

Topic 17: Air Masses and Storms

<https://geowiki.ucsd.edu/sio15>

test #6

topics 16,17, HW4

(see geowiki under 'tests' tab)

short videos are
test material!

sign-up for second batch of in-person beachwalks

slot 1: Sat 11/8 2 pm

slot 2: Sun 11/9 2 pm

Sunday, 11/9: virtual beachwalk due 11:59 pm

Monday, 11/10: no lecture but office hour
test #6 due 11:59 pm

Tuesday, 11/11: no discussion session
HW6 due 11:59 pm

Rain

Heavy Rain/Flash Flooding Possible

Snow

Freezing Rain Possible

Issued 3:29 AM EST Mon, Nov 09, 2020

DOC/NOAA/NWS/NCEP/Weather Prediction Center

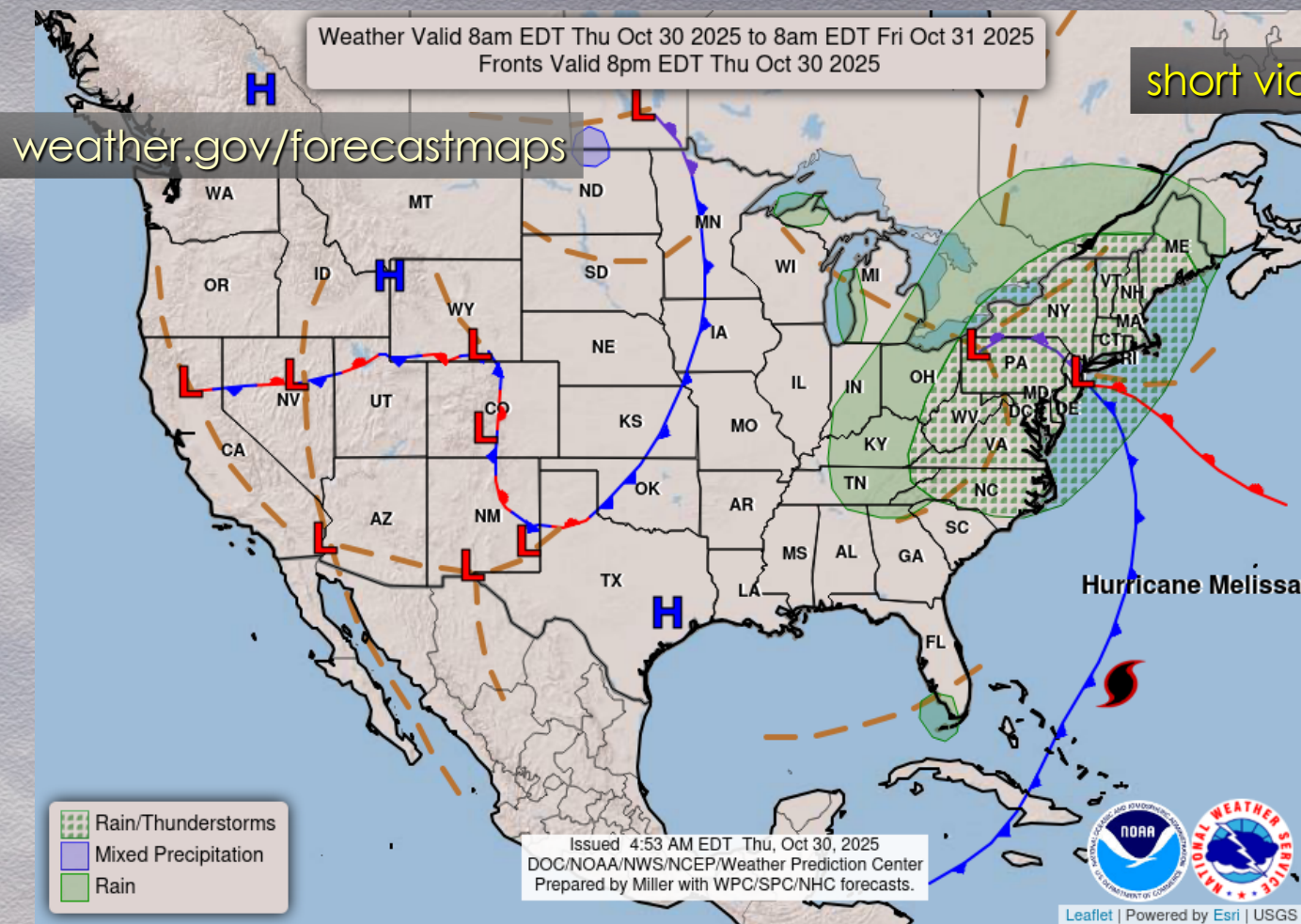
Prepared by Kebede with WPC/SPC/NHC forecasts.

