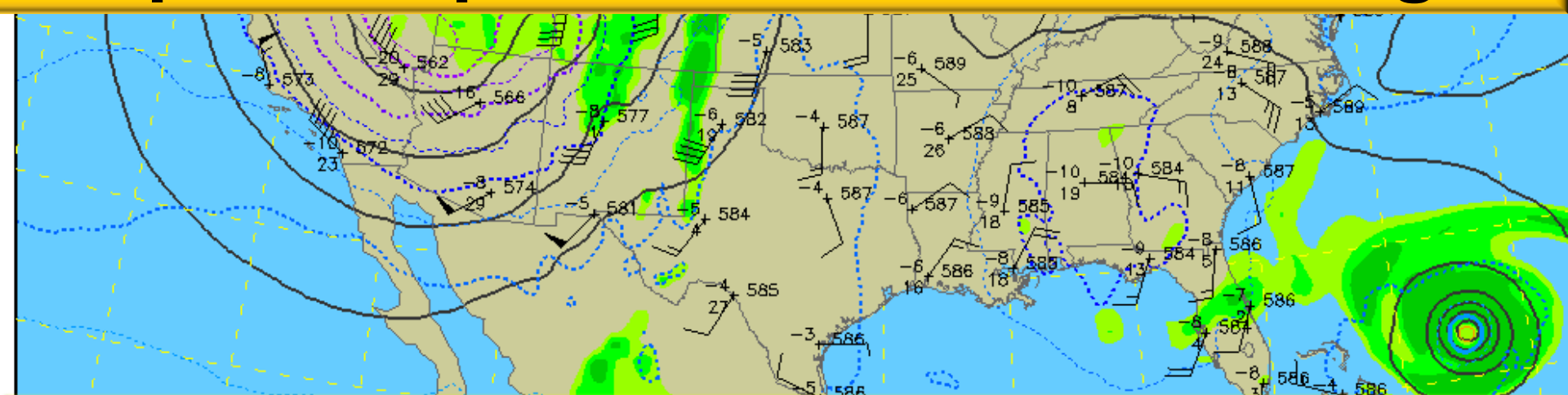


Weather, Climate, and Climate Change...

What the Data Say

Up to the present...Weather Briefing



Bob Endlich

bendlich@msn.com

27 September 2017

<http://casf.diskstation.me/wordpress/>

Apologies for web page Technical Difficulties.

48 years ago today

WC-130 Cloud Seeding in SEA

Udorn RTAFB & Tan Son Nhut AB 8 Mos



Flight Ops, Udorn, Thailand



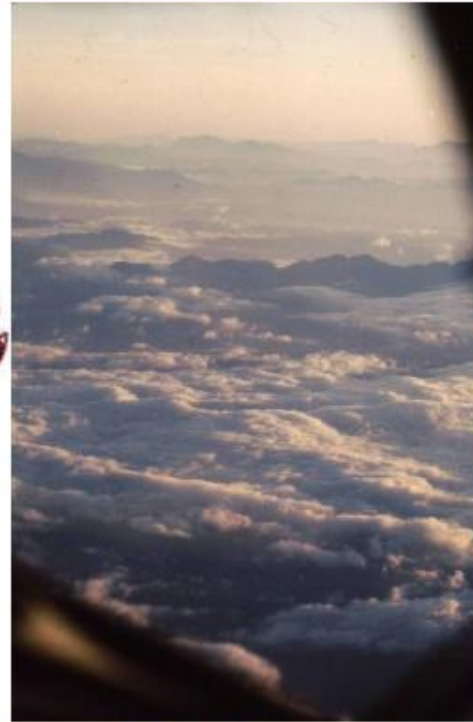
Staff Weather Officer Analysis Team, Tan Son Nhut AB, Vietnam



WC-130A Cloud Seeding in SEA

Udorn RTAFB & Tan Son Nhut AB

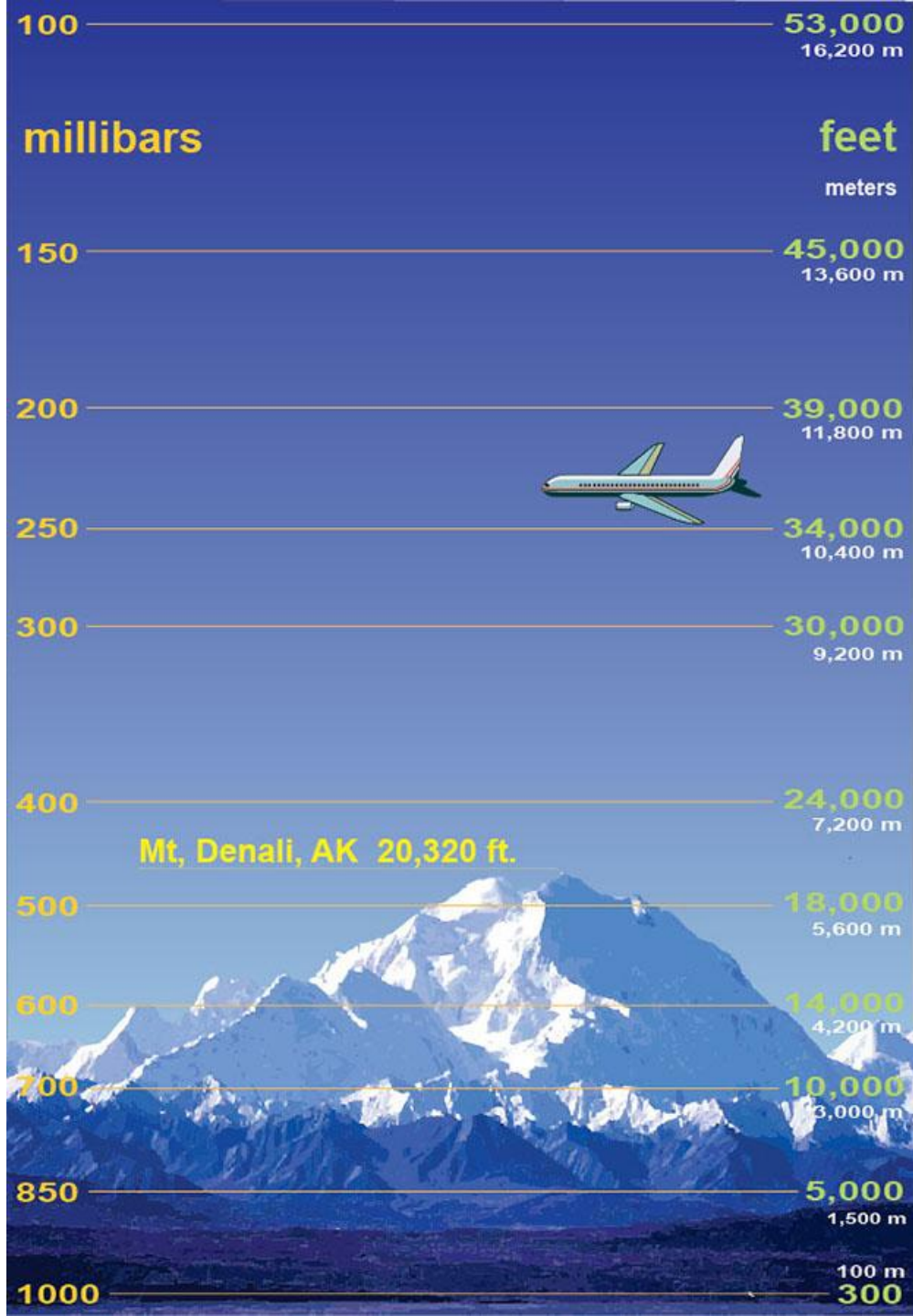
8 Mos

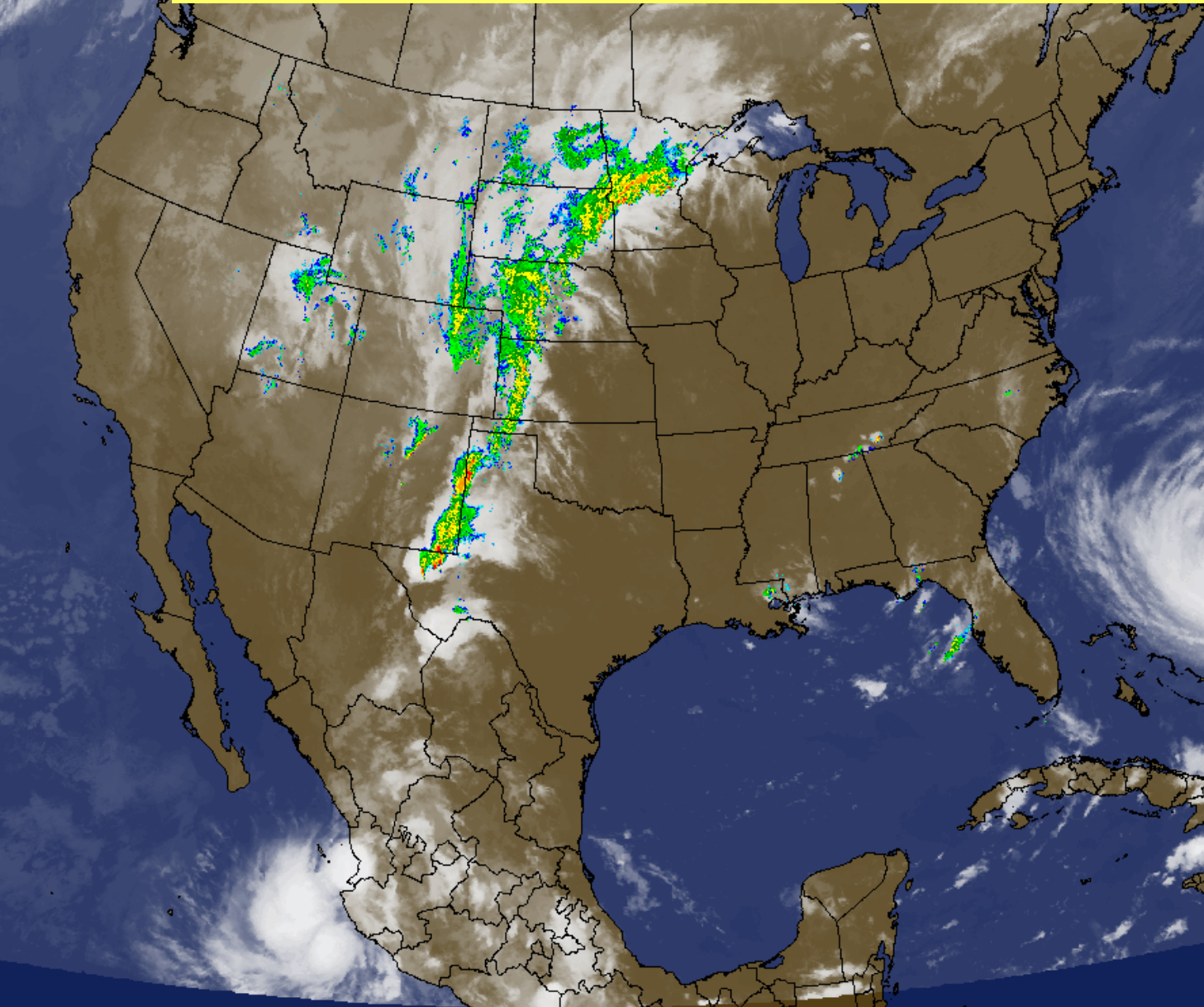


Flight Ops, Udorn, Thailand



http://www.srh.noaa.gov/jetstream//atmos/images/mb_heights.jpg





Jose' Remnants

Maria:
Cat 2 Hurricane

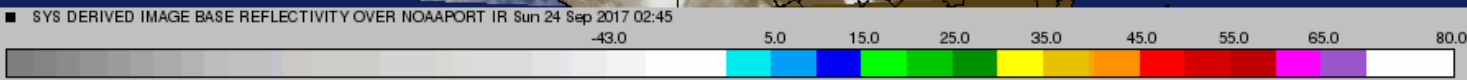
Squall Line

Cold Front

Cold Air cumulus
Colorado Plateau
Utah

Warm Air:
Grand Canyon,
San Andreas Fault
trace

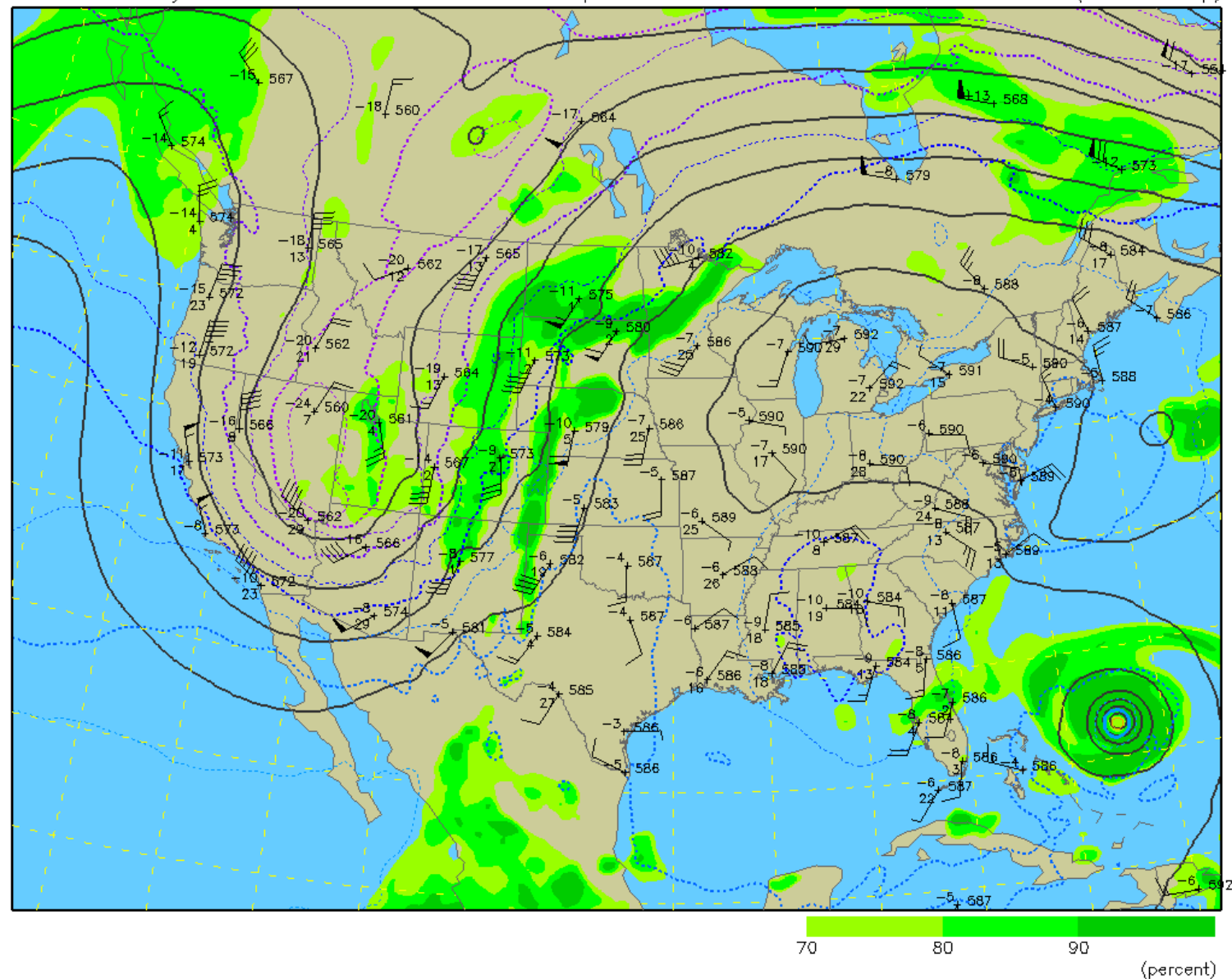
Tropical Storm
developing off
Puerta Vallarta



