2024 Weather Outlook

Don Day, Jr.

DayWeather, Inc.

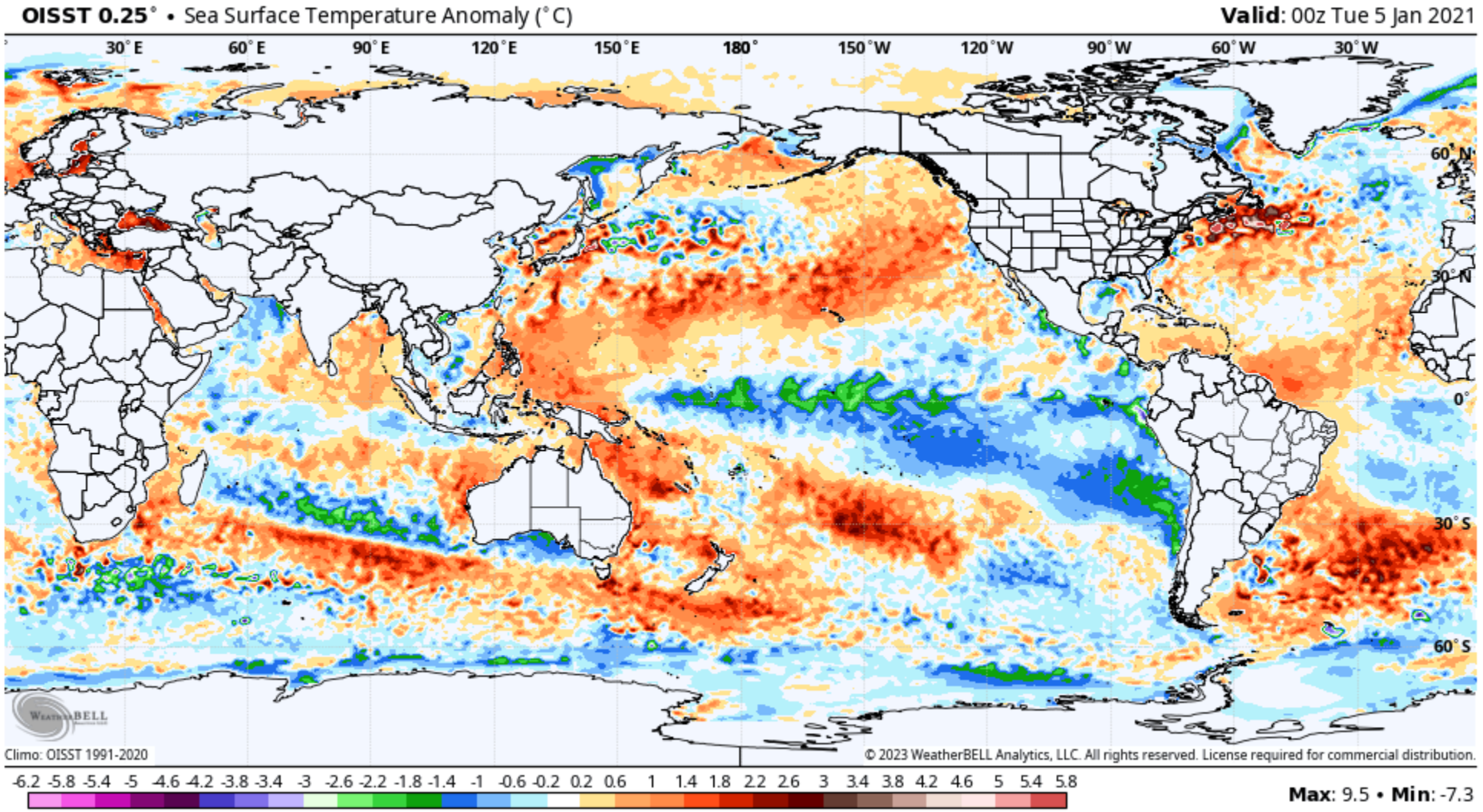
Cheyenne, WY

DAYWEATHER PODCAST

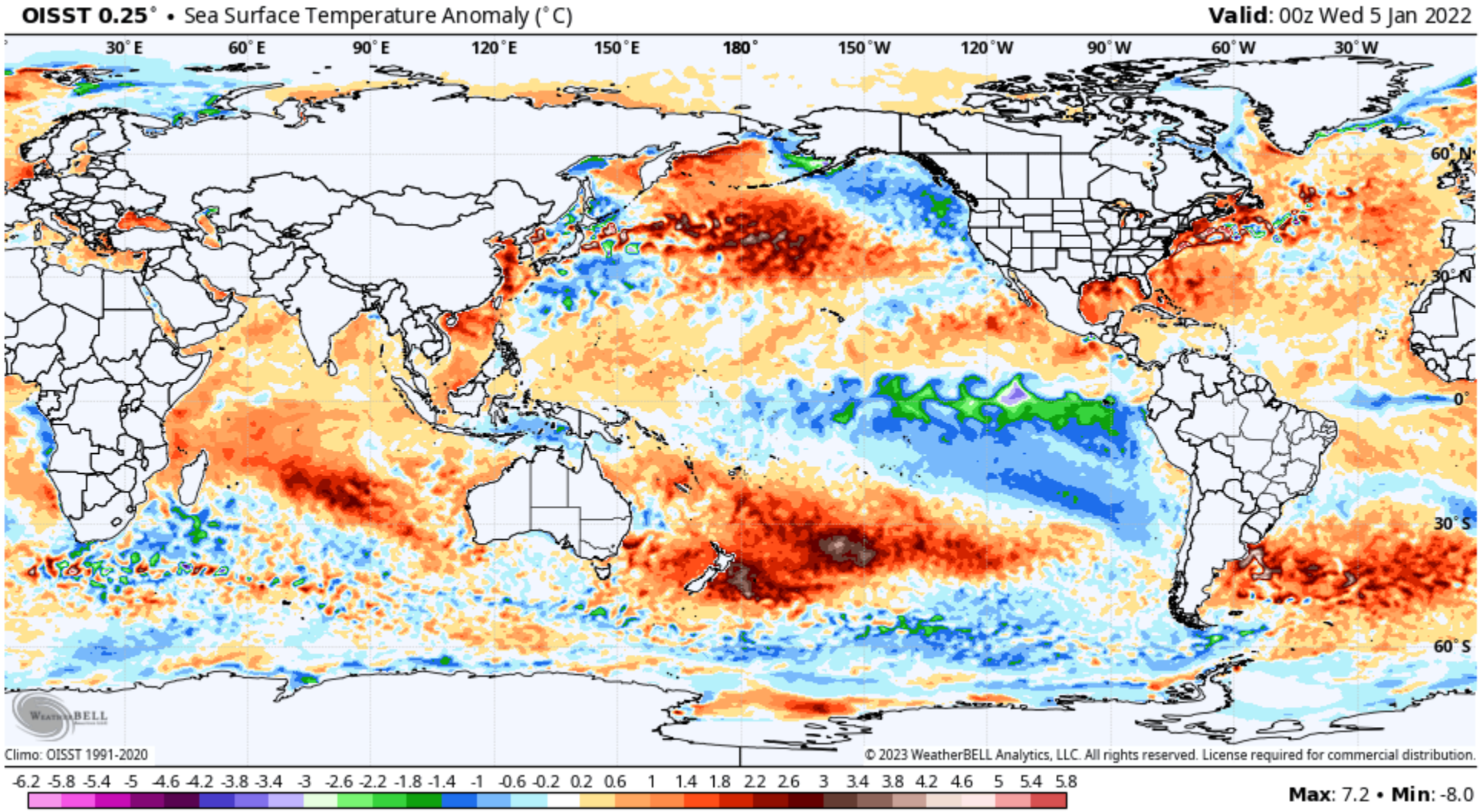
Quick Review of Past Few Years

- Three year La Nina (2021-2023) – drought signal
- Transition to El Nino (late 2023 to early 2024) – more wet, drought conditions improved
- El Nino formed early 2023….how long will it last?
- La Nina returning?

