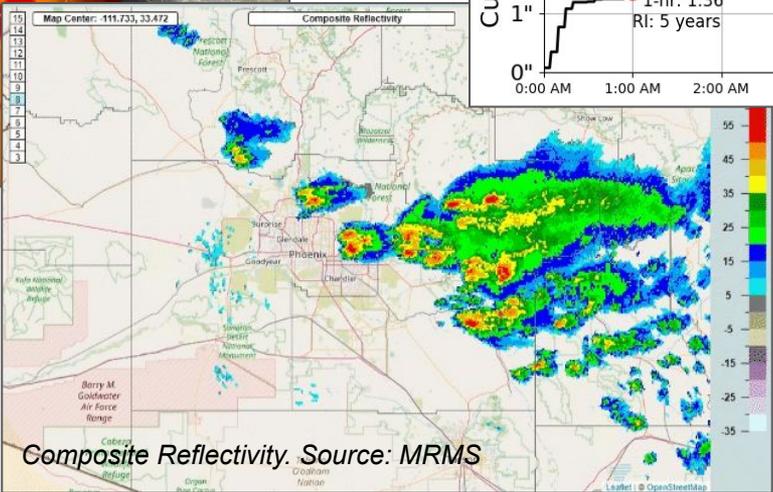
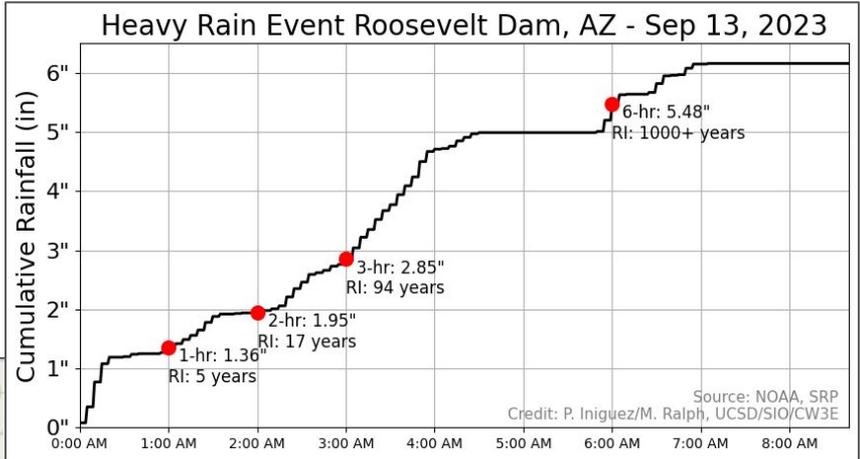
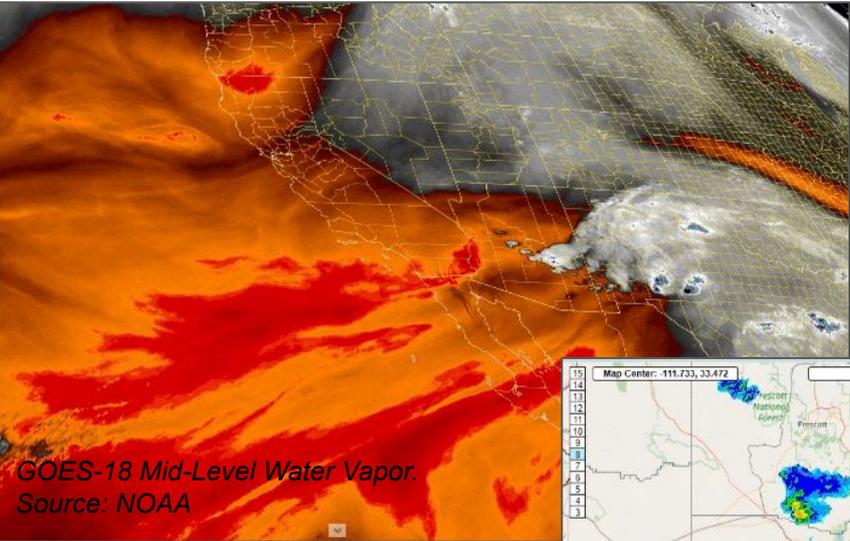


CW3E Analysis: Fall Heavy Rain Event in AZ (2023-09-13)