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

0-hour analysis valid 0000 UTC Sun 24 Sep 2017

RAP (00z 24 Sep)





NCAR RAL Real-Time Weather Data

Home / RAL :

[Weather Home](#)

[Satellite](#)

[Radar](#)

[Surface](#)

[Upper-Air](#)

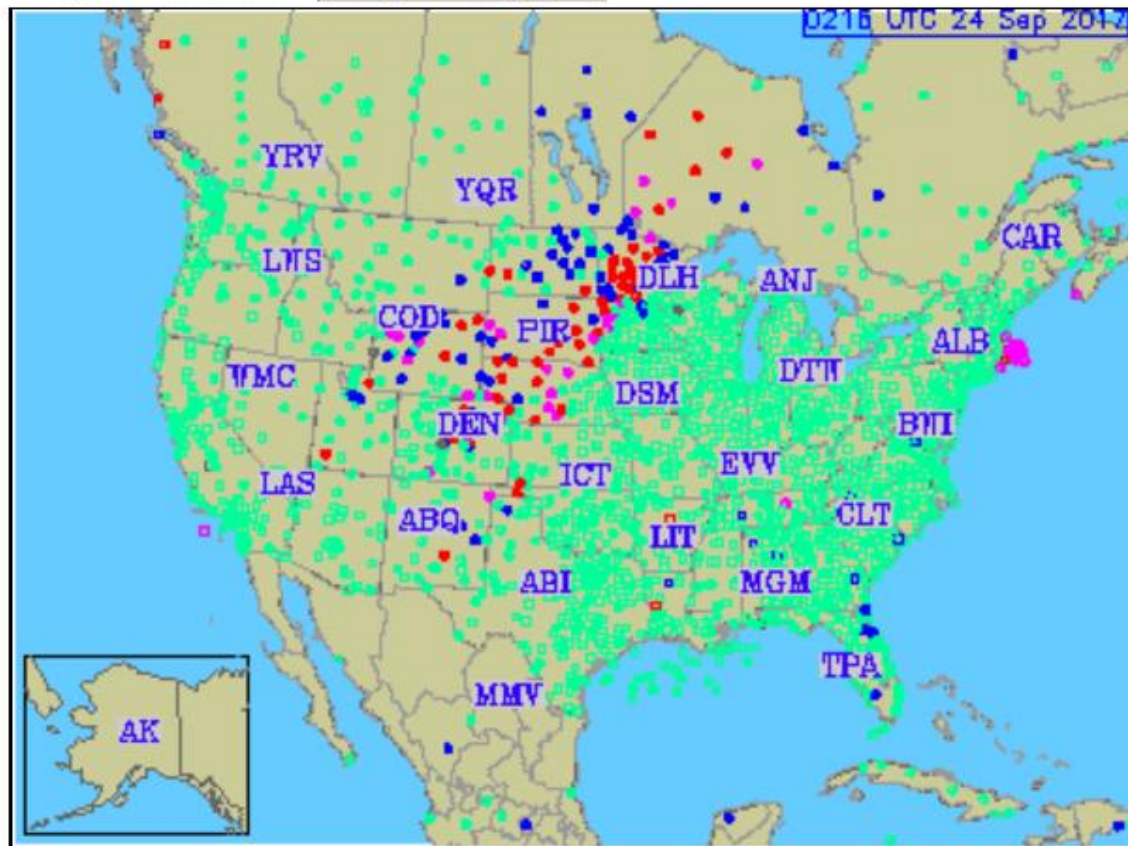
[Forecast](#)

End date:

End time:

Loop duration:

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





NCAR RAL Real-Time Weather Data

Home / RAL :

[Weather Home](#)

[Satellite](#)

[Radar](#)

[Surface](#)

[Upper-Air](#)

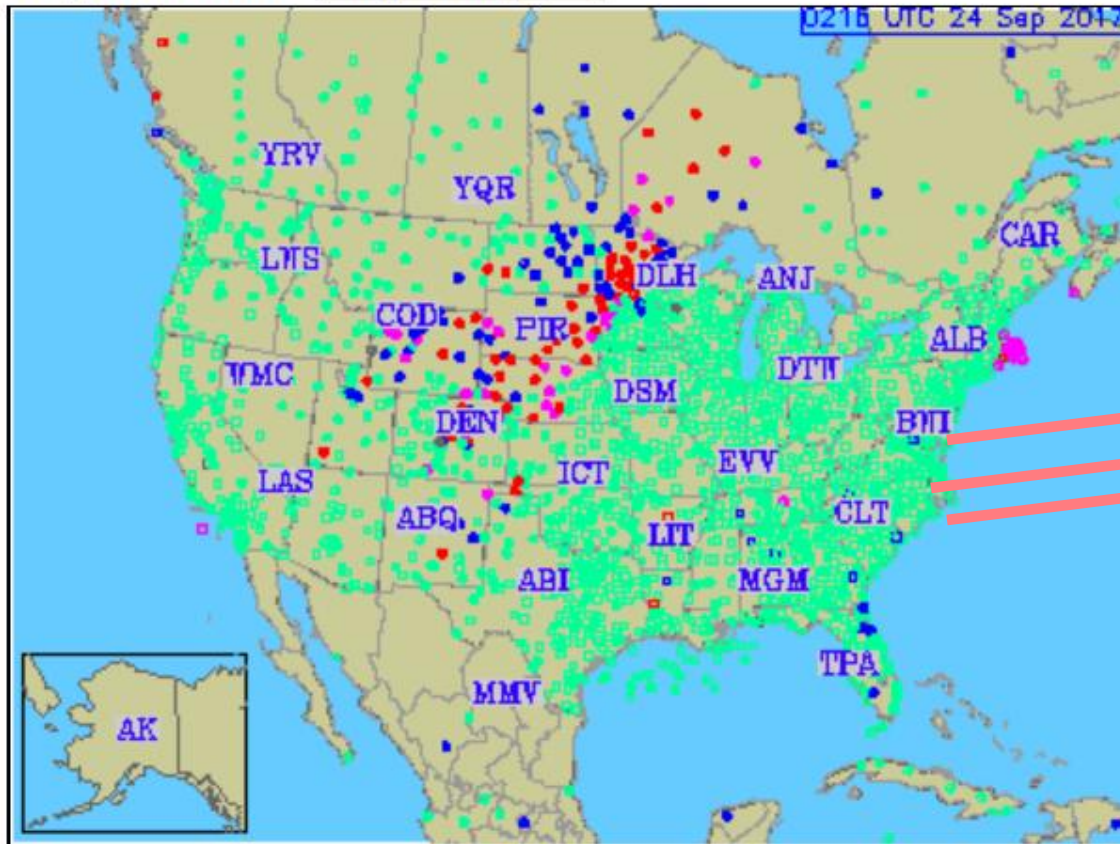
[Forecast](#)

End date:

End time:

Loop duration:

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



Text observations

Retrieve text format METARs:
See [stations.txt](#) for a list of stations.

Enter 4-letter ICAO id(s):

☒ Raw ☐ Translated

Contour maps

- Temperature
- Moisture (dewpoint)
- Winds/Sea-Level Pressure
- 4-panel plot
- Theta-E

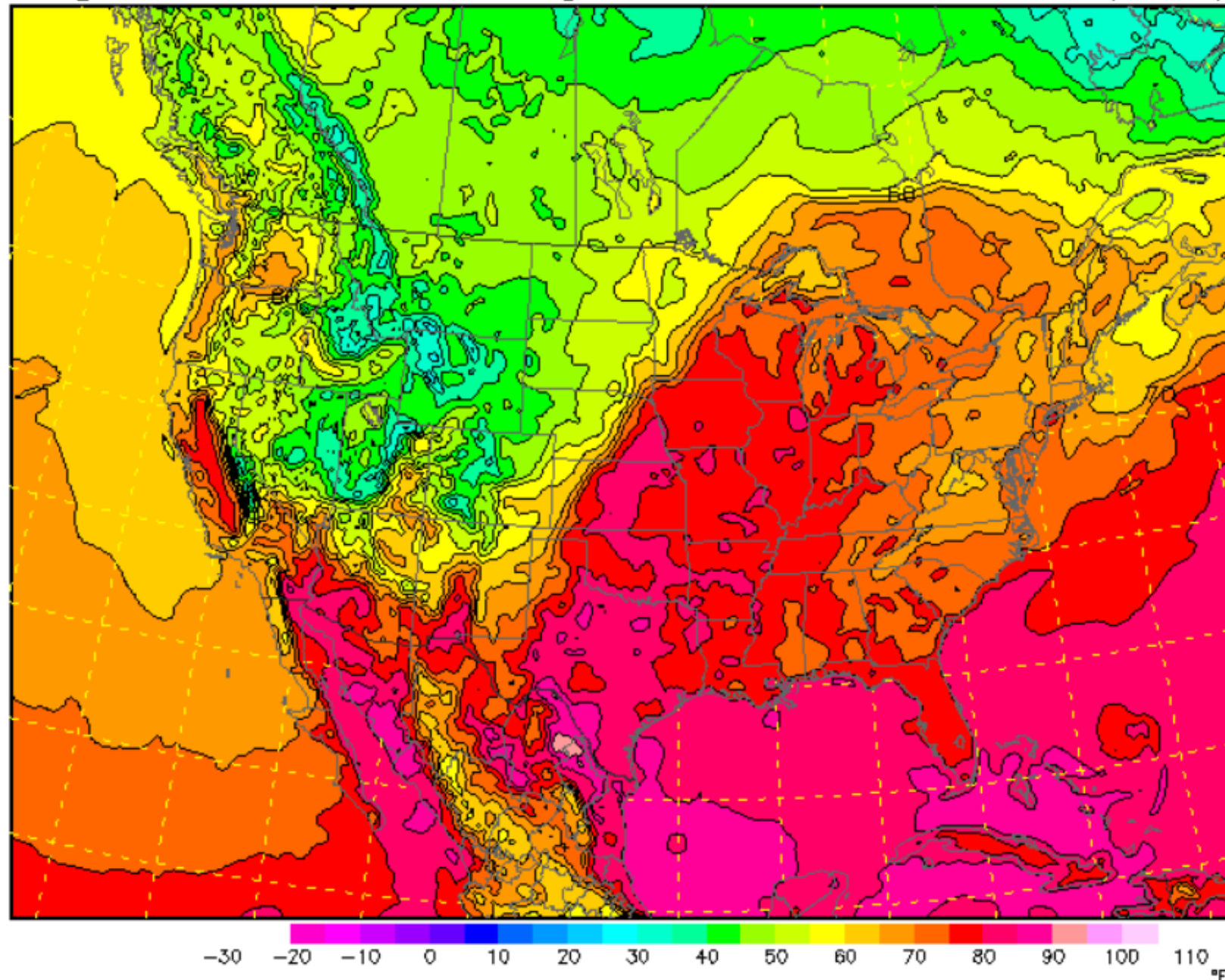
- 24-hour Precipitation
- U.S. Snow Depth (Air Force)
- N. Hemi Snow Depth (Air Force)
- U.S. Snow Cover (NOAA-NESDIS)
- N. Hemi Snow Cover (NOAA-NESDIS)

Local Weather

Temperature (°F)

Analysis valid 0100 UTC Sun 24 Sep 2017

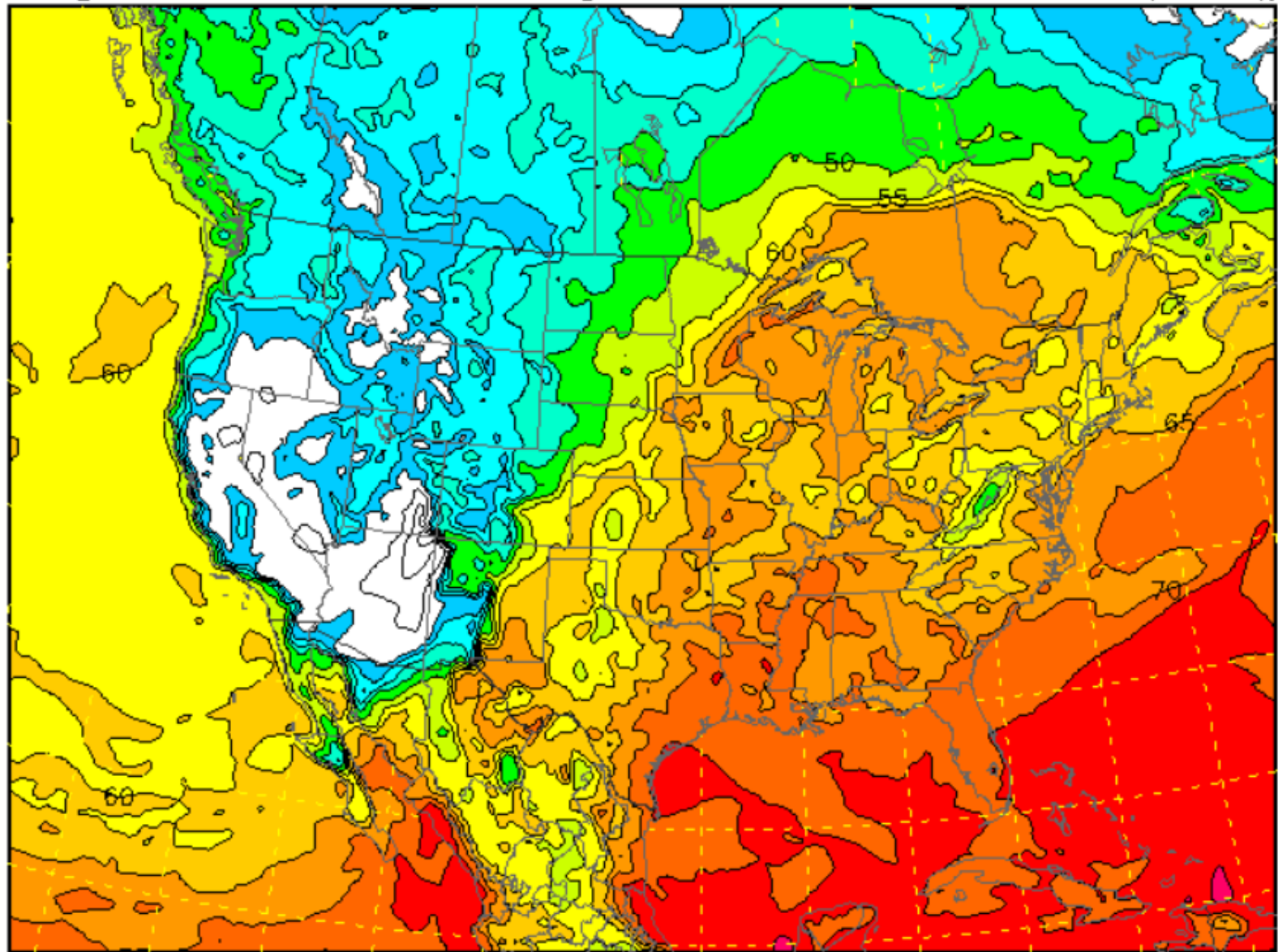
RAP (01z 24 Sep)



