

Narda and Us.... A Story



Bob Endlich

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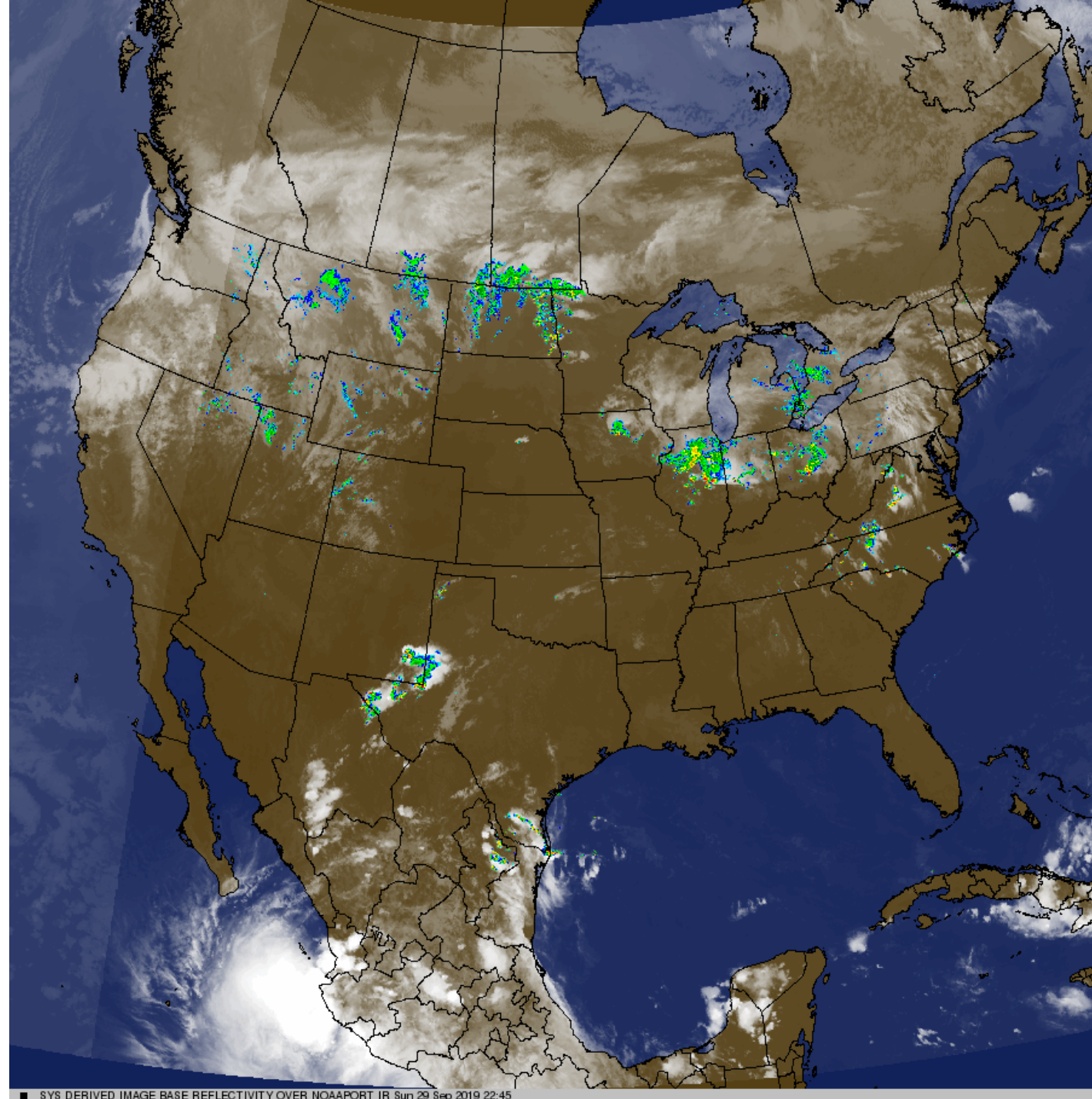
Weather, Climate, and Climate Change—What the Data Tell Us

1 Oct 2019

Tropical Moisture Feed from Narda
had been feeding the area since at
least Saturday evening when flashes
of lightning near Hobbs were visible
in Las Cruces.

This satellite-radar composite...

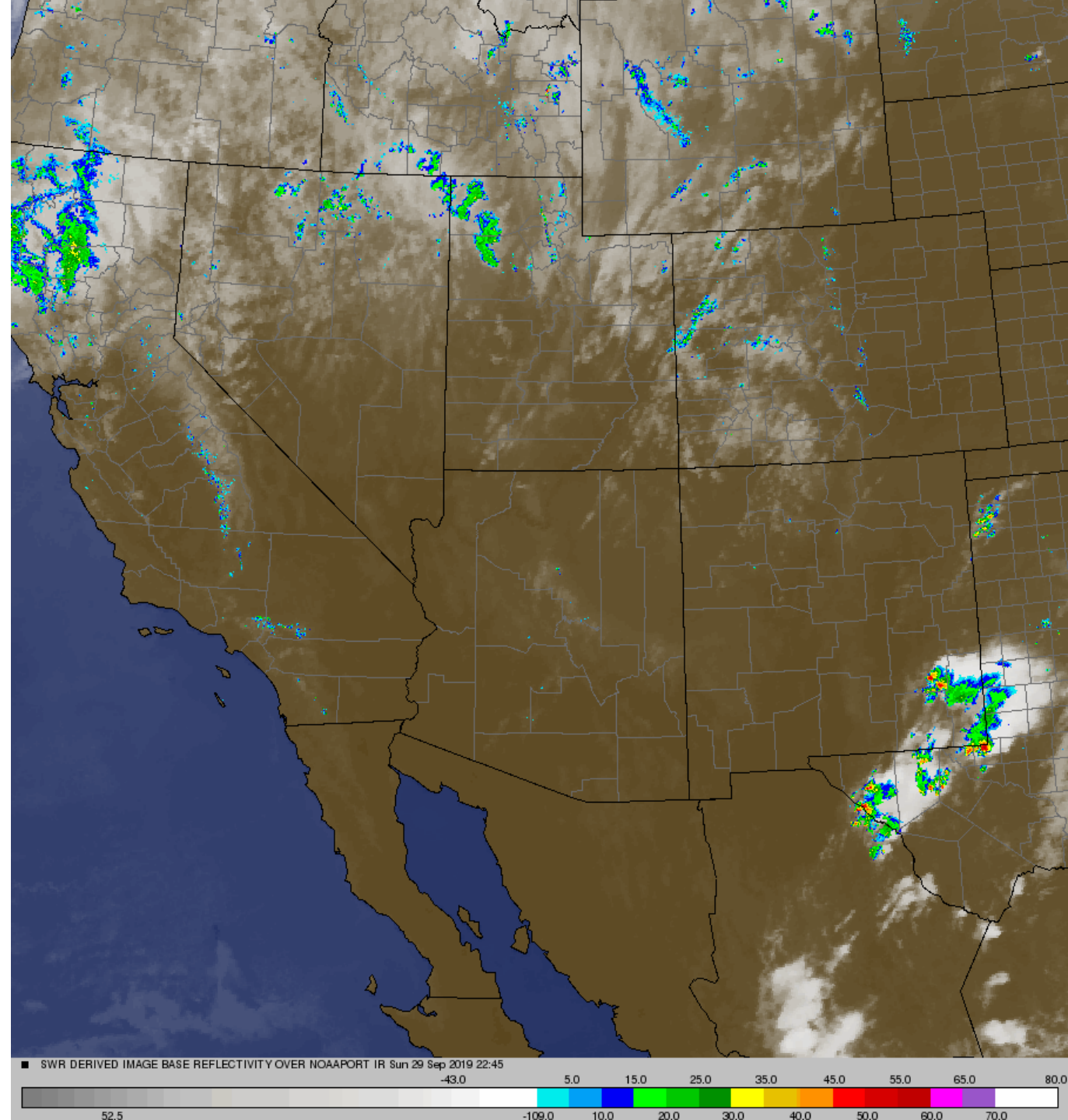
Sunday 29 September 2019/2245Z



Closer view at 2245Z Sunday

Thunderstorms has gotten as close as Hudspeth County.

Strong Cells might be over Quitman Mountains and Sierra Blanca Mt.