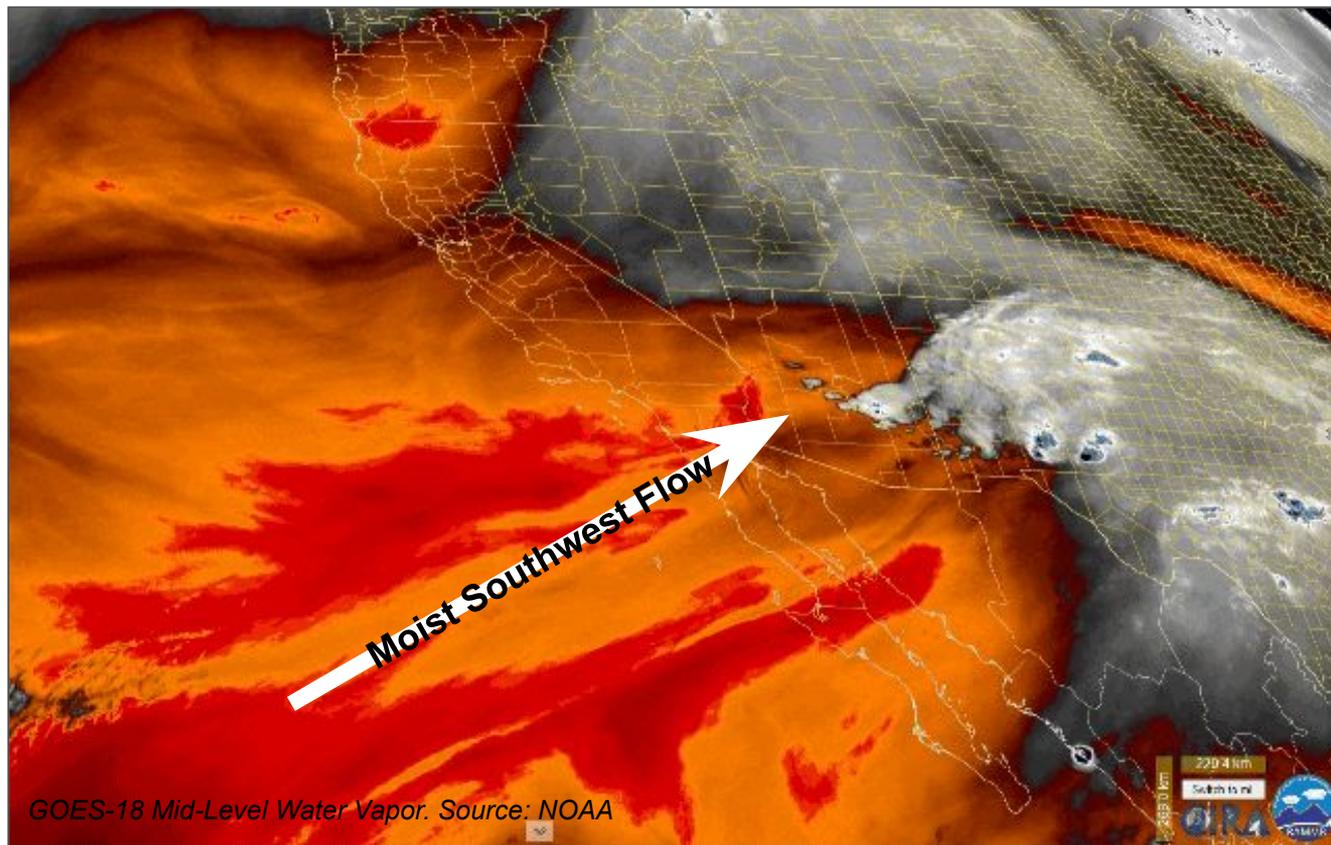


Fall Heavy Rain Event in Arizona (2023-09-13)

- On September 12-13, 2023, a deep southwesterly flow of moist air was directed into Arizona, ahead of an advancing upper level trough.
- This setup was a classic “Transition” monsoon event, signified by the transition from the hot, humid active summer into quieter fall months. Synoptic conditions for transition events are distinctly different from typical monsoon events when high pressure is overhead. While precipitation trends down in September, the combination of summer moisture and fall dynamics can result in significant rainfall events. The pattern resulted in persistent convection near and just east of the Phoenix area.
- The Southwest Monsoon runs from June 15 through September 30.
- Heavy precipitation fell over the Salt River watershed in central Arizona, with some locations receiving more than 20% of the normal total water year precipitation in a 24-hour period.
- In excess of 6” of rain fell near Roosevelt, AZ. The Return Interval (Annual Probability) of 5.5”/6 hr is over 1000 years (<0.1%). For a nearby COOP station (Roosevelt 1 S, 1905+), the all-time 1-day record is 4.14” (1978-03-02). For comparison the average annual precipitation total is 15.91”.
- The heavy rain resulted in flooding and rock slides, causing at least one highway to close.
- IVT tools (based on the GEFS) indicated the potential for this notable moisture flux days in advance.