Leaflet | Powered by Esri | USGS, Map tiles by Stamen Design, CC BY 3.0 - Map data © OpenStreetMap

Jamaica



Lecture 10/29/25 - NYC

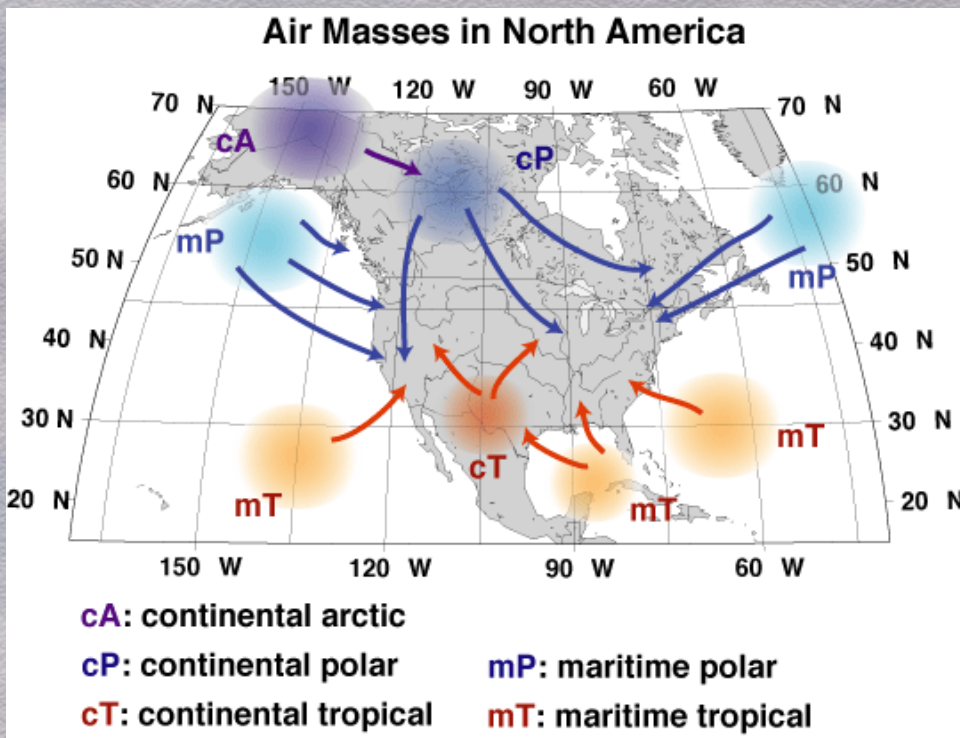


source: NOAA/NWS

Air Masses

short video 13d

- a large body of air (> 1500km) with similar T and humidity
- forms over large flat, calm area (source region)
- ideal source region: surface H pressure area



