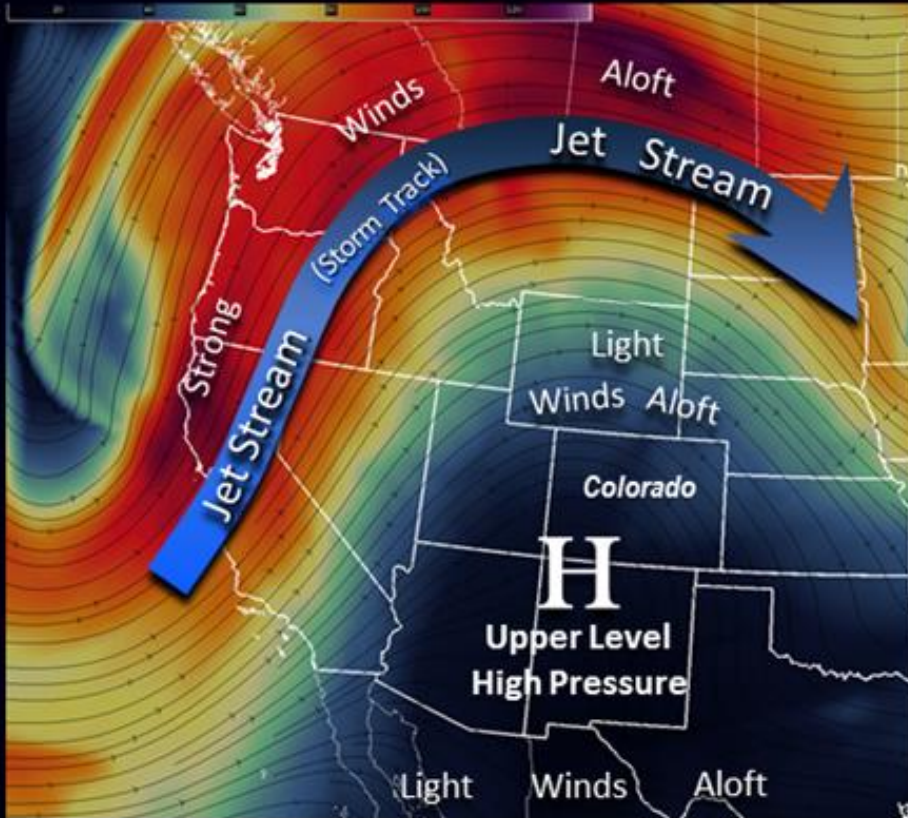


# La Niña and the Upcoming 2020-2021 Winter Season

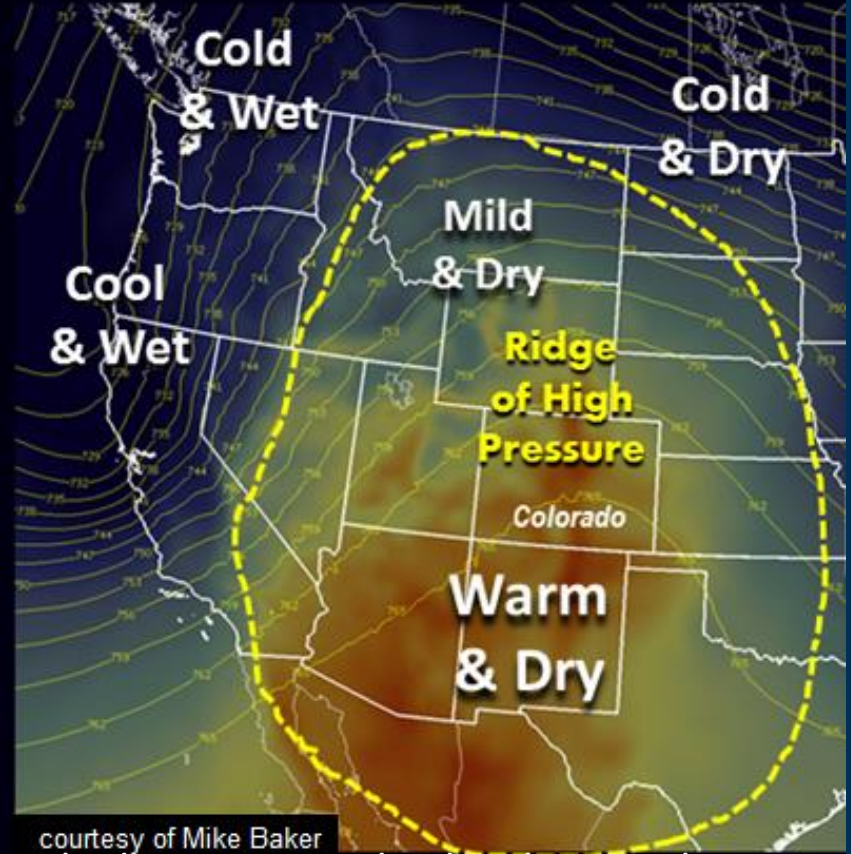
National Weather Service  
Boulder, Colorado



