

February 2021 Winter Weather Outbreak

Ian Stearns

Overview

- A number of winter weather events impacting the North American Continent, and particularly the central US
- Begins with the Early February Nor'easter, still ongoing
 - Most notable for the extreme cold outbreak
- Extreme Cold Outbreak
 - Lasted between February 10 and February 20
 - Sent sub-freezing air as far south as Northern Mexico
- Winter Storm Uri
 - Brought snow to Texas and other southern states
 - Tornadoes in the Eastern US
- At least 70 deaths associated with this outbreak so far

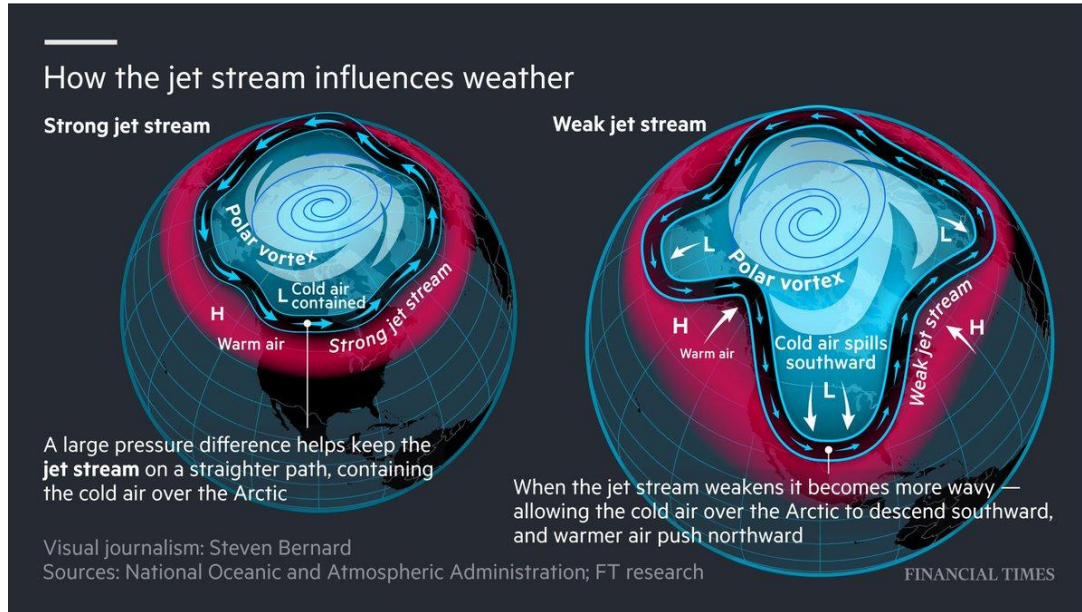
Why did it get so cold?

Polar Vortex - Large rotating mass of very cold stratospheric air

Jet Stream serves to bound/contain this very cold air.