Classification:
arctic/polar/tropical
continental/maritime

- moved by winds aloft
- change when they move

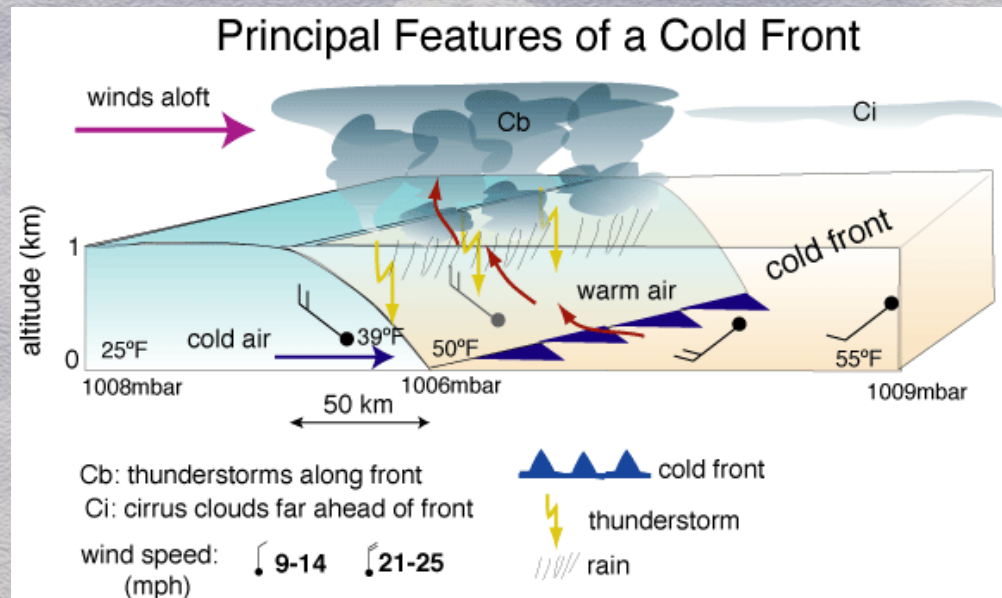
Air Masses and Fronts

short video 13d

- weather changes when one air mass replaces another
- front: boundary between two air masses

- cold air mass pushed underneath warm mass
- air rises quickly (-> Low pressure)
- local heavy rains (behind front)
- barbed in map

COLD FRONT



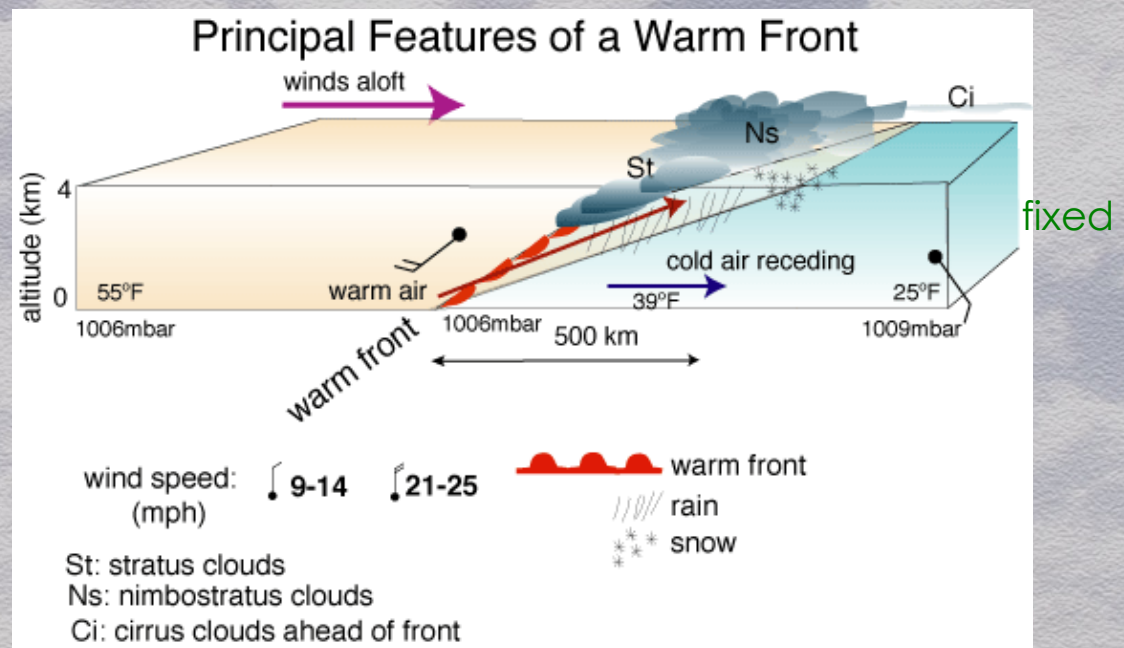
fixed

Air Masses and Fronts

short video 13d

- warm air mass moves on top of cold air mass
- air rises slowly
- rain in large area (before front)
- lobed in map