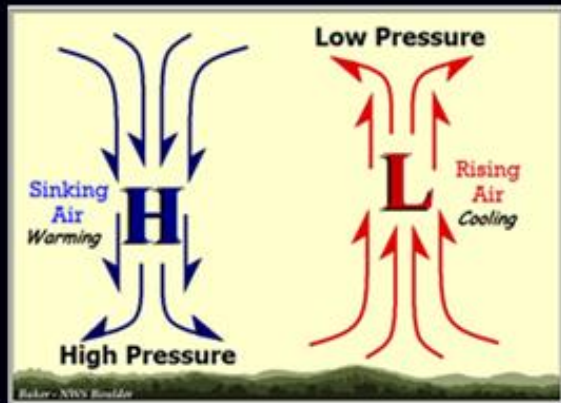
# The Power of the High Pressure Ridge



courtesy of Mike Baker



courtesy of Mike Baker



A large and persistent high pressure ridge has been a dominant weather feature over the Desert Southwest and Rocky Mountain region this summer. Sinking air beneath this dome of high pressure accentuates the warming and drying of the lower atmosphere, consequently reducing cloud cover and the formation of precipitation. The recent unseasonably warm and dry conditions observed across Colorado can also be attributed to the polarward displacement of the jet stream by the upper ridge.

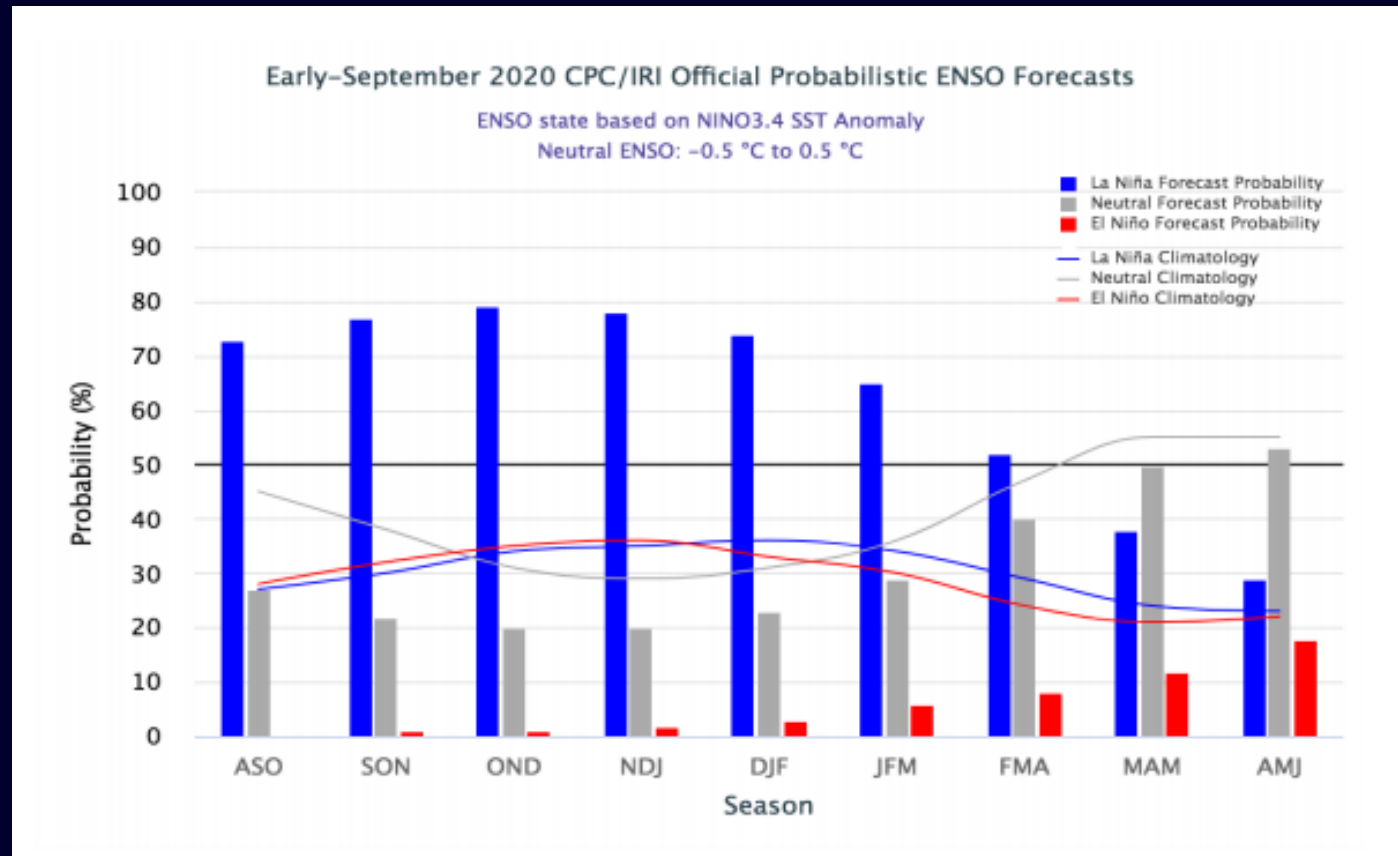


A satellite view of Earth showing the Americas and the Pacific Ocean. The text "Status of La Niña" is overlaid in large red font.

# Status of La Niña

- La Niña conditions are present and are likely to continue through the Northern Hemisphere winter (~75% chance).