If the jet stream ever weakens, this cold air can dip down into the midlatitudes

Manifests as a chronic Arctic surface high pressure

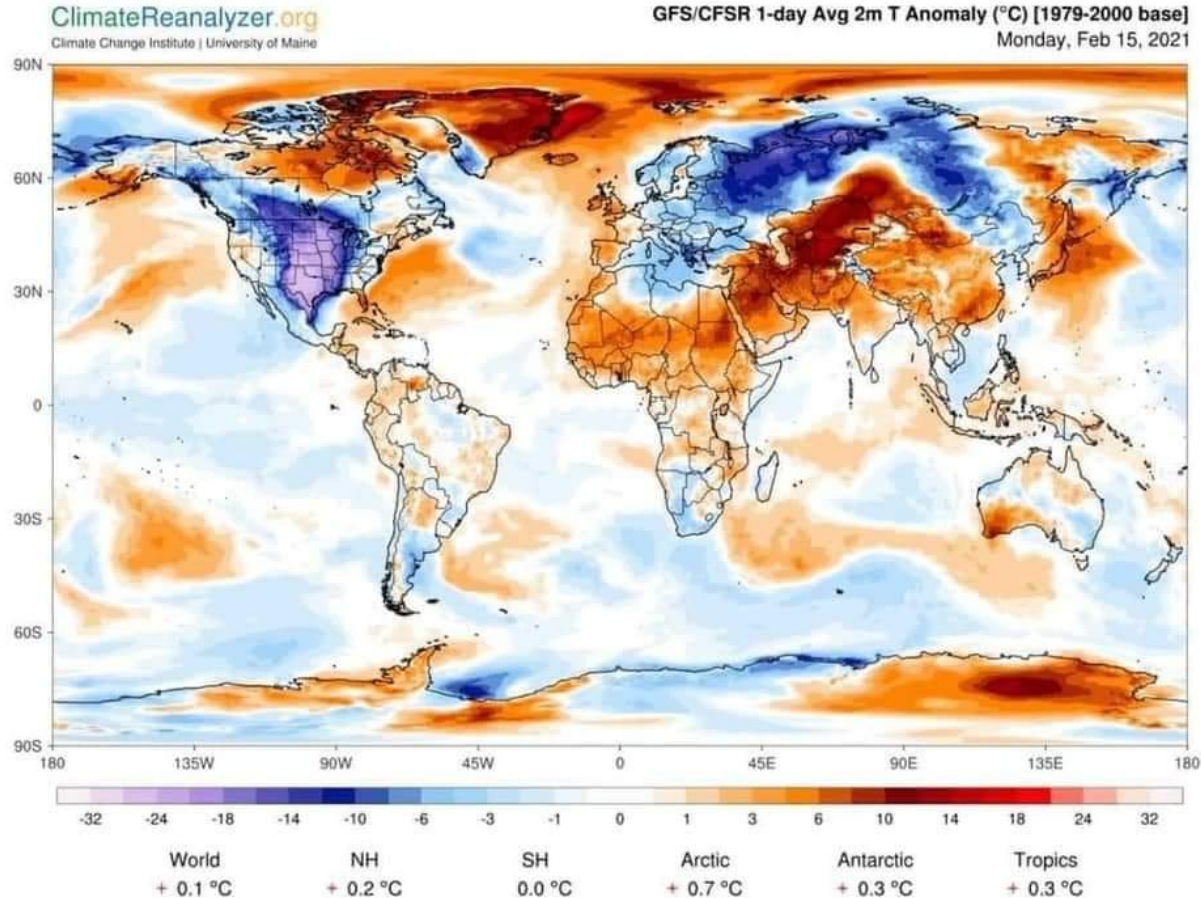


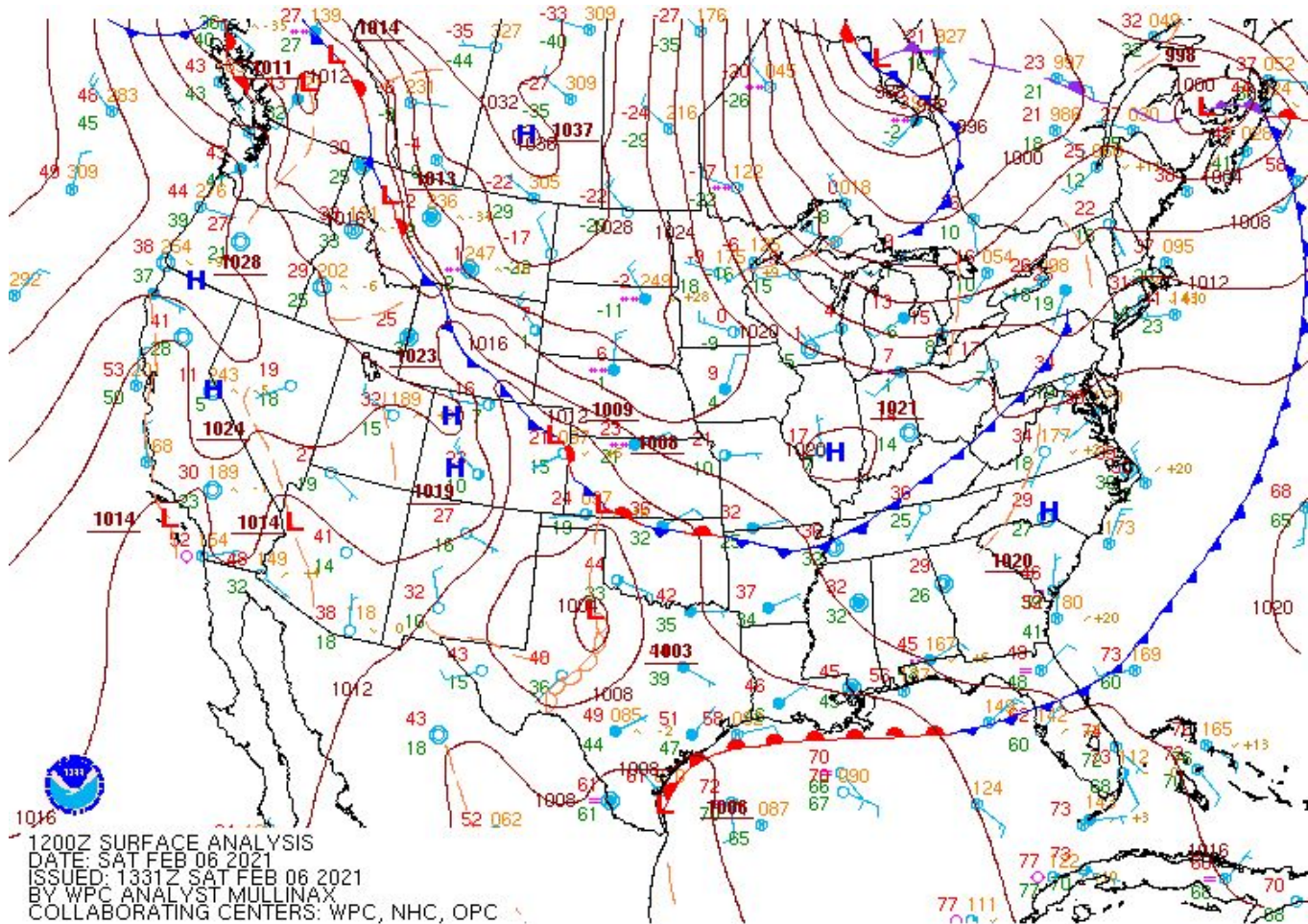
Greenland Block Negative NAO

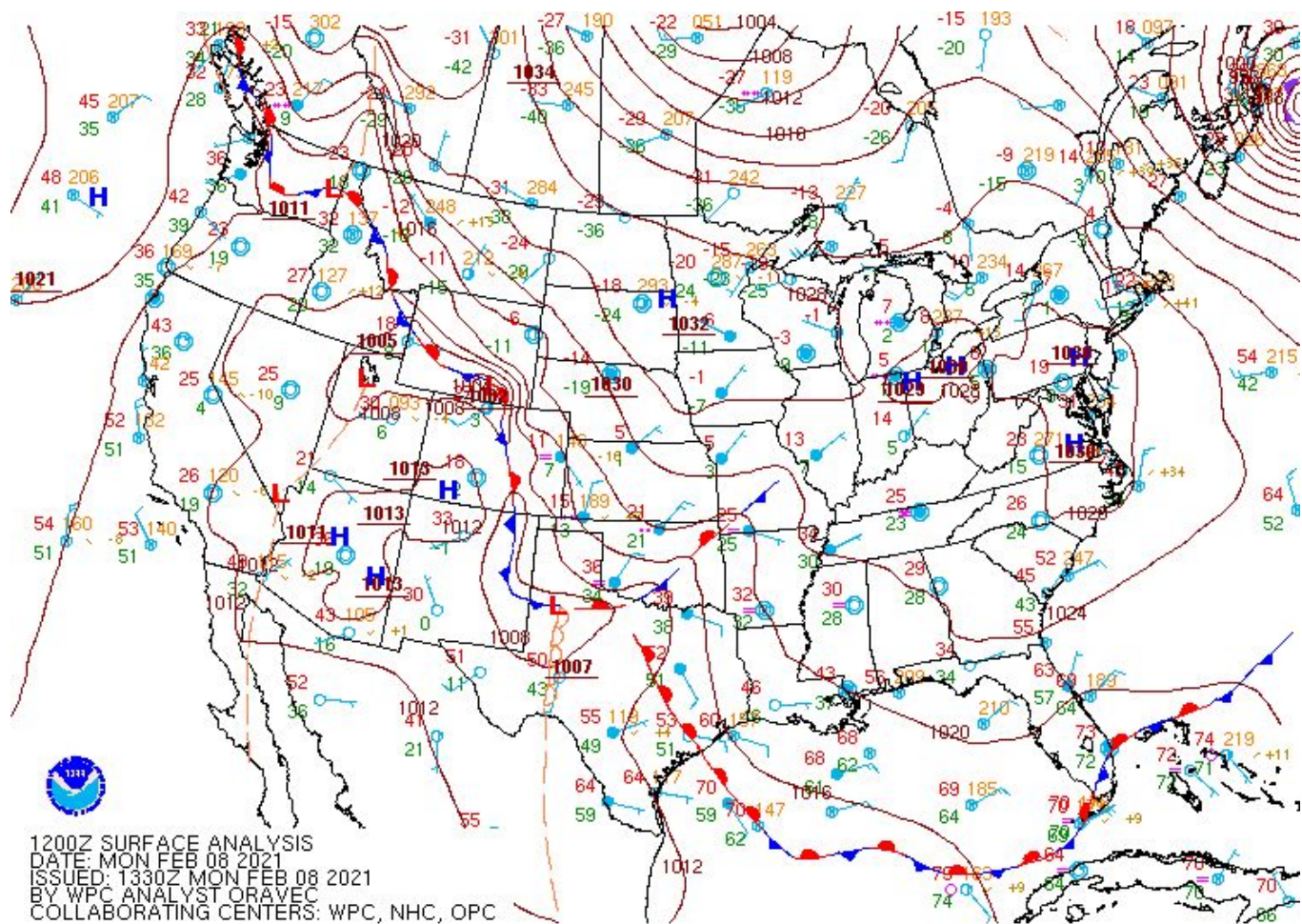
Upper ridging extends into Canada

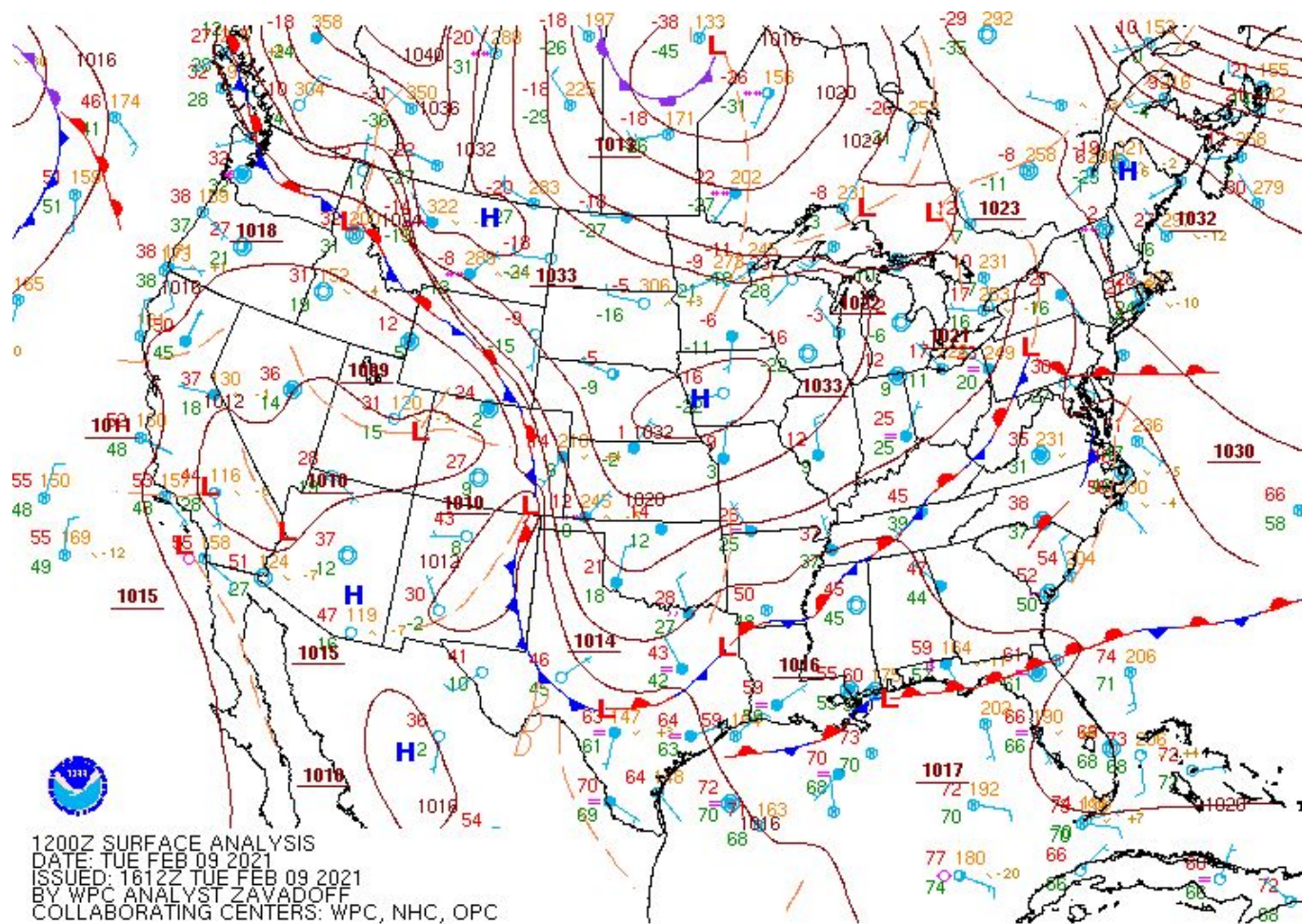


