.**

Temp

June-Aug

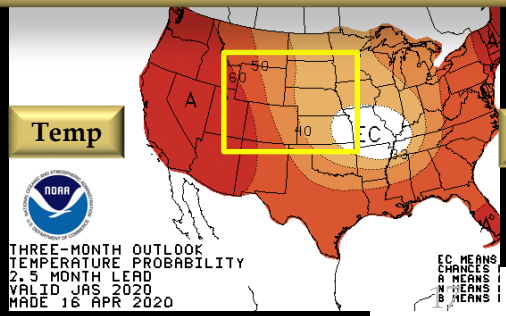



Pcpn

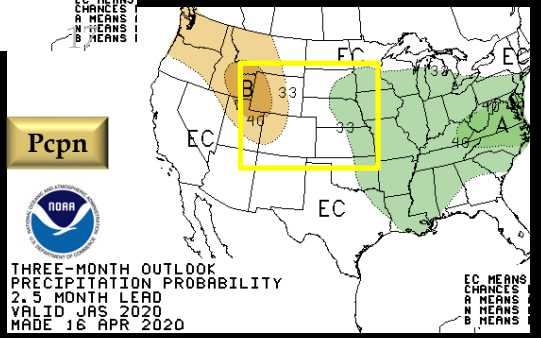



Temp

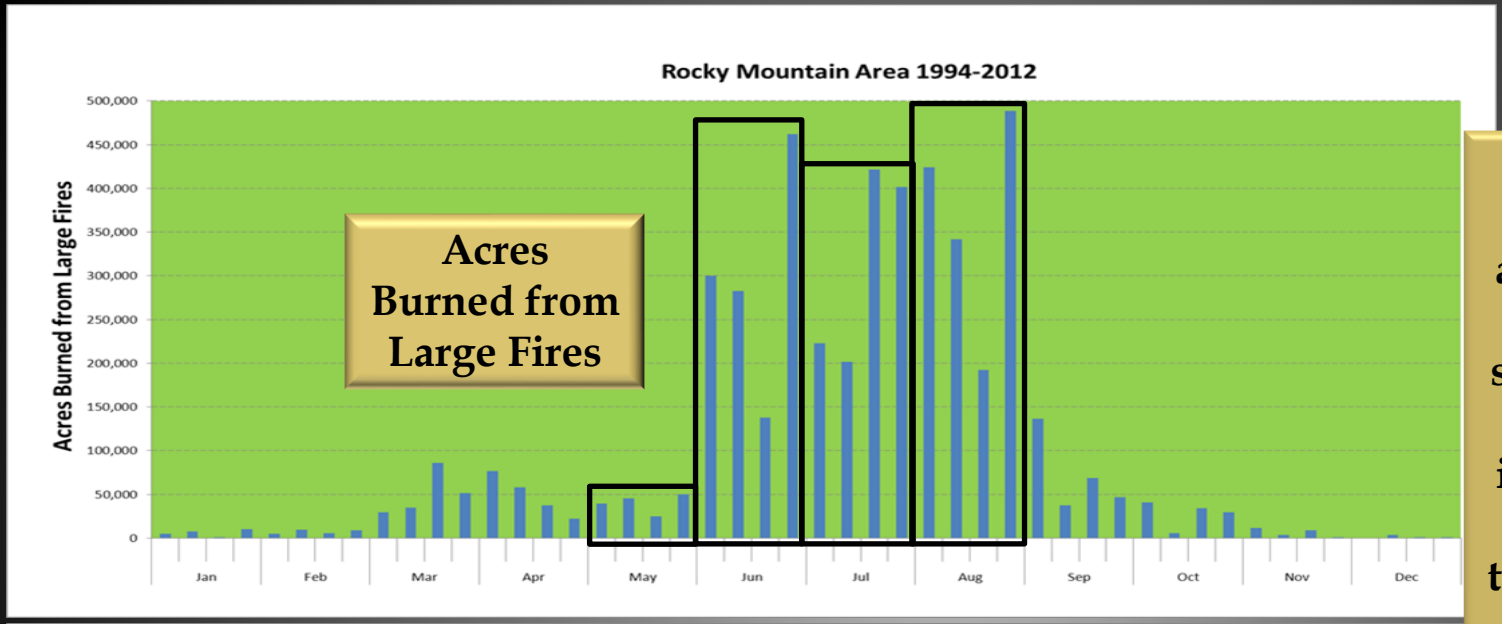
July-Sep

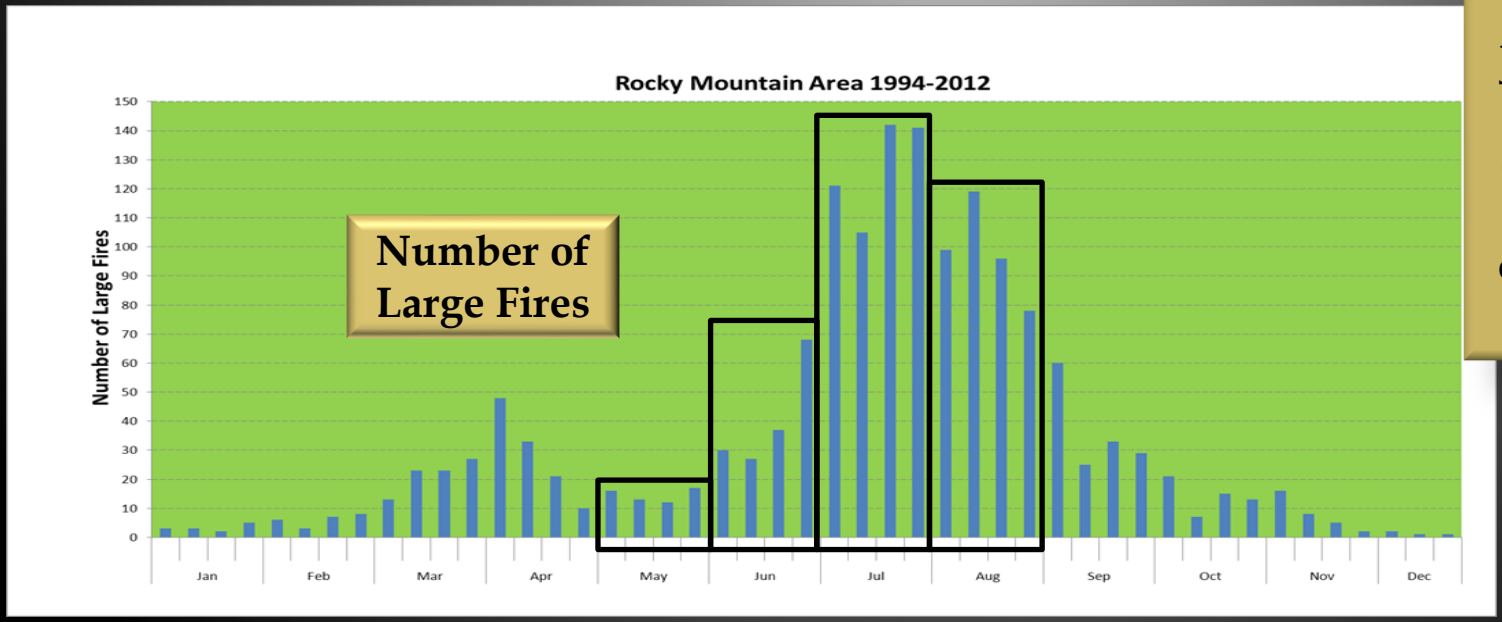



Pcpn



# Rocky Mountain Area Fire History

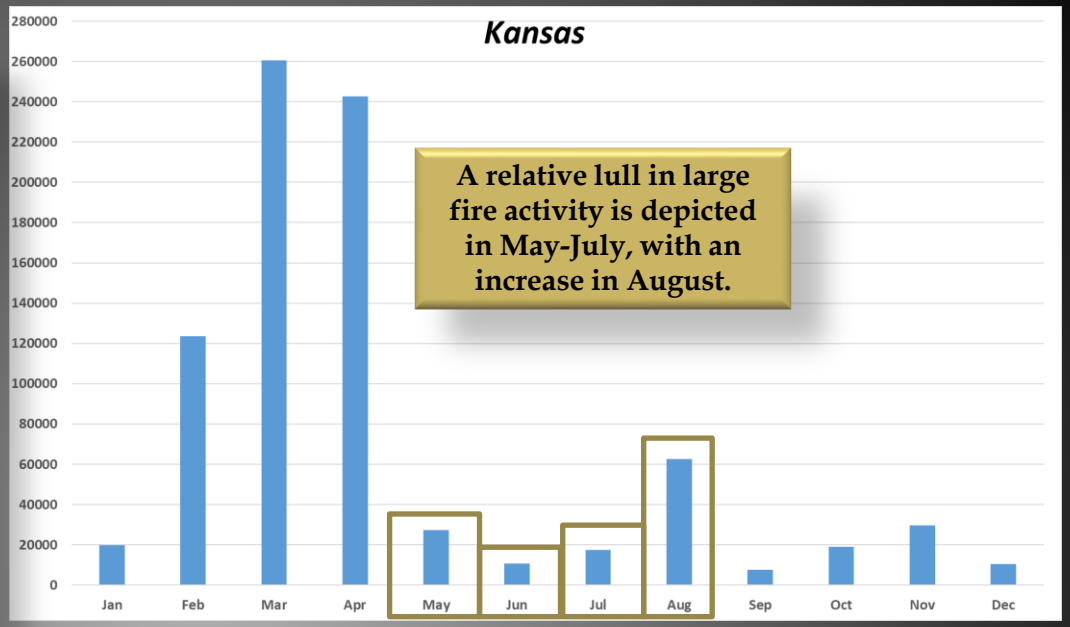


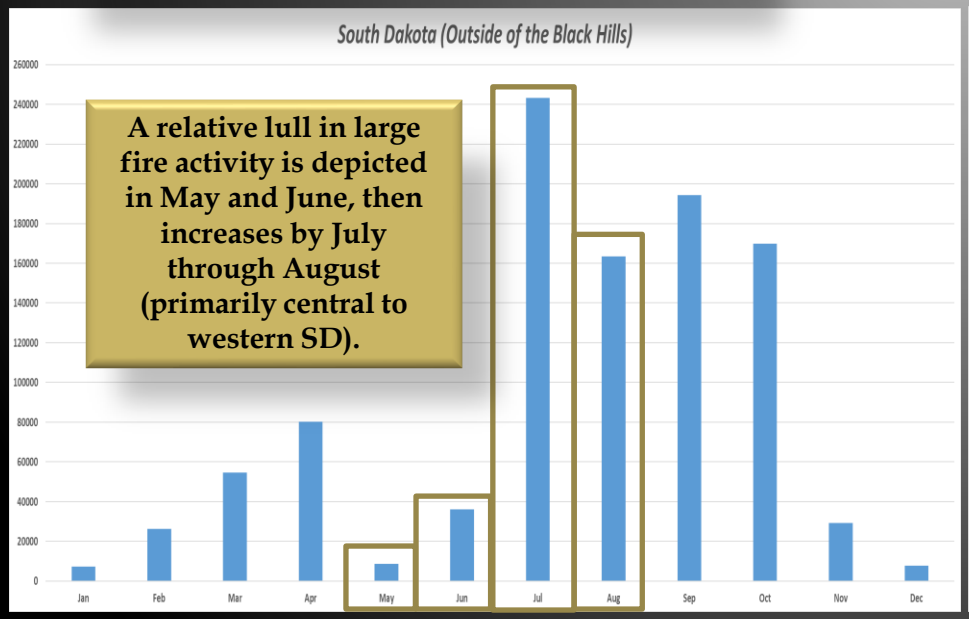



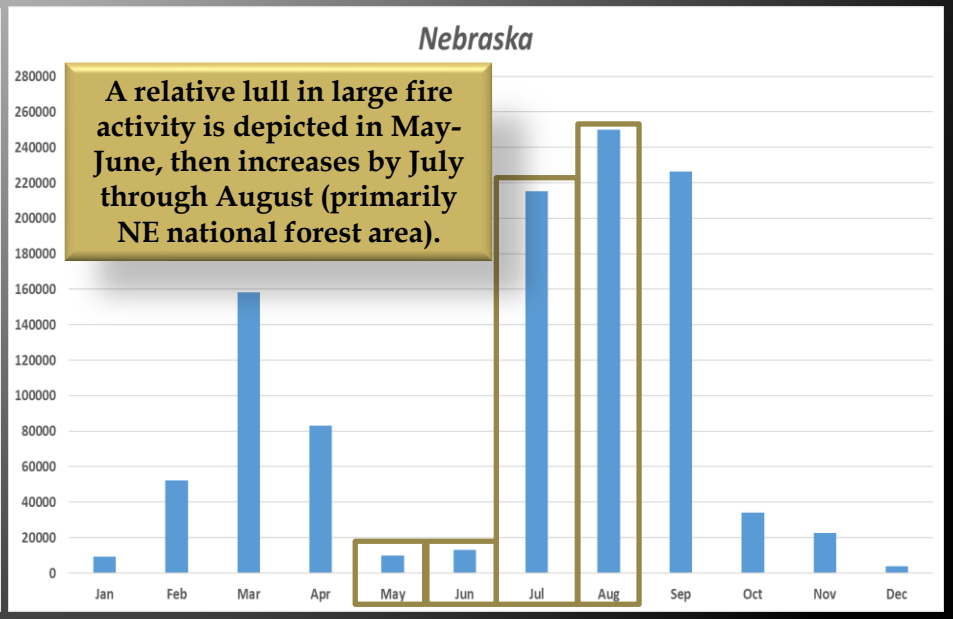

**Historically, after a lull in large fire activity during May associated with spring green-up and a seasonal increase in precipitation, the core fire season in the RMA is depicted by an increase by June in the number of large fires and especially the acres burned, then continuing through August.**

# Rocky Mountain Area Fire History

Large fire activity across the eastern plains typically decreases in May and June as a result of a seasonal increase in precipitation, humidity, and green-up. The fire occurrence increase by July through August in SD (not Black Hills) is primarily across central to western SD, and for NE in and around the national forest of northwest NE.