## The probability of La Niña, El Niño and non-ENSO or neutral conditions for the next nine 3-month climate periods

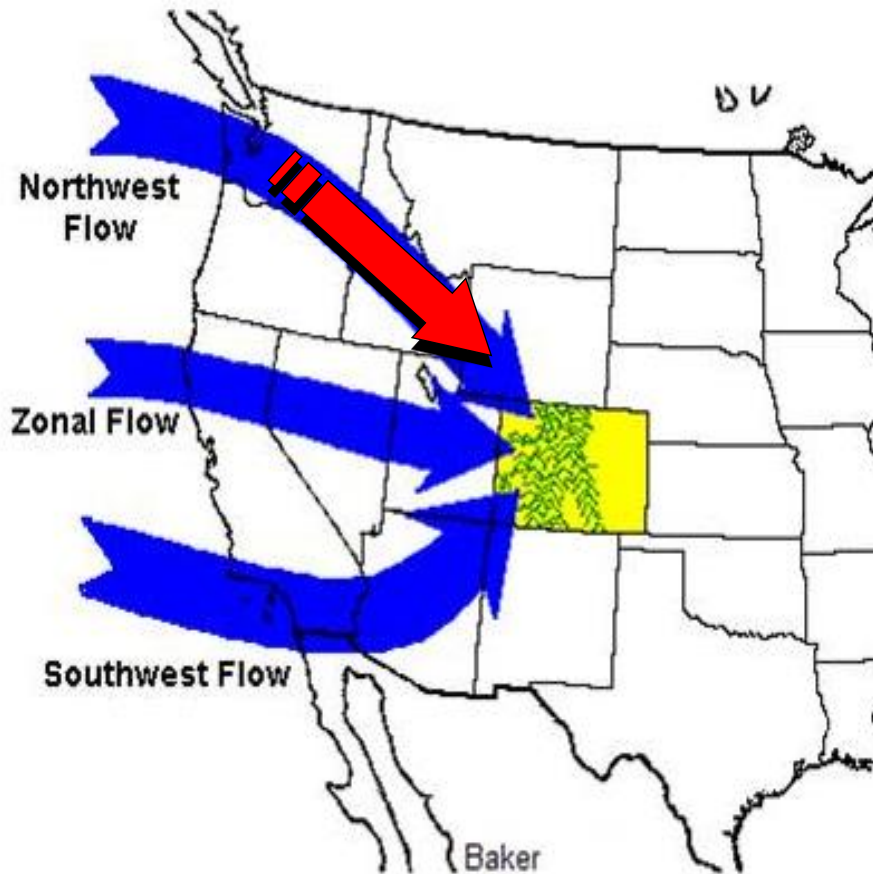


Issued Aug 20, 2020

La Niña is likely (> 70% chance) from August-October 2020 and to December-February 2020-21, with a ~50% chance of continuing through February-April 2021.

# The Role of the Jet Stream on Colorado Weather

## The Jet Stream and It's Influence On Colorado Weather



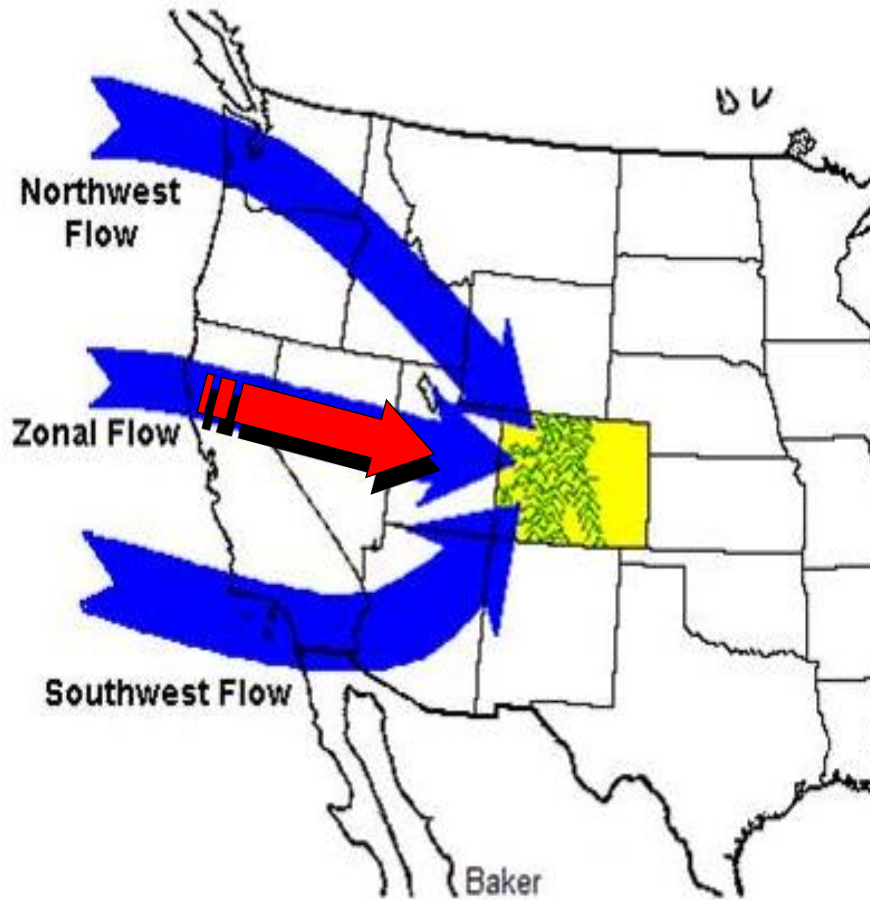
Courtesy of Mike Baker

A northwest jet stream originating over the Pacific Northwest typically produces above average precipitation and below average temperatures across western Wyoming and northwest Colorado during the winter season of moderate to strong La Niñas

This same jet stream pattern is often responsible for below average precipitation , above average temperatures and periods of strong and gusty downslope winds (Chinook and Bora wind events) east of the Continental Divide , particularly during the fall and spring of La Niña episodes.