The Coldest Place on Earth? The American Midwest

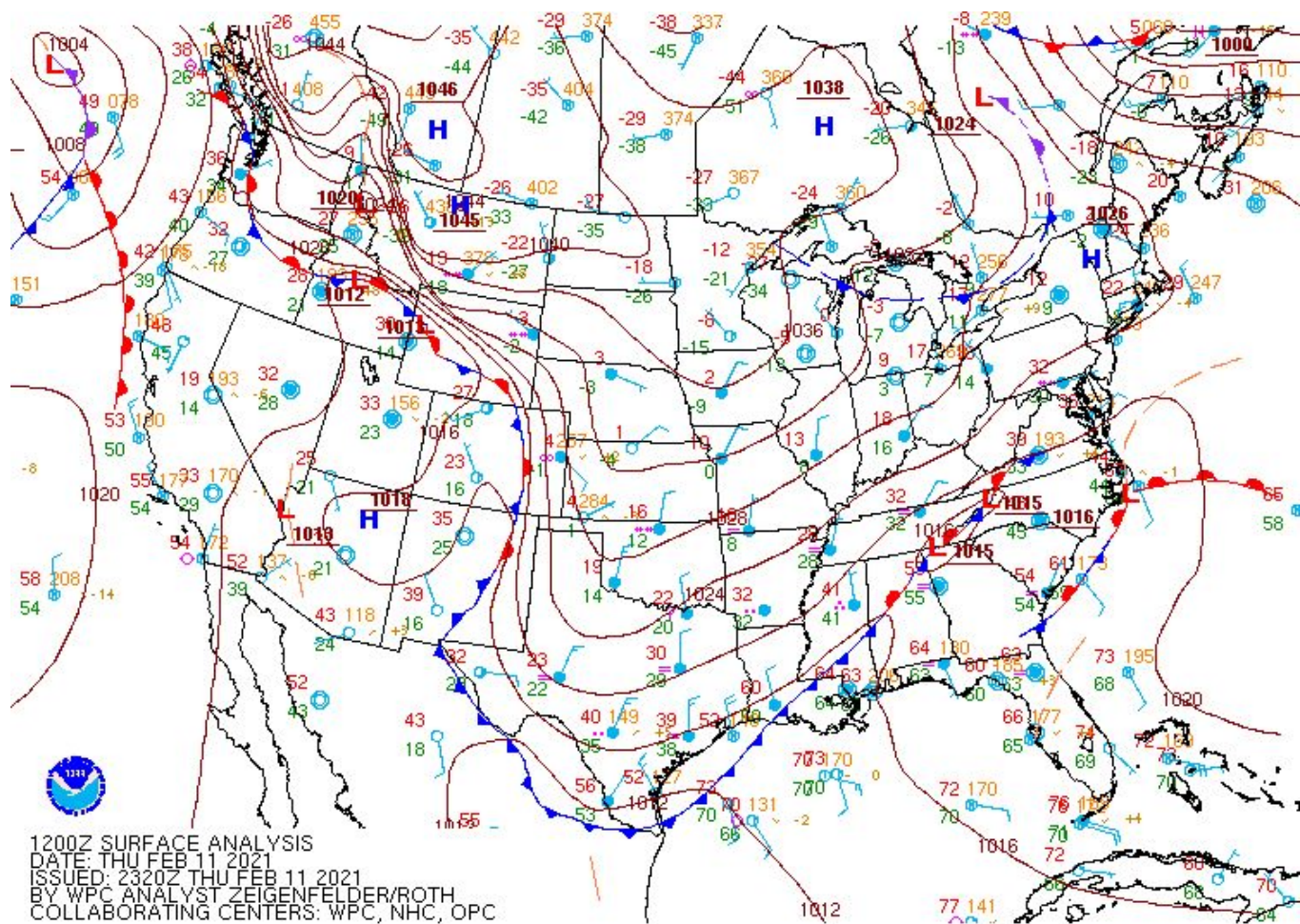


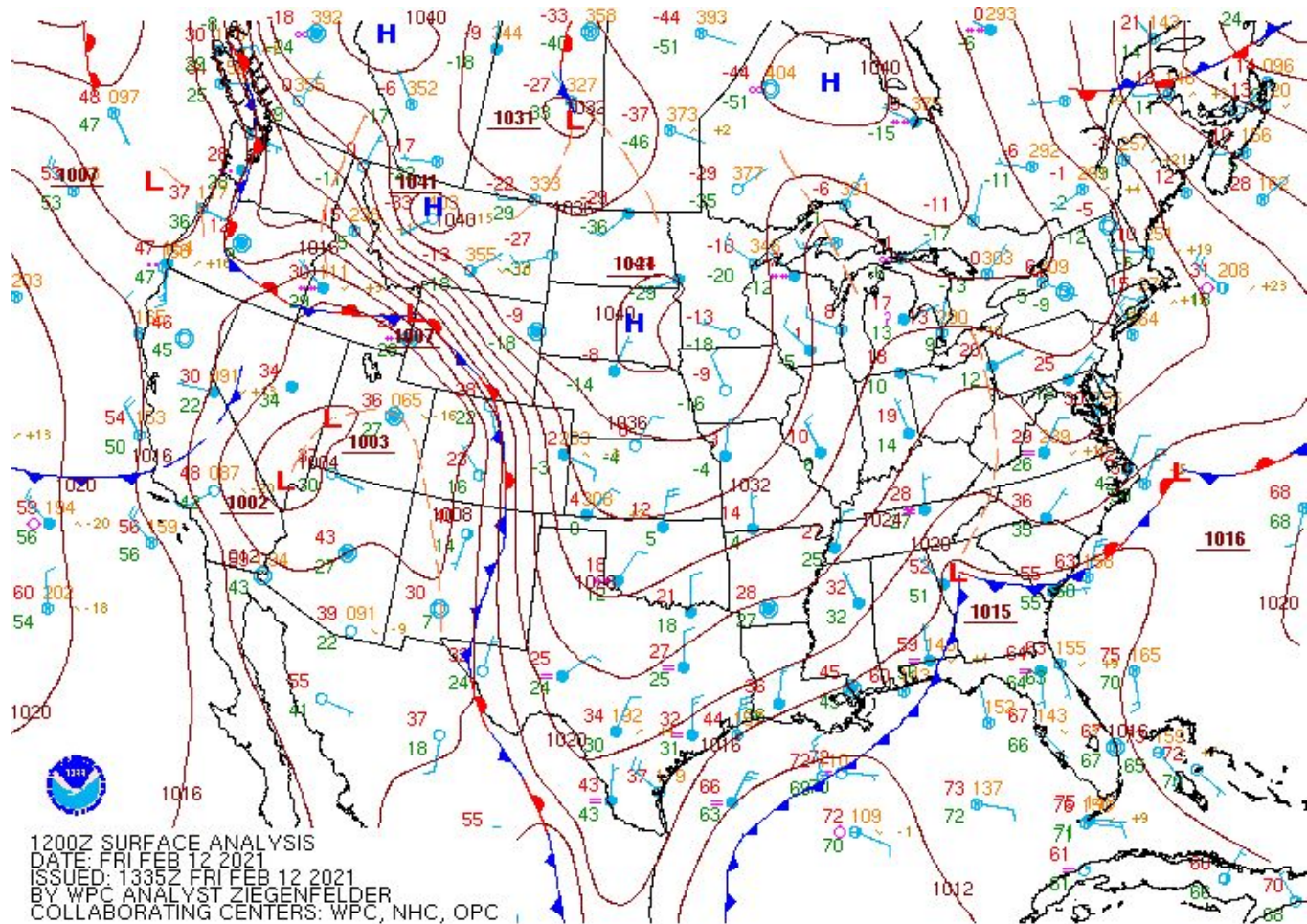


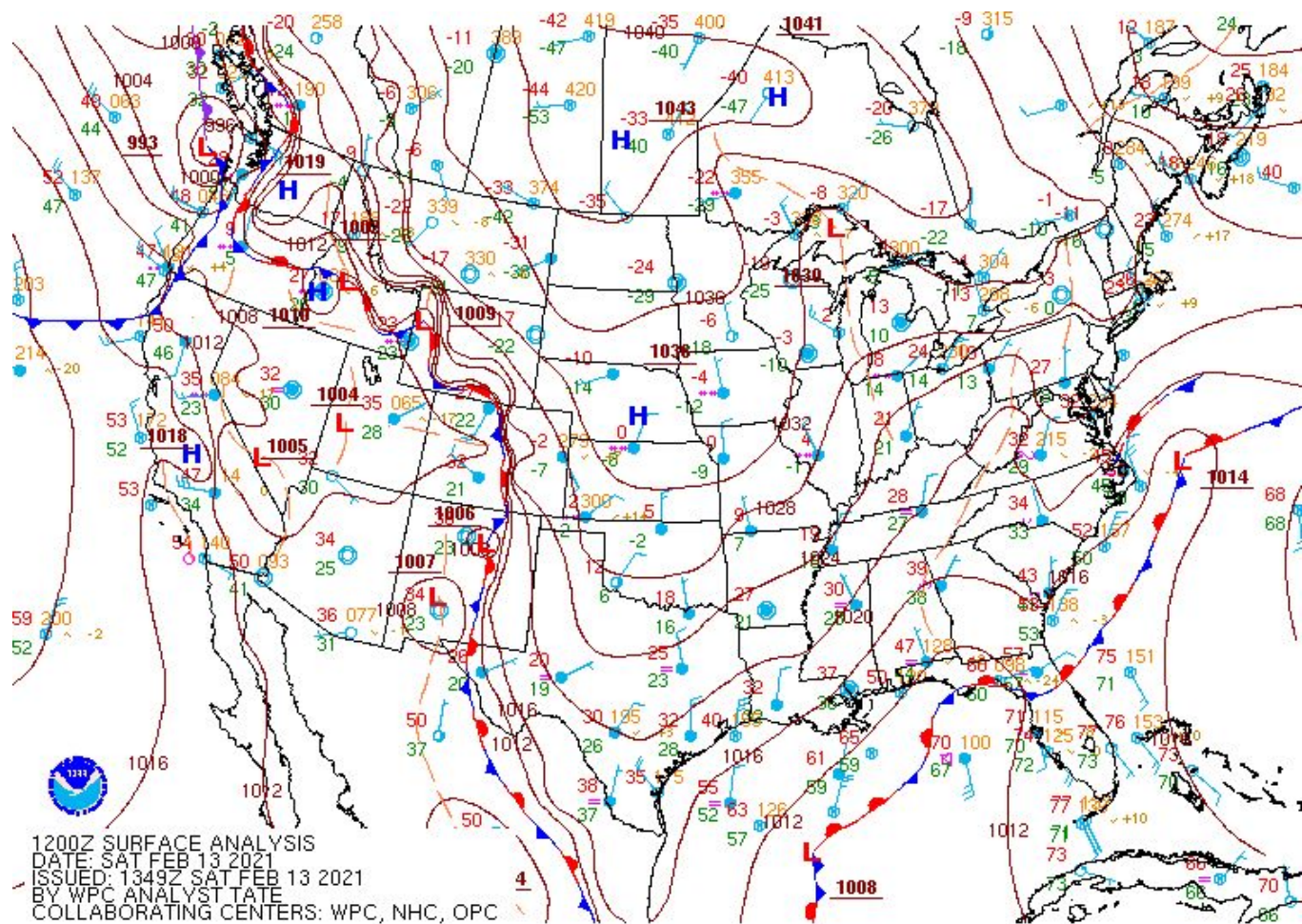




1200Z SURFACE ANALYSIS
 DATE: TUE FEB 09 2021
 ISSUED: 1612Z TUE FEB 09 2021
 BY WPC ANALYST ZAVADOFF
 COLLABORATING CENTERS: WPC, NHC, OPC