Dewpoint Temperature (°F)

Analysis valid 0100 UTC Sun 24 Sep 2017

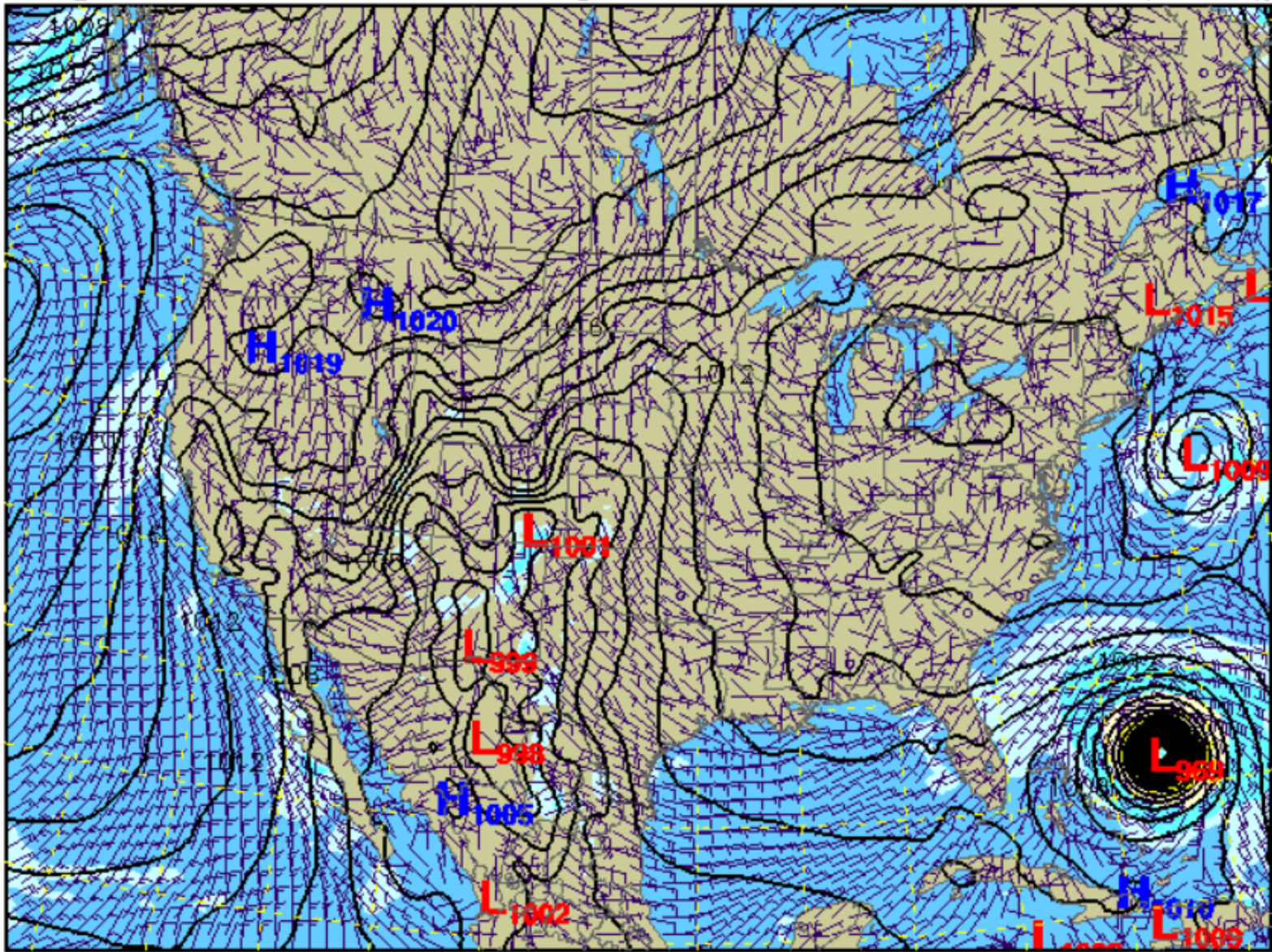
RAP (01z 24 Sep)



Wind Speed (knots) / MSLP (mb)

Analysis valid 0100 UTC Sun 24 Sep 2017

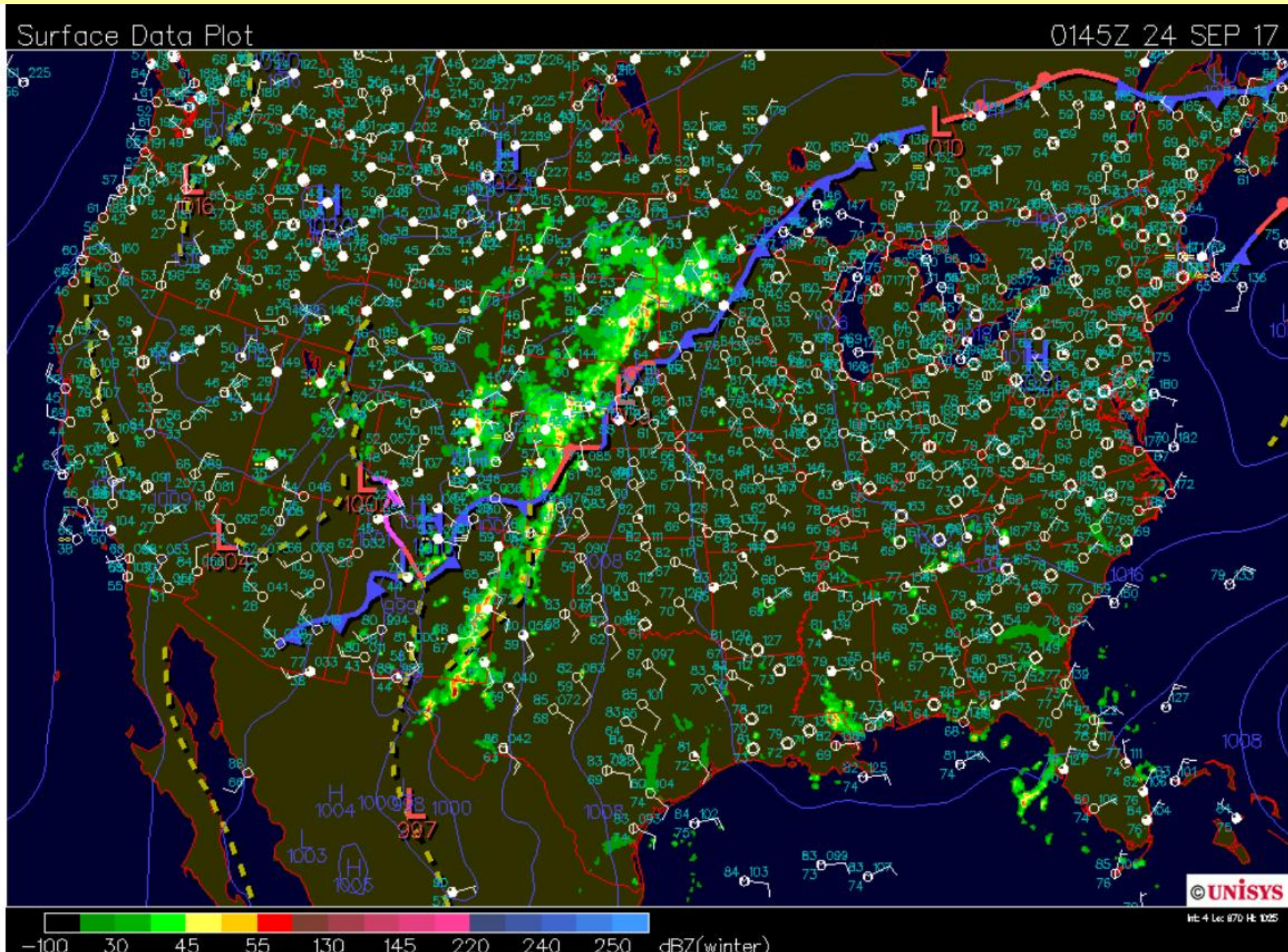
RAP (01z 24 Sep)

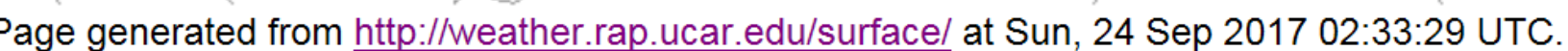


Jose'
remnant

Maria
100 Kt
115 MPH







Adjacent Radars:



- Short Range Images
- Reflectivity:

Composite

Loop
- Base

Loop
- Velocity:

Storm

Loop
- Relative

Base

Loop
- Rainfall:

1-Hour

Loop
- Total

Storm

Loop
- Total

Storm

Loop
- Long Range Images
- Reflectivity:

Base

Loop
- U.S. Views
- Reflectivity:

National

Loop
- Alaska

Loop
- Hawaii

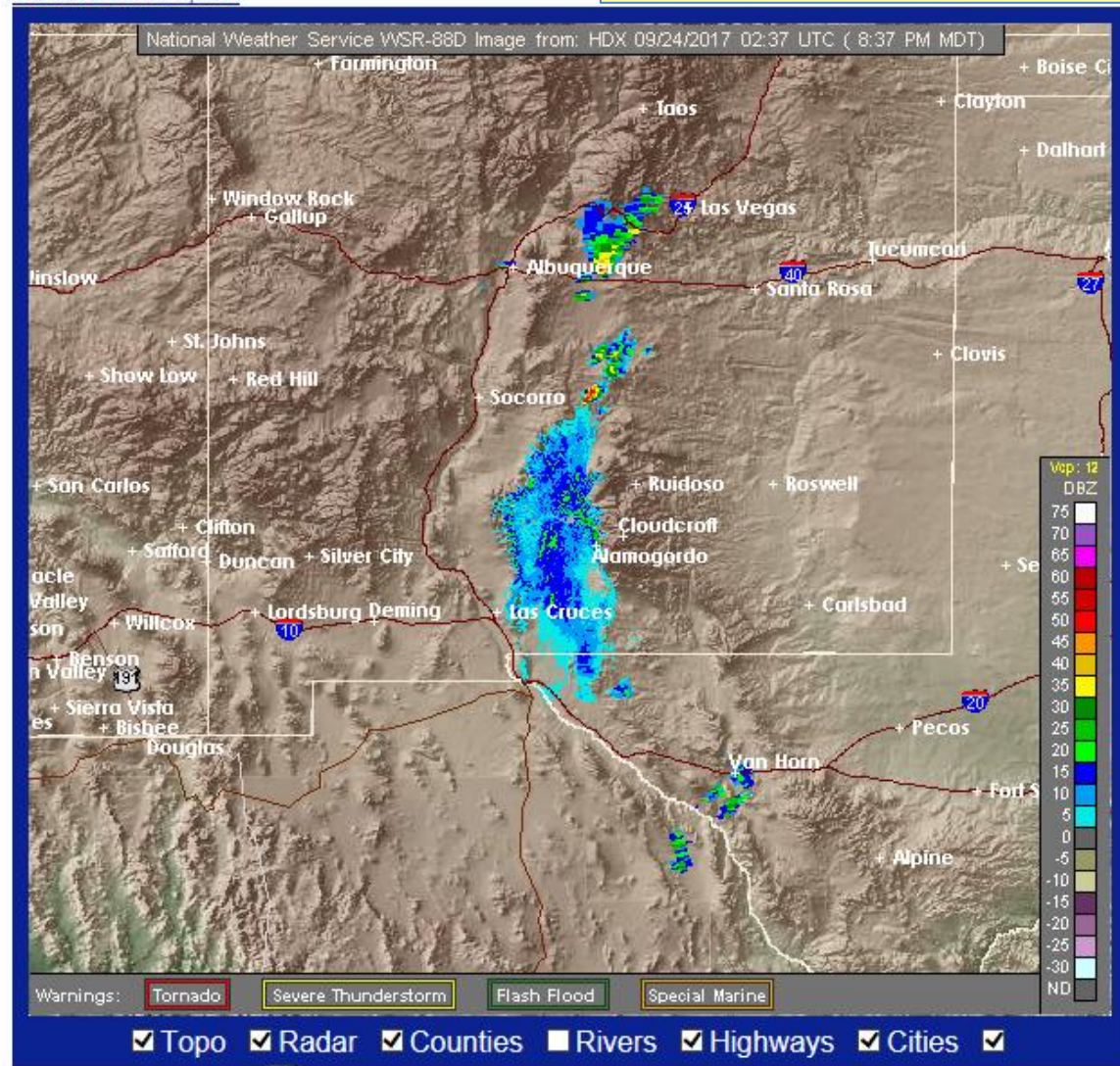
Loop
- Guam

Loop
-

Long Range Base Refl

<https://radar.weather.gov/ridge/radar.php?rid=hdx&product=N0Z&overlay=11101111&loop=no>

NWS El Paso, TX



Saturday evening

Adjacent Radars:



Short Range Images
Reflectivity:
Composite
Base Loop

Velocity:
Storm
Relative Base Loop

Rainfall:
1-Hour
Total Storm Total Loop

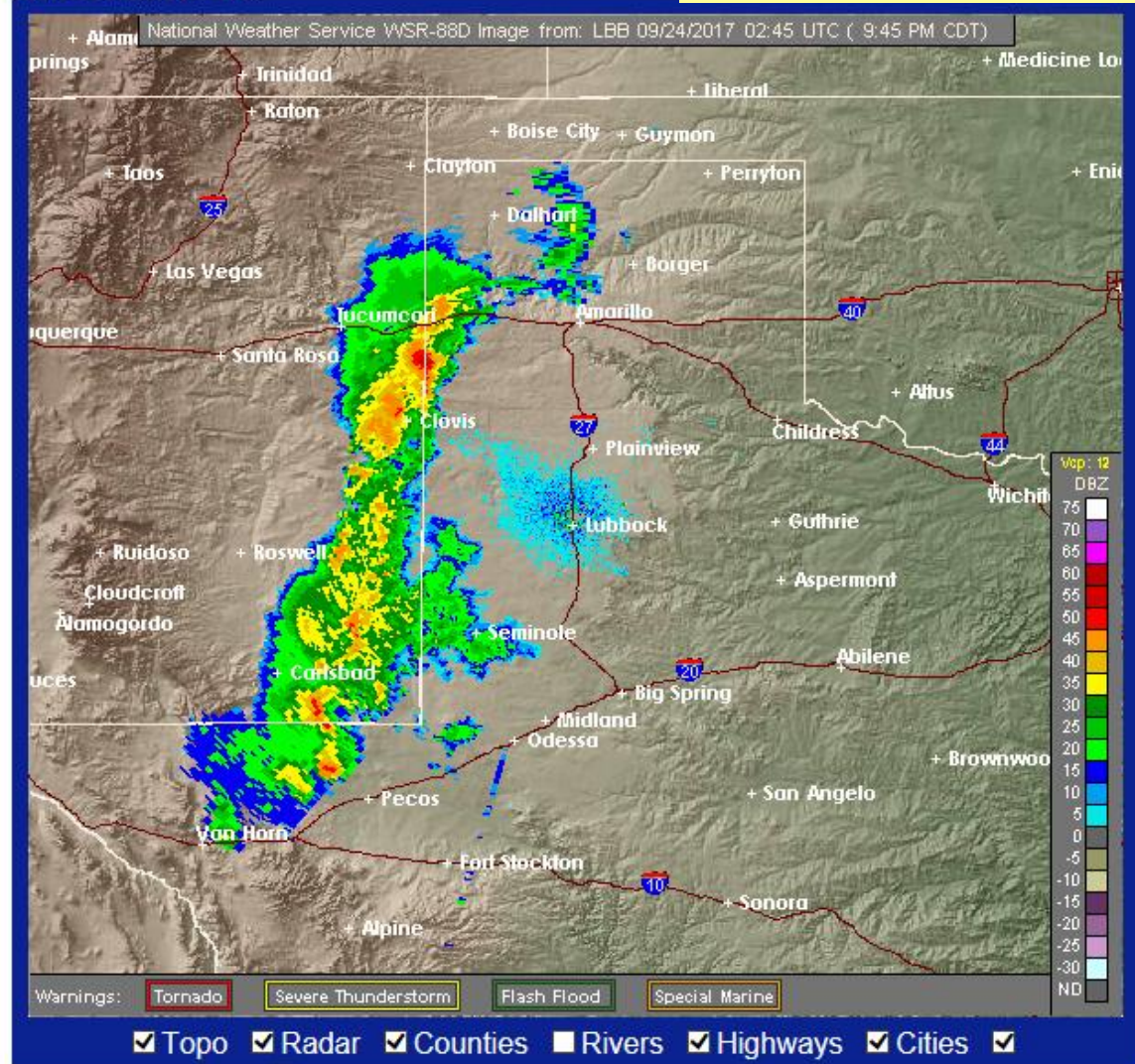
Long Range Images
Reflectivity:
Base Loop

U.S. Views
Reflectivity:
National Loop
Alaska Loop
Hawaii Loop
Guam Loop

Long Range Base Reflectivity

NWS Lubbock, TX

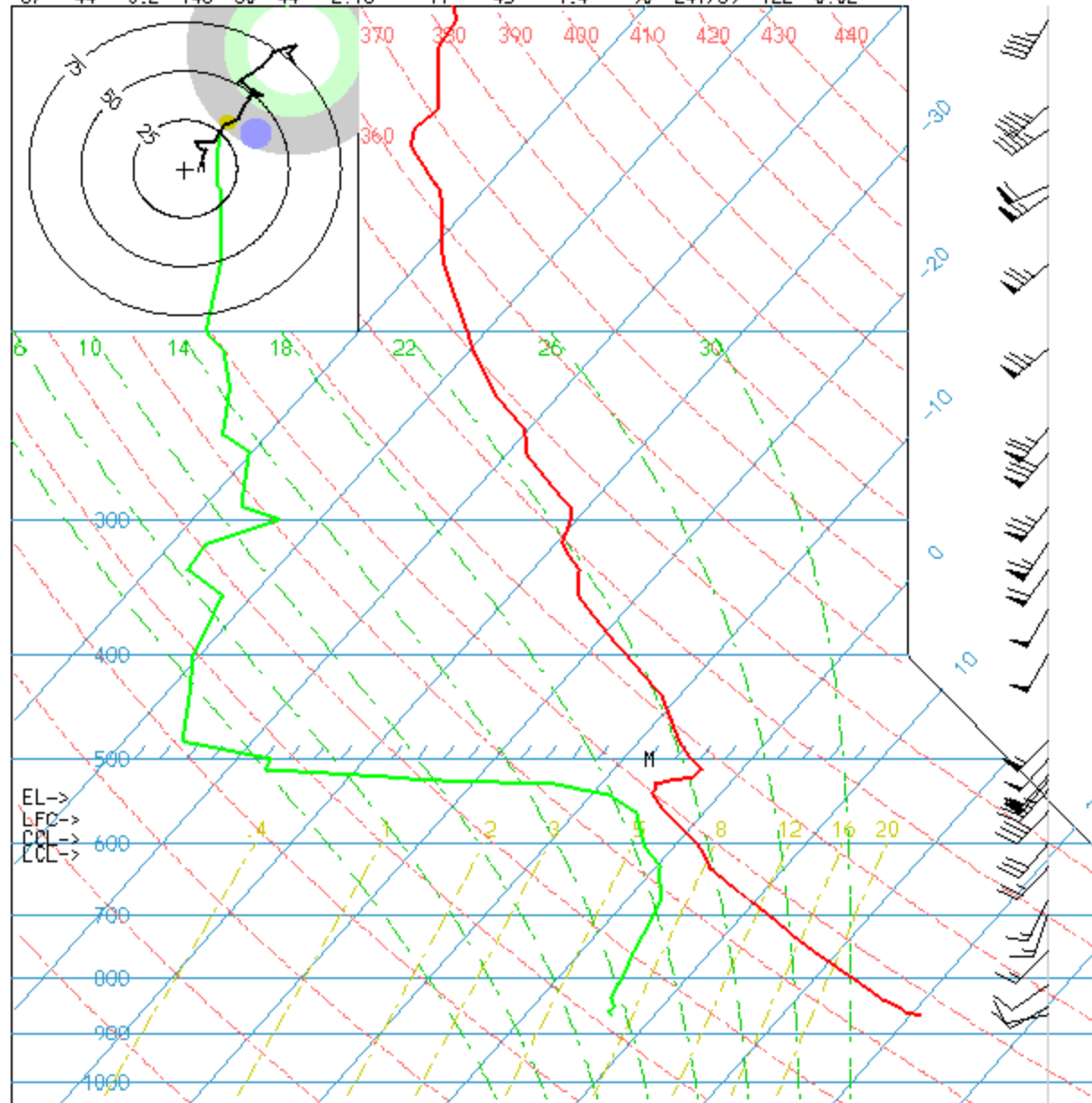
<https://radar.weather.gov/ridge/radar.php?rid=lbb&product=N0Z&overlay=11101111&loop=no>



National Weather Service • Since 1870

Saturday evening

T(F)	Td	LI	SWT	K	TT	Pw(m)	CAPE	CIN	Bmin	Tc	CELL	SREH	YGP
87	44	3.2	146	30	44	2.18	11	-45	-1.4	90	241/39	122	0.02



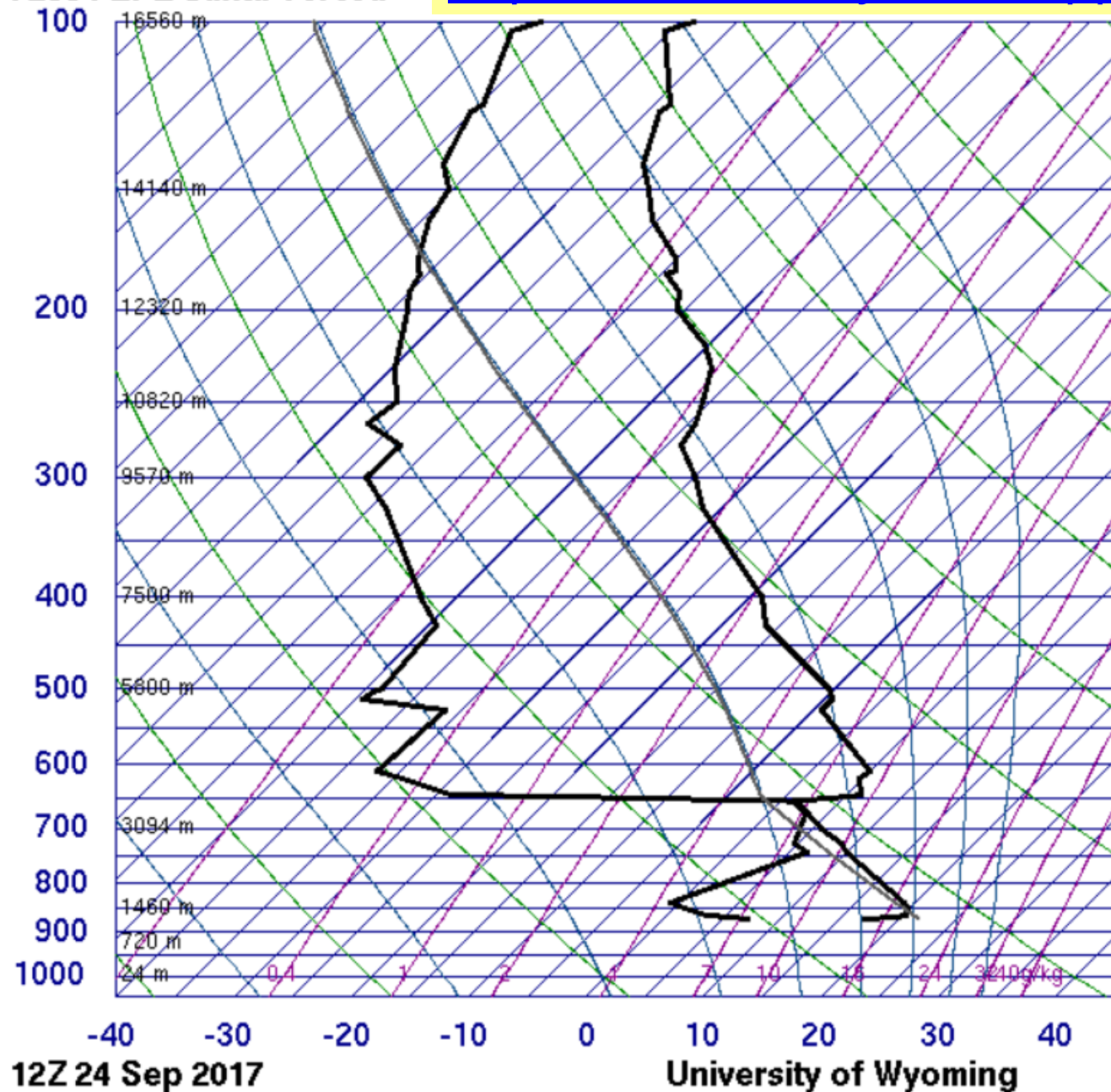
Skew-T Log P diagram
Saturday evening
24 SEP 2017 0000Z

Good example of
Frontal Inversion
and two air masses.

Warm Air

Frontal Inversion of
Temperature

Cold Air

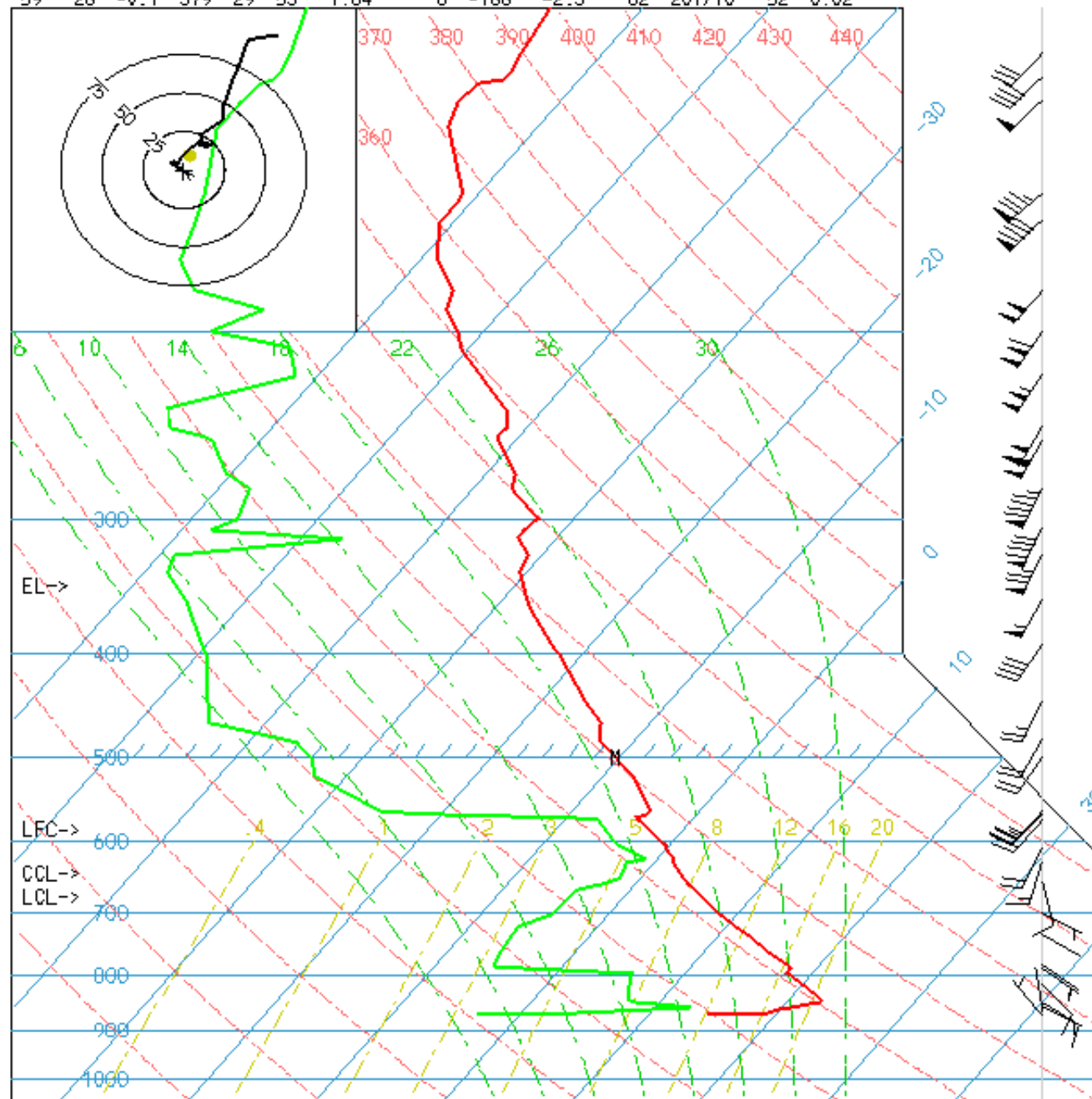


SLAT 31.86
 SLON -106.70
 SELV 1252.
 SHOW 9.69
 LIFT 9.59
 LFTV 9.25
 SWET 62.00
 KINX 24.60
 CTOT 6.50
 VTOT 25.50
 TOTL 32.00
 CAPE 0.00
 CAPV 0.00
 CINS 0.00
 CINV 0.00
 EQLV -9999
 EQTV -9999
 LFCT -9999
 LFCV -9999
 BRCH 0.00
 BRCV 0.00
 LCLT 270.8
 LCLP 646.5
 MLTH 306.8
 MLMR 5.08
 THCK 5776.
 PWAT 15.12

Sunday AM
 Sounding

Cold Air
 Strongest
 before being
 modified.