## The Jet Stream and It's Influence On Colorado Weather

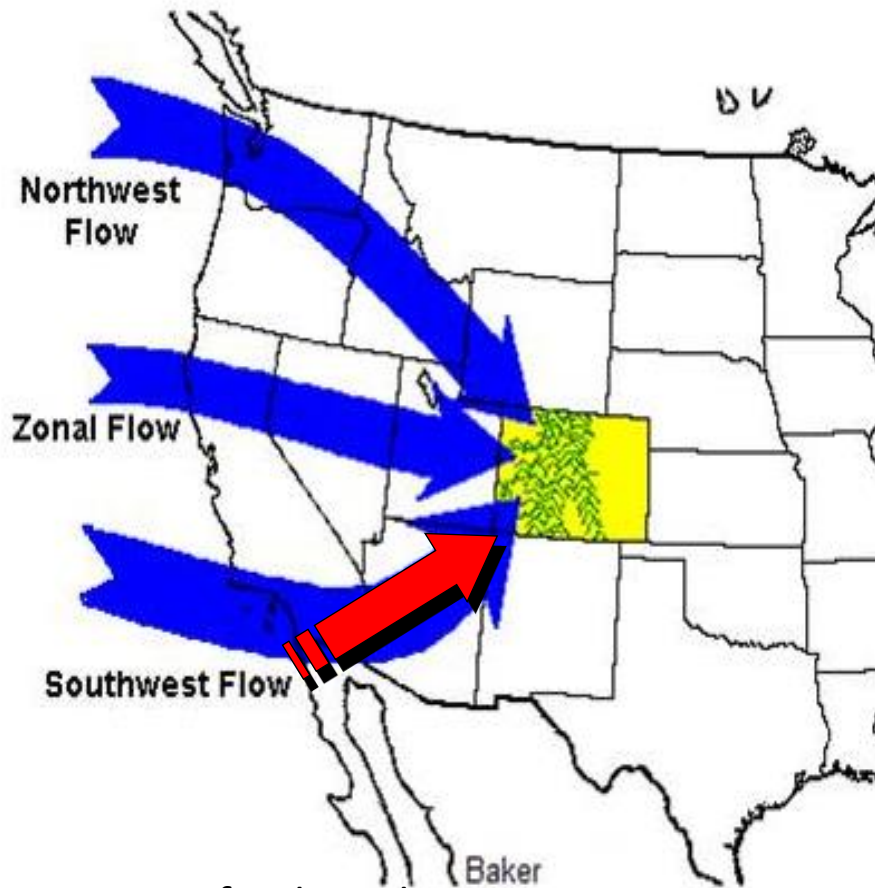


Courtesy of Mike Baker

A westerly or zonal jet stream often results in above average winter and springtime precipitation, increased cloud cover and a greater number of valley fog days across western Colorado.

This same westerly jet stream pattern is also associated with below to much below average precipitation, very low humidity and above average temperatures in areas east of the Continental Divide. There is also an increase in the number of potentially downslope wind events (mainly the warmer Chinook type winds) during the spring of La Niñas.

## The Jet Stream and It's Influence On Colorado Weather



Courtesy of Mike Baker

Finally, a southwest jet stream originating over the Desert Southwest is often associated with above to much above average precipitation and lower than average daytime temperatures for the Four Corners region, particularly across southwest and south central Colorado during late winter and spring of El Niño episodes.