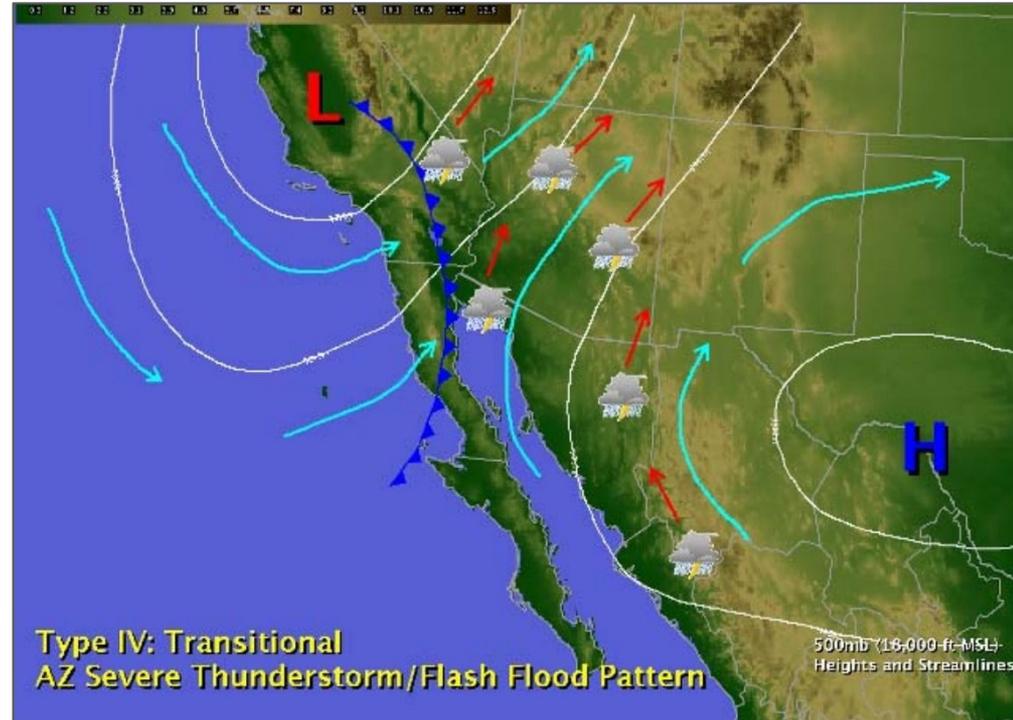
Fall Heavy Rain Event in Arizona (2023-09-13)

- Classic “Transition” Event.
- Deep, moist southwesterly flow into Arizona.
- Trough approaching from the northwest.
- Persistent convection near/just east of Phoenix.