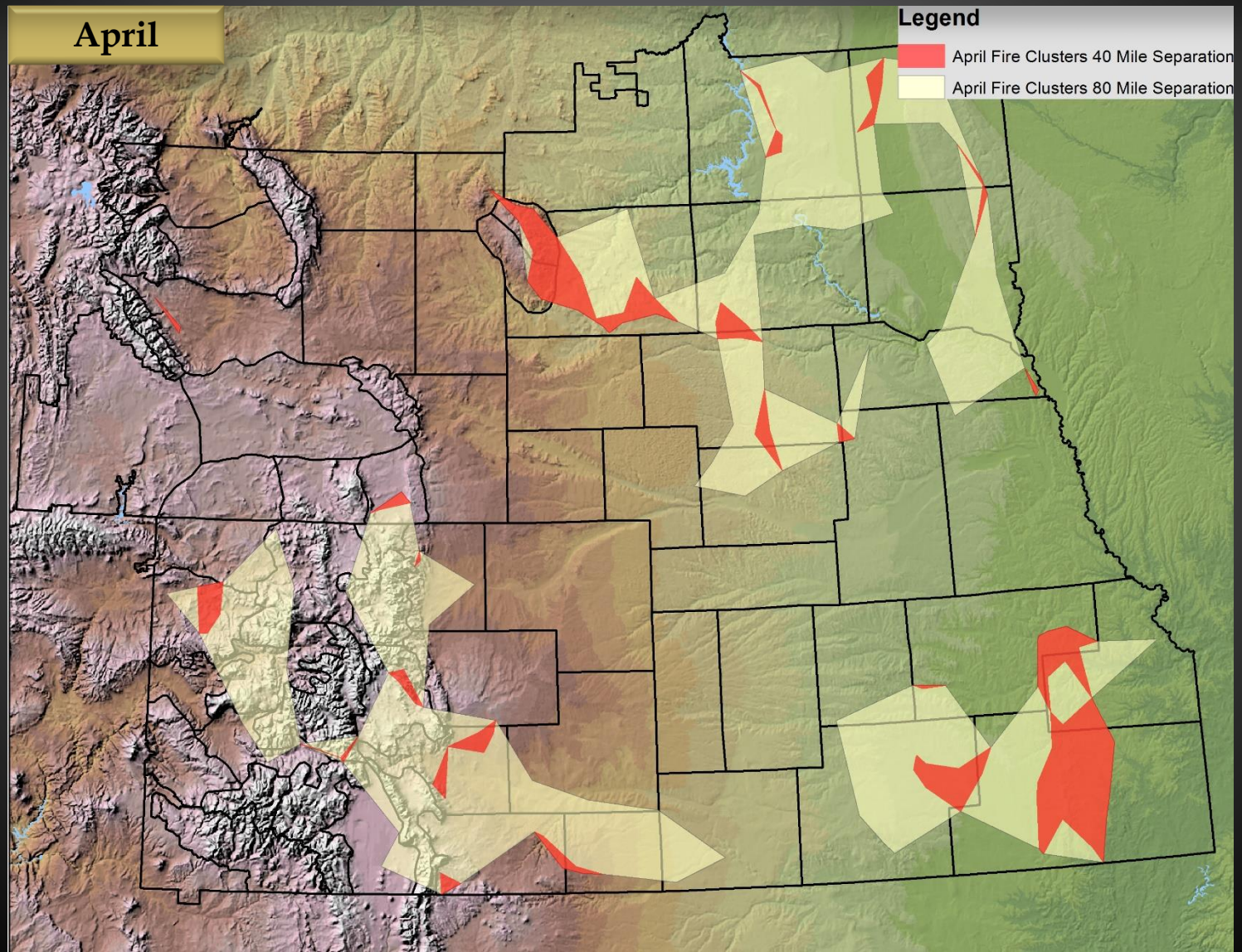


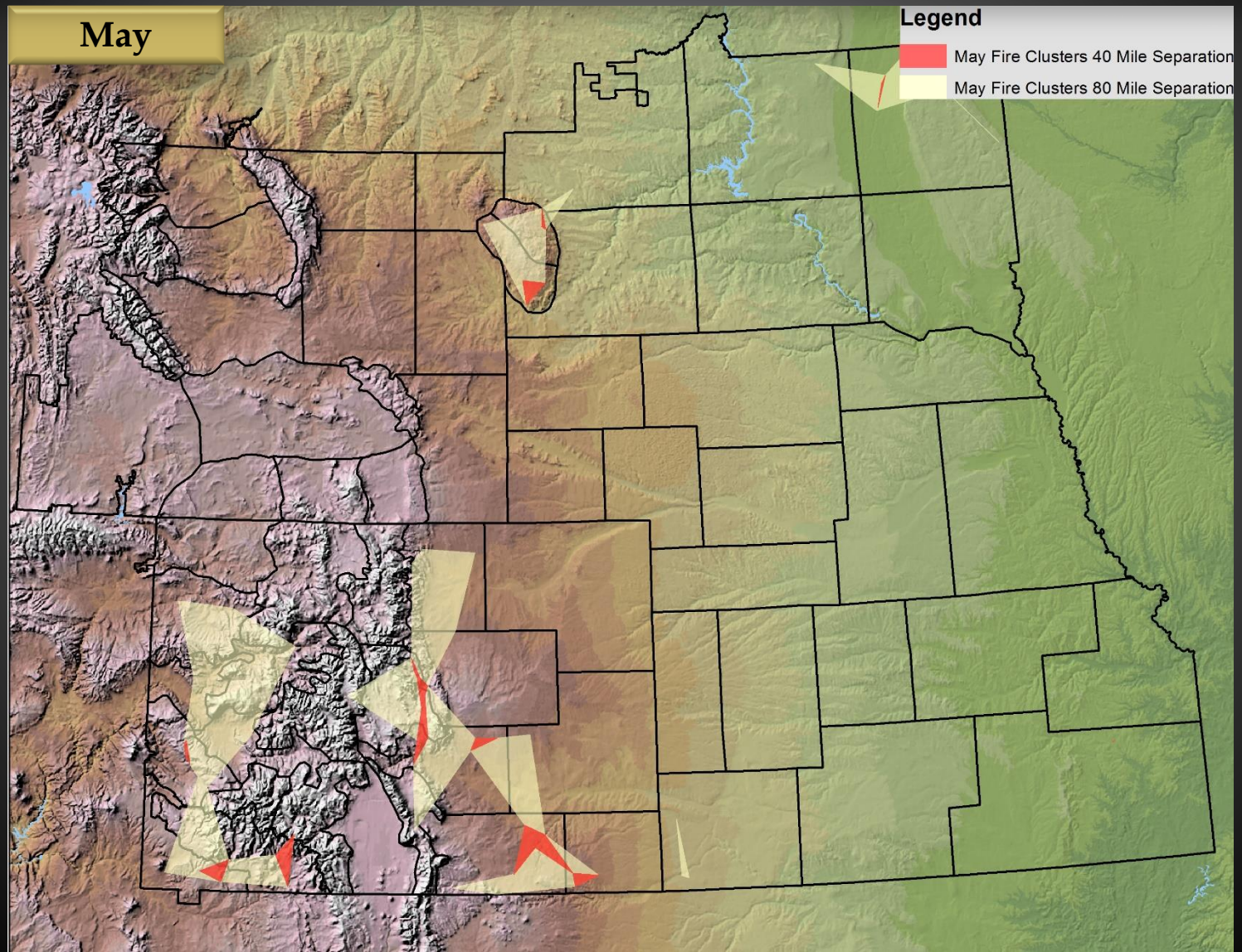
# Rocky Mountain Area Fire History

**Historical fire data 1992-2015 (large fire clustering analysis) in April shows a slight decrease in large fire activity across the eastern plains and a slight increase in CO.