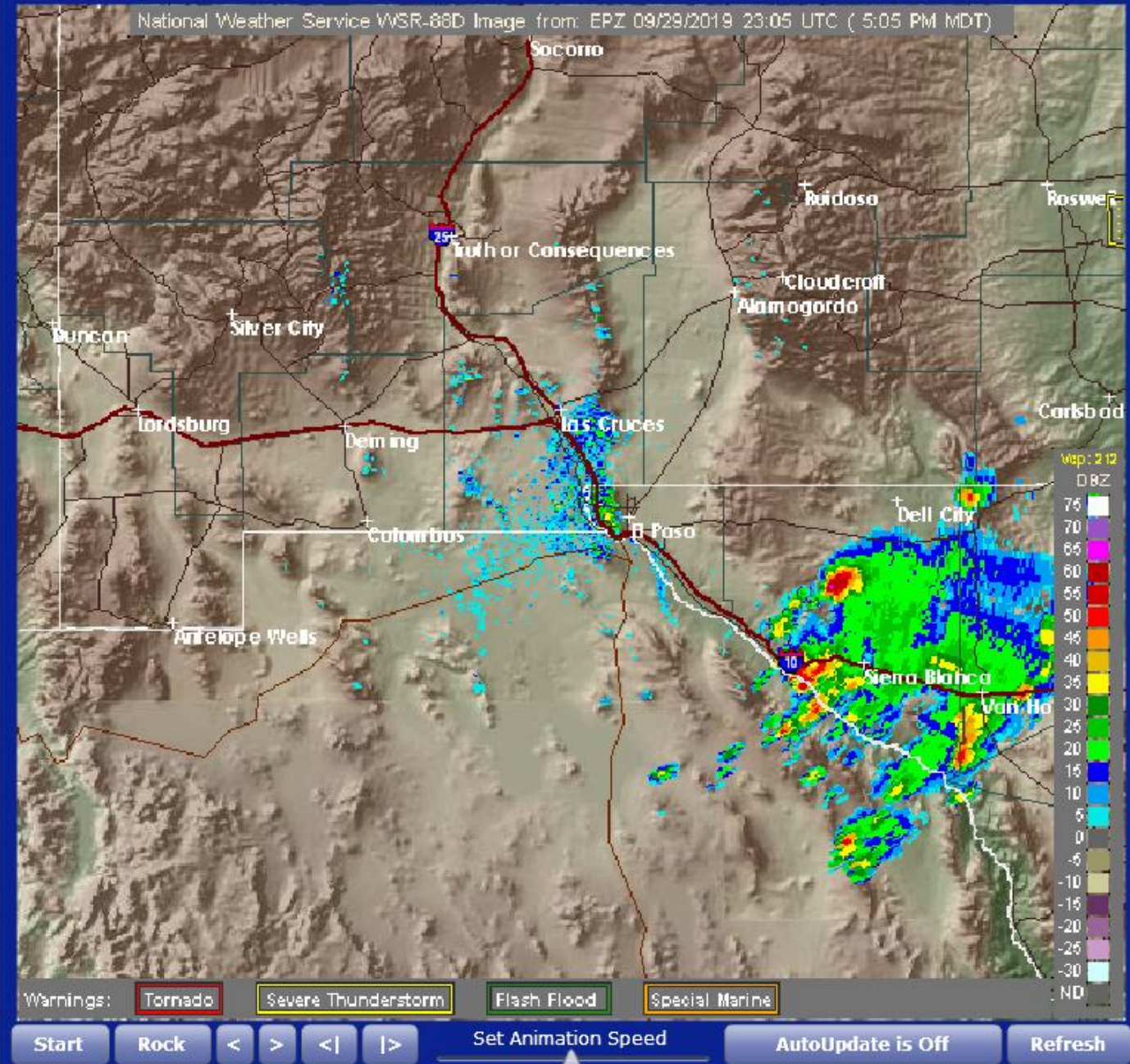


NWS Radar Sun 29 Sep 2019 2305Z
Sunday 1735 MDT

Shows radar signature of the thunderstorms
east of El Paso

NWS El Paso, TX

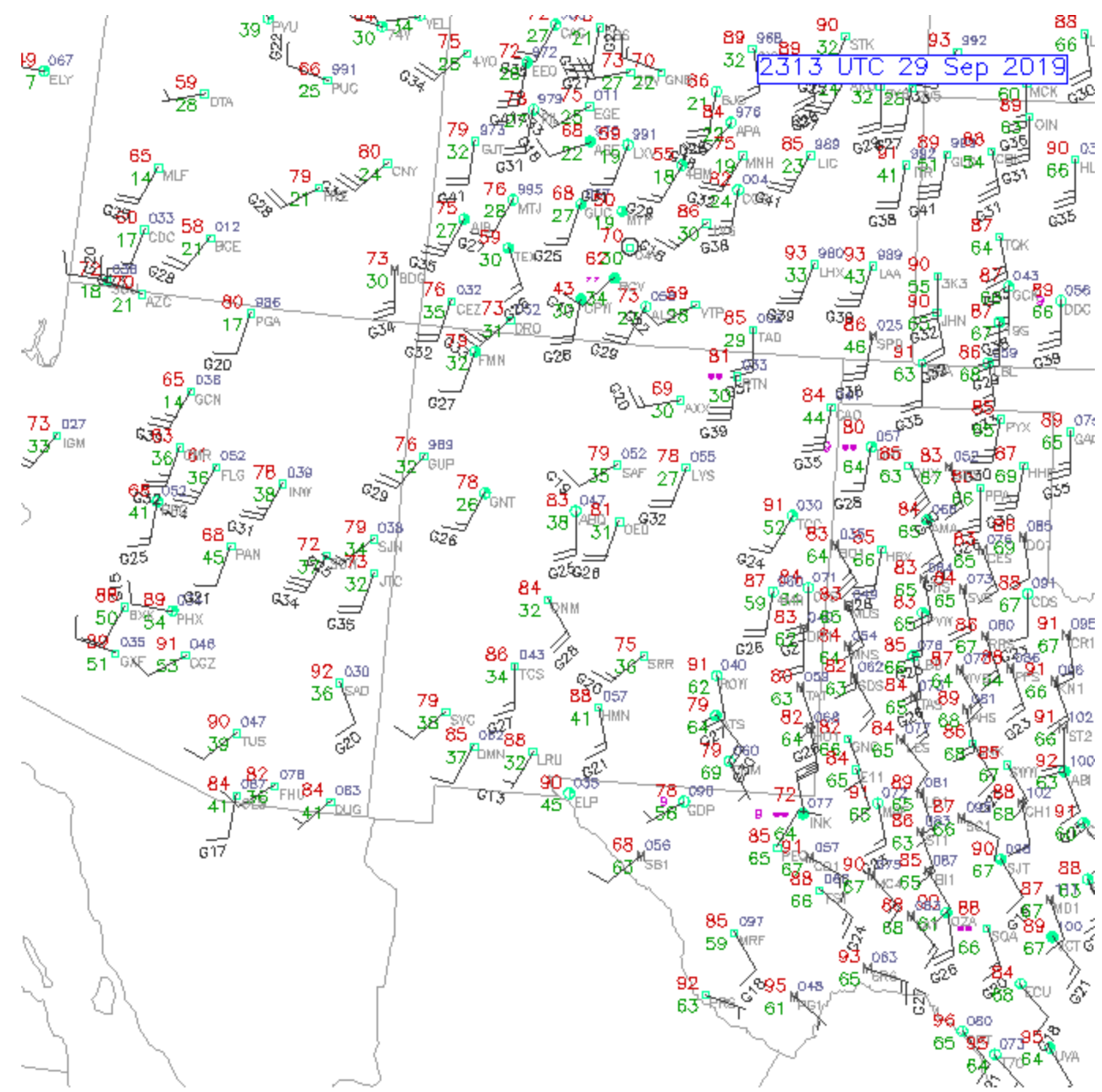
05:05 PM MDT Sun Sep 29 2019



Story of the dry air and the wet plume
is in the Dew Points
Sunday PM
29 Sep 2019/2313Z

City Td

LRU 32
ELP 45
SB1 63
CNM 69





View from Dona Ana County Fairgrounds 2239Z Sunday 29 Sept 2019

DISCUSSION... Moisture plume continues to drift slowly west as upper high over the lower Mississippi Valley expands west. Currently the lead edge (western edge) of the moisture plume extends from about Sierra Blanca, TX to Amarillo. TPW imagery shows PWs within this plume from 1.0 to 1.6 inches. At the surface, dryline runs from far eastern Hudspeth County north over eastern New Mexico just east of the Sacramento Mountains. At the western edge of all this moisture, a few thunderstorms had fired up over eastern Hudspeth County. Expect moisture/thunderstorms to spread as far west as El Paso/Organ Mountains tonight. MUCAPE/DCAPE values show Hudspeth has decent severe wind potential this evening.

While we were pondering possibilities of a visit from
Narda's moisture

In Montana, it was a different story.

29 SEP 2019/1200Z
Sunday AM 0600L

500 mb ~18,000 ft

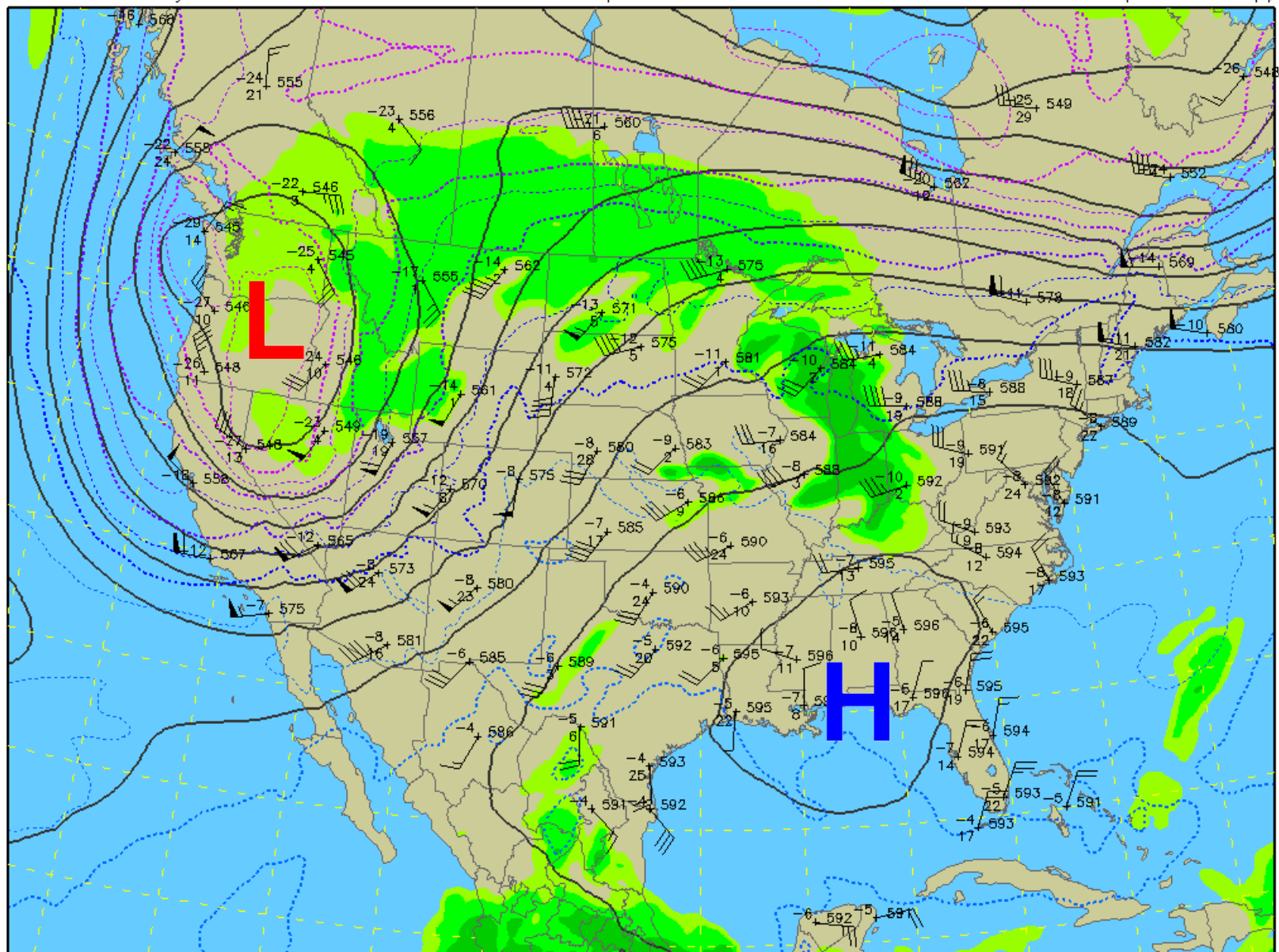
The 5940 decameter height
(594 contour line)
is now over Mobile AL.