T(F) Td LI SNT K TT Pw(cm) CAPE CIN Bmin Tc CELL SREH VGP
 59 26 -0.1 379 29 53 1.64 8 -166 -2.3 82 201/10 52 0.02



El Paso Sounding

Tuesday AM 1200Z

Just before Tues
AM's Thunderstorm

“Leaved” Tropopause

Subsidence Inversions

Cold Air has
been modified

Satellite Composite Tuesday Morning
1415Z

Features:

Unsymmetrical
Maria

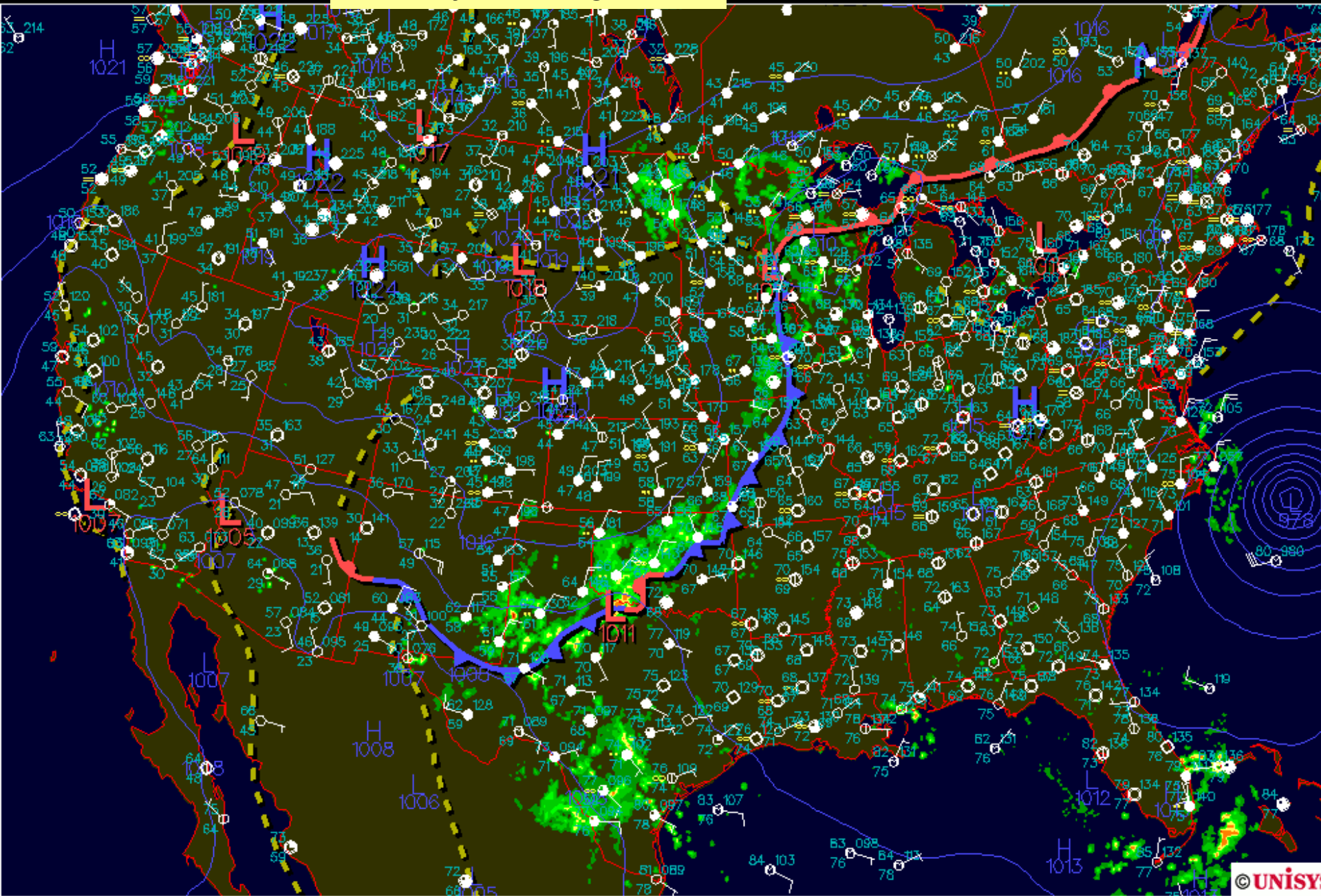
Occluding Low:
MN WI area

Cold Front

Lows developing
OK-
TX Panhandle

San Antonio

Cold-air cumulus
Arizona

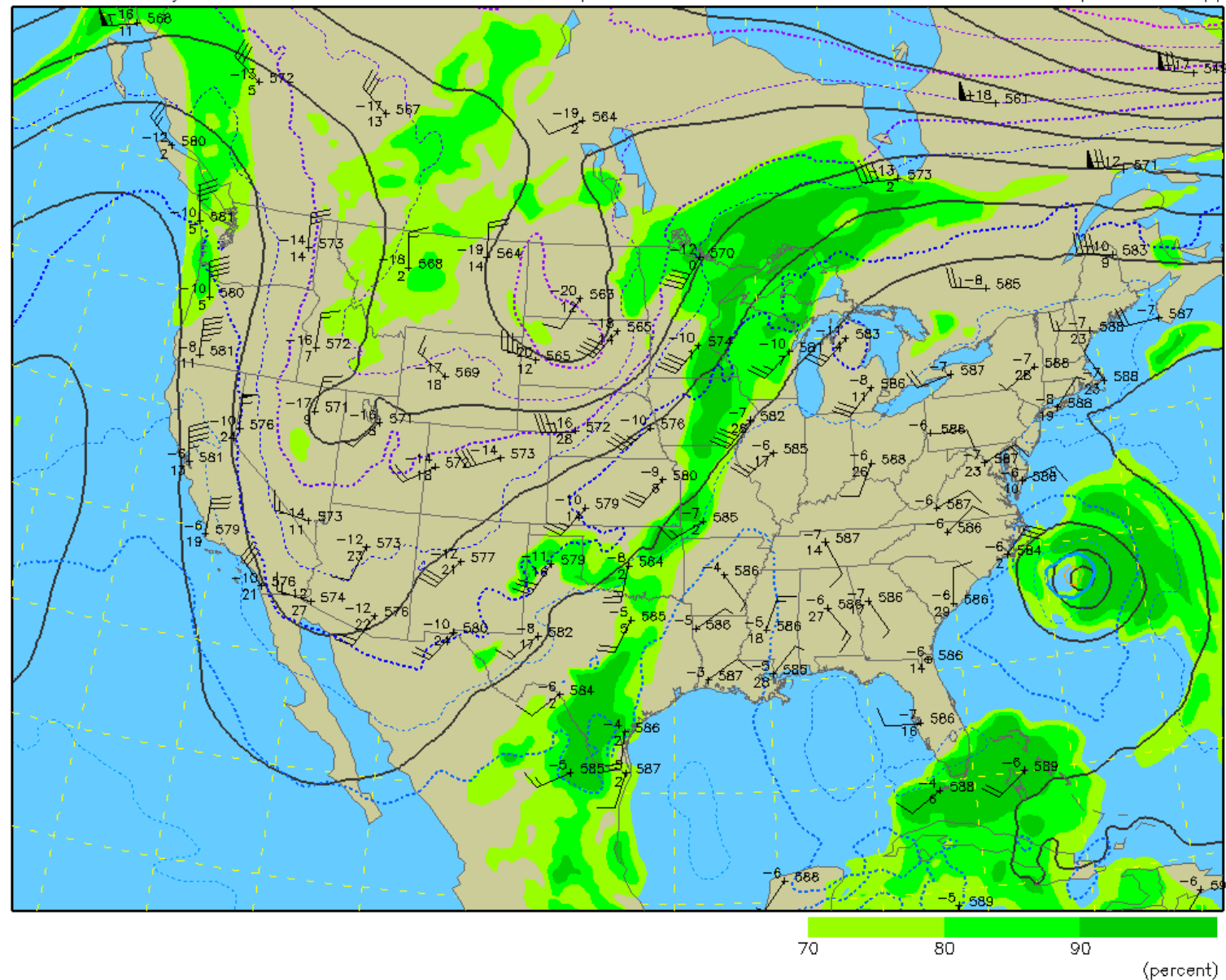


Tuesday 26 Sep 1200Z

500 mb Heights (dm) / Temperature (°C) / Humidity

0-hour analysis valid 1200 UTC Tue 26 Sep 2017

RAP (12z 26 Sep)



Features;

Planetary Wave
= Long Wave
= Rossby Wave

Short Wave

Hurricane Maria

Computer
Errors drawing
5880 meter
contour line

"588 line"

1443 UTC 26 Sep 2017

Active Storm system

Cold Air Canada

Minnesota

Wisconsin, Iowa

Clockwise Circulation

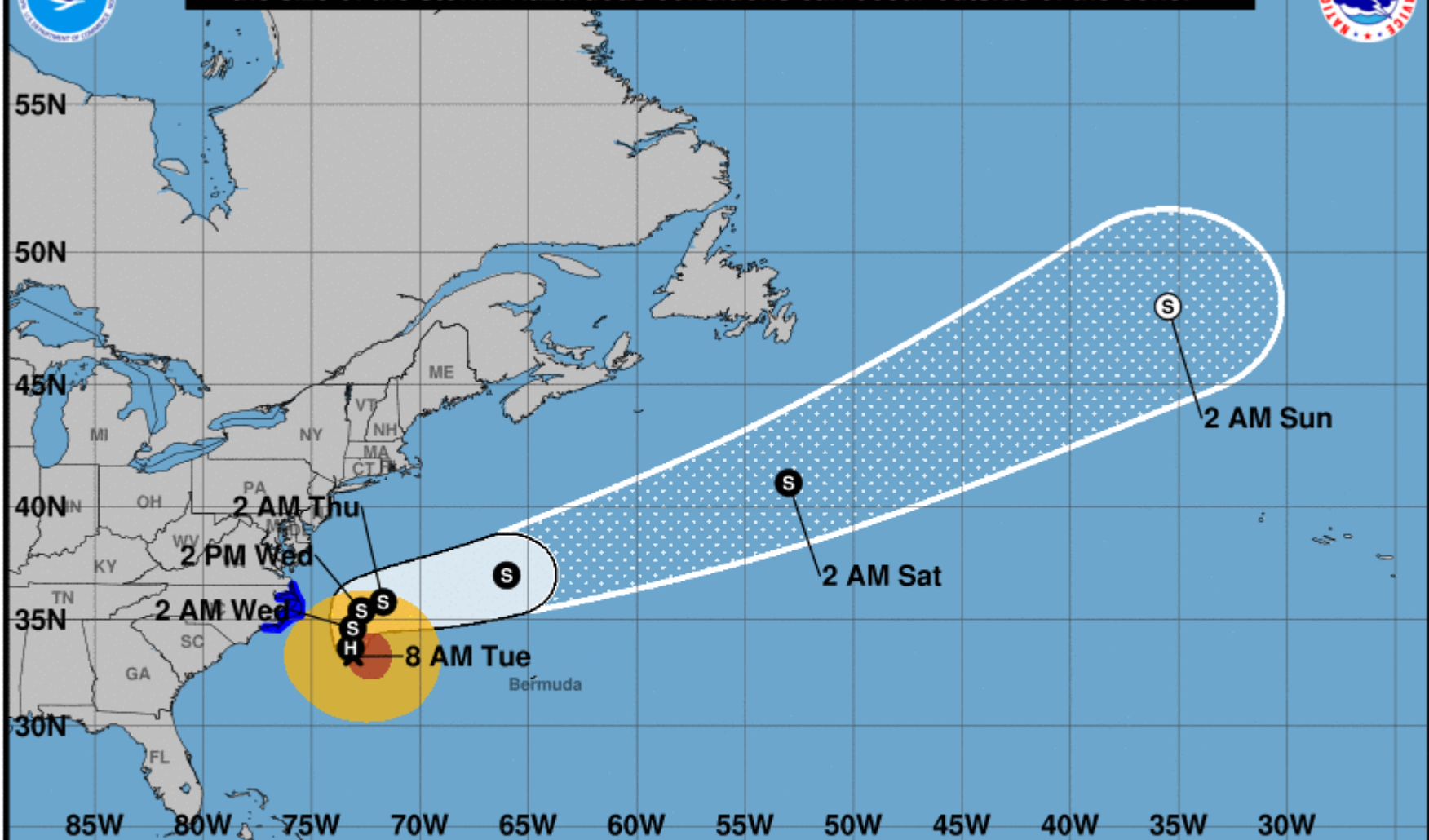
Fog, Rain,
Moderate Rain
Heavy Rain

Warm Air
PIA = 78F

Cold Air
ONL = 45F



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.