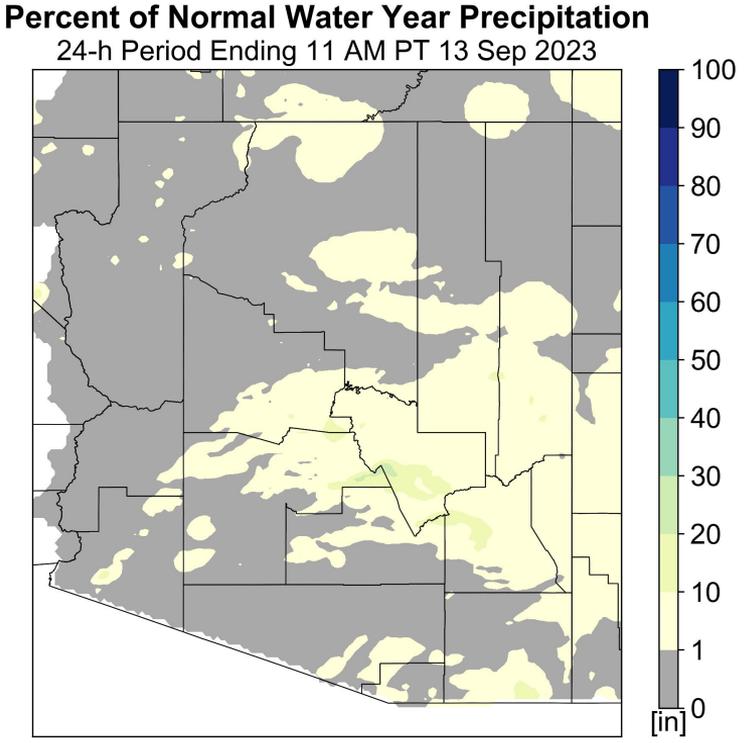
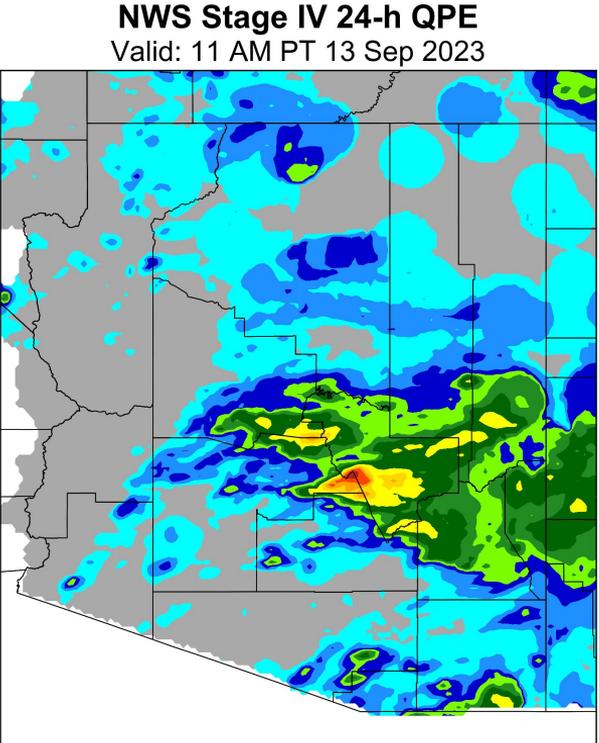
Fall Heavy Rain Event in Arizona (2023-09-13)

- Classic “Transition” Event.
- Southwest Monsoon is 6/15-9/30.
- While precipitation trends down in September, combination of summer moisture and fall dynamics can result in significant rainfall events.
- Often called “Transition” events as weather transitions from hot, humid active summer into quieter fall months. Synoptic conditions are distinctly different from typical monsoon events (i.e. overhead high pressure).



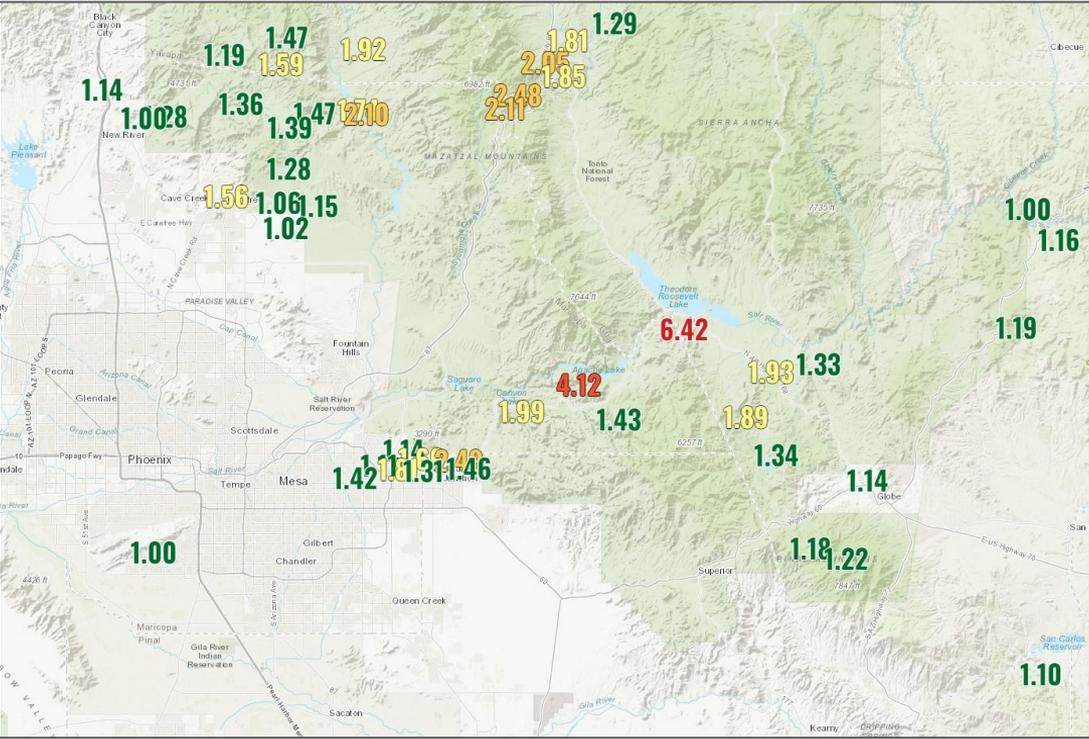
Maddox Type IV Pattern. Source: NOAA/NWS Tucson