**



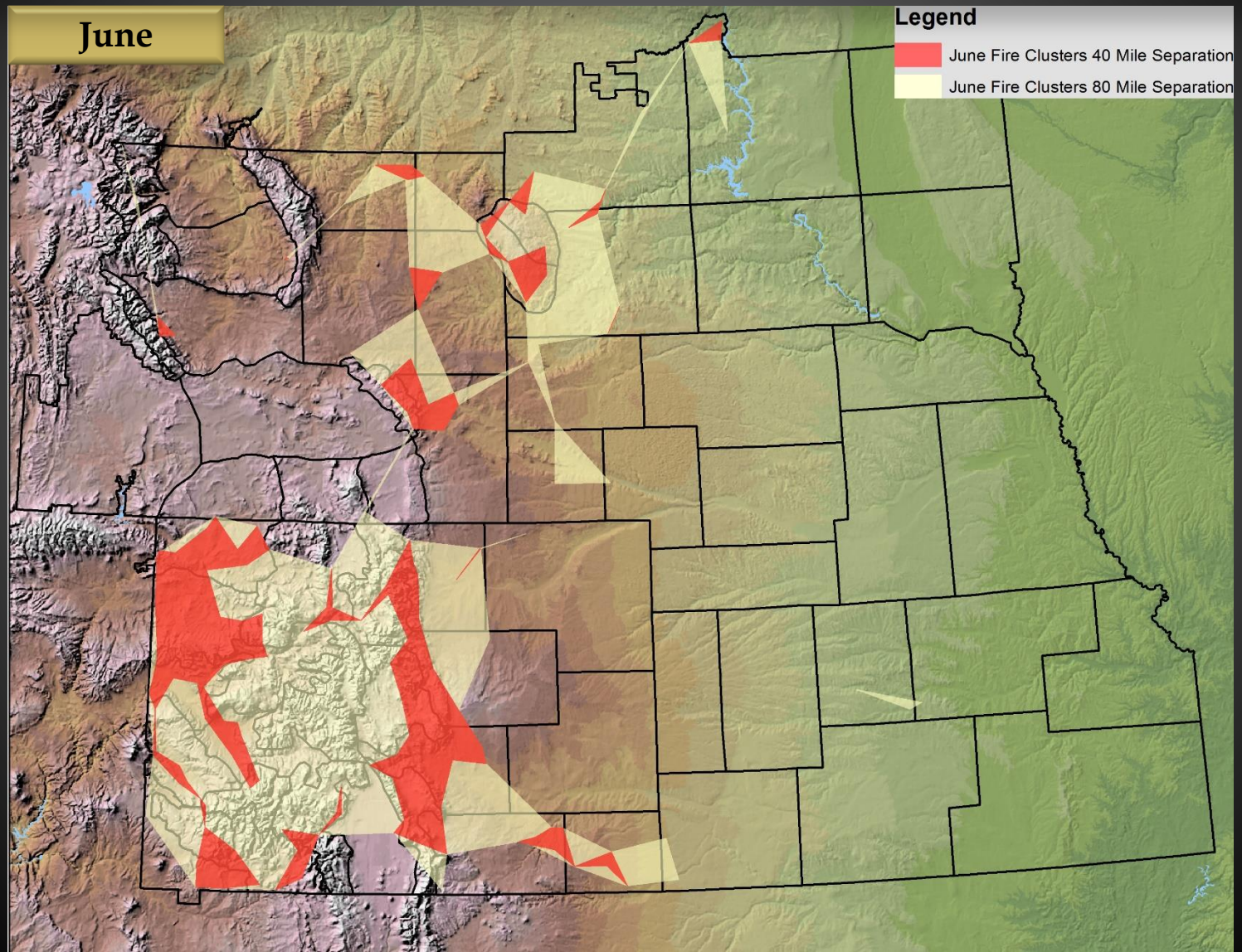
# Rocky Mountain Area Fire History

**Historical fire data 1992-2015 (large fire clustering analysis) in May shows a slight decrease in large fire activity in CO, with a more noteworthy decrease across the eastern plains.**