Cold air, which brought snow
to Montana is over desert of
eastern Oregon (546 line)

500 mb Heights (dm) / Temperature ($^{\circ}\text{C}$) / Humidity (%)

0-hour analysis valid 1200 UTC Sun 29 Sep 2019

RAP (12z 29 Sep)





September 2019 Winter Storm

Latest Snowfall Reports

(9pm Sunday, September 29th)

Browning (Glacier)	48.0"
14 SW Dupuyer (Teton)	37.0"
13 SW Heart Butte (Pondera)	34.0"
12 SSW East Glacier (Pondera)	28.0"
15 SW Augusta (Lewis and Clark)	25.0"
17 WSW Bynum (Teton)	22.0"
NWS Great Falls (Cascade)	19.3"
Augusta (Lewis and Clark)	19.0"
Dutton (Teton)	18.0"
5 NNE Fairfield (Teton)	16.0"
1 WSW Choteau (Teton)	16.0"

Please send us your snowfall reports!
Include the amount of snow and your
location (i.e. 19.3" 5 WSW Great Falls)



National Weather Service · Great Falls, Montana Updated: 9/29/2019 9:59 PM MT

NWUS55 KGGW 291628
LSRGGW

PRELIMINARY LOCAL STORM REPORT...SUMMARY
NATIONAL WEATHER SERVICE GLASGOW MT
1027 AM MDT SUN SEP 29 2019

..TIME...	...EVENT...	...CITY LOCATION...	...LAT.LON...
..DATE...MAG....	..COUNTY LOCATION..ST..	...SOURCE....
	..REMARKS..		

0720 AM	SNOW	5 S OPHEIM	48.78N 106.41W
09/29/2019	E4.0 INCH	VALLEY MT	PUBLIC

ALSO HAD 1/2 MILE VISIBILITY IN FALLING SNOW.

0939 AM	HEAVY SNOW	ZORTMAN	47.92N 108.53W
09/29/2019	M11.0 INCH	PHILLIPS MT	CO-OP OBSERVER

SNOWING SINCE 430 AM YESTERDAY. 1.45 INCHES LIQUID. STILL SNOWING LIGHTLY.

1010 AM	SNOW	9 SSW CHAPMAN	48.74N 108.21W
09/29/2019	E3.0 INCH	PHILLIPS MT	TRAINED SPOTTER

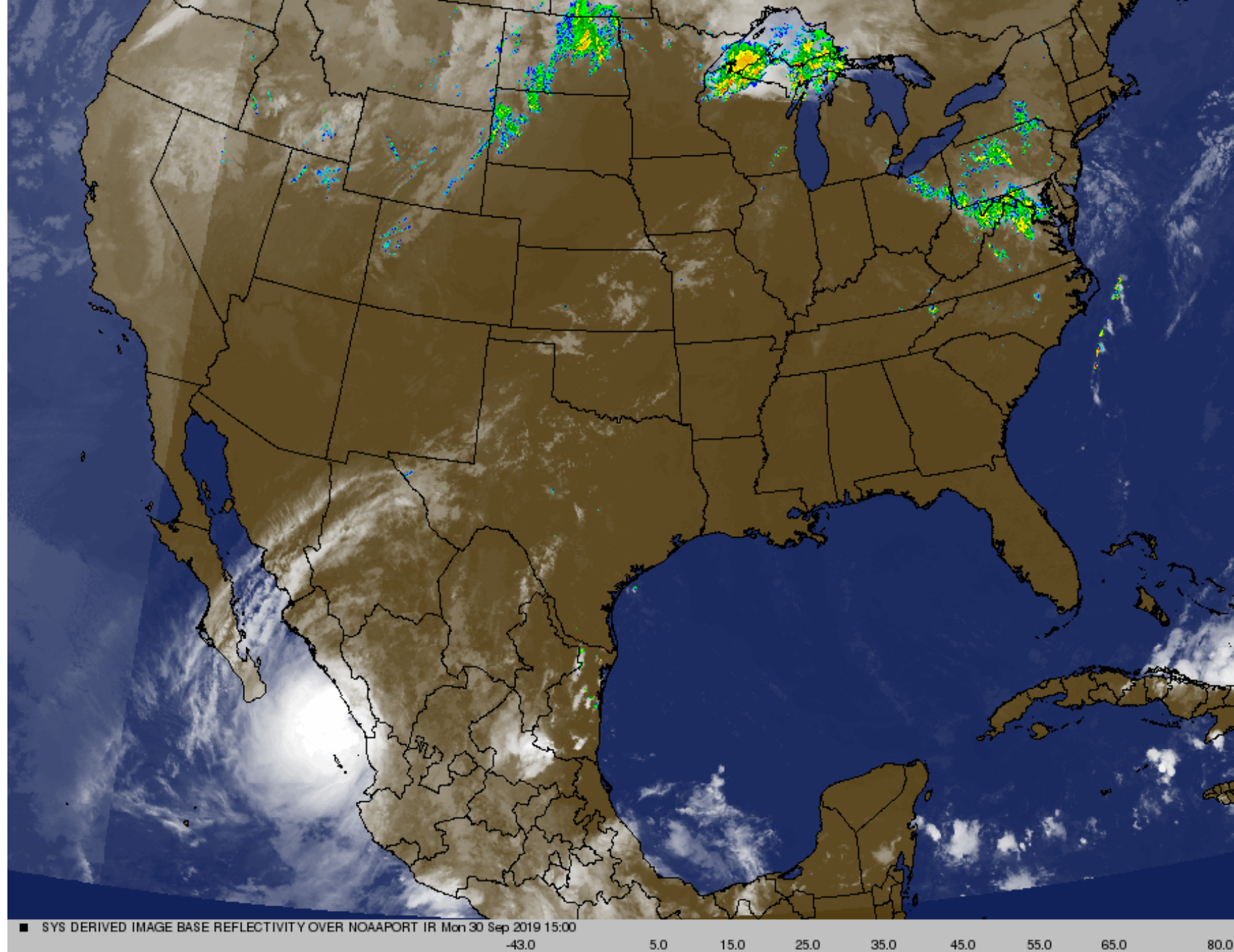
HEAVY WET SNOW. STILL SNOWING LIGHTLY.

1010 AM	SNOW	10 NE WHITEWATER	48.86N 107.47W
09/29/2019	E3.0 INCH	PHILLIPS MT	TRAINED SPOTTER

HEAVY WET SNOW. STILL SNOWING LIGHTLY. ROADS ARE SLUSHY.