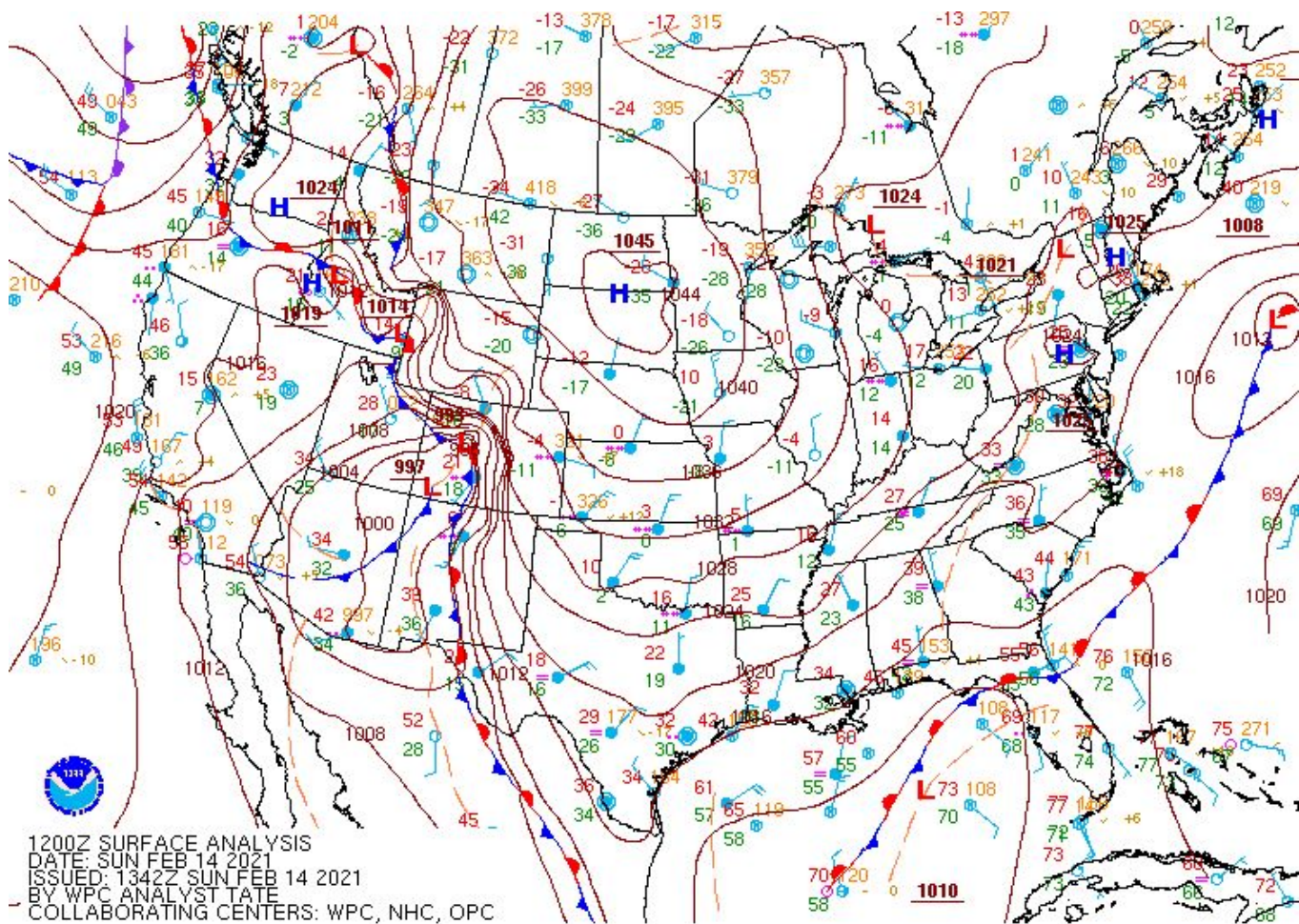
1200Z SURFACE ANALYSIS

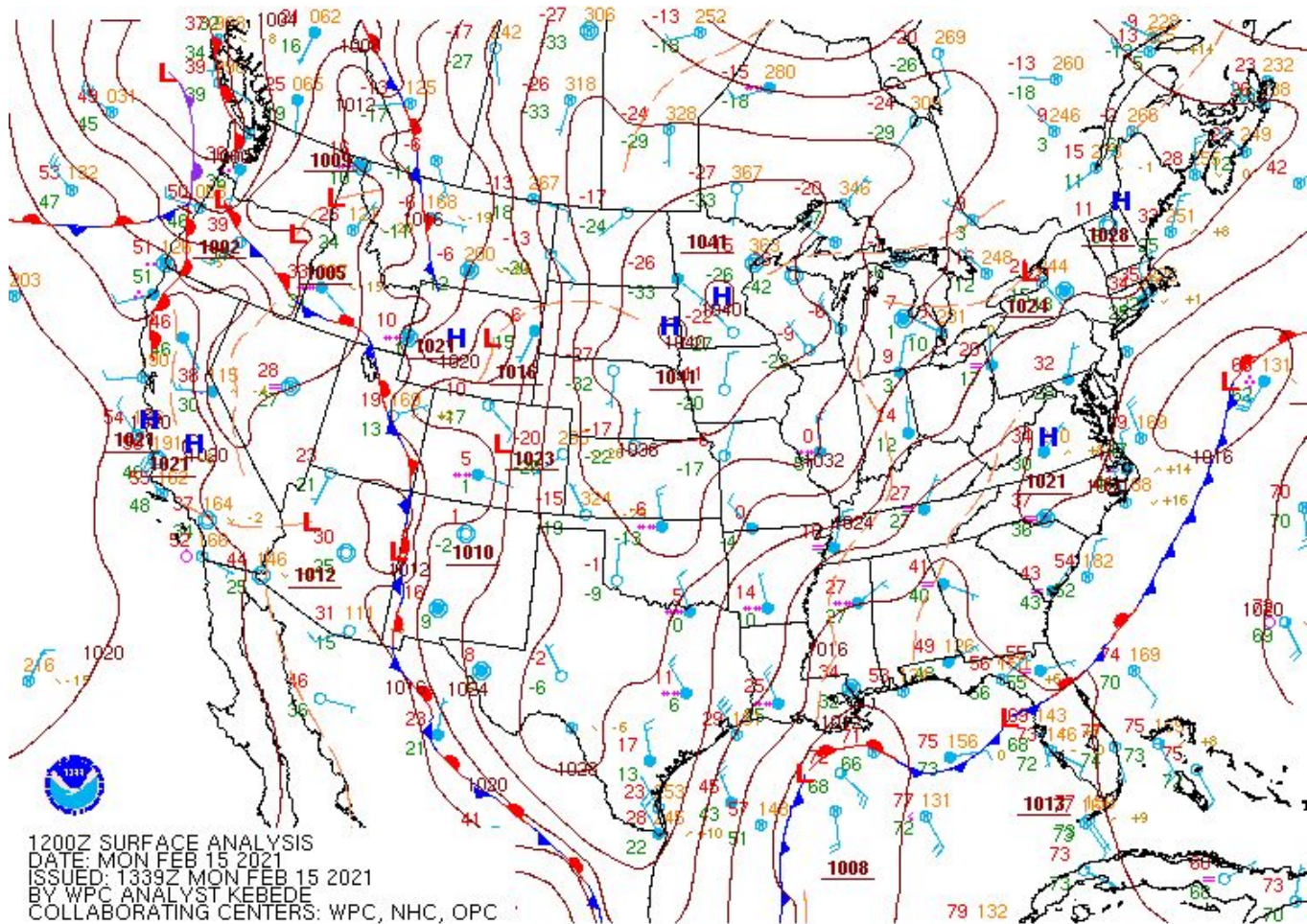
DATE: SAT FEB 13 2021

ISSUED: 1349Z SAT FEB 13 2021

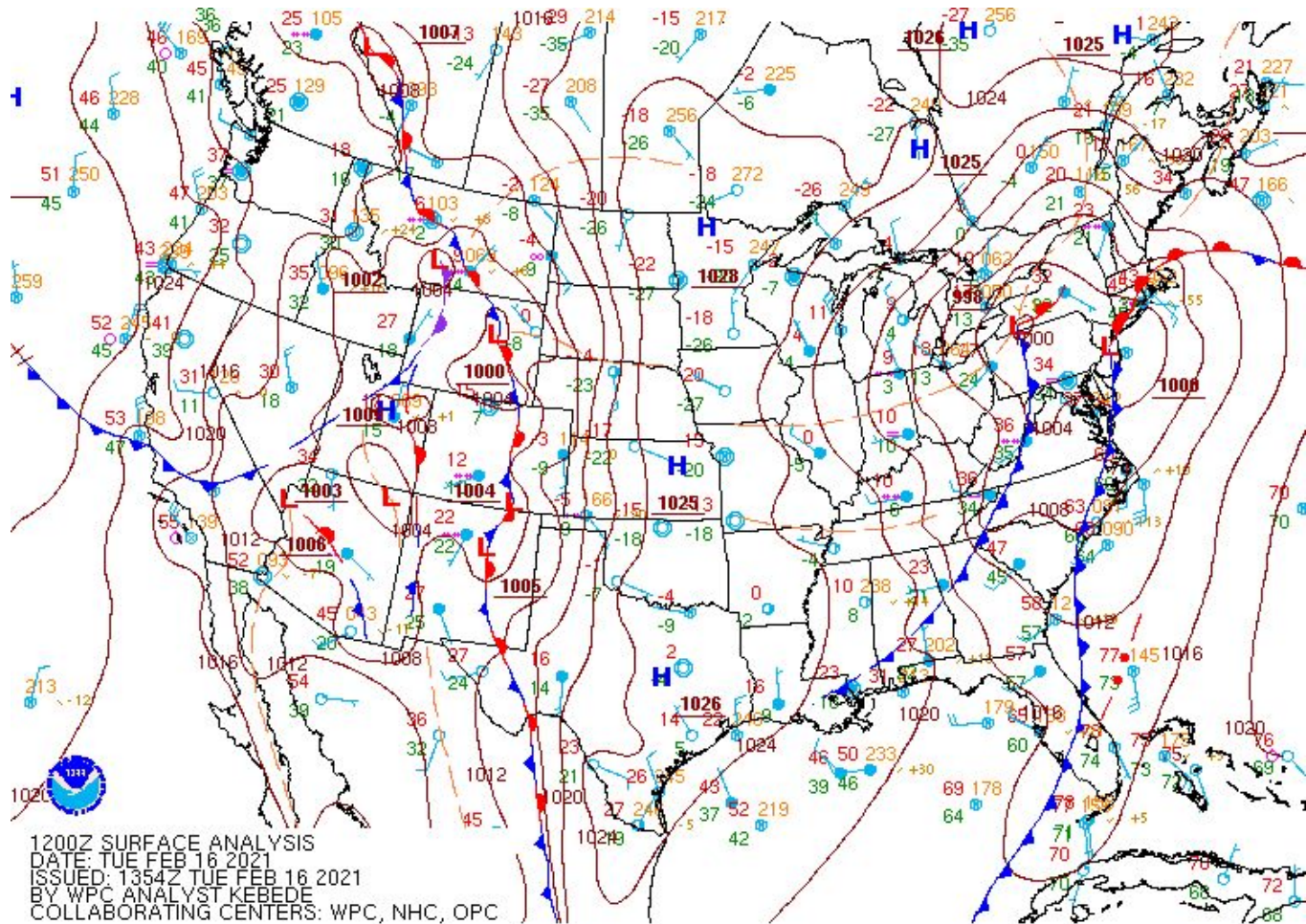
BY WPC ANALYST TATE

COLLABORATING CENTERS: WPC, NHC, OPC