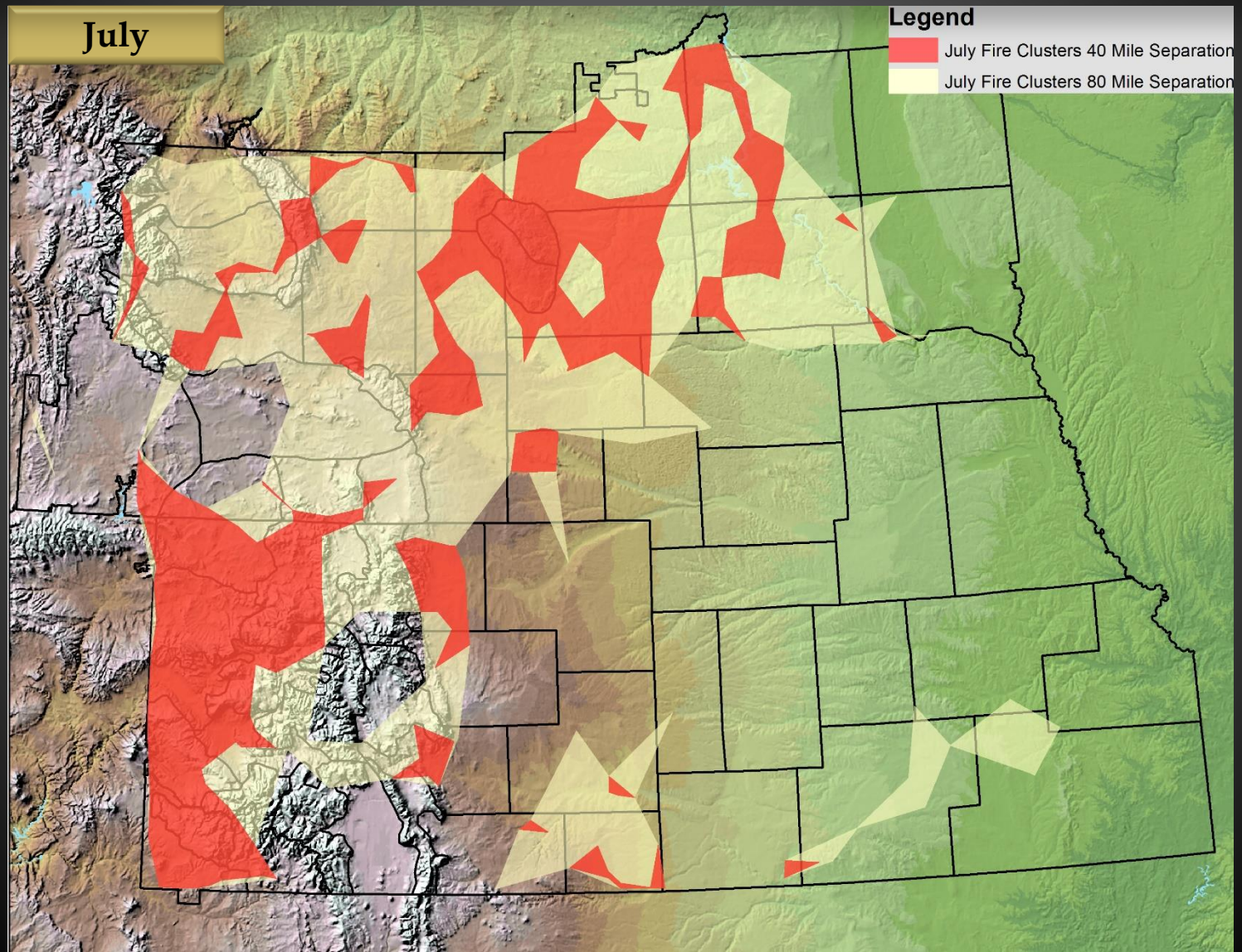
# Rocky Mountain Area Fire History

**Historical fire data 1992-2015 (large fire clustering analysis) in June shows the advent of the core fire season across CO, and to a lesser extent an increase in large fires over east-northeast WY and southwest SD.**