30 Sep 2019/1500Z

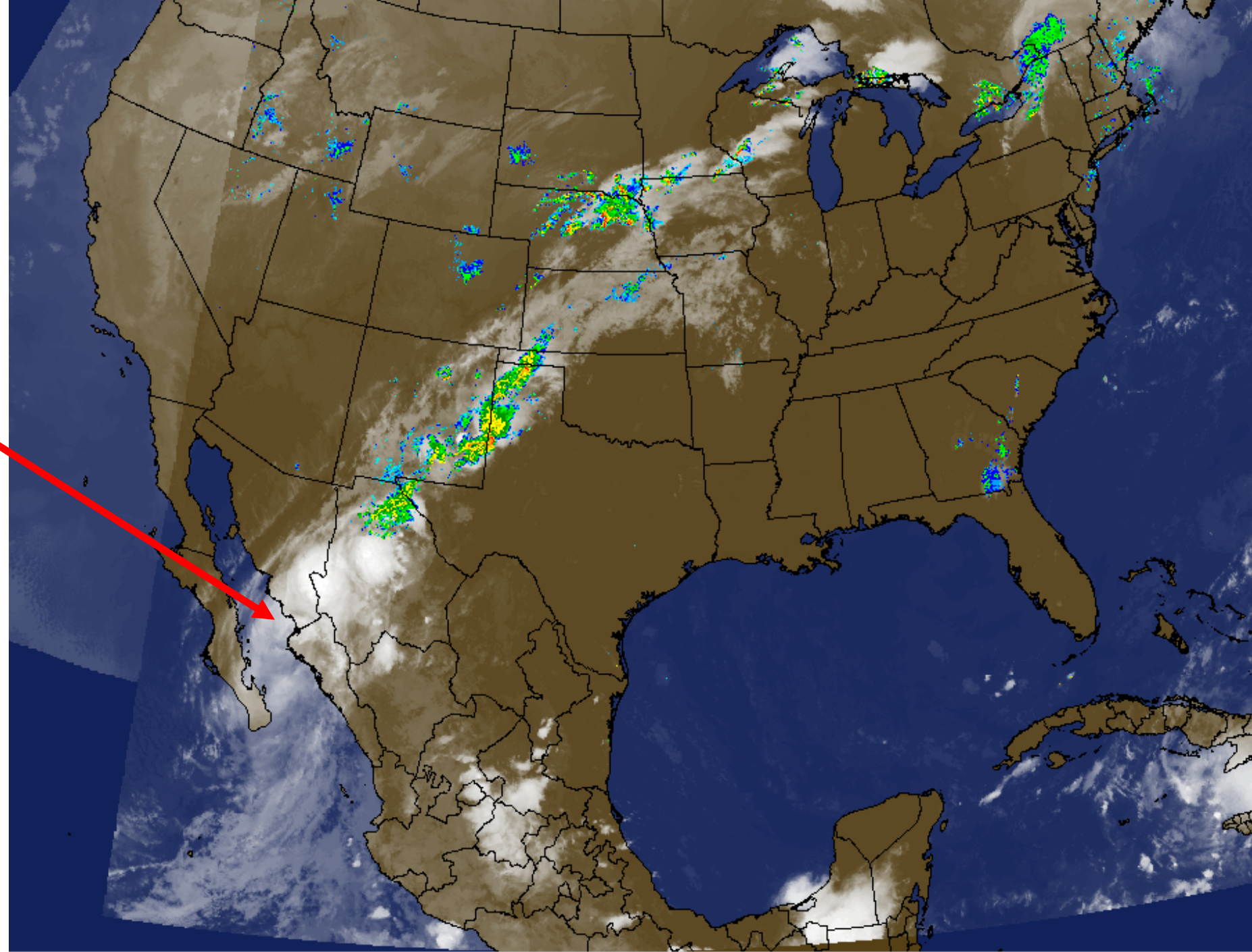
Monday Morning



1 Oct 2019/0330Z

Monday Evening

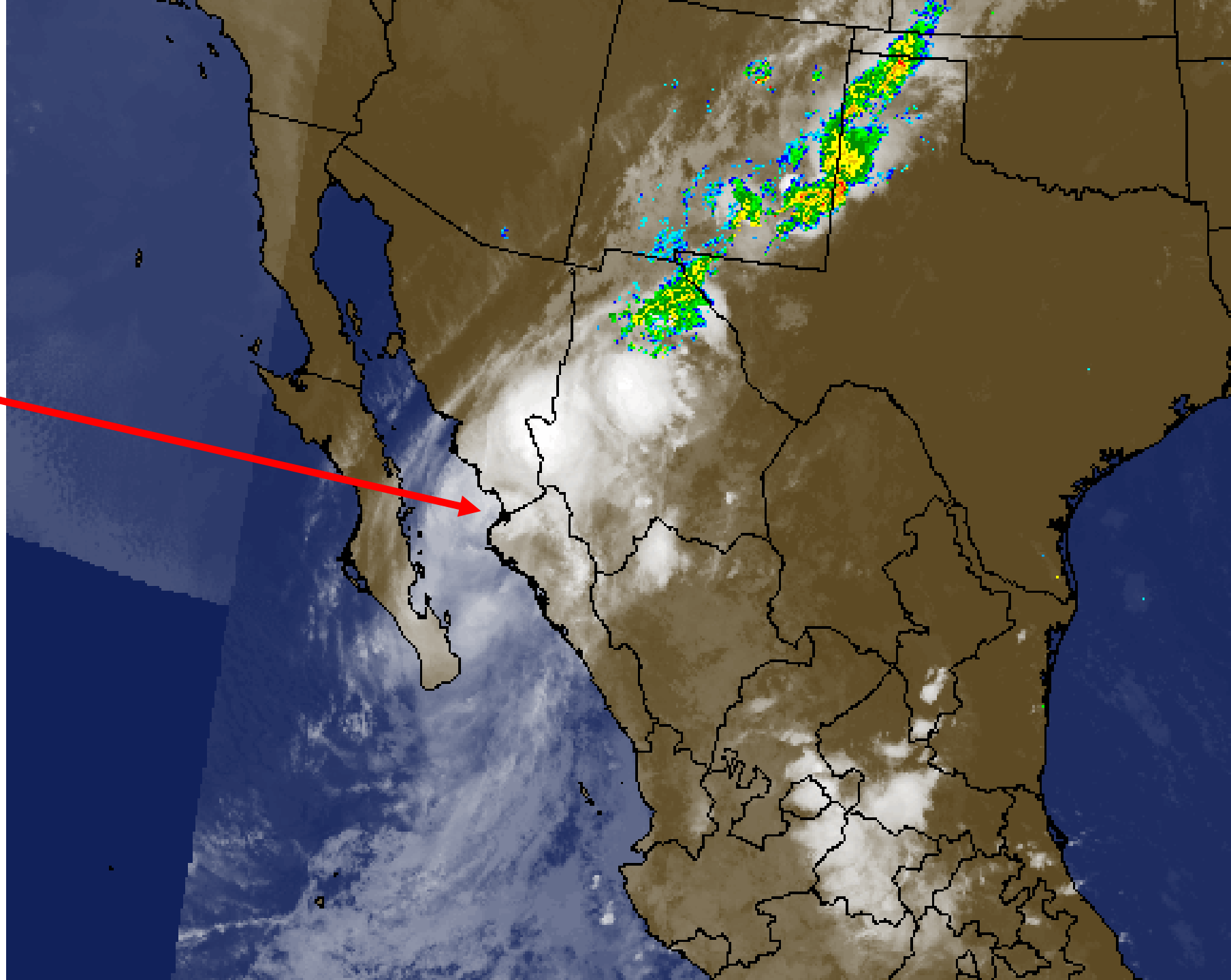
Passive microwave satellite imagery, especially a recent 2326 UTC SSMI/S pass, continue to show that a small mid-level eye feature has remained close to the northwestern coast of mainland Mexico since the previous advisory, with the center now located just inland near Los Mochis.



1 Oct 2019/0330Z

MONDAY Evening

Passive microwave satellite imagery, especially a recent 2326 UTC SSMI/S pass, continue to show that a small mid-level eye feature has remained close to the northwestern coast of mainland Mexico since the previous previous advisory, with the center now located just inland near Los Mochis.

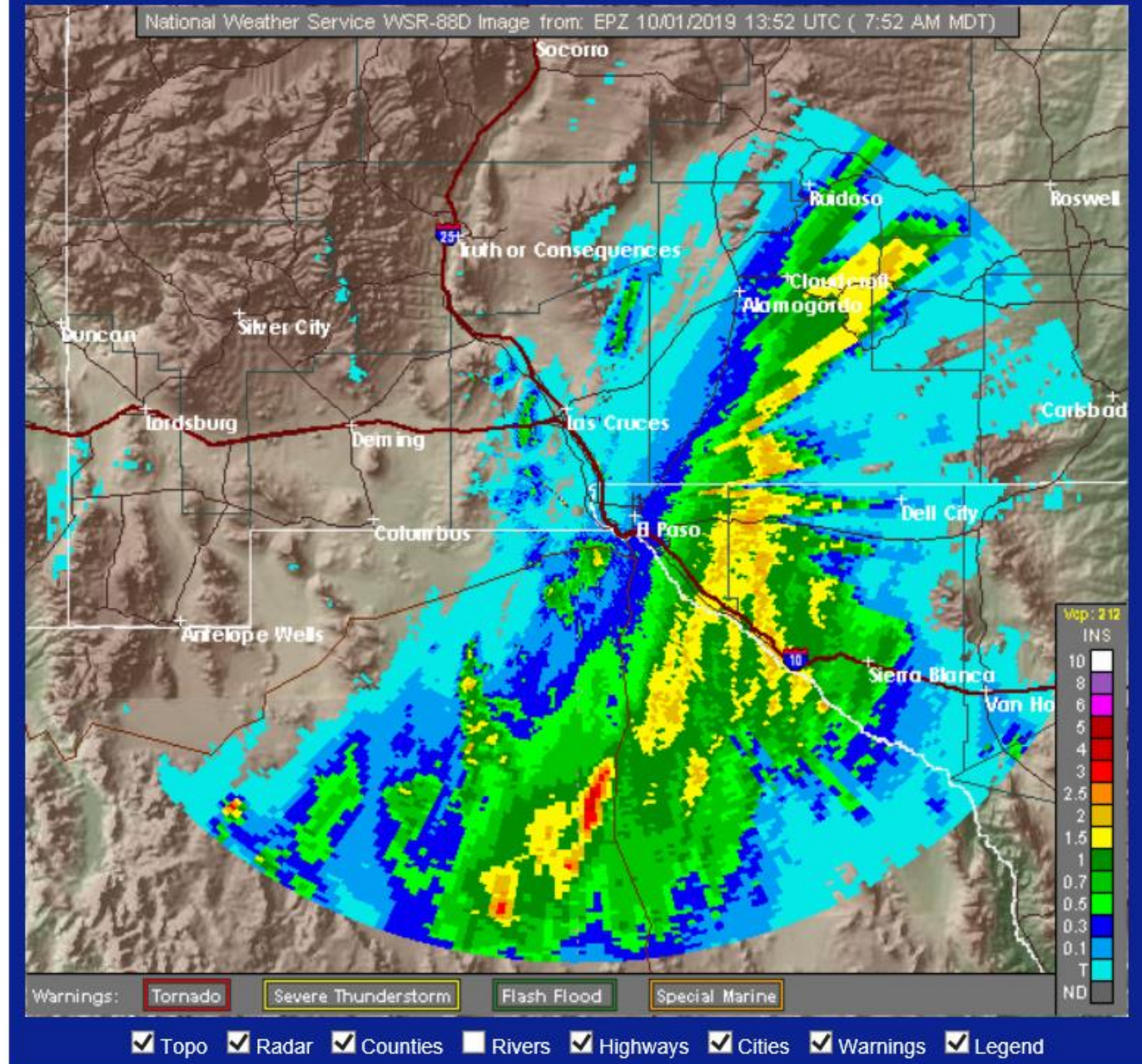


Storm Total Mon AM to Tuesday AM

NWS El Paso, TX

Storm Total Precipitation

Radar Precip Est From 07:24 AM MDT Mon Sep 30 2019
to 07:52 AM MDT Tue Oct 01 2019