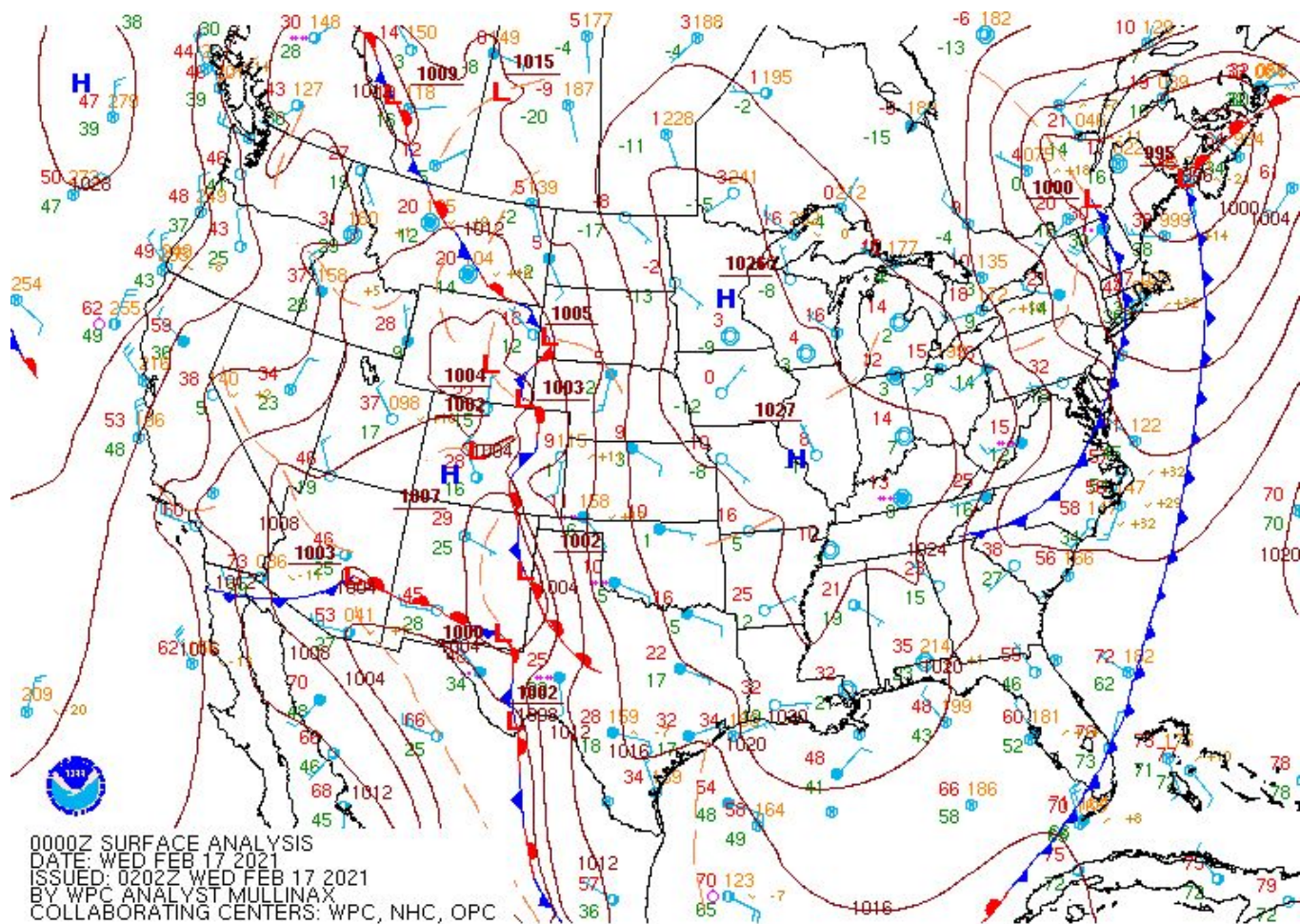




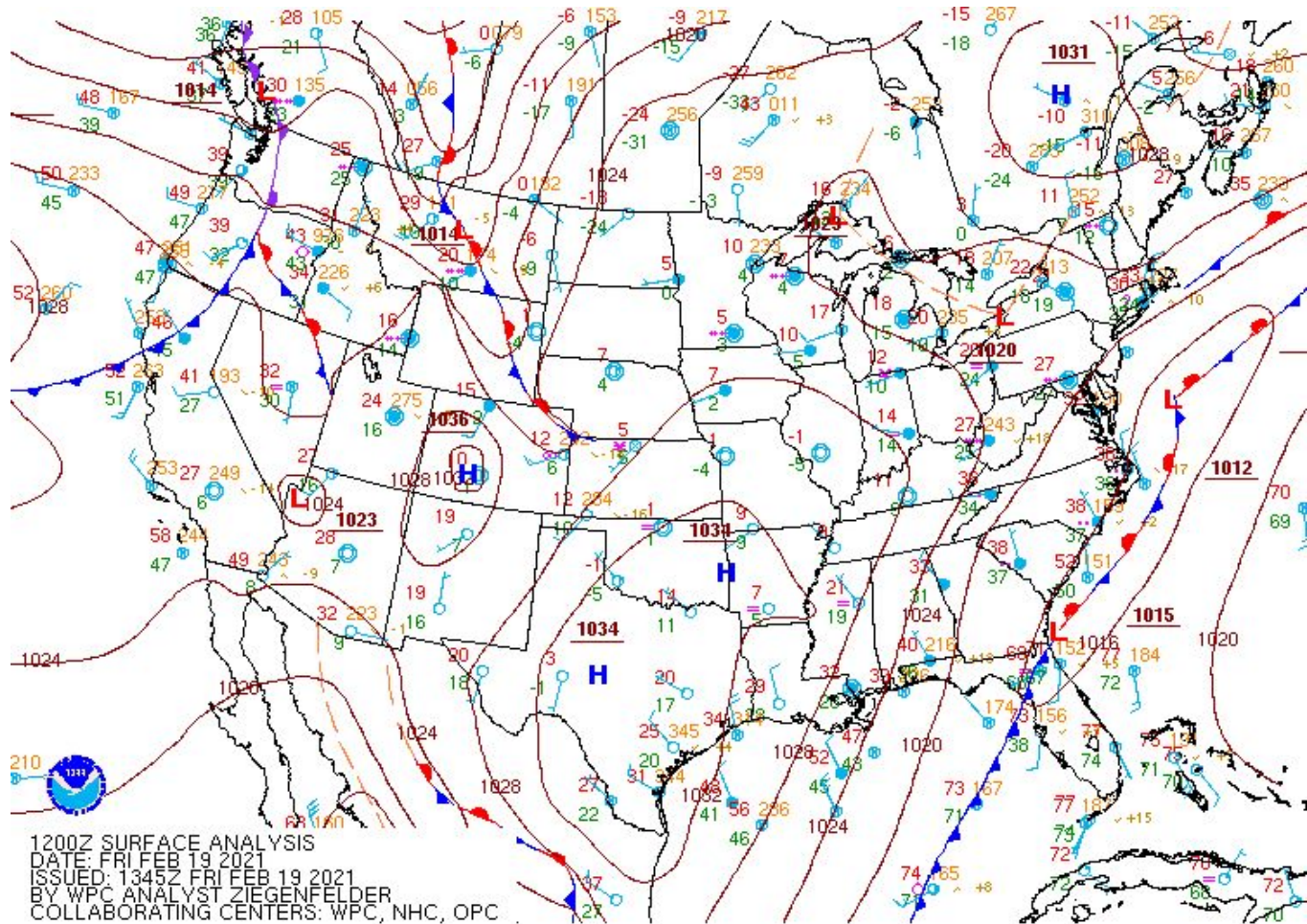
1200Z SURFACE ANALYSIS
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 ISSUED: 1339Z MON FEB 15 2021
 BY WPC ANALYST KEBEDE
 COLLABORATING CENTERS: WPC, NHC, OPC