WARM FRONT

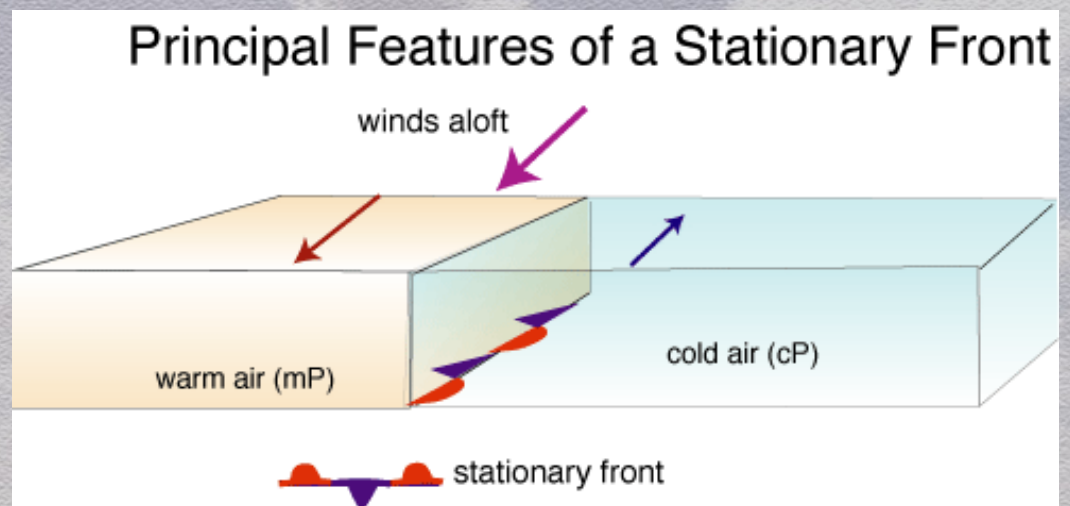


Air Masses and Fronts

short video 13d

- 2 air masses butt against each other but do not replace each other
- surface winds parallel to front/opposite directions
- precipitation along front
- winds aloft usually along front
- may dissipate or turn into cold/warm front or L
- barbs/lobs in map; alternating direction