Hurricane Maria

Tuesday September 26, 2017

8 AM EDT Intermediate Advisory 41A

NWS National Hurricane Center

Current information: x

Center location 33.3 N 73.1 W

Maximum sustained wind 75 mph

Movement N at 7 mph

Forecast positions:

● Tropical Cyclone ○ Post/Potential TC

Sustained winds: D < 39 mph

S 39-73 mph H 74-110 mph M > 110 mph

Potential track area:

Day 1-3 Day 4-5

Watches:

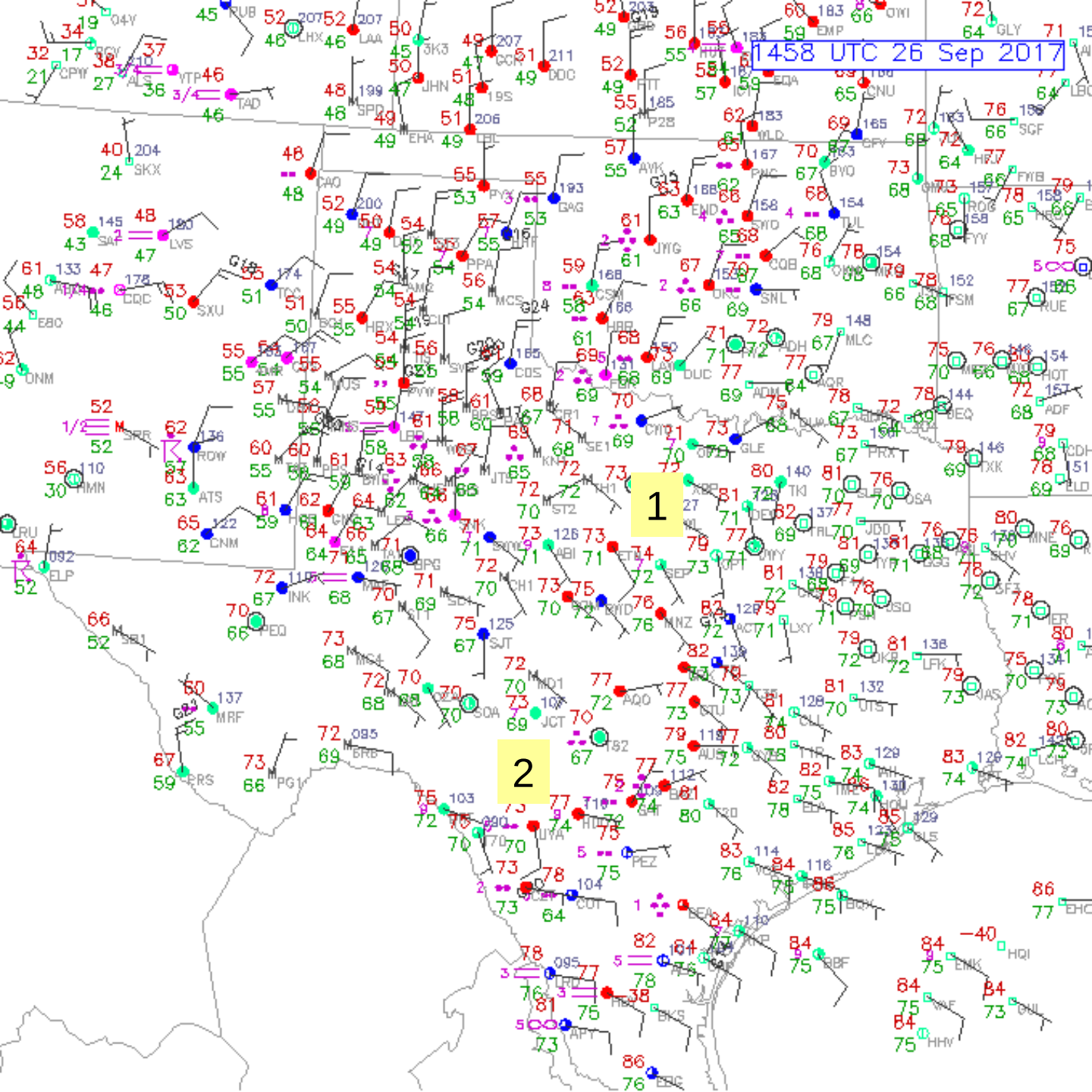
Hurricane Trop Stm

Warnings:

Hurricane Trop Stm

Current wind extent:

Hurricane Trop Stm



Tuesday Morning
26 SEP 1458Z

Frontal Boundary

Low Developing
On Front:

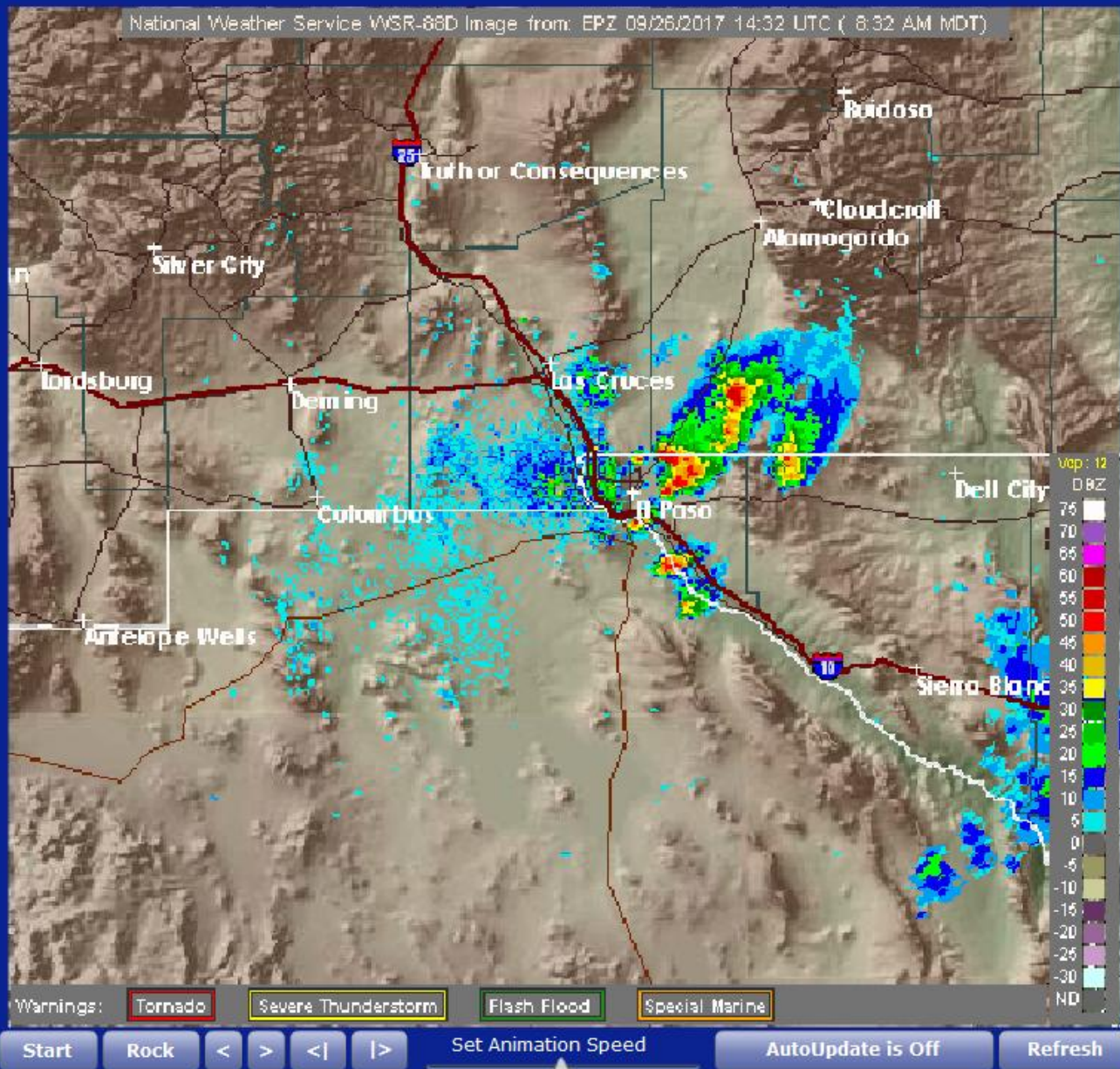
NW Texas= 1

Thunderstorm

El Paso

Onshore Flow
Into Trof
San Antonio
Area = 2

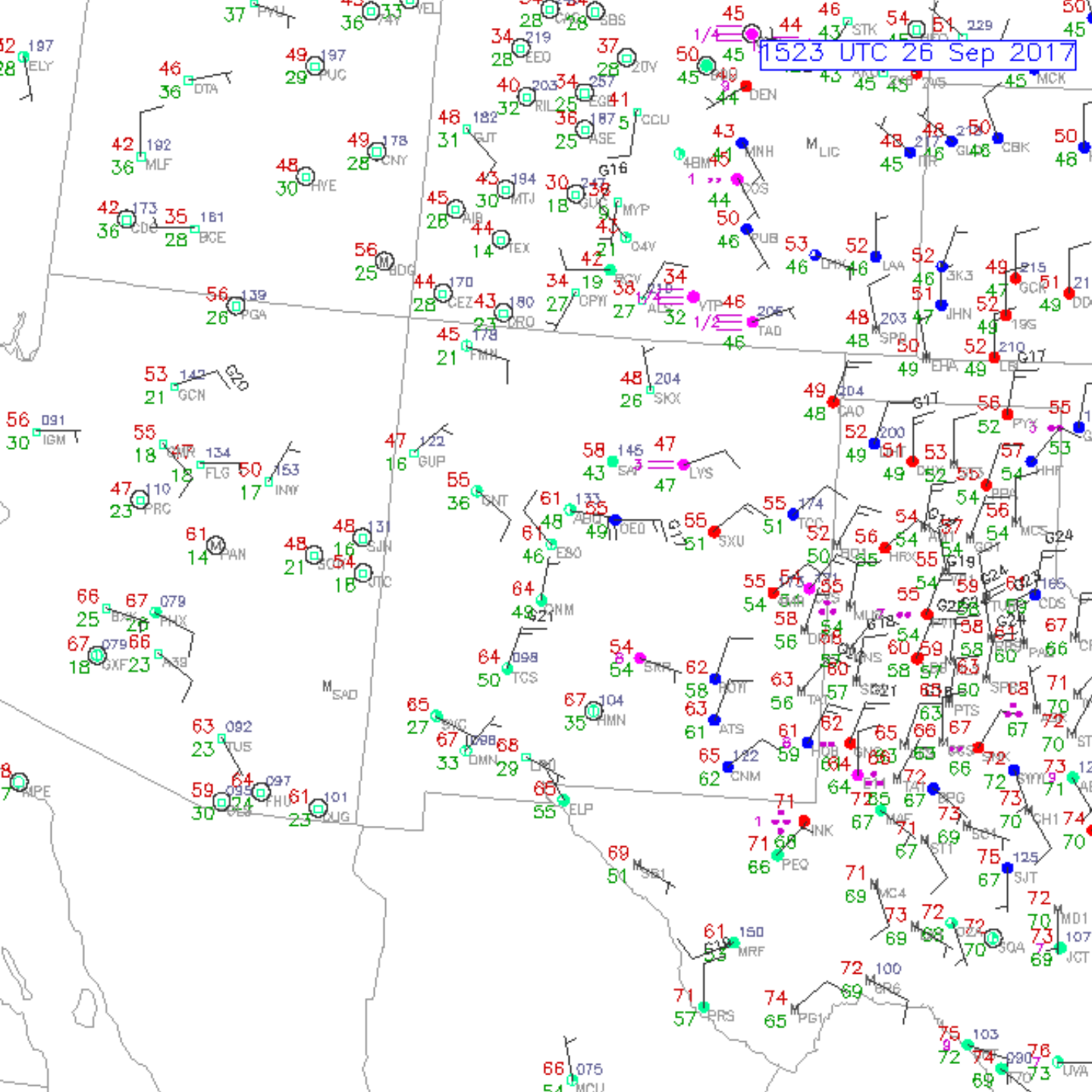
08:32 AM MDT Tue Sep 26 2017



NWS RADAR

Santa Teresa EPZ

Tuesday Morning
26 SEP 1432ZThunderstorm
Racing north on
Frontal Boundary.



Cold Air

“Grey Norther”

Coming Down
the Plains
and from the
East.

ELP Td = 55

LRU Td = 29

Satellite Radar Composite
Wednesday, 27 SEP 1430Z

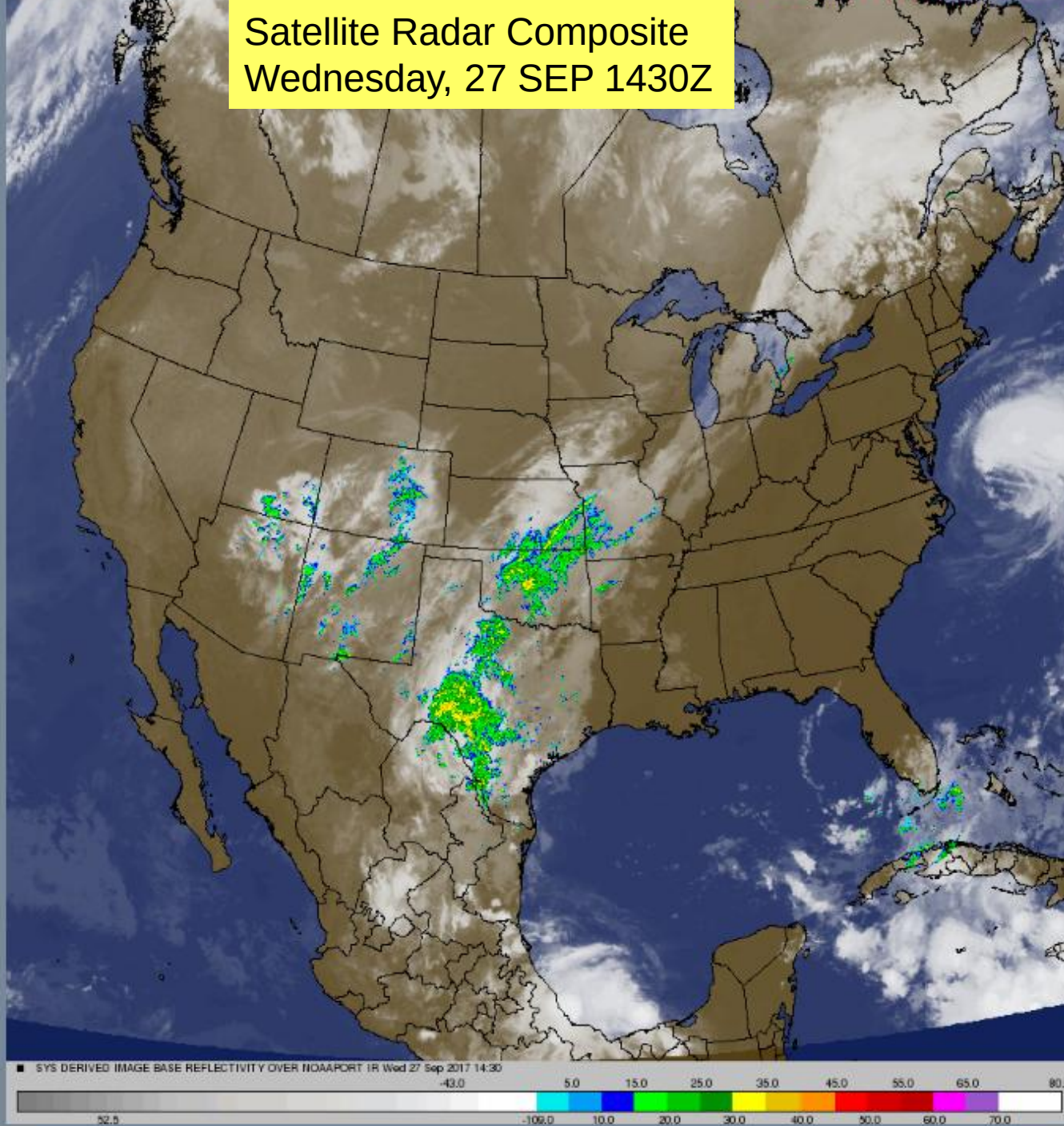
Short Wave Quebec

Cold Front Great Lakes

Maria off Delmarva Penin.