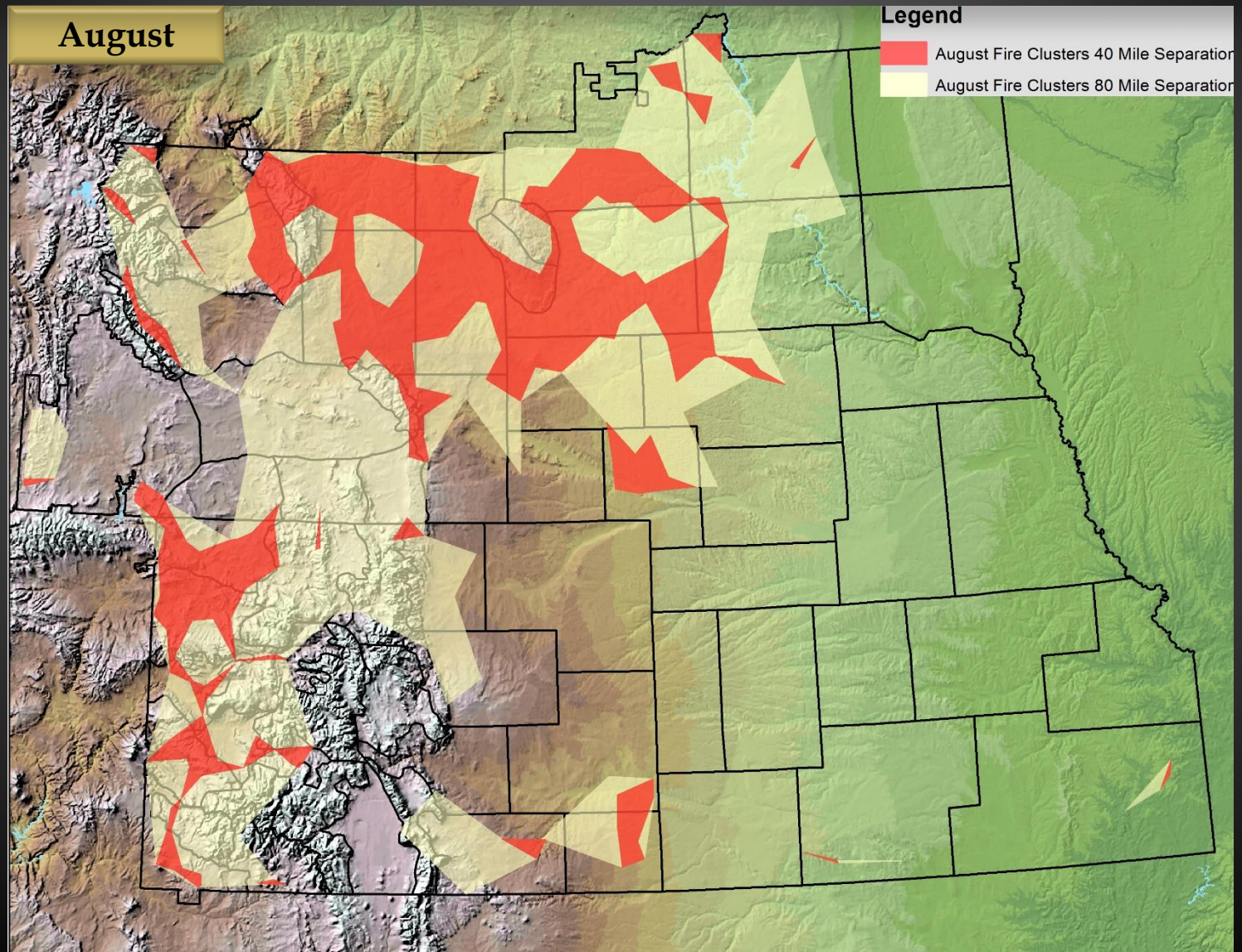
# Rocky Mountain Area Fire History

**Historical fire data 1992-2015 (large fire clustering analysis) in July shows the progression of core fire season expanding from CO into northern portions of the geographic area.**



# Rocky Mountain Area Fire History

**Historical fire data 1992-2015 (large fire clustering analysis) in August shows the continuation of core fire mainly across CO, WY, and western portions of SD and NE.**



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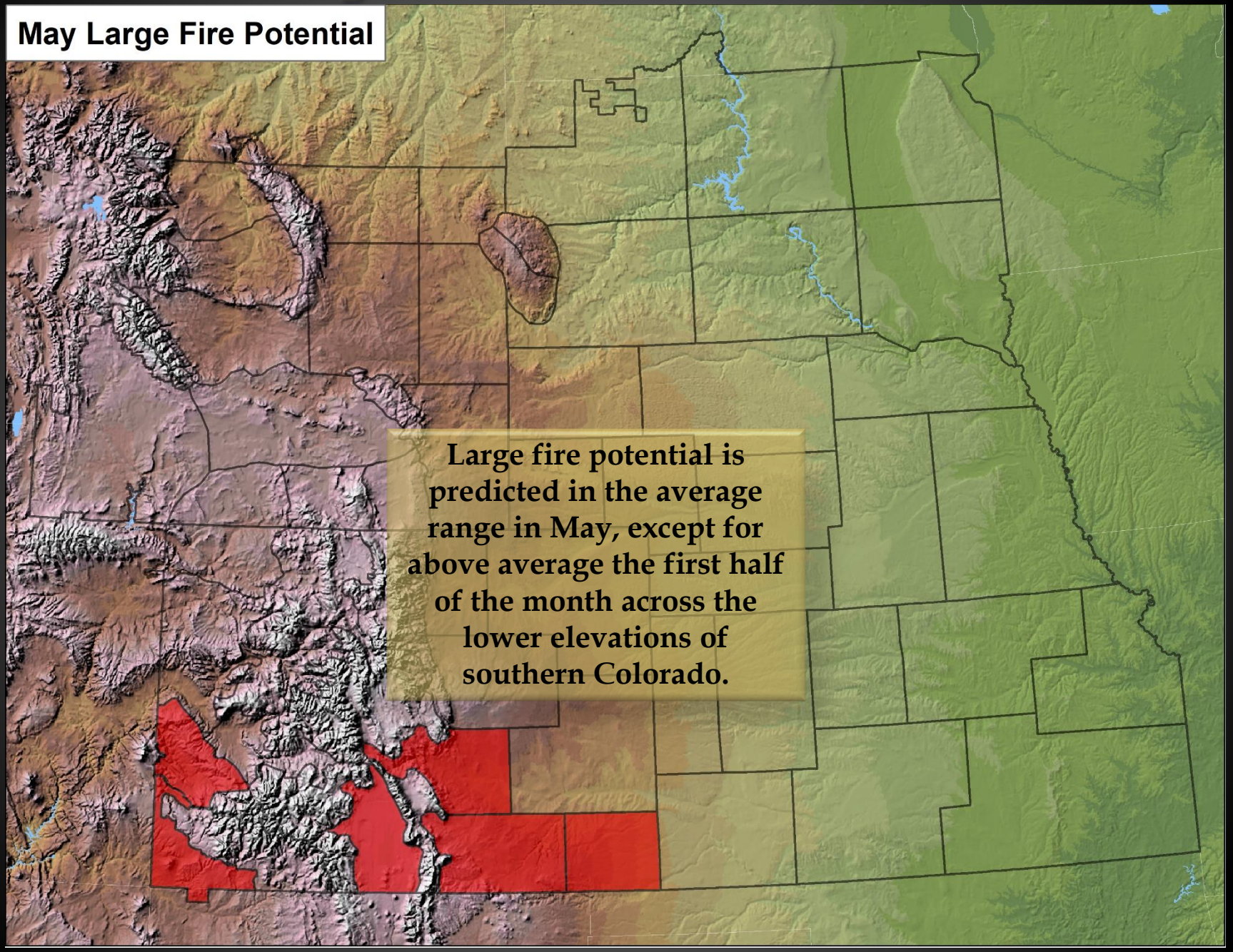