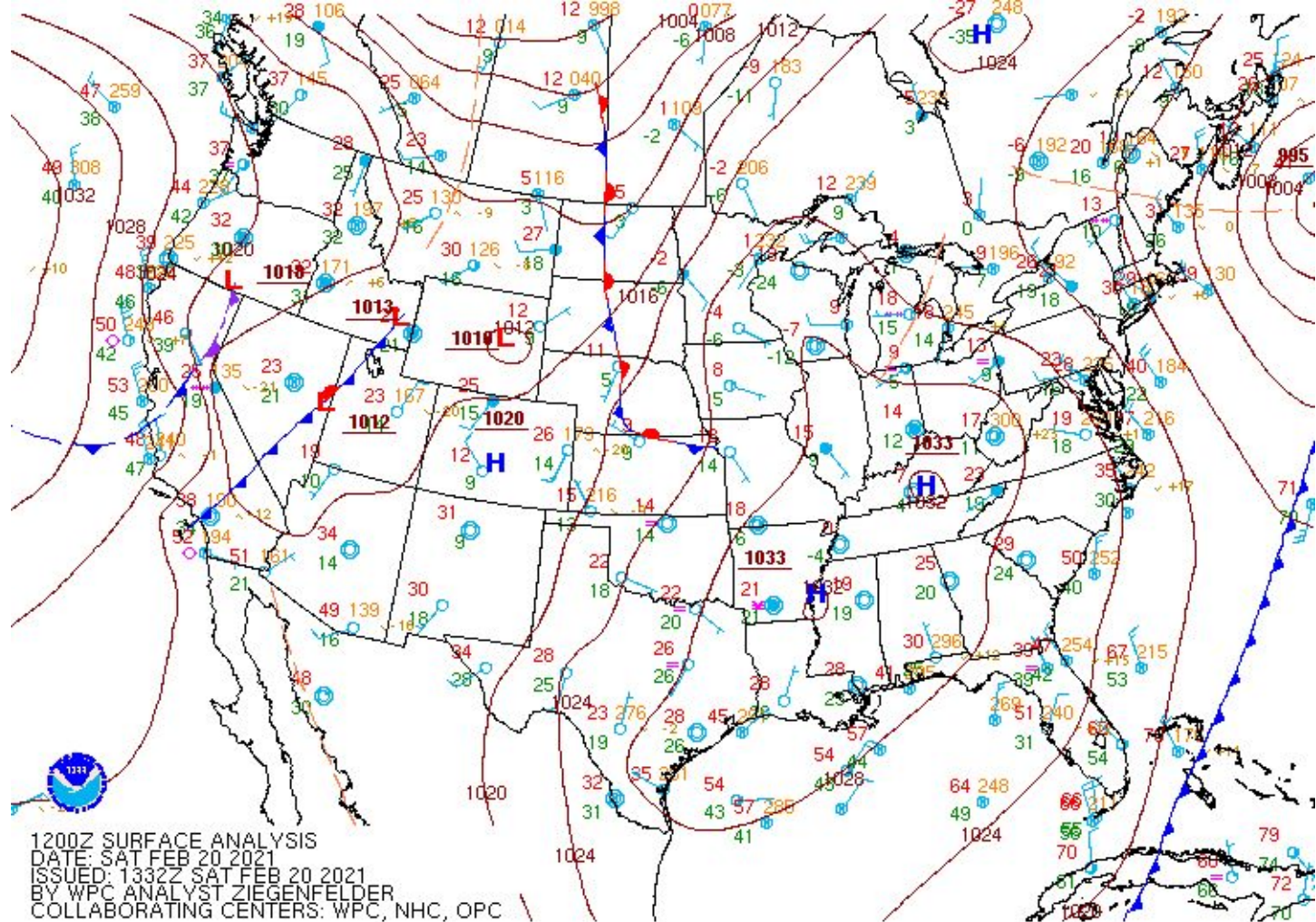


1200Z SURFACE ANALYSIS
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 ISSUED: 1354Z TUE FEB 16 2021
 BY WPC ANALYST KEBEDE
 COLLABORATING CENTERS: WPC, NHC, OPC



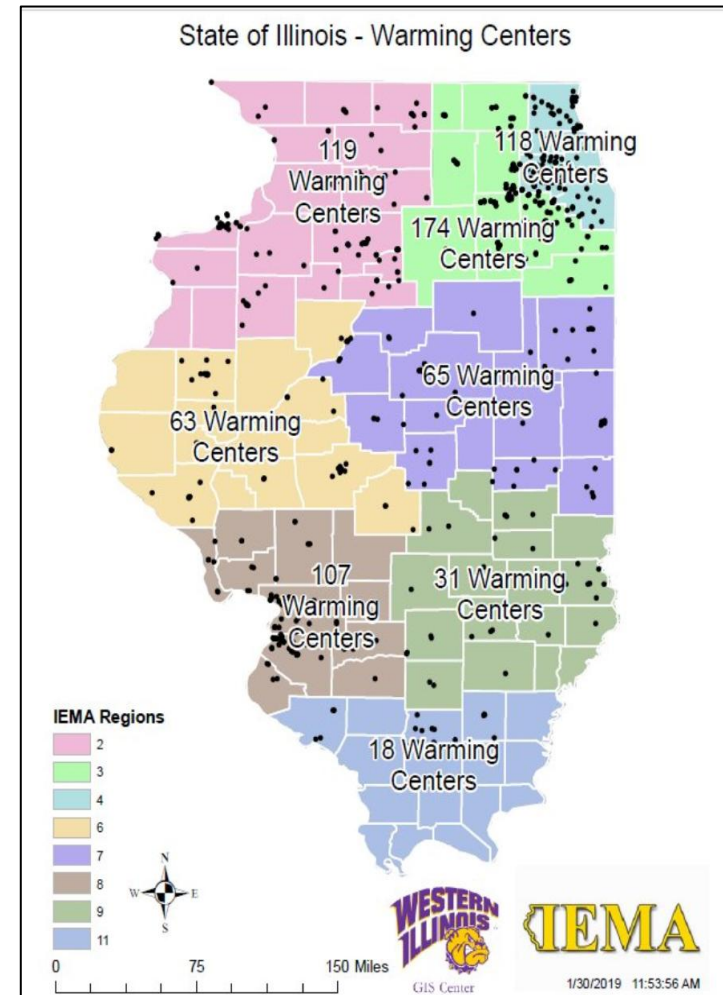
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DATE: WED FEB 17 2021
ISSUED: 0202Z WED FEB 17 2021
BY WPC ANALYST MULLINAX
COLLABORATING CENTERS: WPC, NHC, OPC





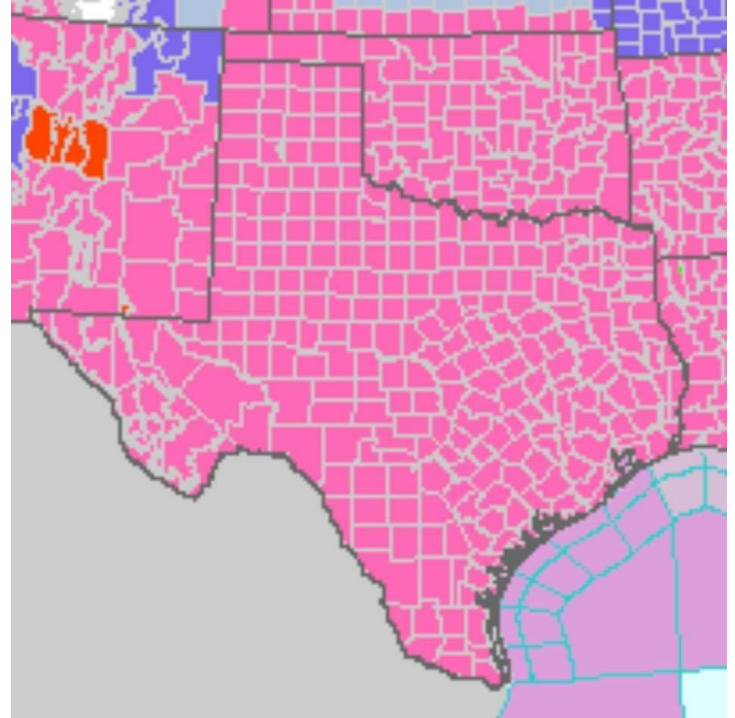
Upper Midwest

- Life-threatening cold temperatures for much of Valentine's weekend
- February 14 was our coldest day
 - High of 0°F in Macomb
 - Wind Chill of -20°F and Below
 - Lows of -10°F and lower
- Additionally, northern Illinois received 14-17 inches of snow



Texas

- First time in history every TX county is under winter storm warning
- Frigid Cold (Below 0°F in some places)
 - Many locations saw lowest temperatures ever recorded
- Widespread blackouts
- Some places received 10+ inches of snow
 - 3-5 inches of accumulation
 - Poor road conditions
 - Deadly pileup crash on I-35, Killing 5
- Dozens of direct deaths
 - Can likely expect many more



Is Green Energy to Blame?