Large Rain Area
Hill Country and West

Cold Air Cumulus
4-Corners to local area

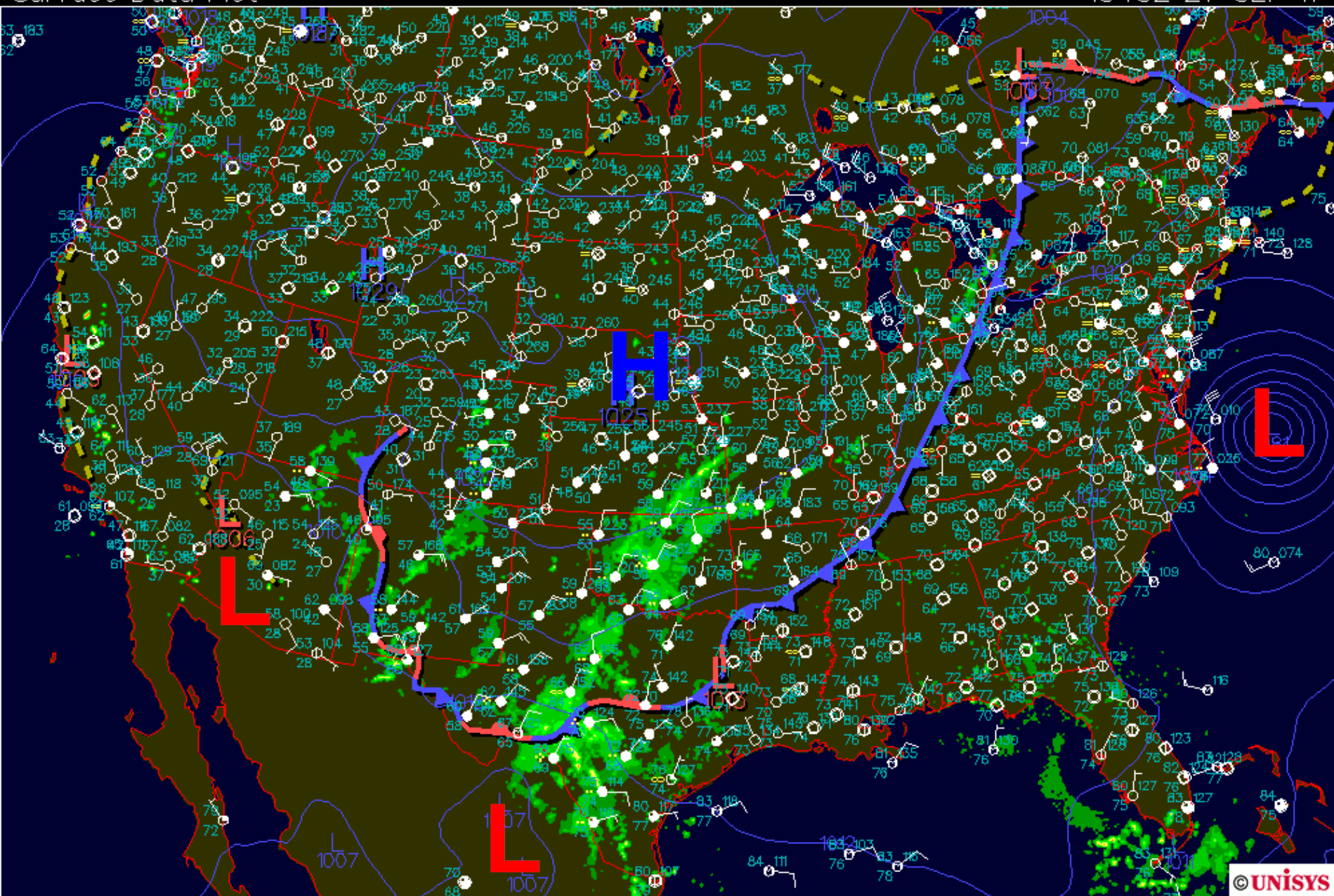


Surface Chart Wednesday 0745L

27 SEP 1345z

1345Z 27 SEP 17

Surface Data Plot



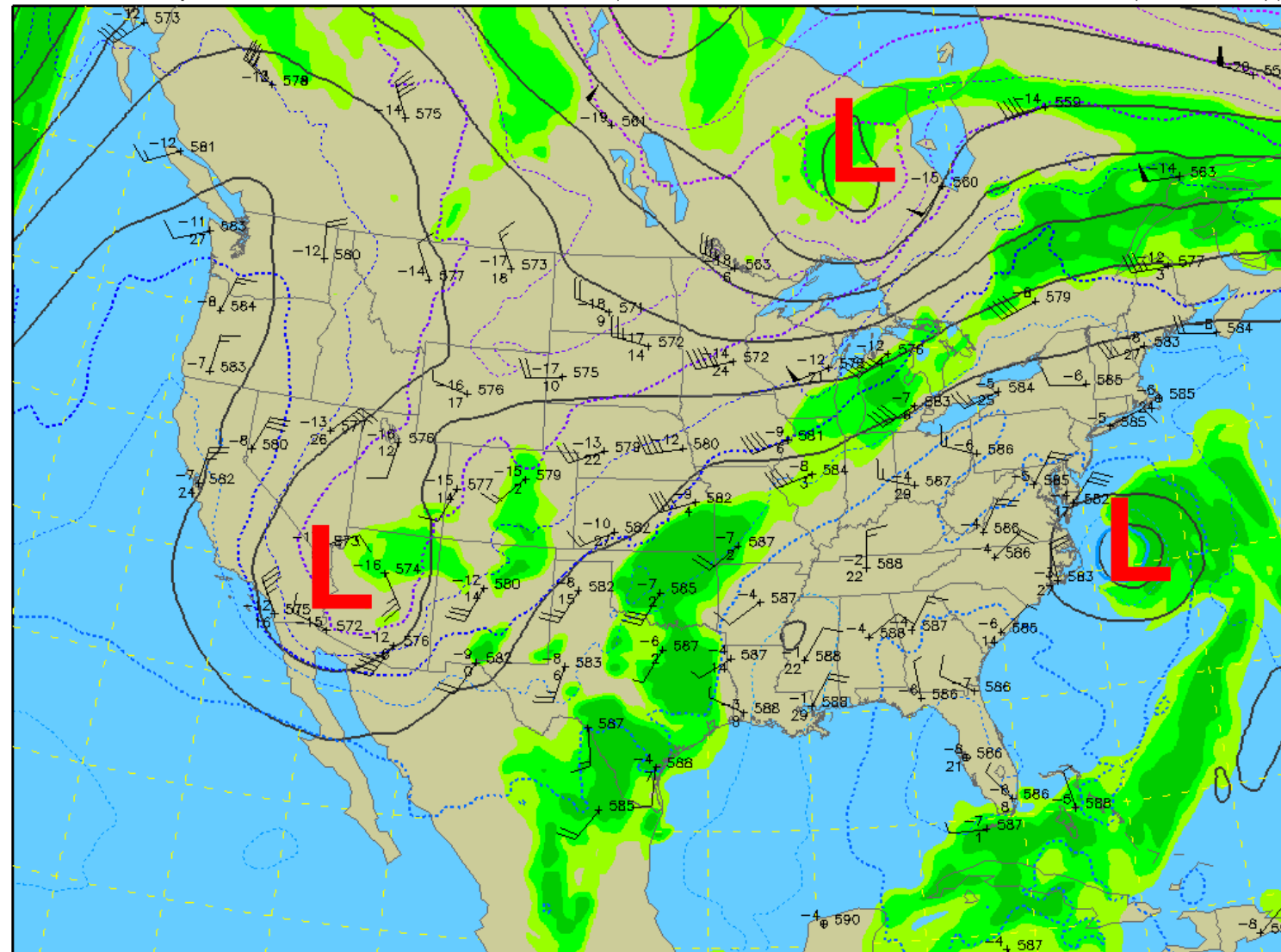
© UNISYS

Int 4 Loc 001 Hc 1205

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

0-hour analysis valid 1200 UTC Wed 27 Sep 2017

RAP (12z 27 Sep)



500 mb chart
Wednesday 0600L
27 SEP 1200Z

Short Wave Ontario

Maria E Outer Banks

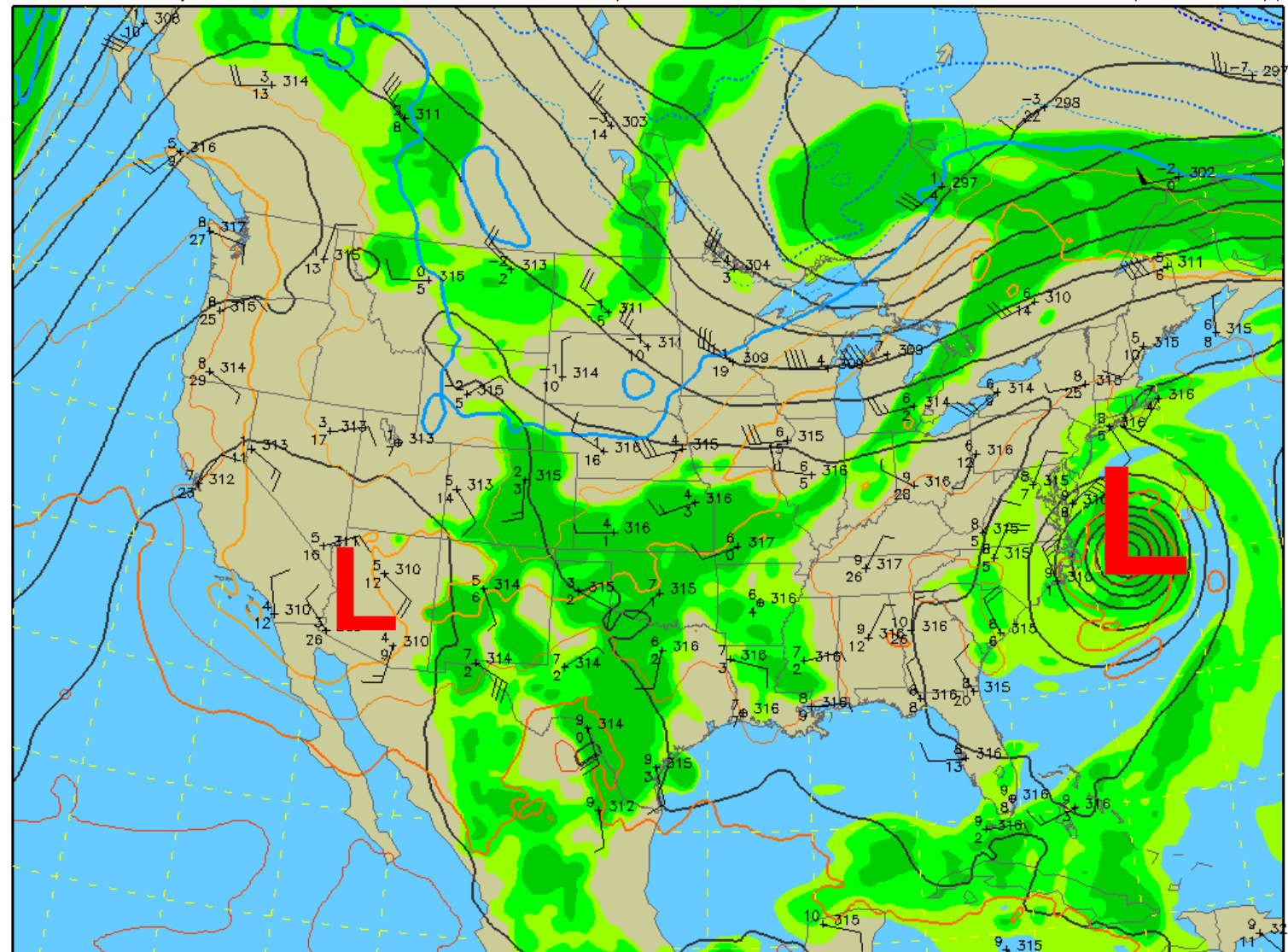
Rossby Wave
Southwest AZ

70 80 90
(percent)

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

0-hour analysis valid 1200 UTC Wed 27 Sep 2017

RAP (12z 27 Sep)



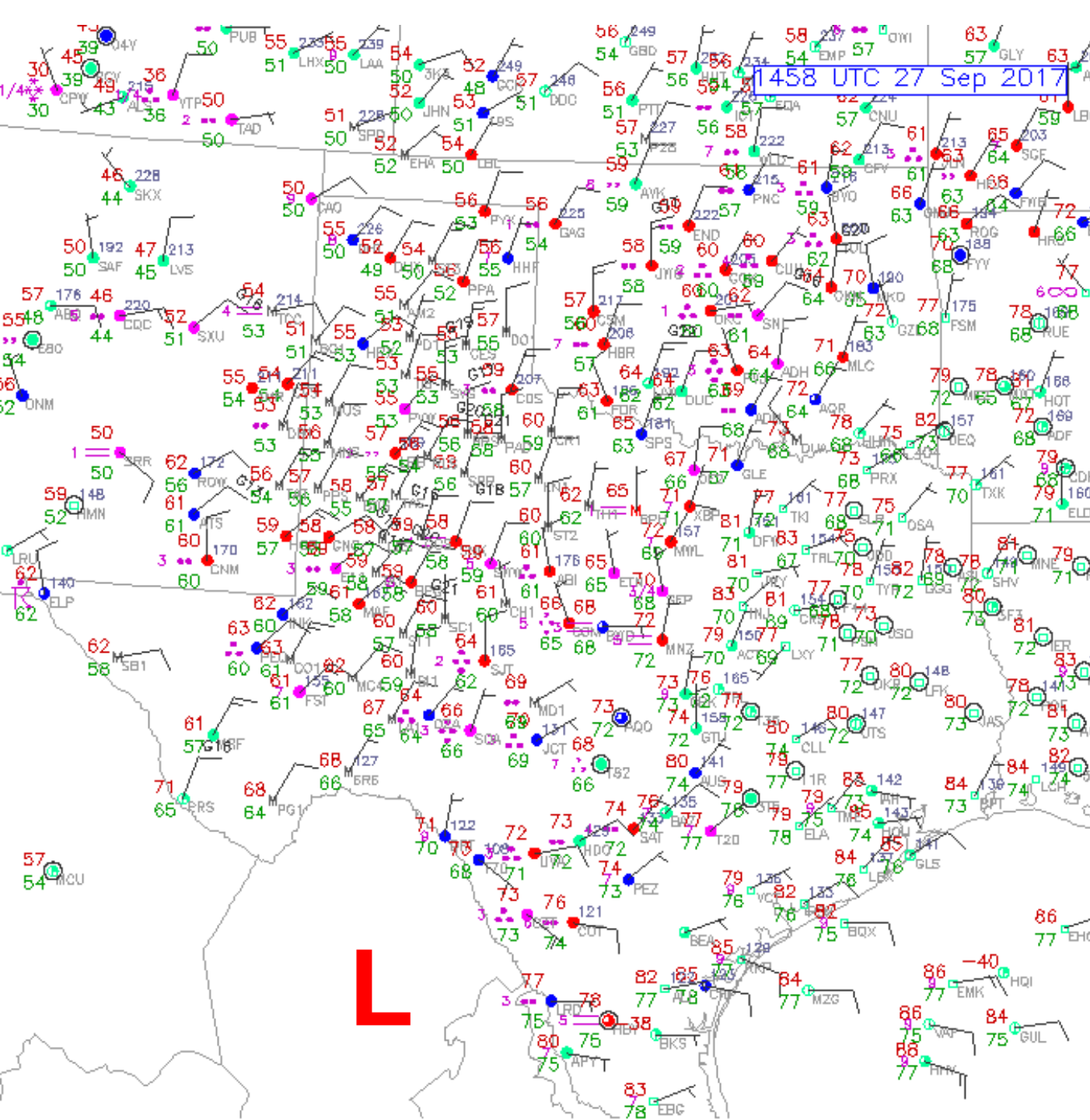
700 mb Chart

~10,000 ft
MSL

Hurricane
Maria

Closed Low
SW Arizona

70 80 90
(percent)