STATIONARY FRONT

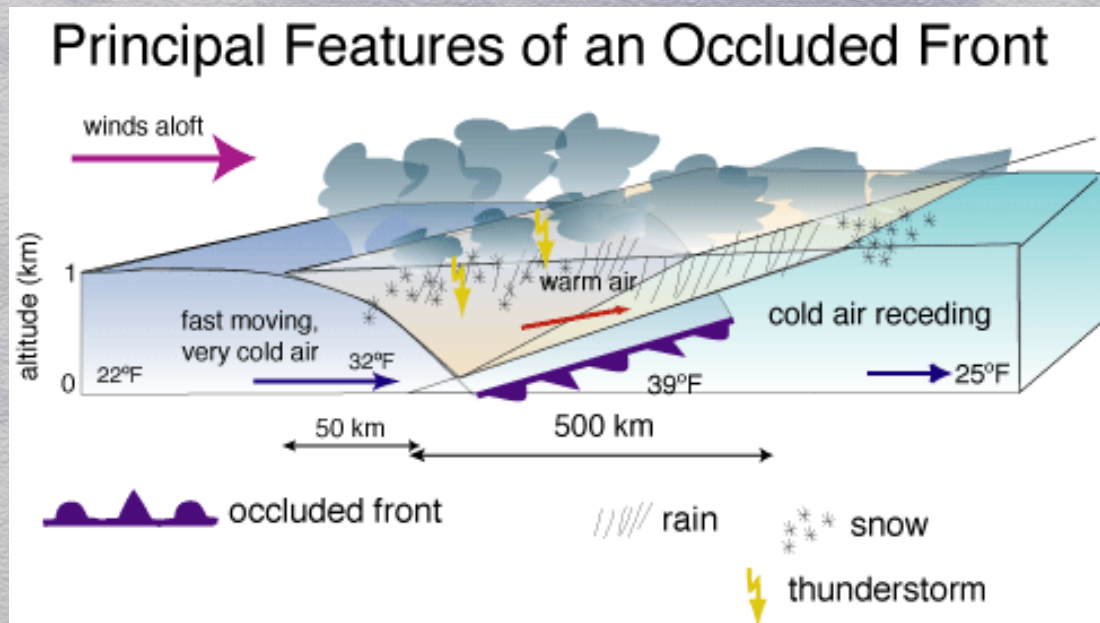


Air Masses and Fronts

short video 13d

- fast moving cold front overtakes warm front
- widespread rain
- mixed in map

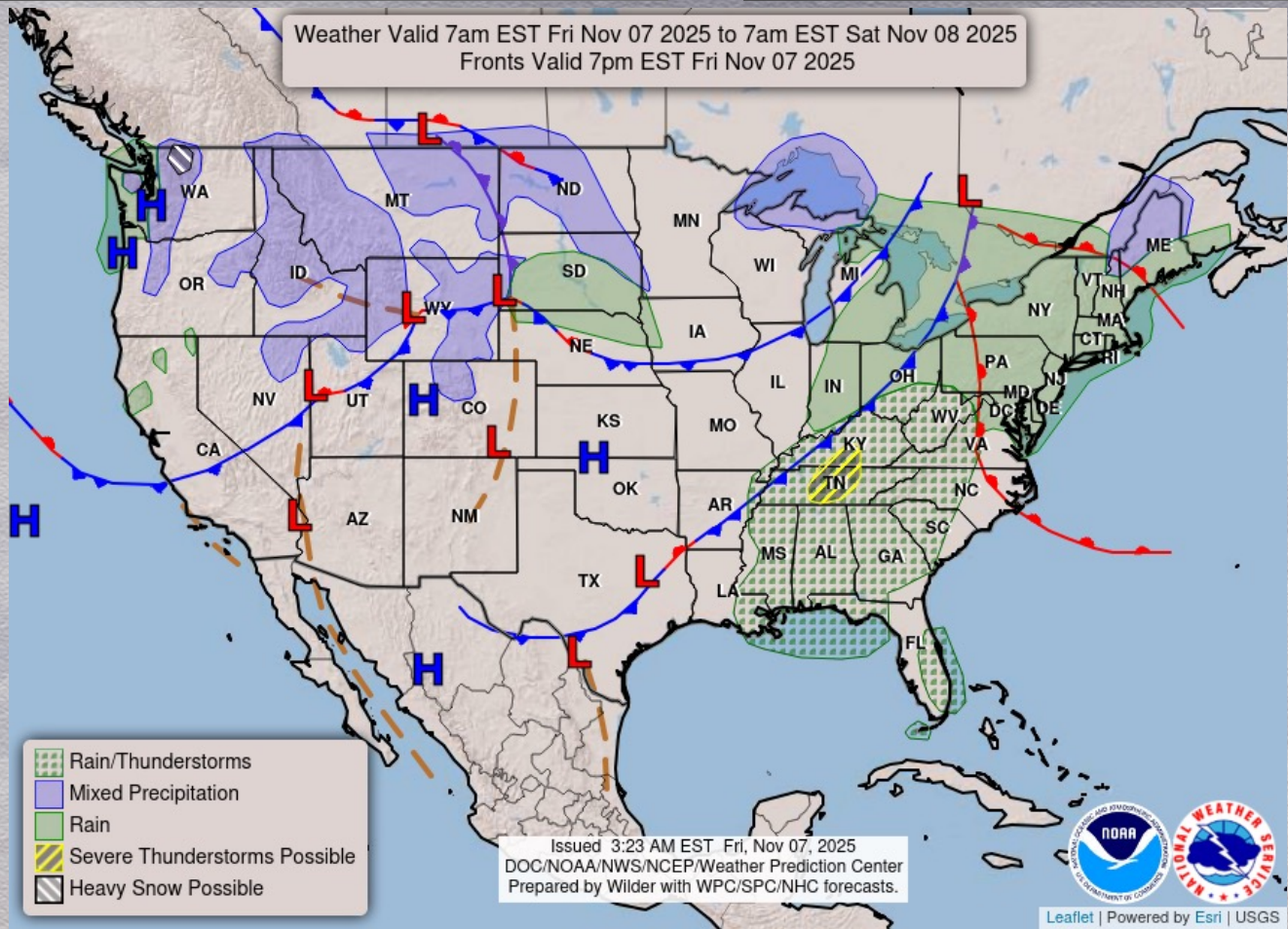
OCCLUDED FRONT



Today's Weather Map short video 13d

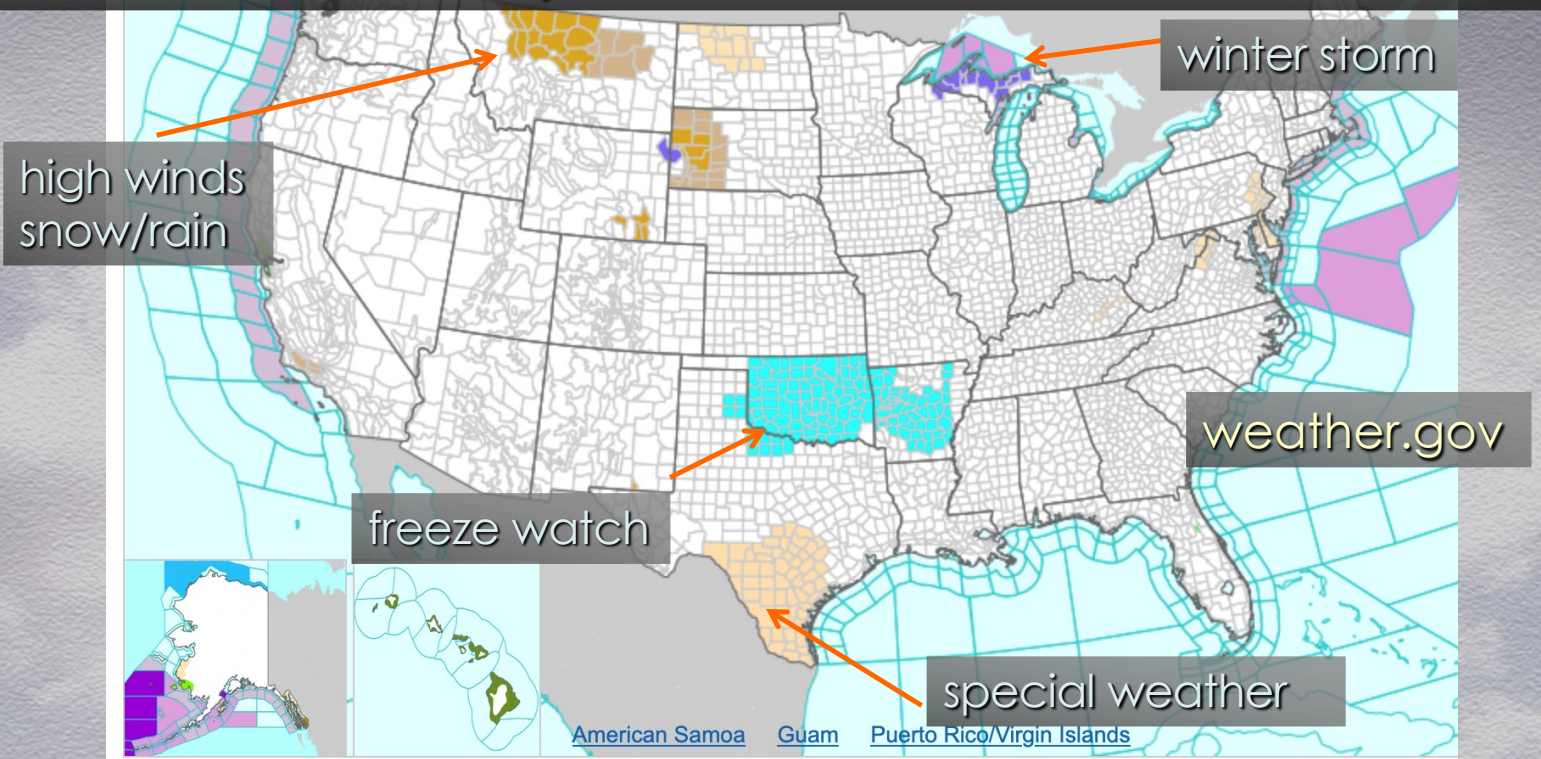
<https://geowiki.ucsd.edu/sio15>

weather.gov/forecastmaps



SIO15 2025: Topic 17b – Extreme Weather - Storms

Today's Weather Alerts



Click on the map above for detailed alerts or

Warnings By State



Go

[Public Alerts in XML/CAP v1.2 and ATOM Formats](#)

Heavy Freezing Spray
Warning

High Wind Warning

Storm Warning

Flood Warning

Gale Warning

Winter Weather
Advisory

Coastal Flood Advisory

High Surf Advisory