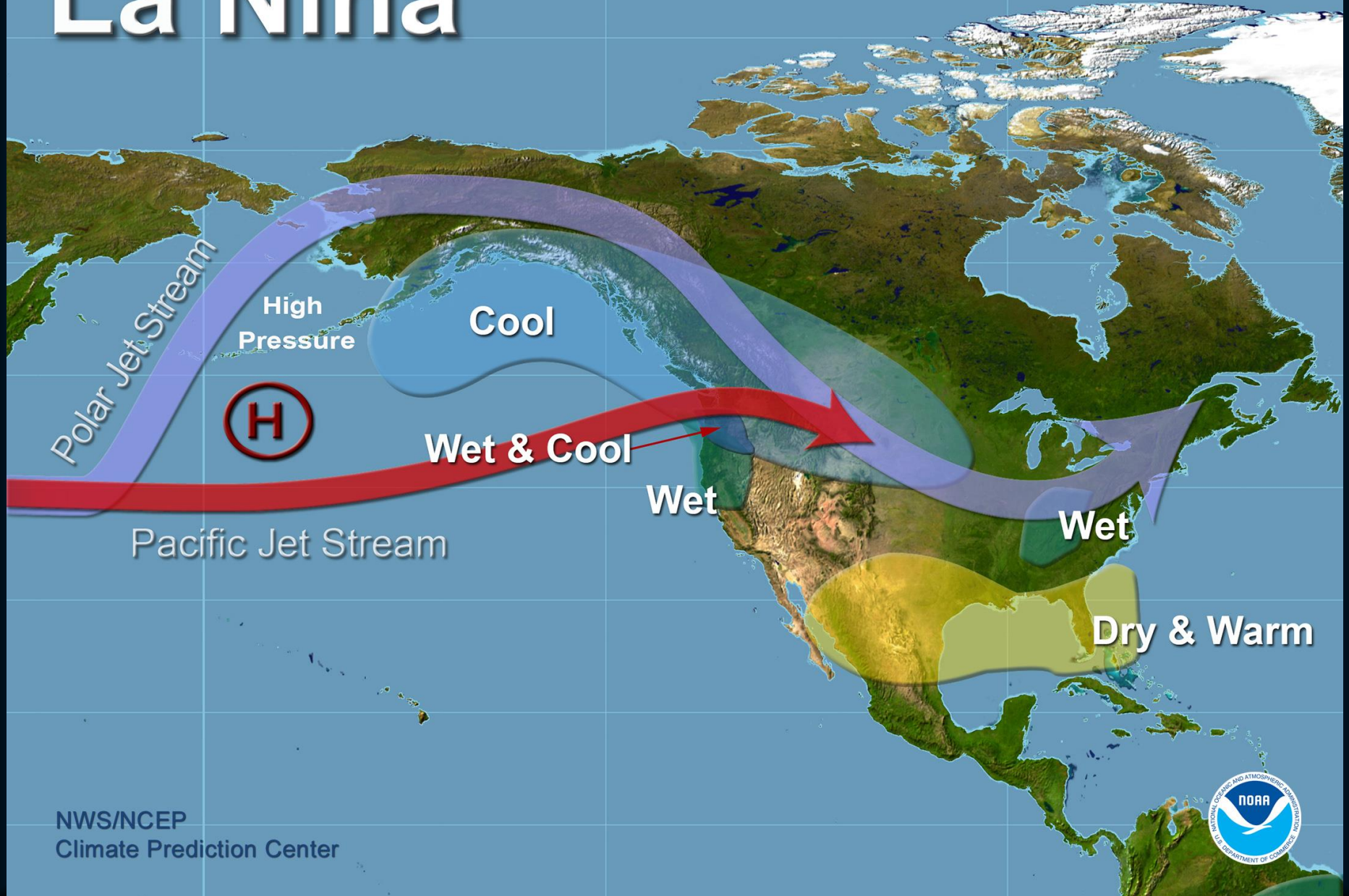
This same jet stream pattern typically produced above average precipitation and warmer than average nighttime temperatures in areas east of the Continental Divide, particularly during the late winter and spring of moderate to strong El Niños.