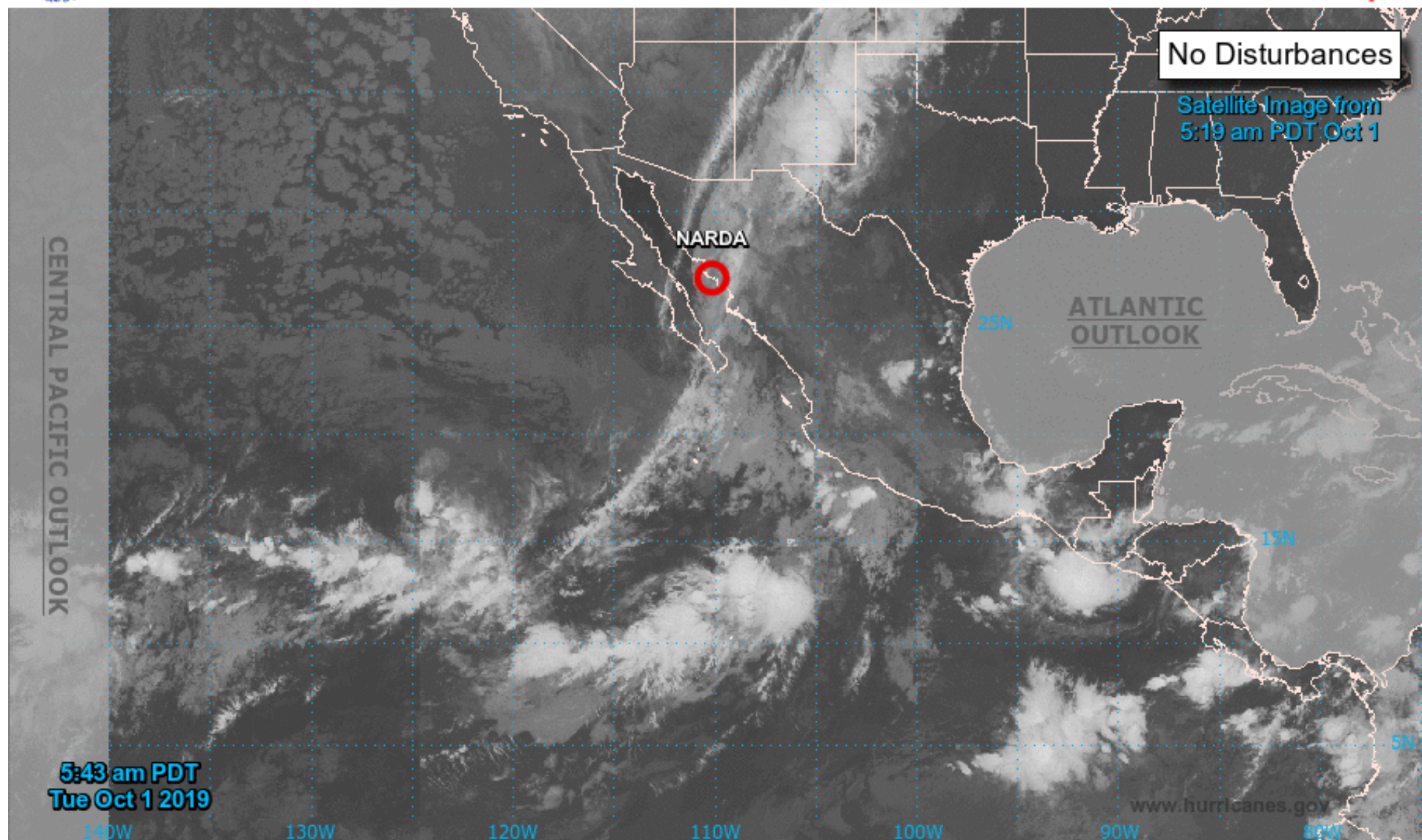
Satellite view
Tuesday, 1 Oct 2019
0543 Tuesday

Splendid example of
the ITCZ, Tropical
moisture feed to
TD Narda, and the
source of the precipitation
in west Texas and
New Mexico



Two-Day Graphical Tropical Weather Outlook

National Hurricane Center Miami, Florida



Current Disturbances and Two-Day Cyclone Formation Chance: < 40% 40-60% > 60%

Tropical or Sub-Tropical Cyclone: Depression Storm Hurricane

Post-Tropical Cyclone or Remnants



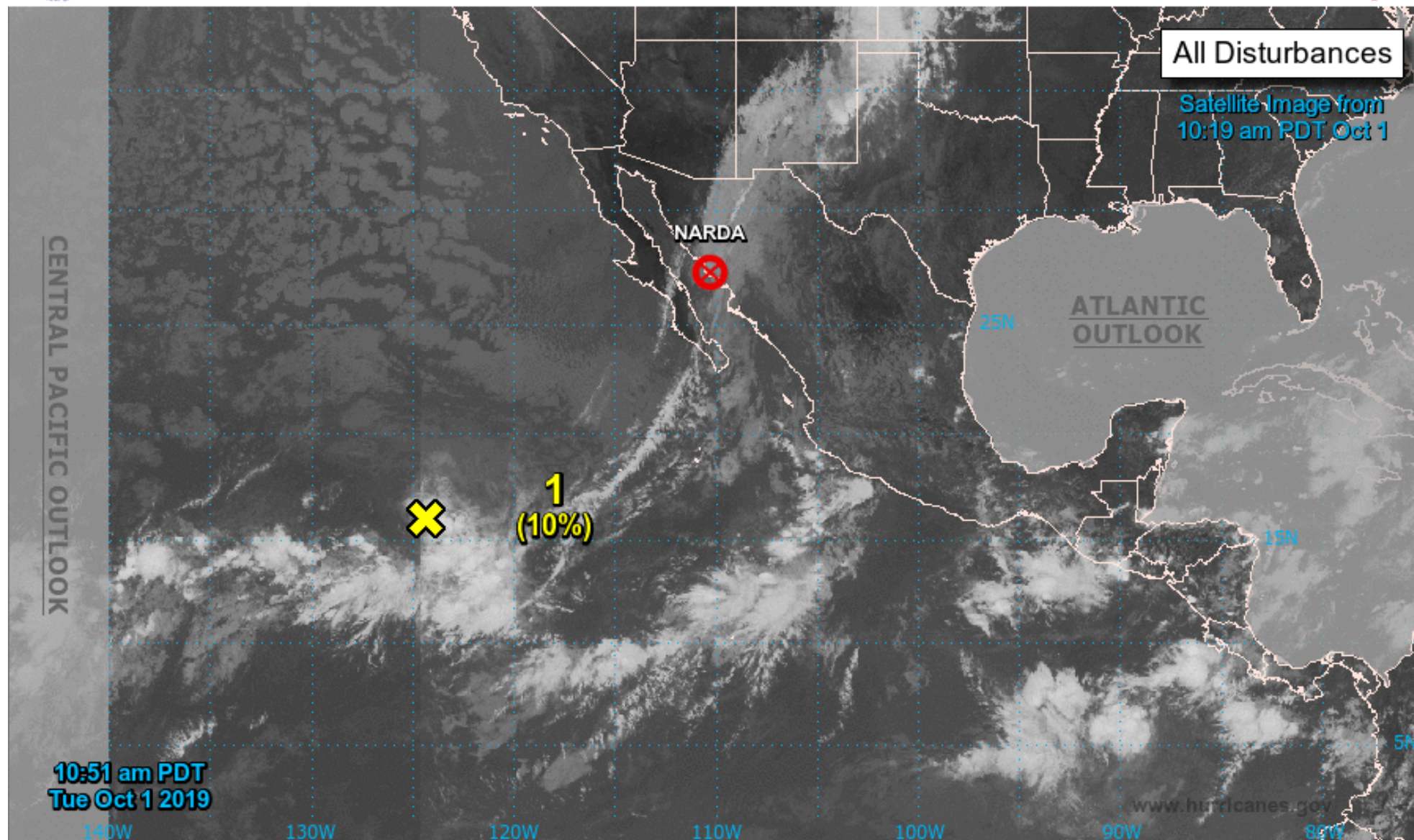
Two-Day Graphical Tropical Weather Outlook

National Hurricane Center Miami, Florida



In addition to showing the demise of Narda, this shot shows the direct connection between the ITCZ and us in the middle latitudes.