Small Craft Advisory

Hazardous Seas
Warning

Lake Wind Advisory

Wind Advisory

Rip Current Statement

Beach Hazards
Statement

High Wind Watch

Freeze Watch

Fire Weather Watch

Coastal Flood
Statement

Special Weather
Statement

Air Quality Alert

Today's Severe Weather Forecast

NWS Austin/San Antonio

[Weather.gov](https://weather.gov) > Austin/San Antonio, TX

Austin/San Antonio, TX

Weather Forecast Office

weather.gov

[Current Hazards](#) [Current Conditions](#) [Radar](#) [Forecasts](#) [Rivers and Lakes](#) [Climate and Past Weather](#) [Local Programs](#)

Today Tonight Strong Cold Front Sunday Critical Fire Weather Sunday Windy Sunday Large Temperature Swings Weather for the Week Austin Weather Radio Outage

Record Heat Possible Today and Sat.

weather.gov/ewx

Updated: Fri Nov 07, 2025 1:40 PM

Austin Bergstrom

Afternoon highs	Today	Tomorrow
Forecast	91°	87°
Record	89° (set in 2024)	90° (set in 1989)
Chance of tying or breaking record	High (95%)	Low (30%)

Key Messages:

❖ Well above normal to near record highs are possible today and tomorrow

San Antonio

Afternoon highs	Today	Tomorrow
Forecast	89°	88°
Record	88° (set in 2005)	90° (set in 1989)
Chance of tying or breaking record	High (80%)	Low (30%)

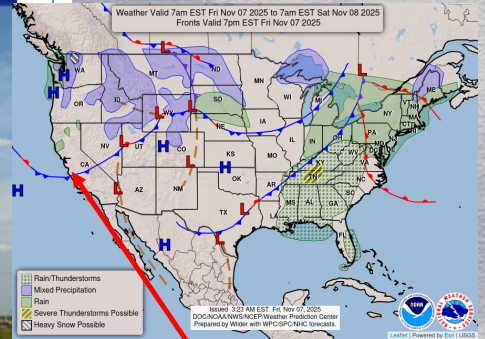
❖ Forecast temperatures will be 15-20° above normal (Mid 70s)

Austin Mabry

Afternoon highs	Today	Tomorrow
Forecast	91°	87°
Record	89° (set in 1988)	89° (set in 2024)
Chance of tying or breaking record	High (95%)	Medium (40%)