Fall Heavy Rain Event in Arizona (2023-09-13)



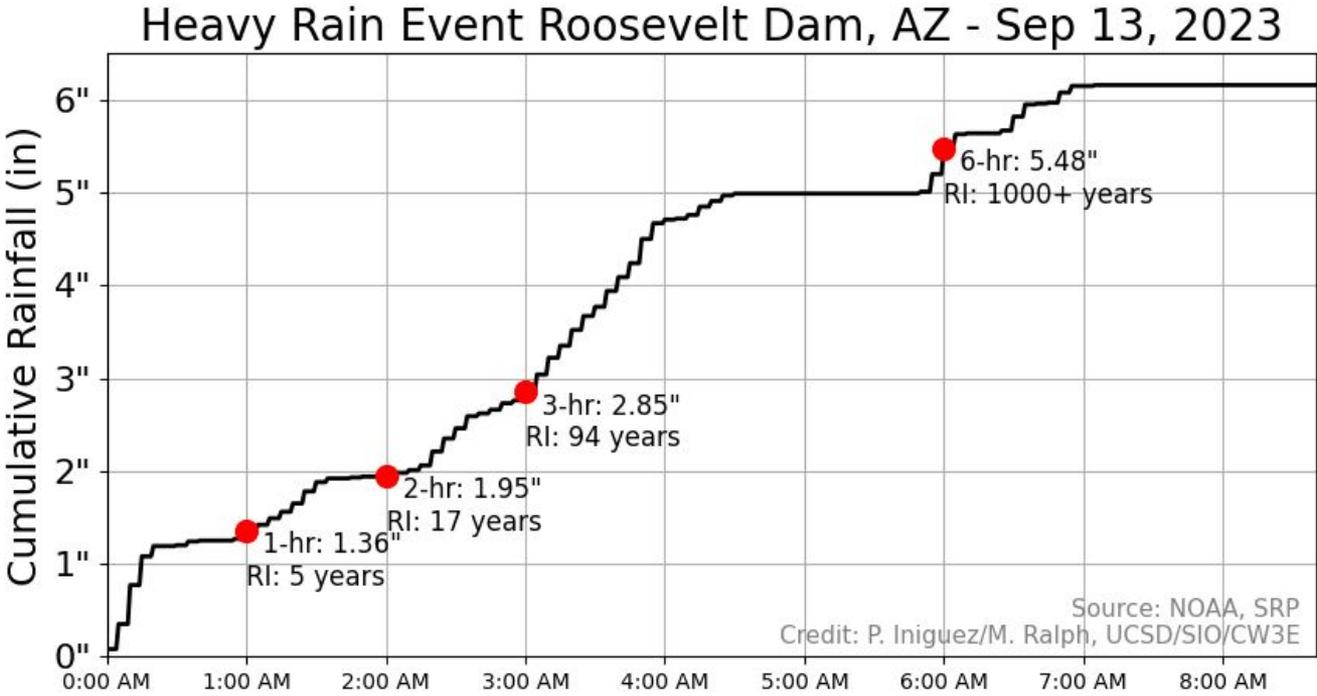
The heaviest precipitation fell over the Salt River watershed in central Arizona, with some locations receiving > 20% of the normal total water year precipitation in a 24-hour period

Fall Heavy Rain Event in Arizona (2023-09-13)



As of 7 AM on Wed. Sep. 13, 2023, in excess of 6" of rain near Roosevelt, AZ.