# Typical North American Temperature, Precipitation & Jet Stream Patterns during La Niña Winters

Typical Wintertime Pattern

# La Niña



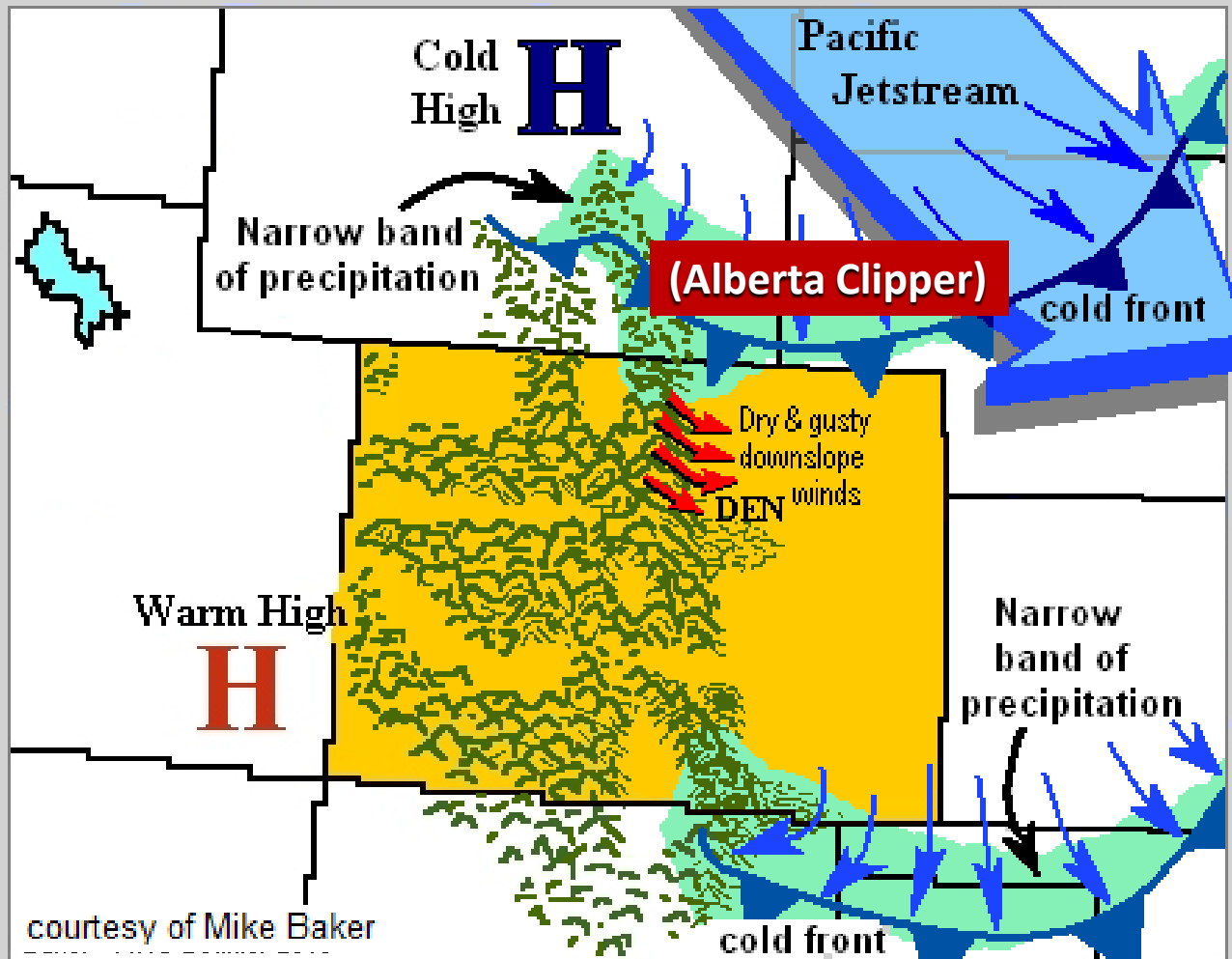


# Weather Patterns Prevailing Across Colorado During Moderate to Strong La Niñas.

**Tend to produce above average temperatures and below average precipitation across most of Colorado...specifically southern and eastern portions of the state at least through the upcoming winter season.**

**Meanwhile the northwest and north central portions of Colorado are in line to see above average precipitation (snowfall) and below average temperatures, particularly during the latter half of this winter and perhaps through the spring of 2011.**

# Mean Position of the Pacific Jet Stream During the Autumn Season of Moderate to Strong La Niña Episodes



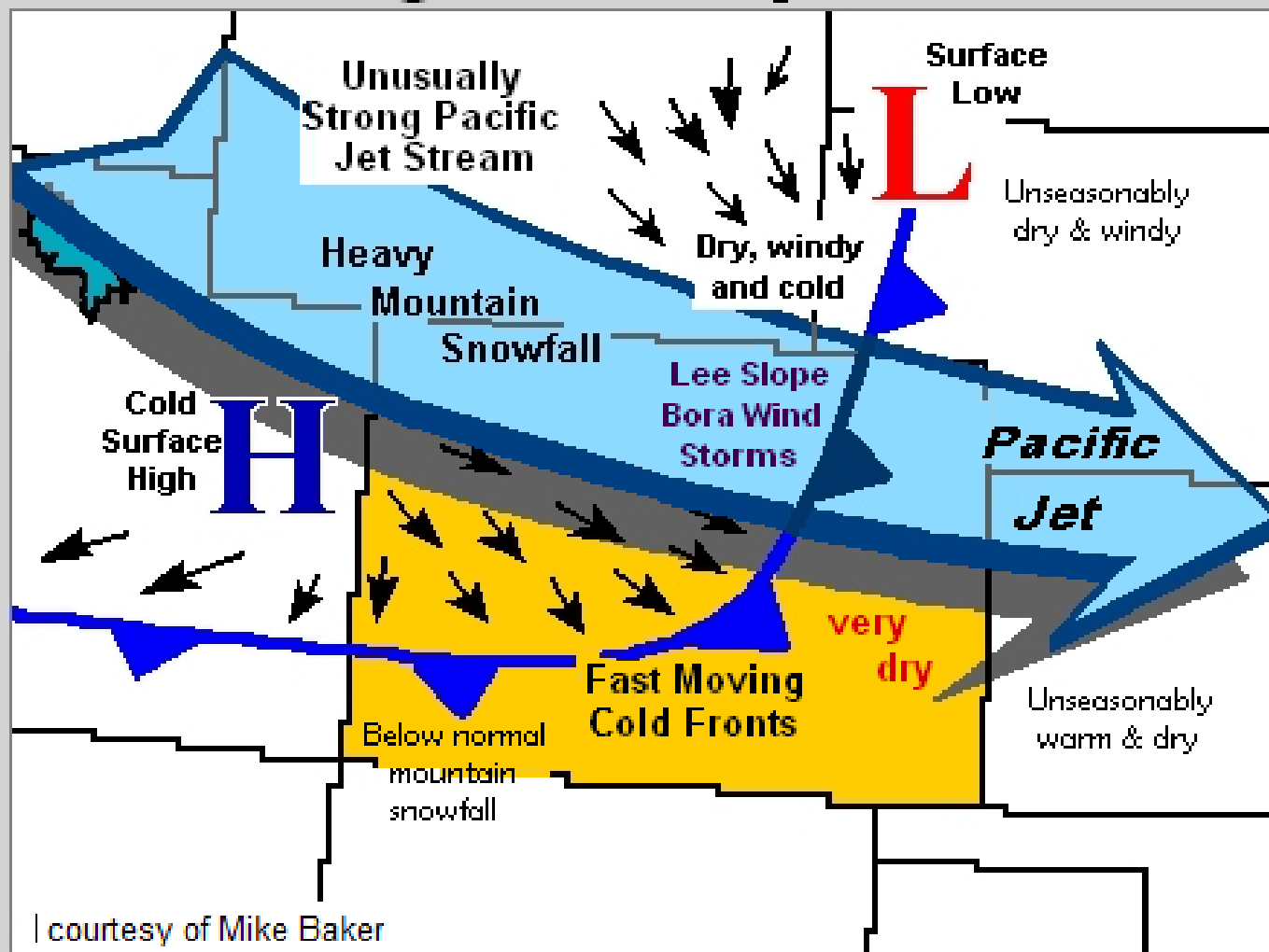
Eastern Colorado will commonly see an increase in the number of “dry” cold fronts, referred to as “Alberta clippers” during the autumn of moderate to strong La Niñas with the Pacific jet stream oriented in this position.