Del Rio

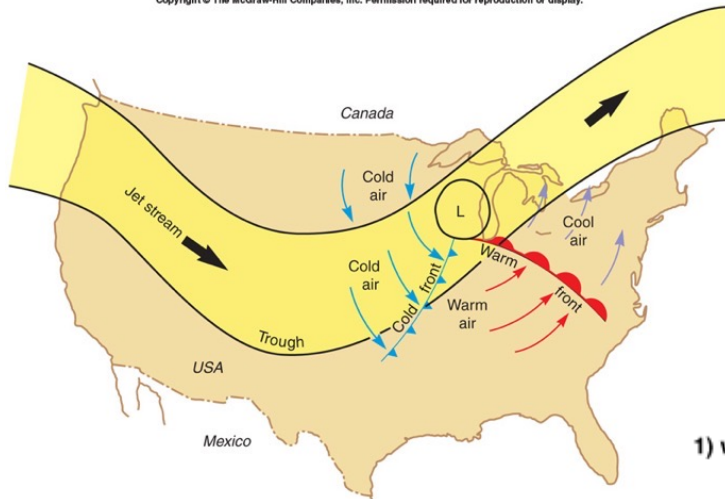
Afternoon highs	Today	Tomorrow
Forecast	91°	88°
Record	92° (set in 1988)	93° (set in 1980)
Chance of tying or breaking record	High (70%)	Very Low (10%)



NATIONAL WEATHER SERVICE AUSTIN/SAN ANTONIO
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Unseasonable warm today with near record high temperatures in the upper 80s to lower 90s forecast.

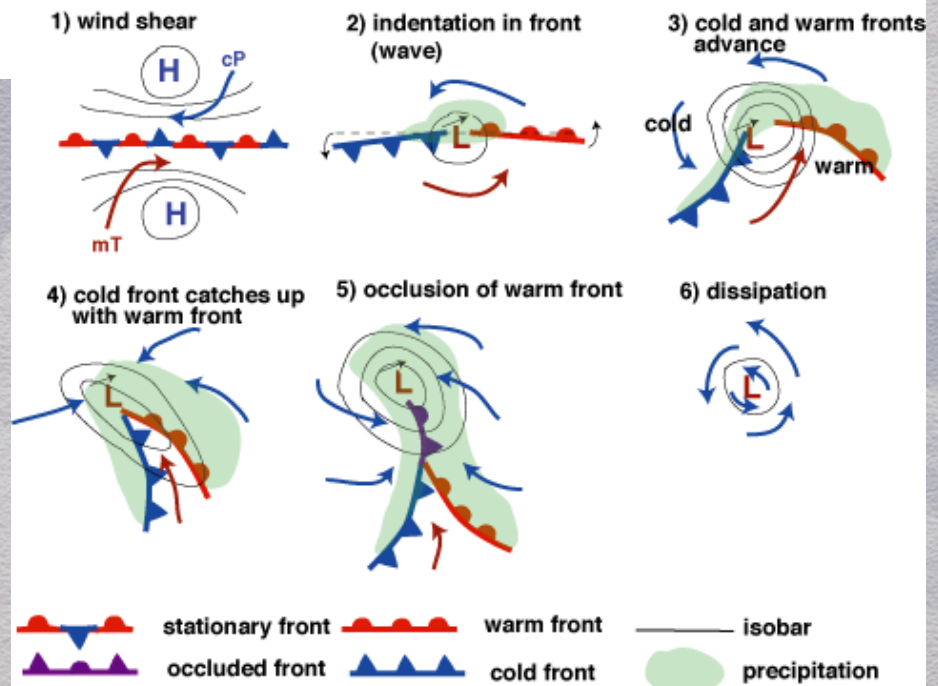
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Wave Cyclones Fig. 13.24

In the U.S.: large low-pressure system moving W to E (big storms)

Stages of a Wave Cyclone



short video 13e

- mid-latitudes
- 2 air masses shear past each other
- -> wave, warm/cold front
- -> cyclone
- occluded warm front
- dissipation