Fall Heavy Rain Event in Arizona (2023-09-13)



Return Interval (Annual Probability) of 5.5"/6 hr is over 1000 years (<0.1%). For a nearby COOP station (Roosevelt 1 S, 1905+), 1-day record is 4.14" (1978-03-02). Average annual total is 15.91"

Fall Heavy Rain Event in Arizona (2023-09-13)

Arizona DOT
@ArizonaDOT

CLOSED: SR 88 EB is closed at milepost 239 near Roosevelt Lake due to a rockslide.



7:33 AM · Sep 13, 2023 · 7,042 Views

Arizona DOT
@ArizonaDOT

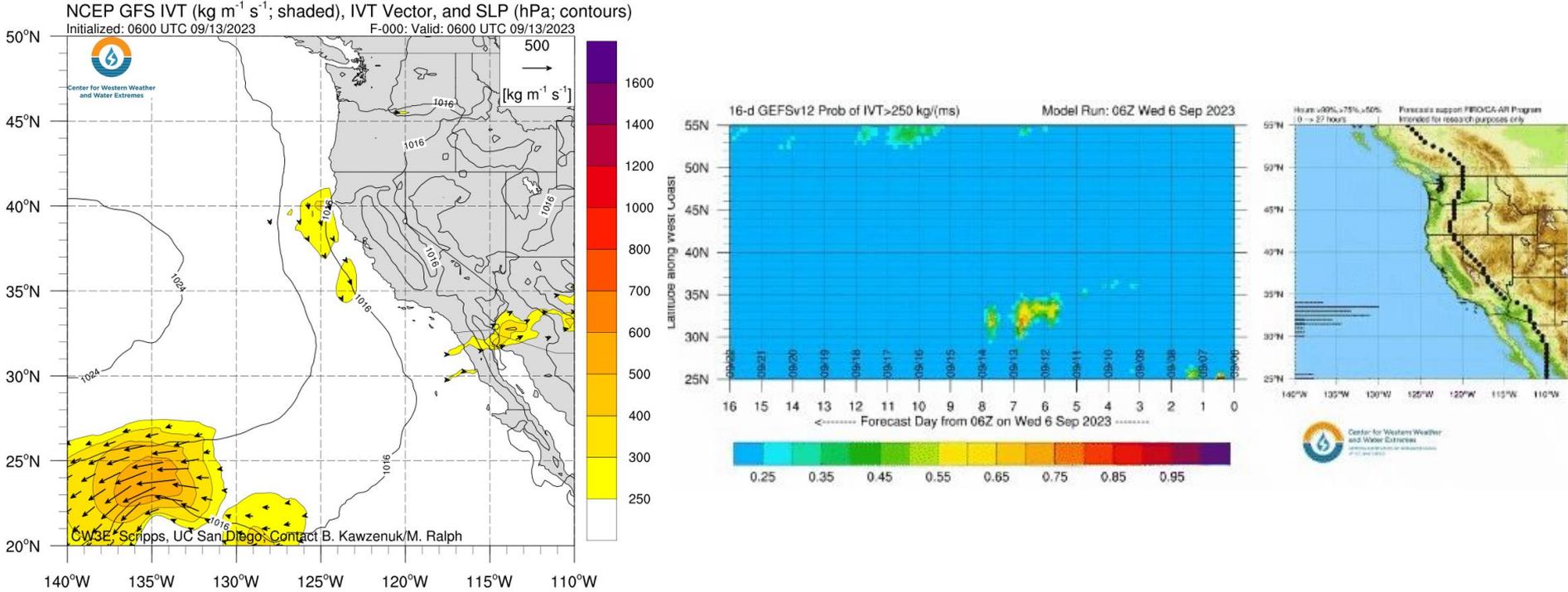
CLOSED: SR 88 is closed in both directions between mileposts 229 and 242 southwest of Roosevelt Lake due to overnight storms and related damage. There is no estimated reopening time.



10:34 AM · Sep 13, 2023 · 9,442 Views

Flooding and rock slides resulted in highway closures.

Fall Heavy Rain Event in Arizona (2023-09-13)



IVT tools (GEFS) indicated notable moisture flux days in advance.