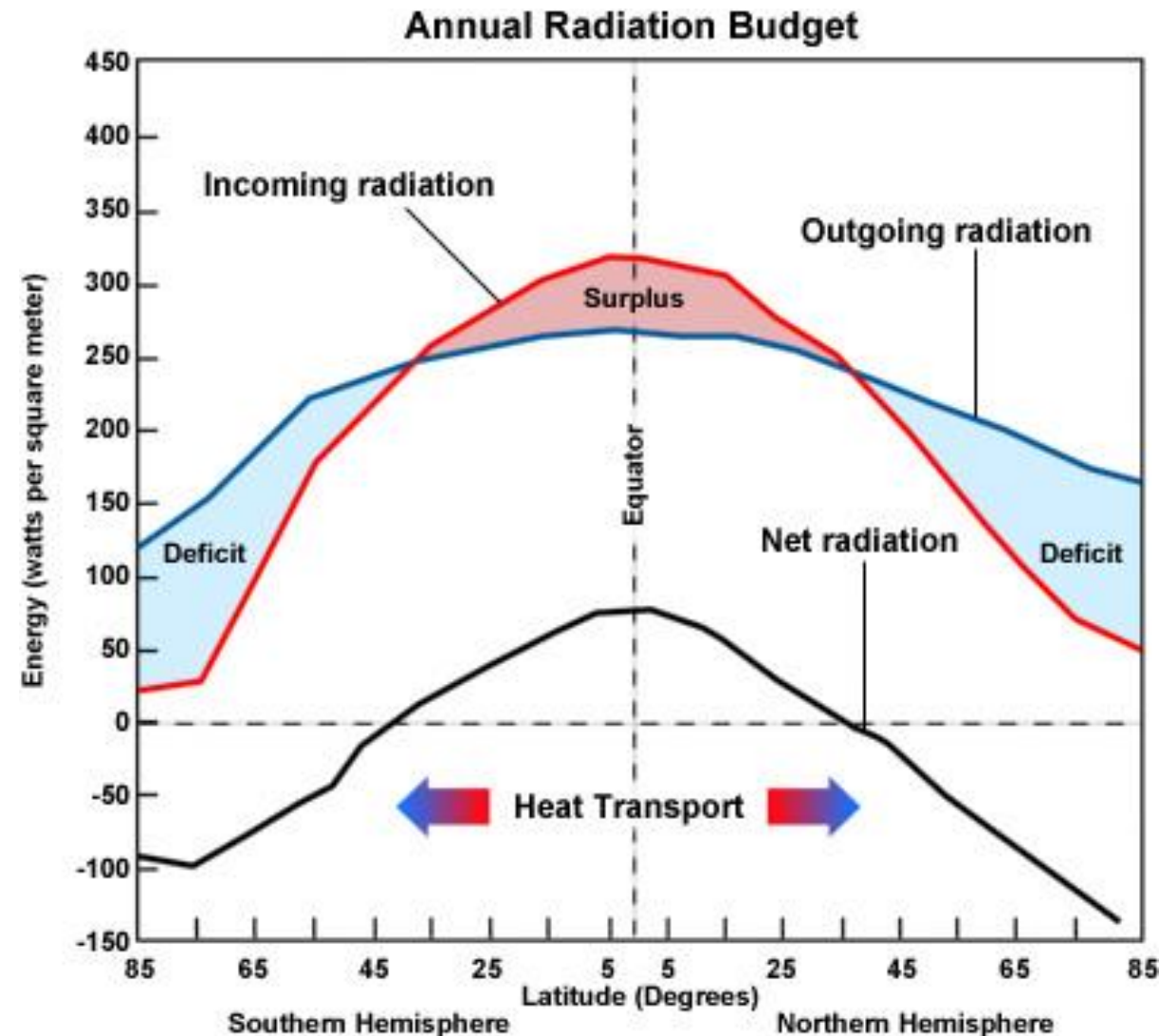
We earlier discussed that storms export heat from the tropics but the climate system also exports moisture and momentum from Tropics to the Middle Latitudes



Current Disturbances and Two-Day Cyclone Formation Chance: < 40% 40-60% > 60%

Tropical or Sub-Tropical Cyclone: Depression Storm Hurricane

Post-Tropical Cyclone or Remnants



Incoming radiation, (insolation), and outgoing radiation vary with latitude. Tropics receive more solar radiation than they emit, creating an energy surplus. Polar regions emit more than they receive. Imbalance causes storms. A Cooler Planet is stormier. Warmer Planet has fewer strong storms.



Note: The cone contains the probable path of the storm center but does not show the size of the storm. Hazardous conditions can occur outside of the cone.

30N

Remnants Of Narda dissipated at 9 AM MDT October 01, 2019



9 AM Tue

25N

115W

110W

105W

Remnants Of Narda

Tuesday October 01, 2019

Current information: x

Center location 27.3 N 110.3 W

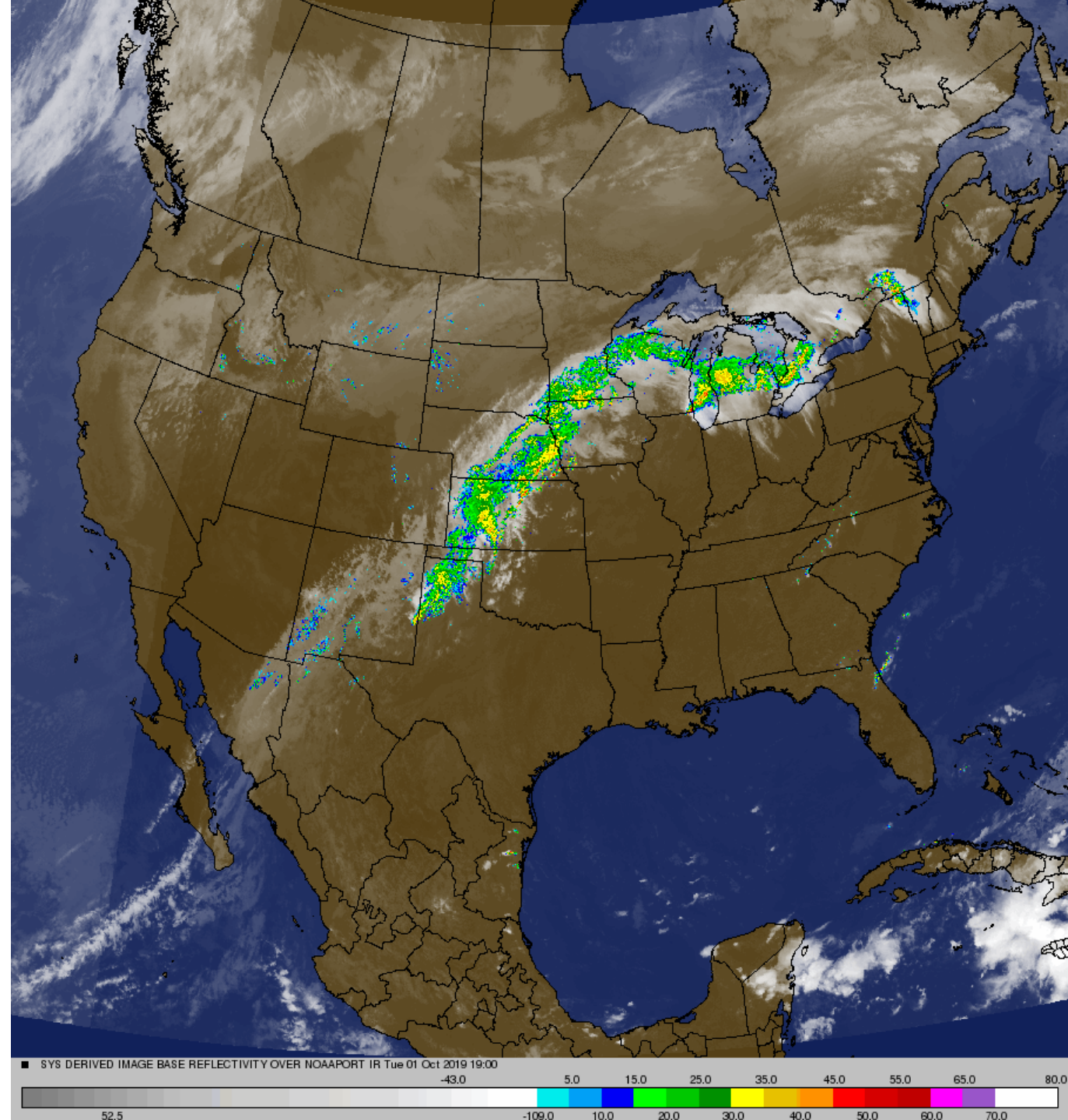
Forecast positions:

● Tropical Cyclone ○ Post/Potential TC

Satellite Radar Composite

1 Oct 2019 1900Z

Tuesday Mid Day



El Paso Radar

1 Oct 2019 1445L

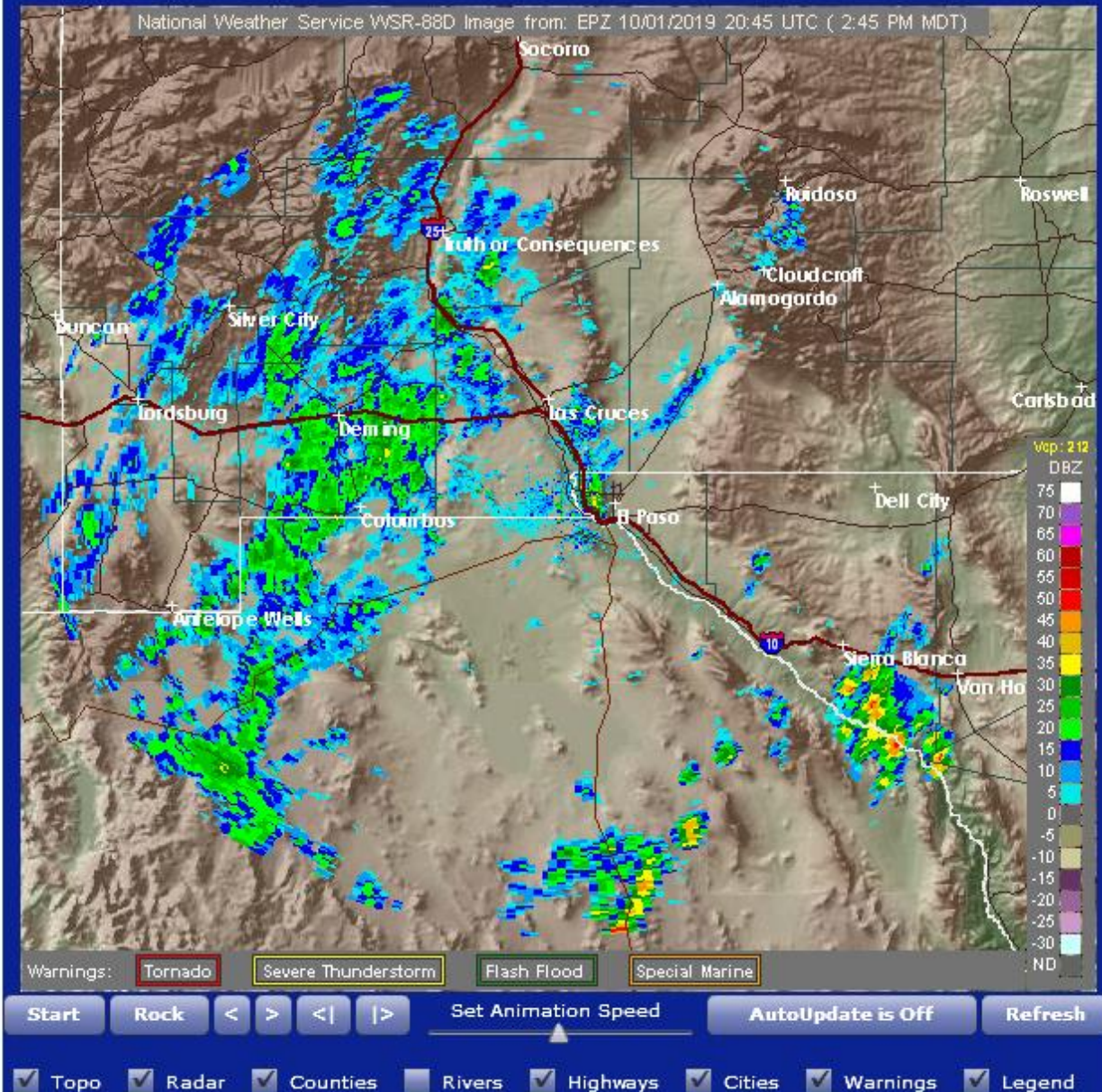
Tuesday PM

Stratiform clouds yielding little rainfall

NWS El Paso, TX

Composite Reflectivity

02:45 PM MDT Tue Oct 01 2...



KEPZ 1 Oct 2019/1200Z

Tuesday AM Sounding

Sounding Saturated 590 mb up to 280 mb

$P_w = 3.96 \text{ cm} = 1.55 \text{ in}$

Yet no rain. Stratiform clouds

Saturated Sounding follows Saturated Adiabats

Midsummer this would be a thunderstorm day

Overcast night; no surface inversion of temperature

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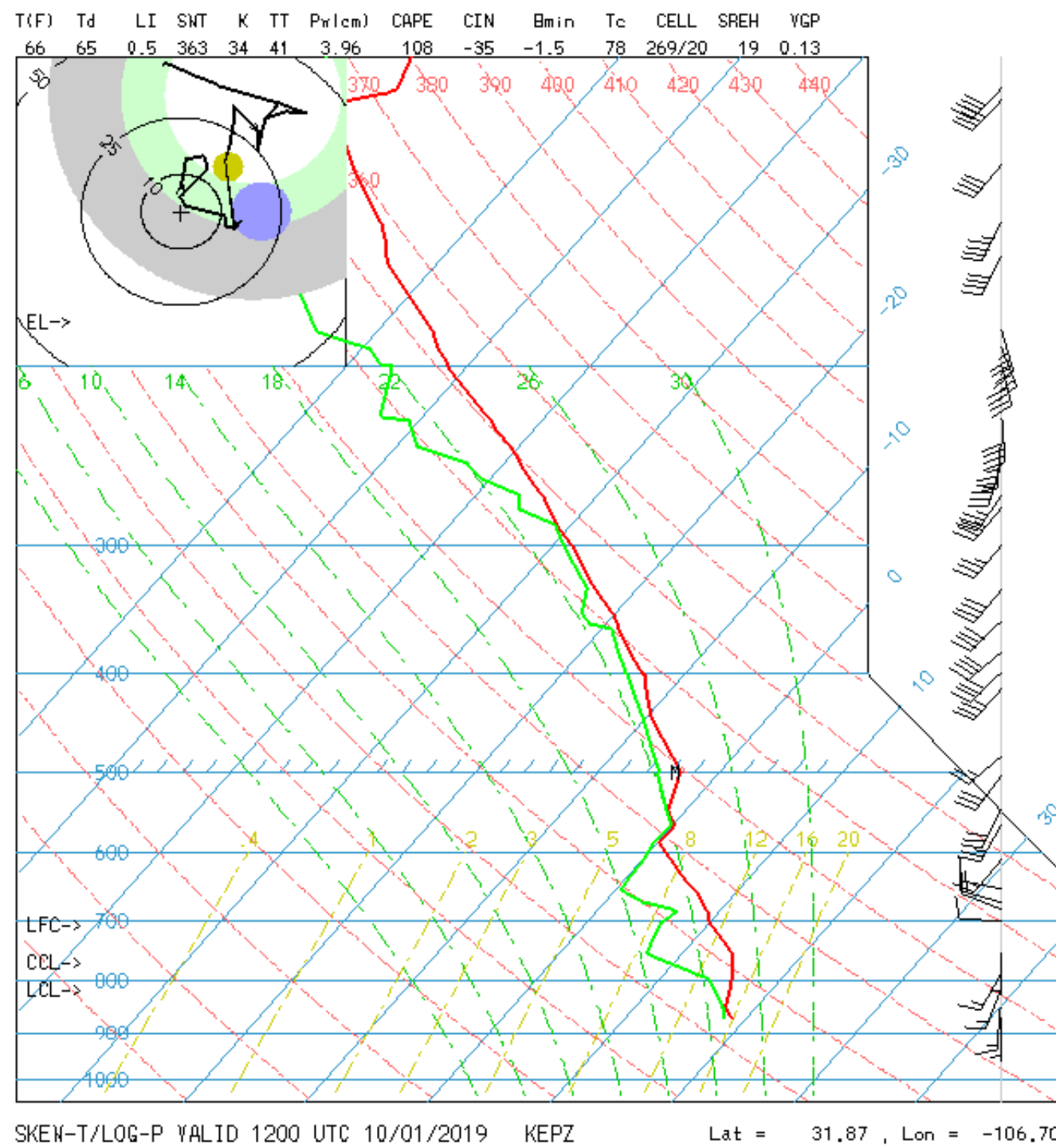
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Visible Satellite Image