27 Sep 1458Z

Wednesday 0858L

Fall Transition:

Cold Air from the
north, a cold front

DFW T = 81F

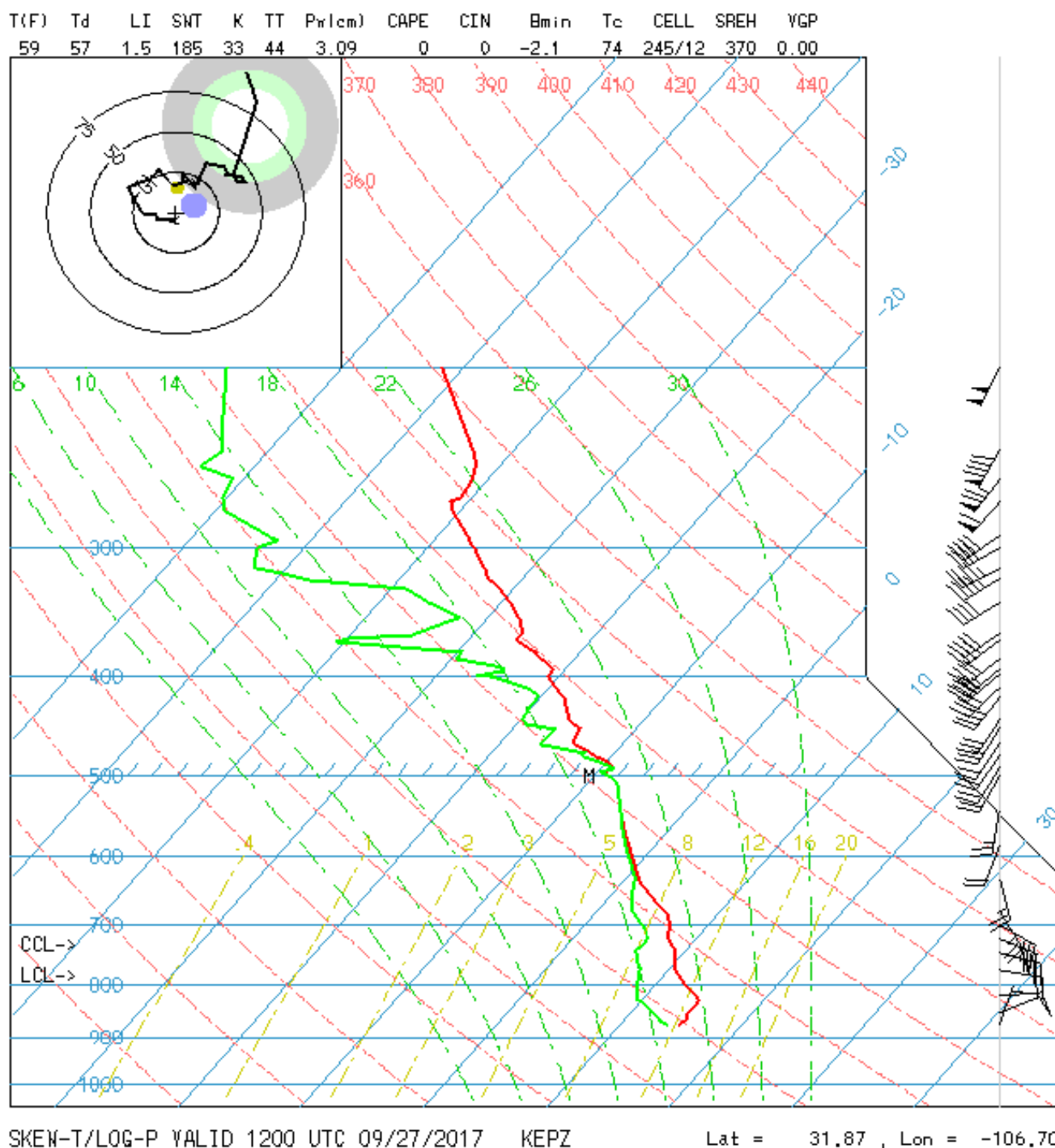
ABI T = 61F Mdt Rain

CRP T = 85F

OZA T = 66F Hvy Rain



Gila Bend
GXF Td = 20



KEPZ Sounding 27 SEP 1200Z

No Data ABV
200 mb
~39,000 ft MSL

Very Moist Sounding

Severe Weather
Threat

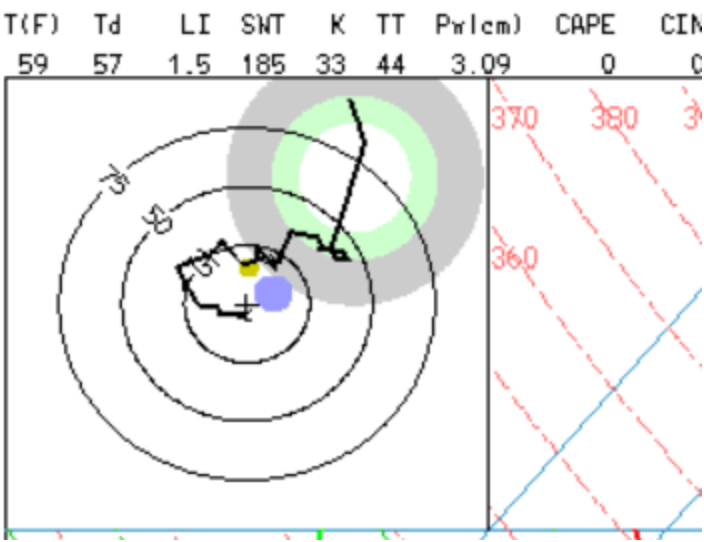
Large "Positive Area"
if parcel saturated

Saturated Air Layer:
Temp = Dewpoint

Cold Air Below
700 mb
Low Lifting
Condensation Level

Today's Severe Weather Threat:

Colored gray and green rings and blue dot represent work of Rasmusse and Blanchard (see References) attempt to predict the **motion** and **type** of supercell thunderstorms based on a climatology study of supercells.



Blue dot is the estimated supercell storm motion... taking 60% of the magnitude and 8 m/s to the right of the boundary-layer to 4 km shear vector.

Blue circle represents a 4 m/s error estimate and is also indicated by the heading "CELL" along the top and is only valid for developing to mature supercell thunderstorms not necessarily all general thunderstorms.

When the blue dot lies within the green ring, then no supercells are anticipated.

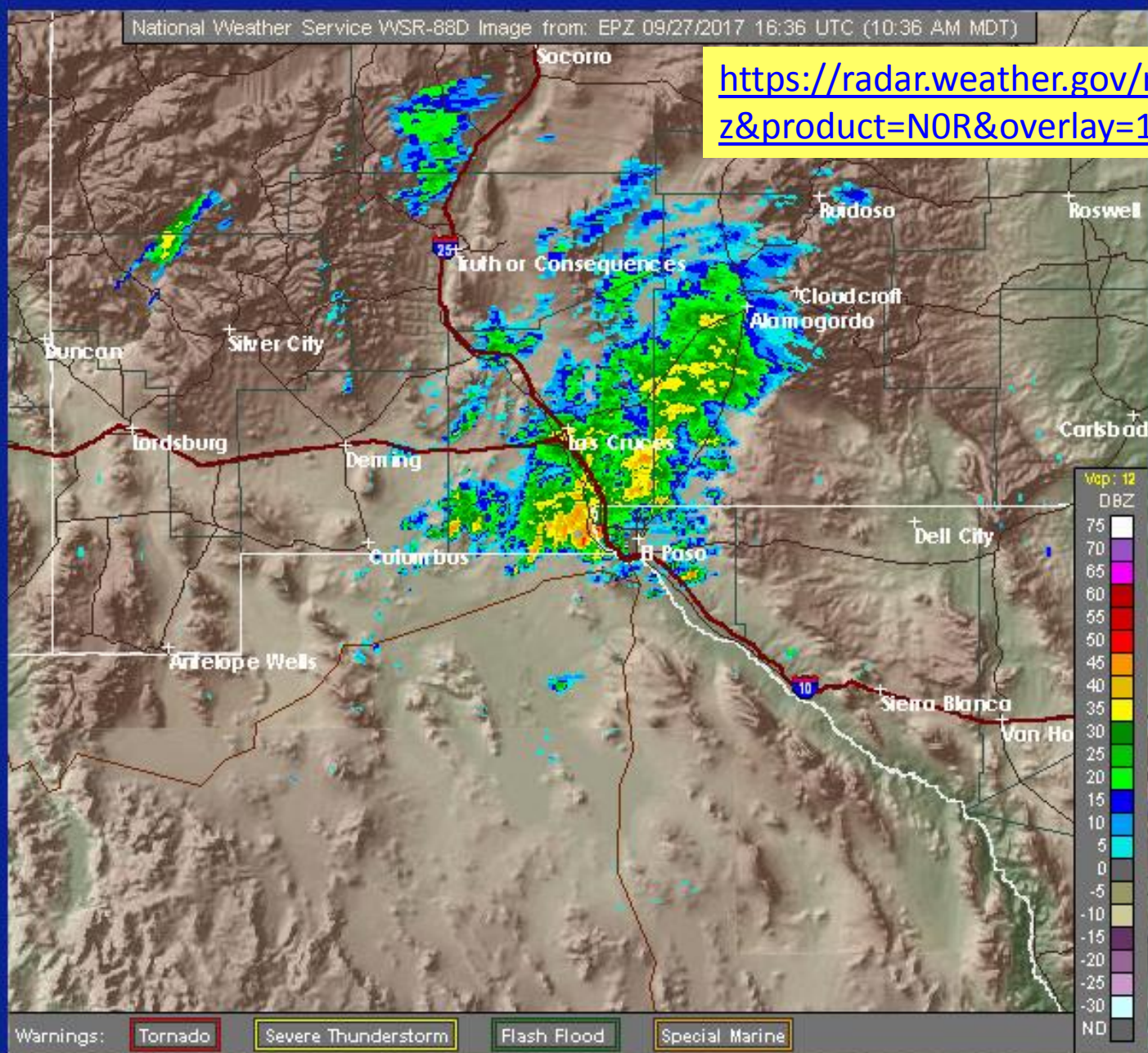
When the blue dot lies on the green ring, "High-Precipitation" supercells are expected.

When the blue dot lies on the gray ring, then "Classic" supercells are expected

When the blue dot lies outside the gray ring, "Low-Precipitation" supercells are expected.

National Weather Service WSR-88D Image from: EPZ 09/27/2017 16:36 UTC (10:36 AM MDT)

<https://radar.weather.gov/ridge/radar.php?rid=epz&product=NOR&overlay=11101111&loop=no>



EPZ Radar
Wednesday 1036L

27 SEP 1636Z

Abundant
Rainfall in the
Borderland

Storm Total Precipitation

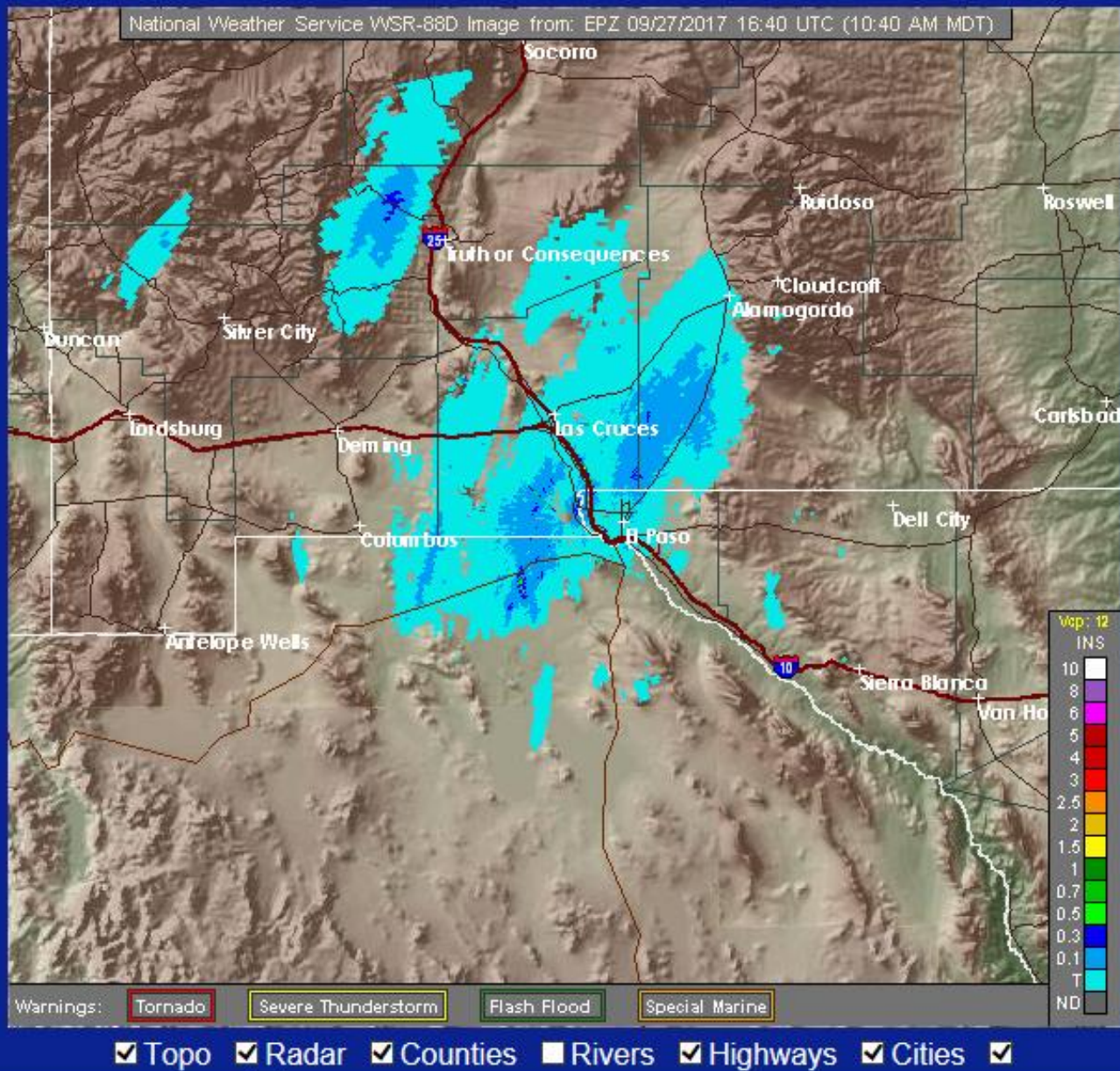
Radar Precip Est From 08:54 AM MDT
Wed Sep 27 2017
to 10:36 AM MDT Wed Sep 27 2017

NWS El Paso, TX

<https://radar.weather.gov/ridge/radar.php?rid=epz&product=N0R&overlay=11101111&loop=no>

Storm Total

Fewer than 2 hours



<https://youtu.be/P2qVnK6zFgE>

Time-Lapse Video Day 5



450 ppm

1270 ppm

▶ ▶| 🔊 0:29 / 2:13