These fast moving cold front often produce little precipitation, and due of their fast movement, often produce strong and gusty northerly winds and sudden drops temperature.

Western Colorado will feel little, if any impact from these high plains frontal systems.



# Mean Position of the Pacific Jet Stream Late Autumn and Winter of Moderate to Strong La Niña Episodes

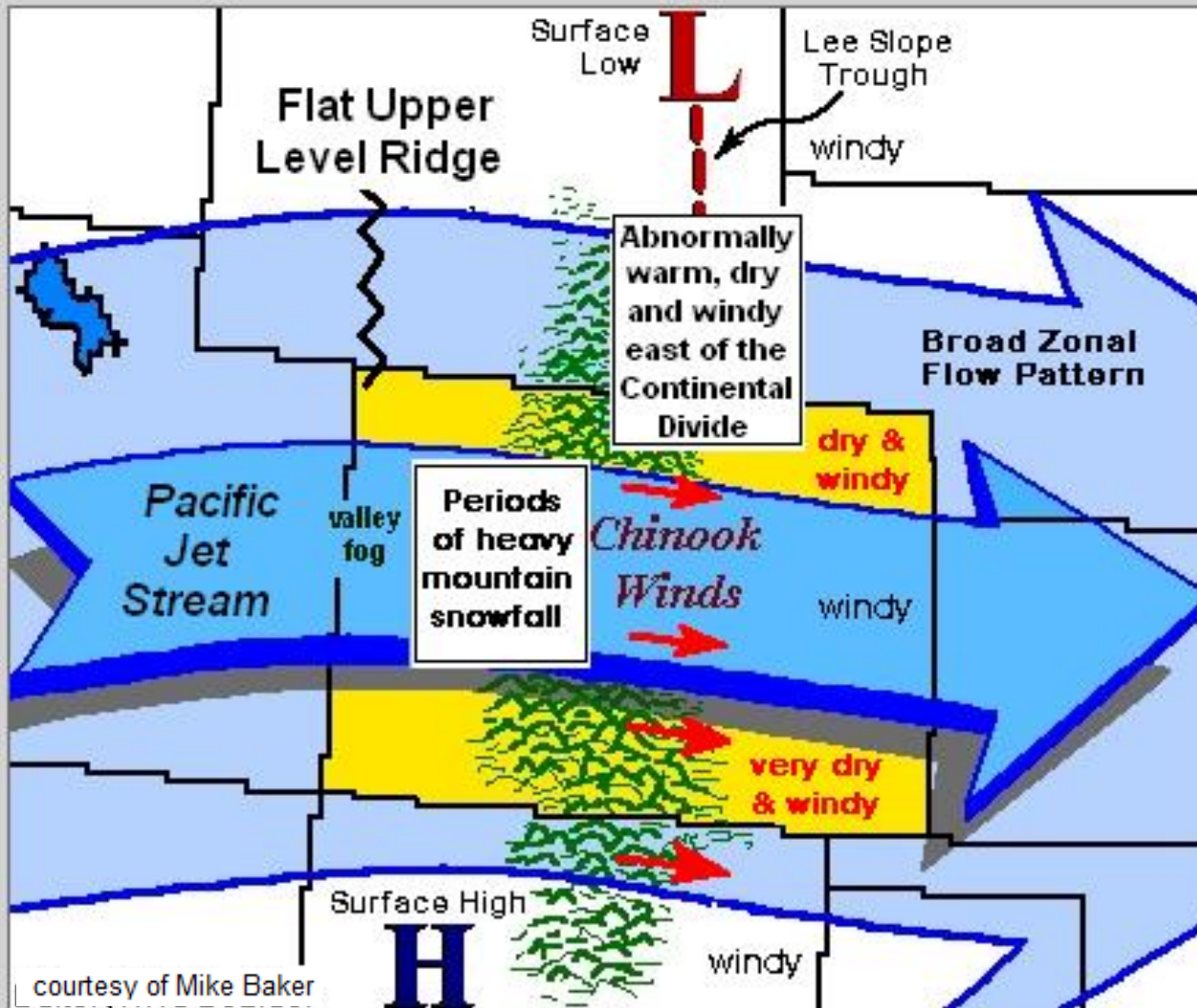


| courtesy of Mike Baker

As the west coast high pressure ridge weakens and flattens, the Polar jet stream acquires more of a west-northwesterly component.