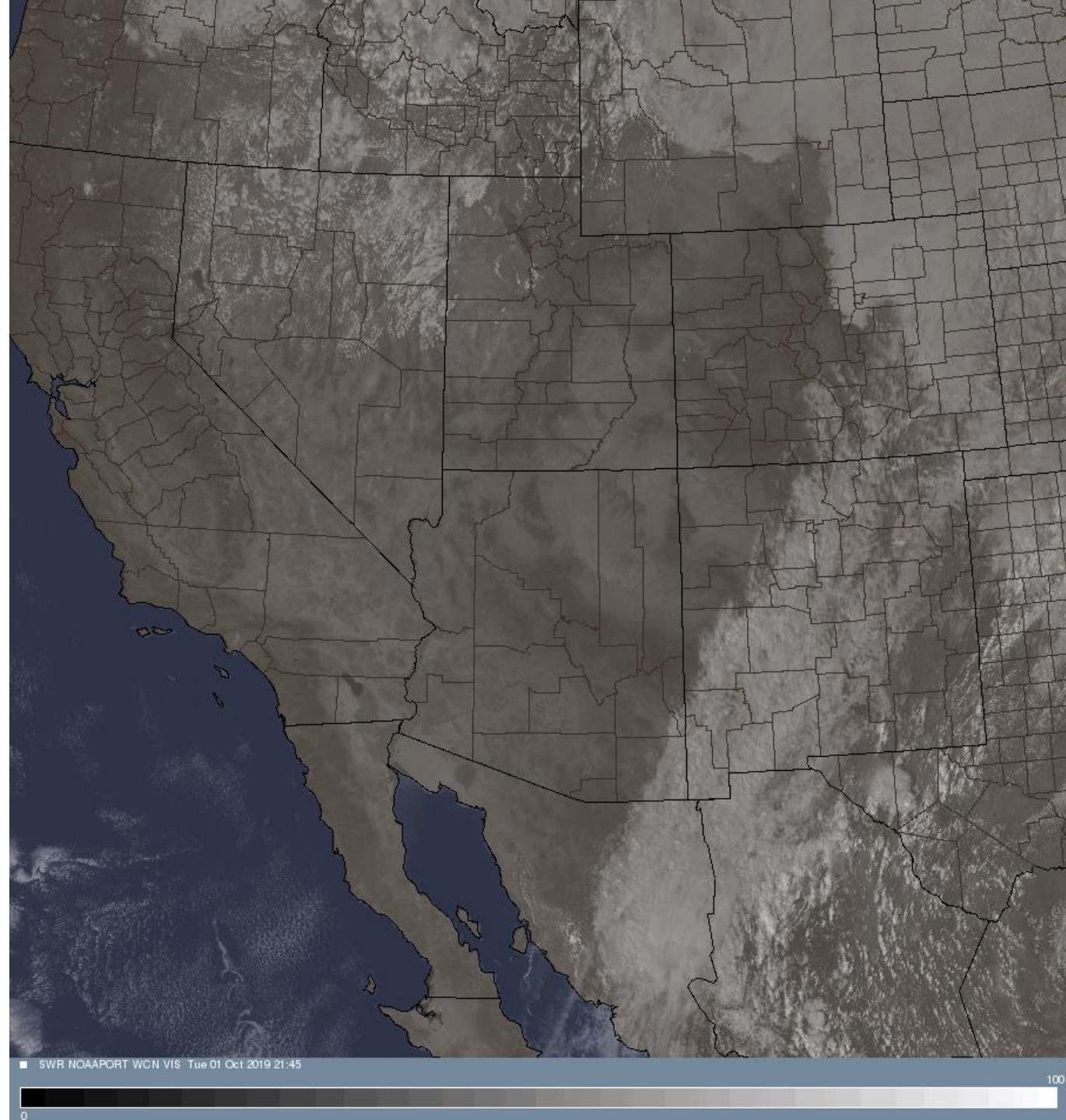
1 Oct 2019/2145Z

Tuesday PM 1545L

Stratiform Clouds NM

Cumuliform Clouds
TX Panhandle

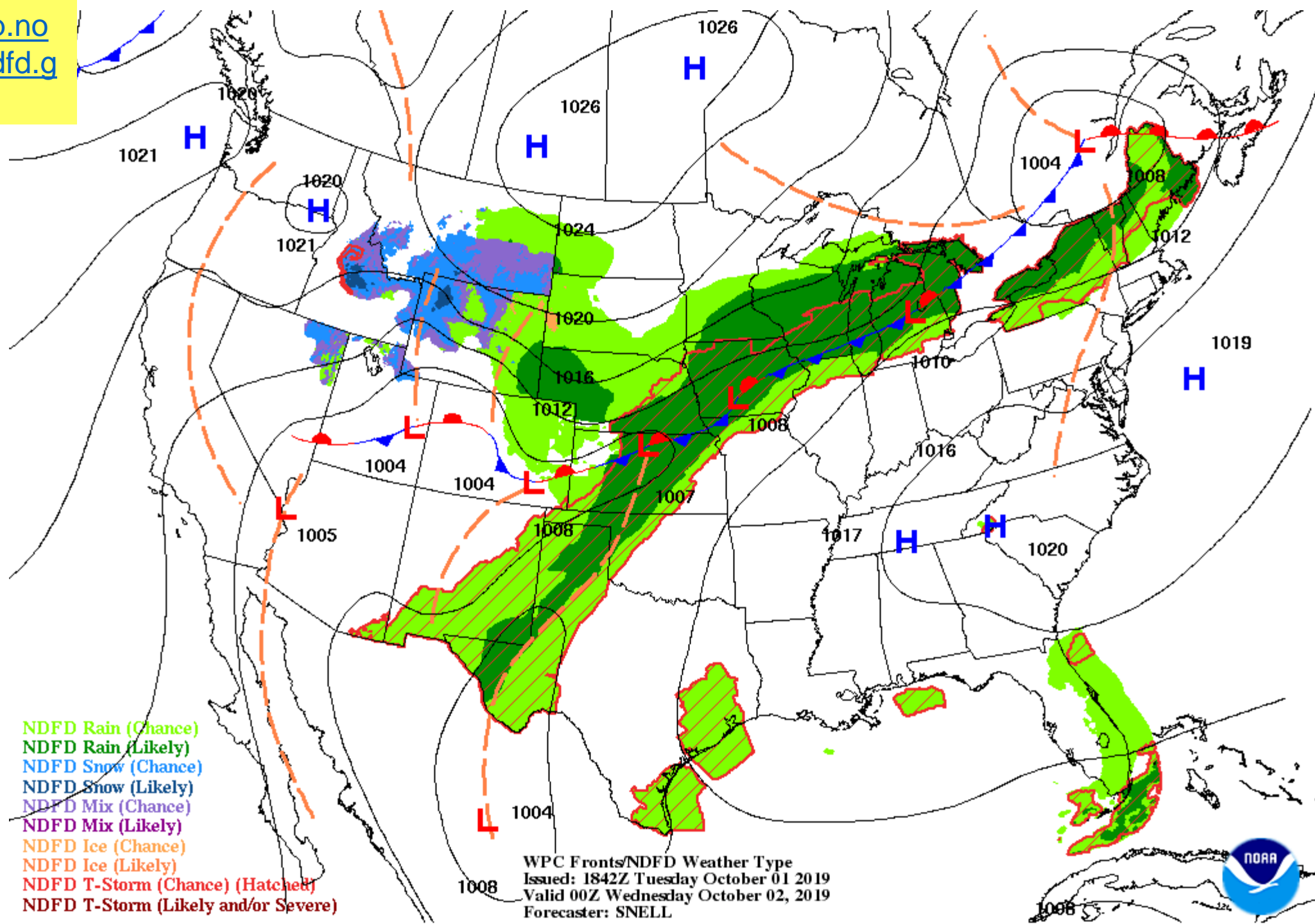
Upslope clouds in cold
air CO, WYO



<https://www.wpc.ncep.noaa.gov/basicwx/92fndfd.gif>

Sfc Forecast VT
2 Oct 2019 0000Z

Tues PM



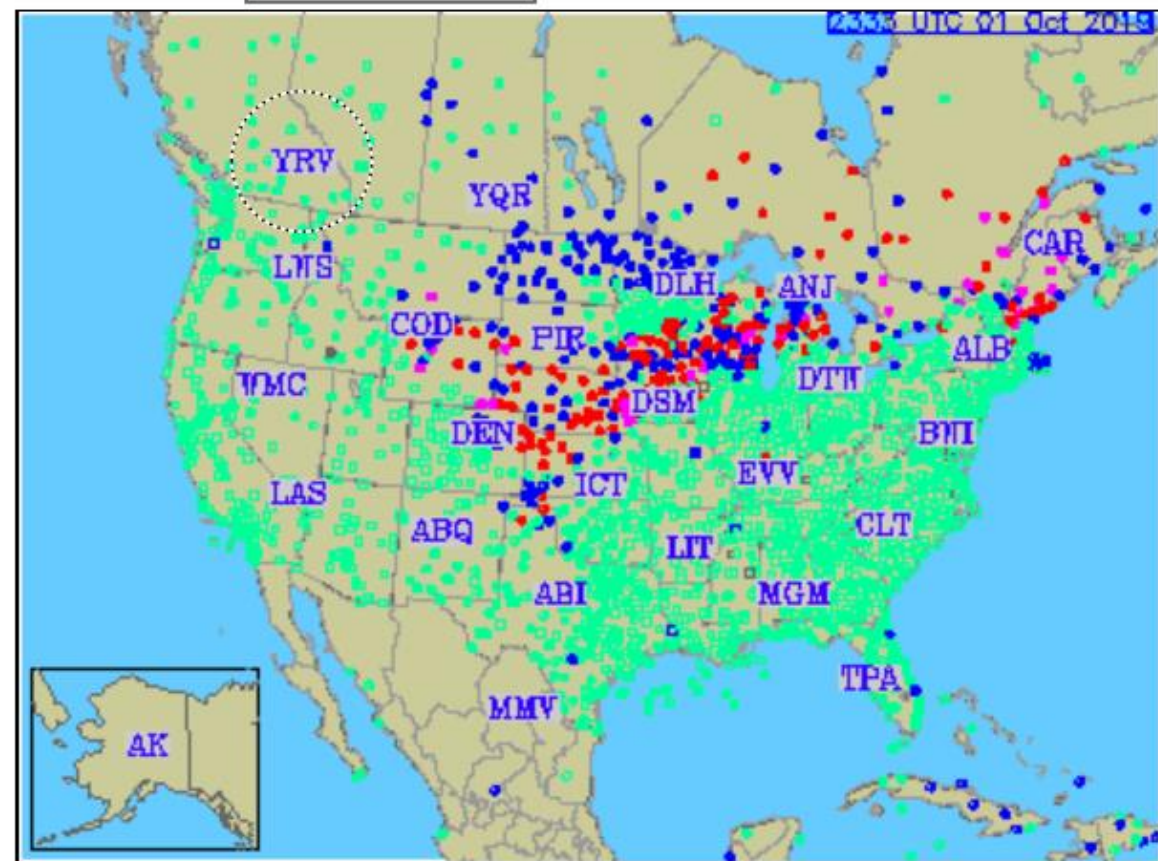
<http://weather.rap.ucar.edu/surface/>



End date: Today ▼

End time: Most recent ▼

Loop duration: Single image ▼



http://weather.rap.ucar.edu/surface/2019100123_metars_den.gif

DWX Dixon Wyoming Clear, 20+Mi.
65F Winds 270/03

CYS Cheyenne 200 OVC 1 Drizzle, Fog
T43 Td 41 Winds 070/10