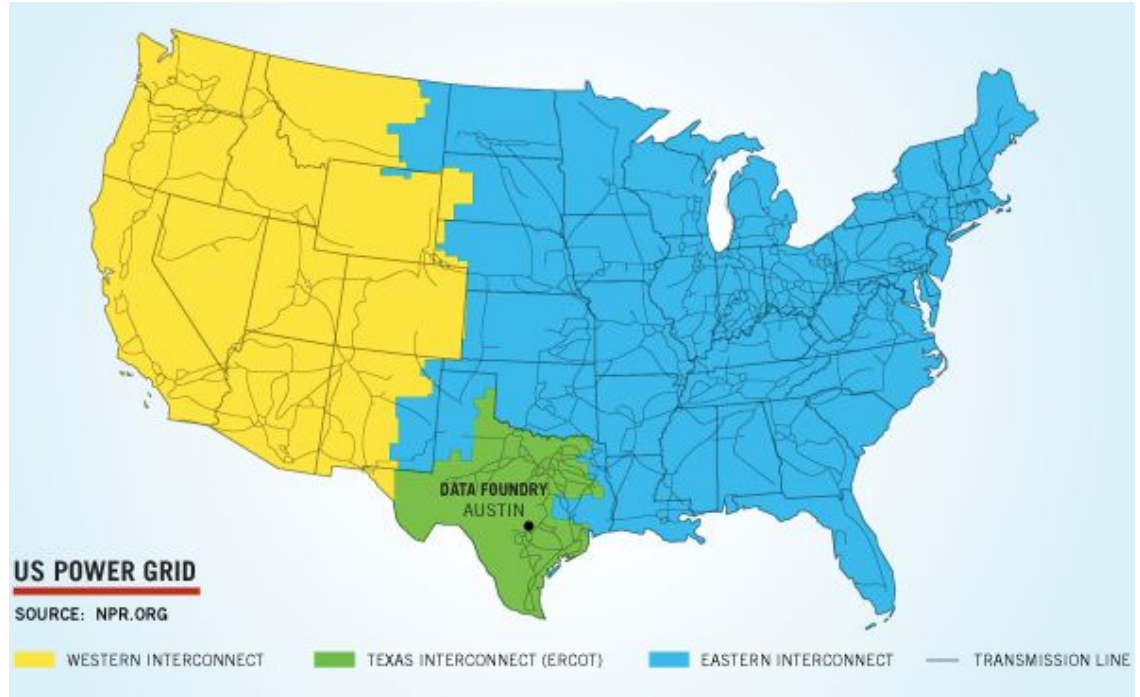
- Some, including public officials, have been quick to blame black-outs on Green Energy
- This is simply **not true**
 - The state of TX gets less than 10% of its energy from renewables
- True reason: Texas' energy infrastructure was simply not prepared for a cold weather outbreak like this



Sweden, 2015

US Energy Grids

- Texas has its own, disconnected grid
- Once strain was put on it, it could not receive support from the rest of the country's power supply
- This event may spark a conversation about energy in Texas









Severe Weather - Winter Storm Uri

- On February 15, a Midlatitude Cyclone developed off the Gulf Coast of Florida
 - Given nickname Uri by the Weather Channel
- Travelled up the East Coast
- A couple storms associated with the cold front of this system would become tornadic
- EF-2 in Baker CO, Georgia
- EF-3 in Brunswick, NC

SPC Storm Reports for 02/15/21

Map updated at 2344Z on 02/23/21

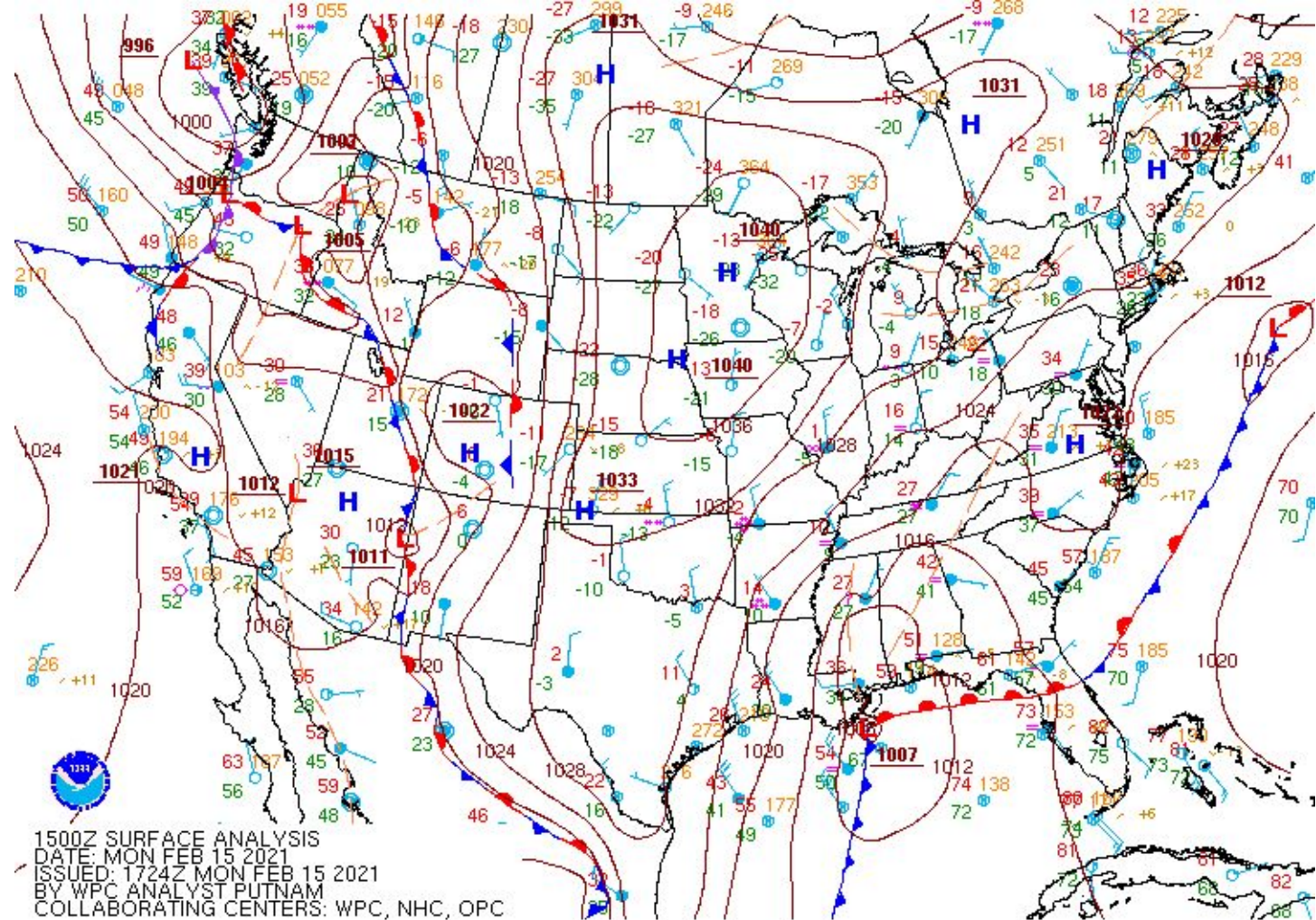


TORNADO REPORTS.. (4)
WIND REPORTS/HI..... (32/2)
HAIL REPORTS/LG..... (9/0)
TOTAL REPORTS..... (45)

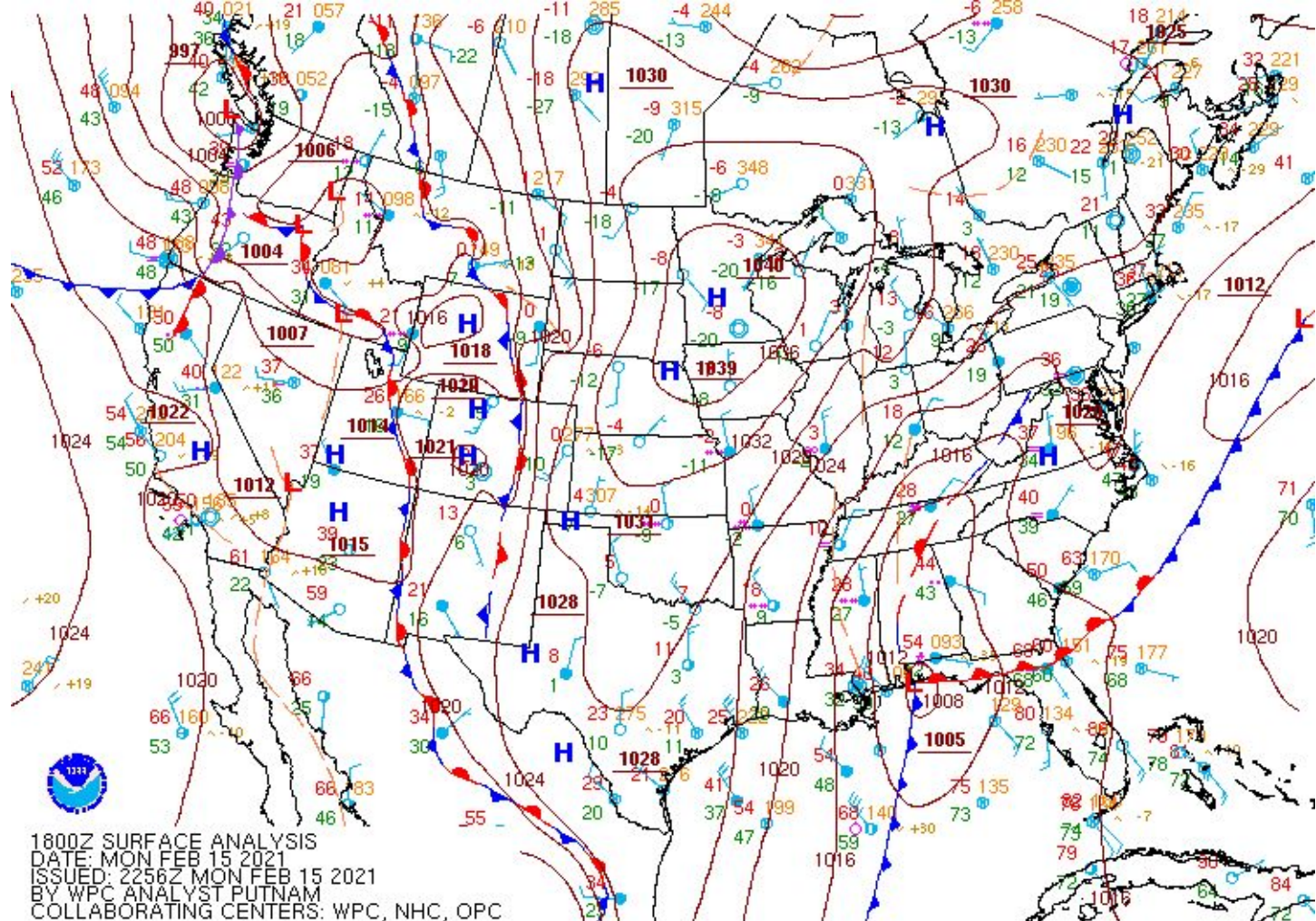
National Weather Service
Storm Prediction Center Norman, Oklahoma