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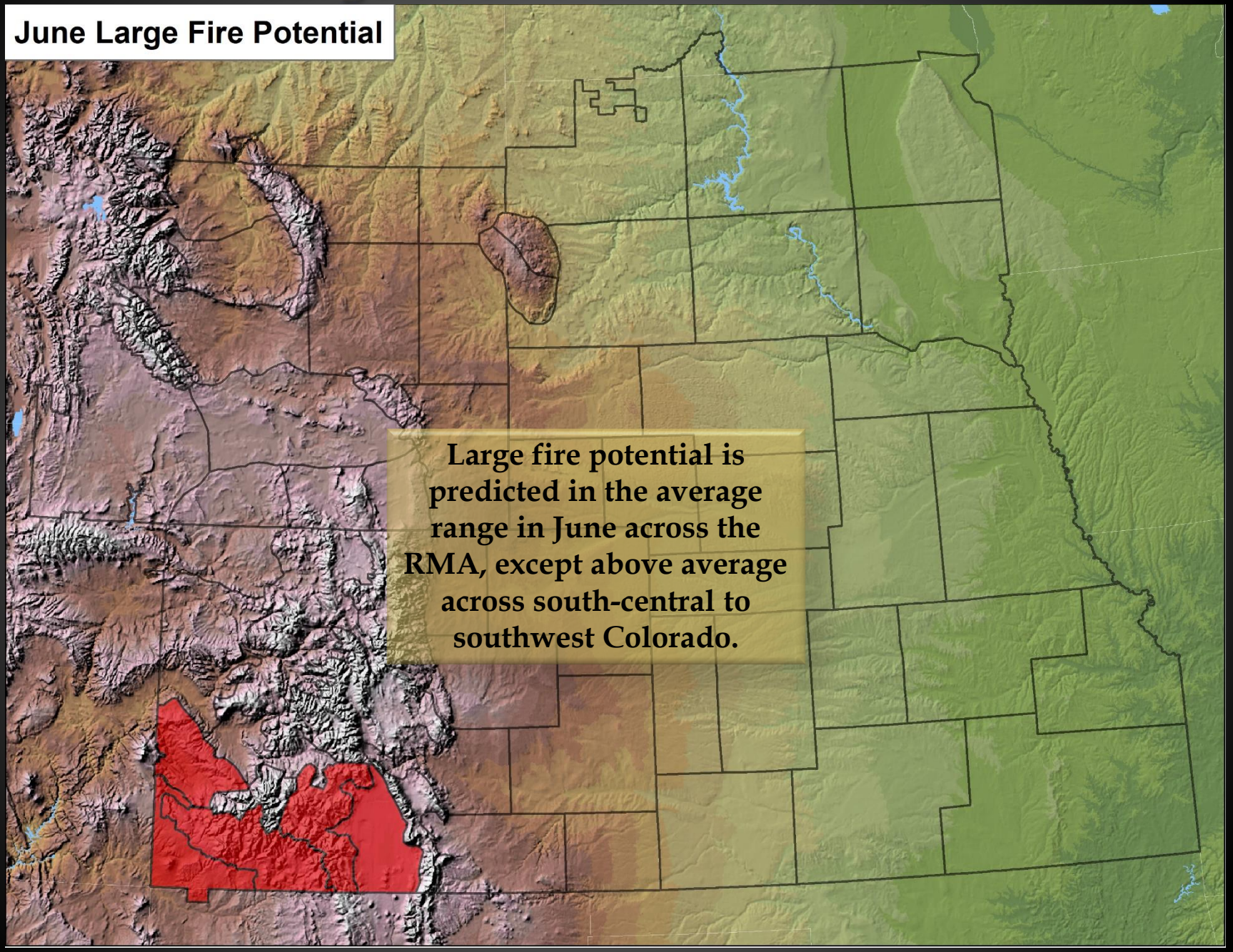