This southward shift in the jet results in an increase, often a significant increase, in precipitation and wind across the northwest plateau and north central mountains of Colorado.

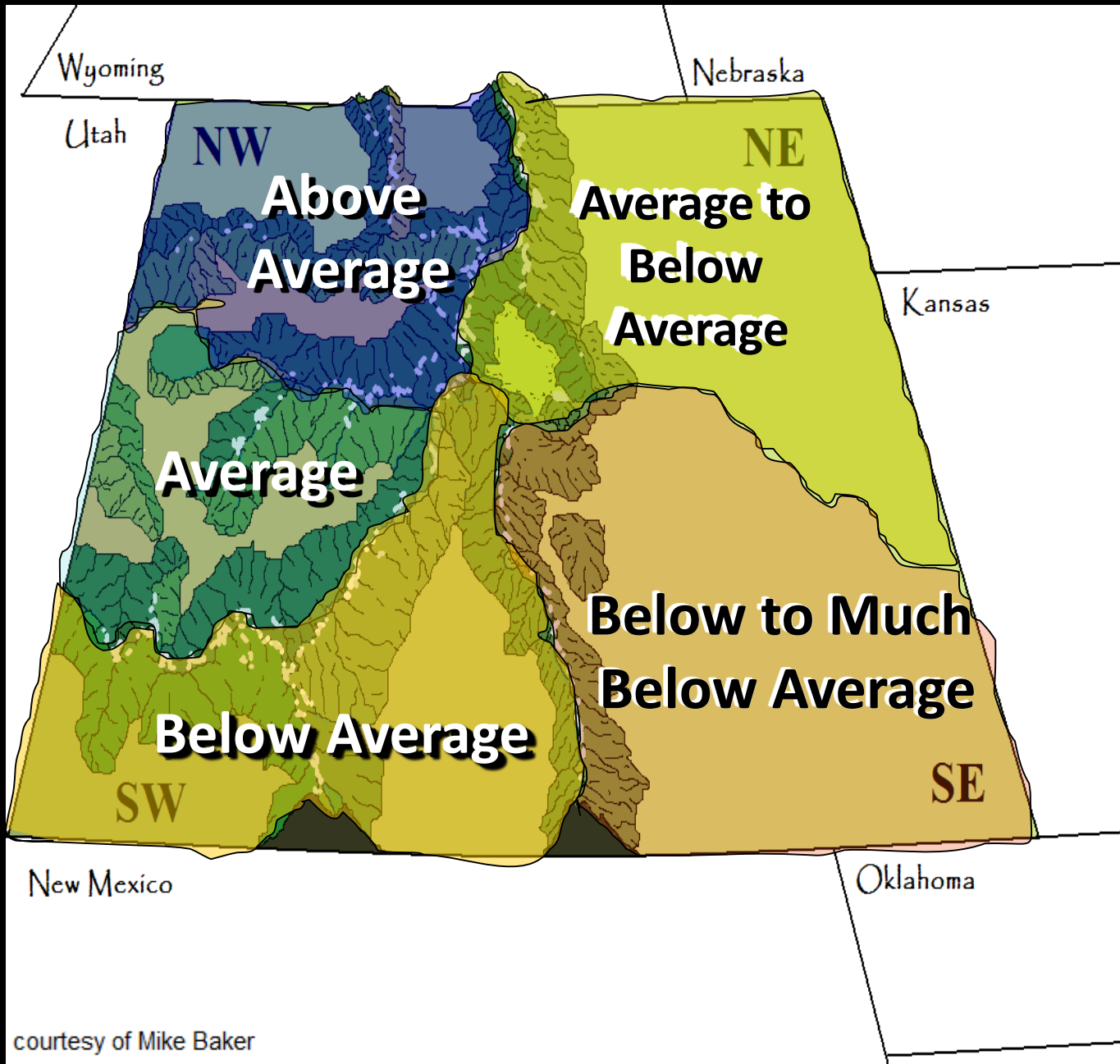
## Mean Position of the Pacific Jet Stream During the Spring of Moderate to Strong La Niña Episodes



In late winter and spring during the stronger La Niña episodes, the prevailing flow aloft usually becomes predominantly zonal or westerly in direction. This generally warmer and drier flow pattern still manages to produce periods of moderate to heavy snowfall on west facing mountain slopes along and west of the Continental Divide.

Whereas in areas east of the Divide, the weather is often abnormally warm, windy and quite dry for days, if not for weeks at a time.





courtesy of Mike Baker

## Cold Season Precipitation Anomalies During La Niña Episodes

West central and northwest Colorado commonly receives **AVERAGE** to **ABOVE AVERAGE** precipitation (rain and snow) during moderate to strong La Niñas, predominately from mid-winter through mid-spring.

While southwest and eastern Colorado commonly see **BELOW** to **MUCH BELOW AVERAGE** precipitation (rain and snow) during the entire cold season of moderate to strong La Niñas.