- High Wind Report (65KT +)
- ▲ Large Hail Report (2" dia. +)

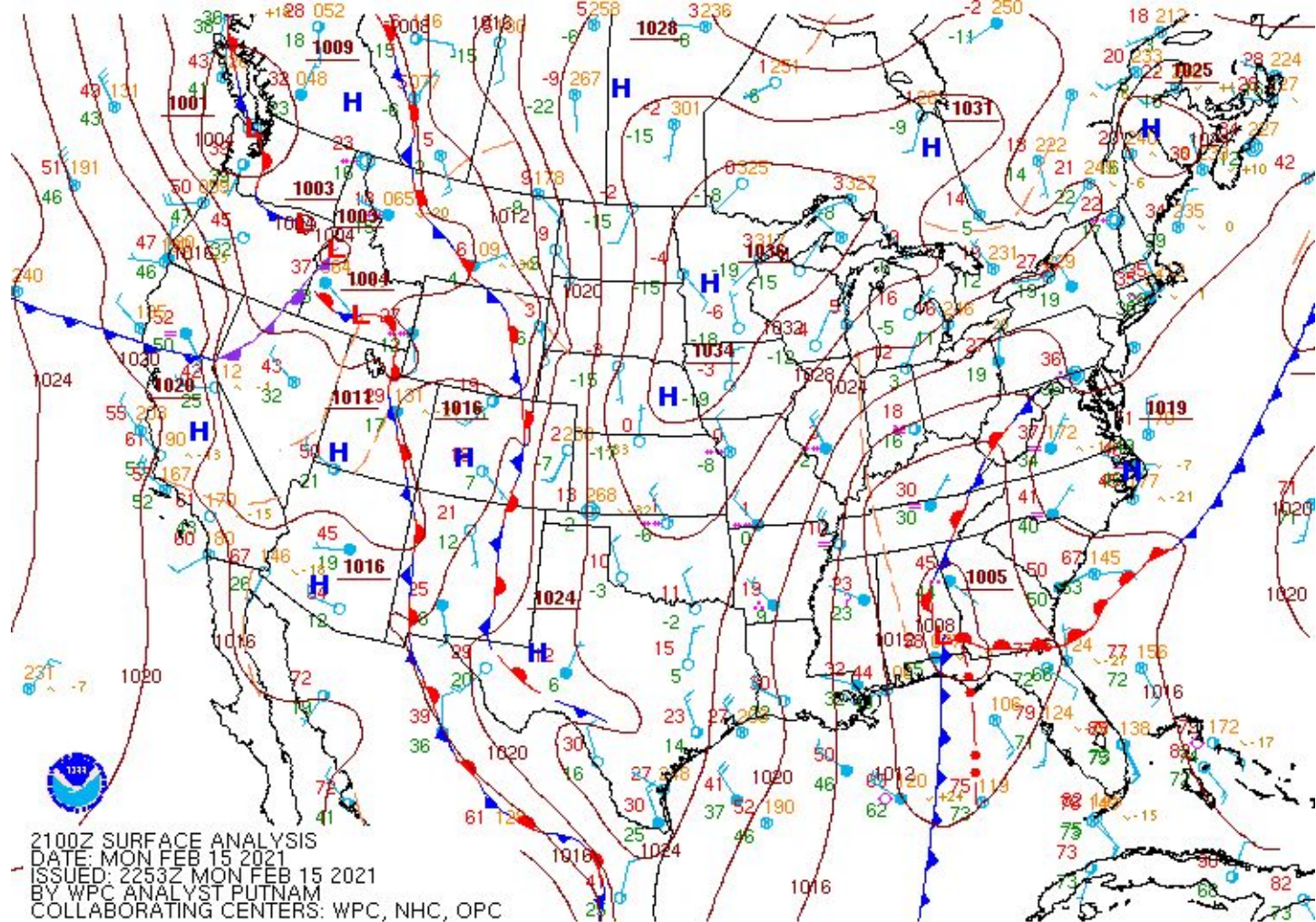
PRELIMINARY DATA ONLY



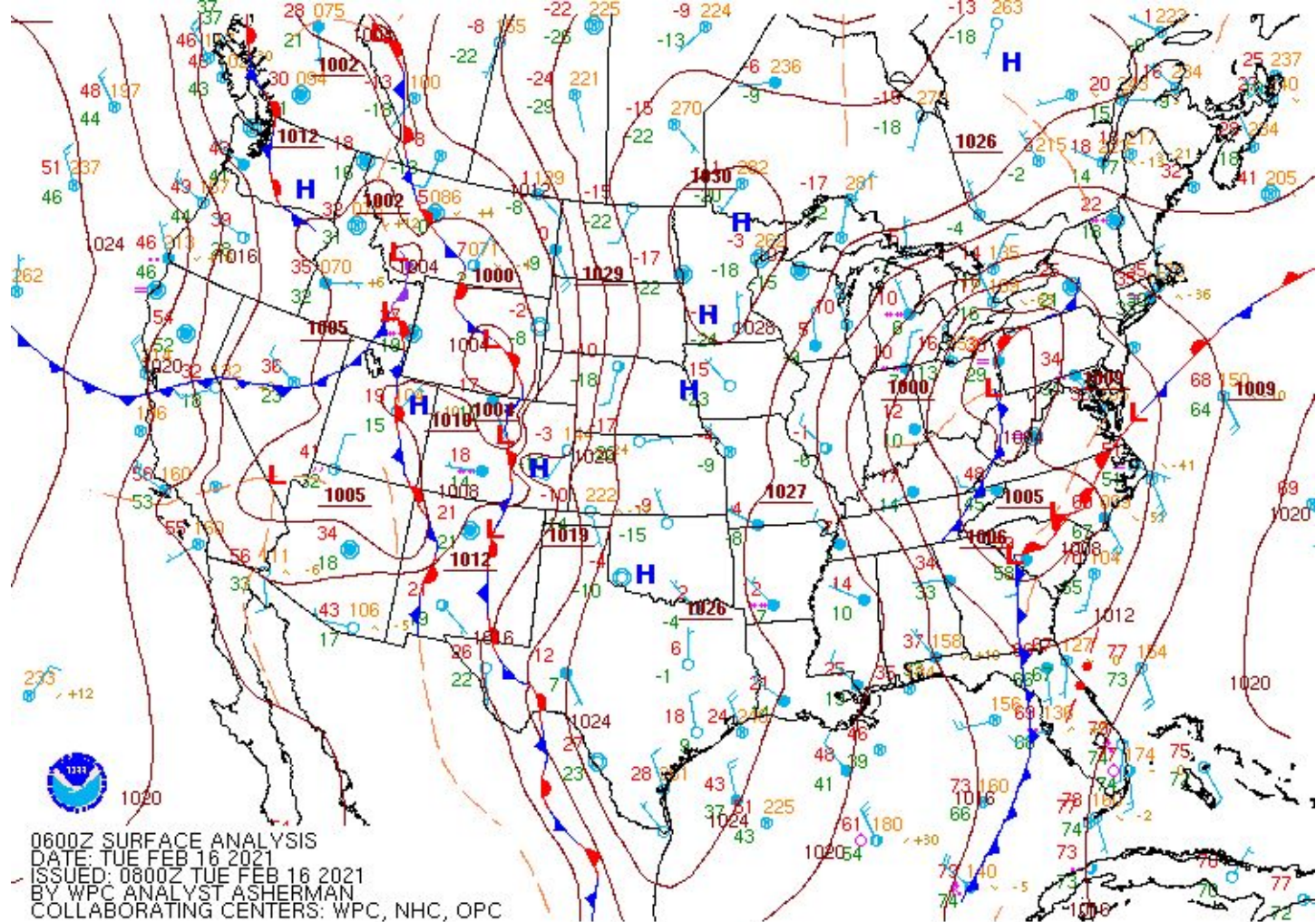
1500Z SURFACE ANALYSIS
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 ISSUED: 1724Z MON FEB 15 2021
 BY WPC ANALYST PUTNAM
 COLLABORATING CENTERS: WPC, NHC, OPC



1800Z SURFACE ANALYSIS
 DATE: MON FEB 15 2021
 ISSUED: 2256Z MON FEB 15 2021
 BY WPC ANALYST PUTNAM
 COLLABORATING CENTERS: WPC, NHC, OPC



2100Z SURFACE ANALYSIS
 DATE: MON FEB 15 2021
 ISSUED: 2253Z MON FEB 15 2021
 BY WPC ANALYST PUTNAM
 COLLABORATING CENTERS: WPC, NHC, OPC



0600Z SURFACE ANALYSIS
 DATE: TUE FEB 16 2021
 ISSUED: 0800Z TUE FEB 16 2021
 BY WPC ANALYST ASHERMAN
 COLLABORATING CENTERS: WPC, NHC, OPC

Brunswick County, NC



Thanks for listening!

Questions?