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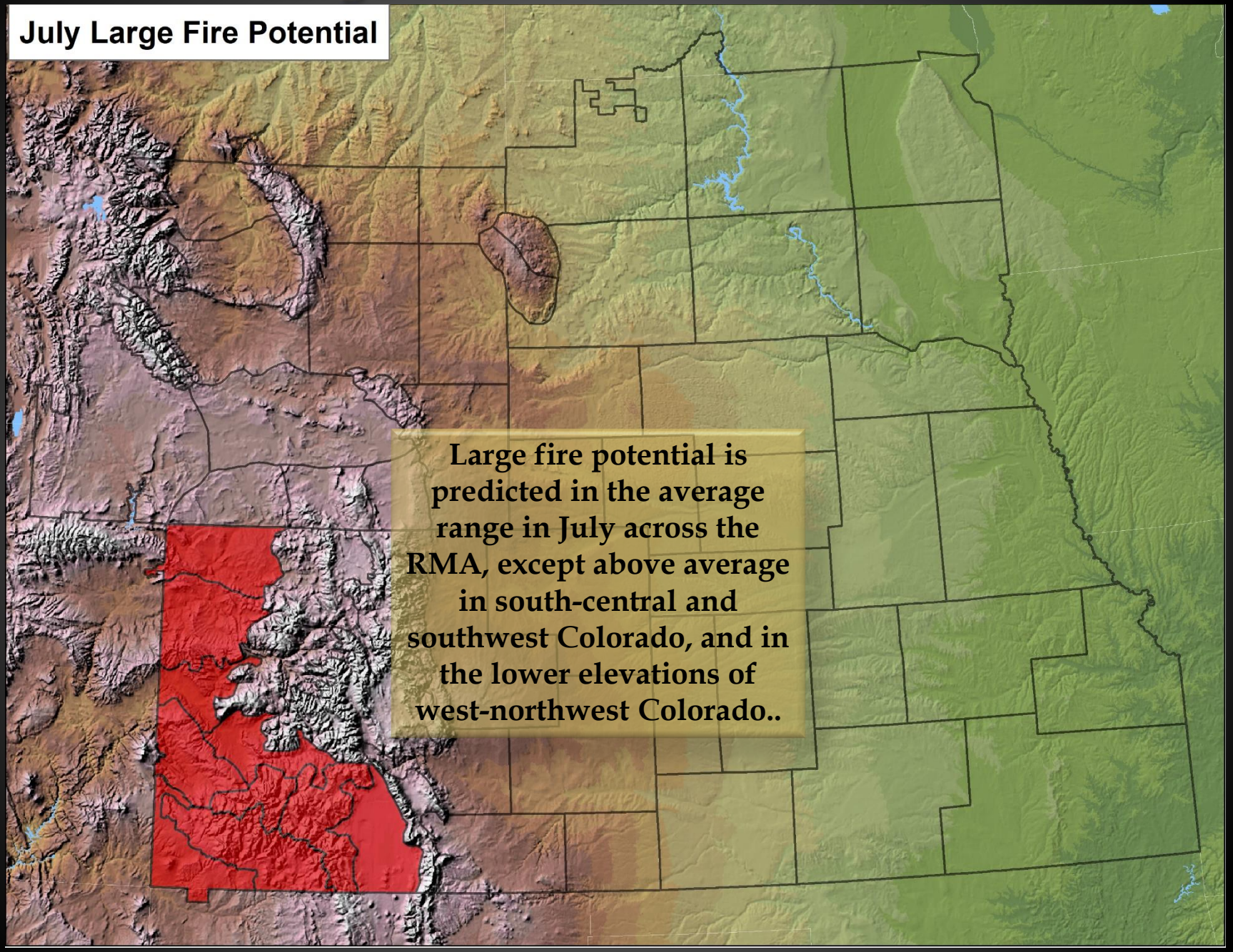
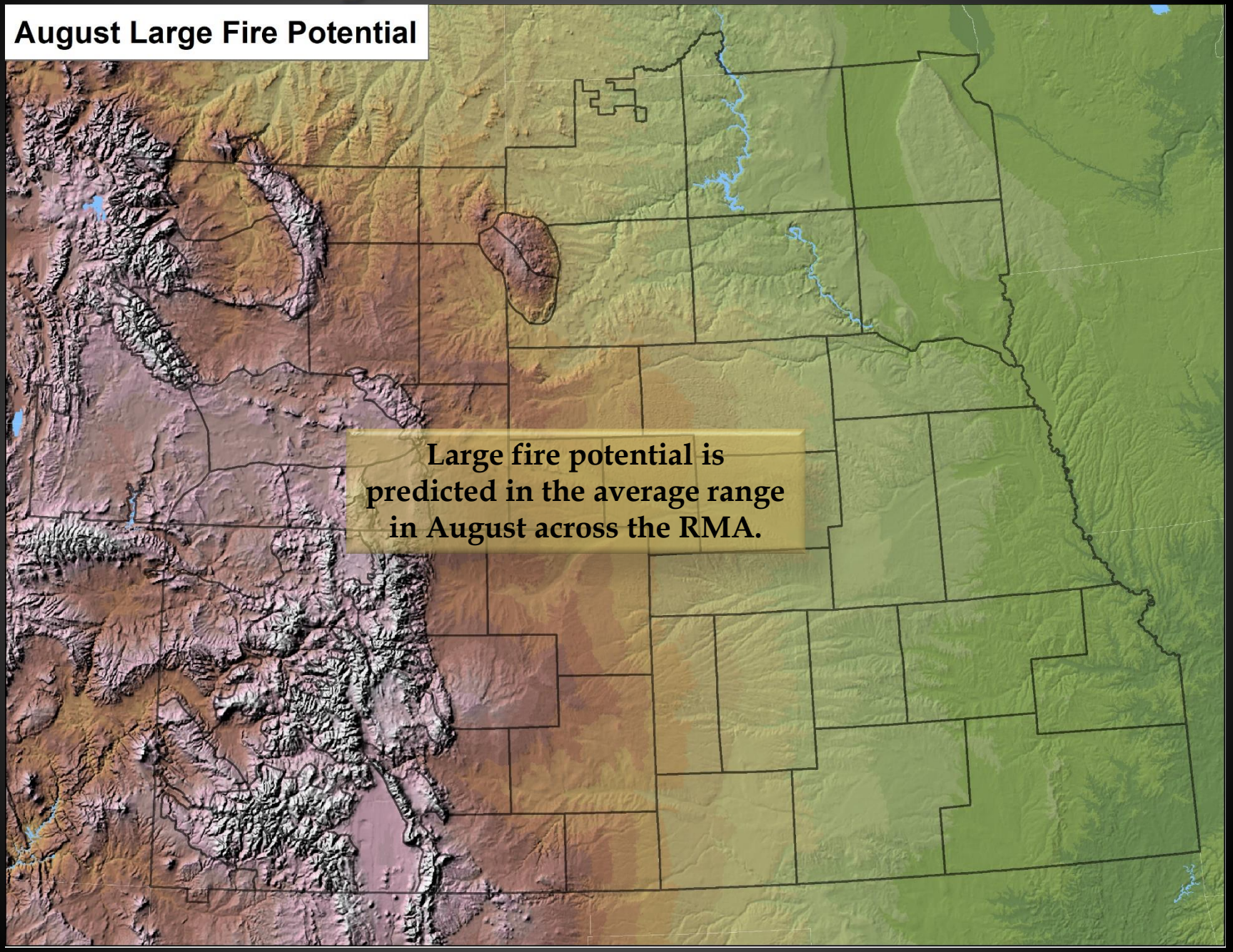


# Large Fire Potential Forecast



# 120 Day Fire Potential Outlook Summary

**Current Climatology**

After a warmer than average month of March across much of the RMA, April was cooler than average in all but southwest portions of the area. Precipitation deficits began to intensify during April, especially from southern CO into western KS. Longer range deficits are most evident across southeast CO with less than 25% of average for the last 60 days. The Drought Mitigation Center portrays an intensification of drought across southern CO.

**Fuels**

Antecedent dead grass fuel loading as a result of the robust growing season of 2019 are most evident across southern CO and western KS where compaction from 2020 snowfall was less prevalent, and green-up has been delayed/stunted this year. Soil moisture in these areas are below the 30$^{th}$ percentile. Given short term forecasts on the dry and warm side, ERC values area predicted to be increasing significantly during early May, especially across south-central and southwest Colorado.

**Weather Predictions**

For late April through the first week of May forecast models indicate a progressive pattern with precipitation mainly in northern and eastern portions of the RMA, while warm, dry, and occasionally windy conditions occur in the south. By the second week of May a potentially cooler northwest flow is forecast, along with precipitation (mainly rain) pushing into the CO front range, but still dry in southwest CO until precipitation chances increase there towards mid-May. CPC long range forecasts show a wetter than average regime across the RMA (closer to average in southwest CO) in May, then with the wetter conditions gradually shifting into mainly far eastern portions of the area during the summer as drier than average conditions expand in western WY and west-northwest CO.

**Considerations and May-August Fire Potential Outlook**

As a result of a delayed and less vigorous green-up across southern Colorado in combination with dry, warm, and windy conditions forecast in the short term, the large fire potential early in May is forecast to be above average in the lower elevations of southern CO. Otherwise, CPC long range forecasts show a wetter than average regime across the RMA (closer to average in southwest CO) in May, then with the wetter conditions gradually shifting into mainly far eastern portions of the area during the summer as drier than average conditions expand in western WY and west-northwest CO. As a result of a better chance of precipitation in short-term and long term forecasts by the second half of May combined with an expanding green-up (albeit stunted), the large fire risk in the second half of May is forecast be closer to average for this time of year. However, above average risk is predicted to gradually re-emerge and expand into the middle elevations across southwest and south-central CO during June through the first half of July. Although the southwest monsoon is not expected to be wetter than average, surges of limited tropical moisture are predicted to bring the large fire risk back into the average range during the second half of July in south-central and southwest CO, while conversely above average risk expands across west-northwest Colorado.