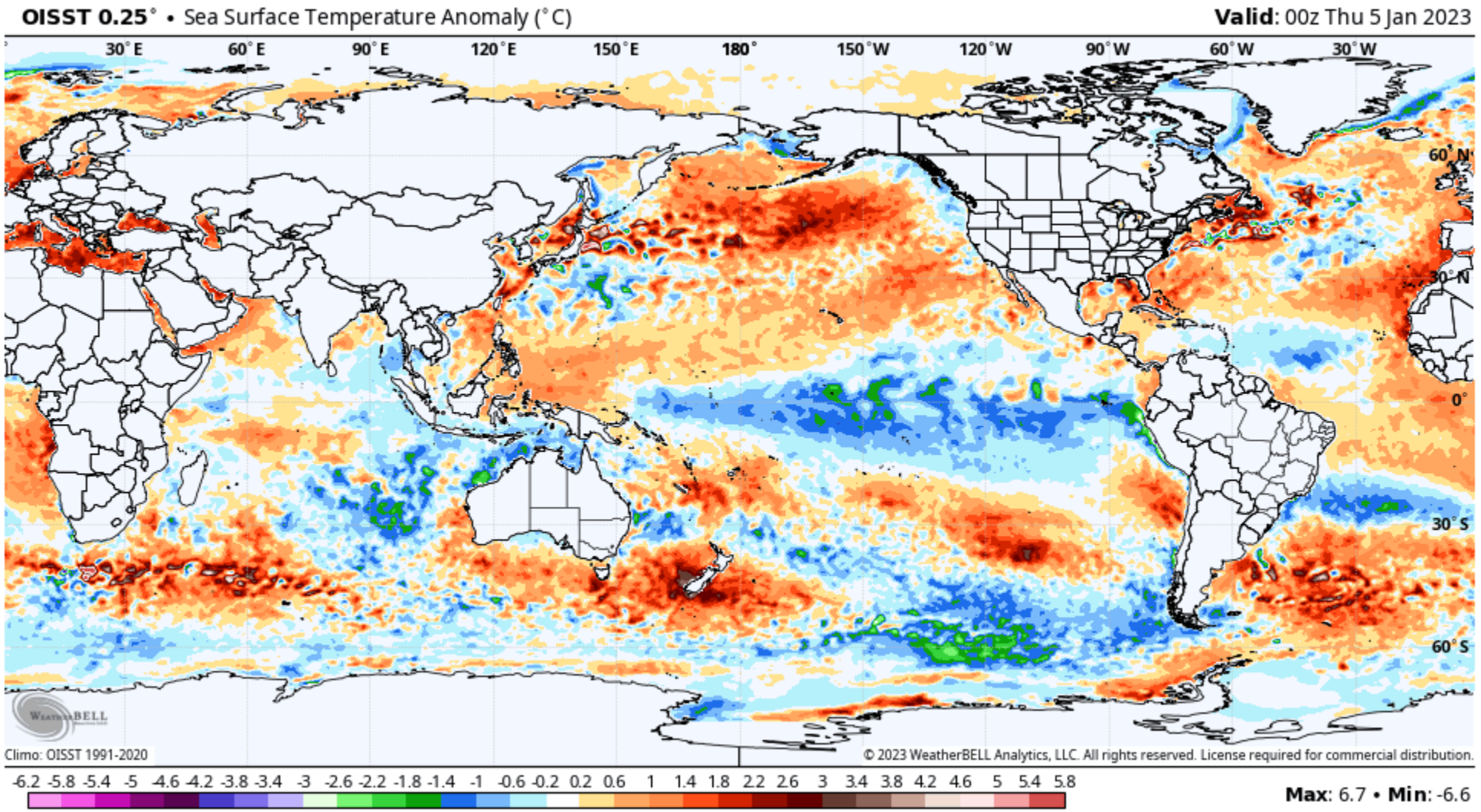
La Nina – 2021-2023



La Nina – 2021-2023



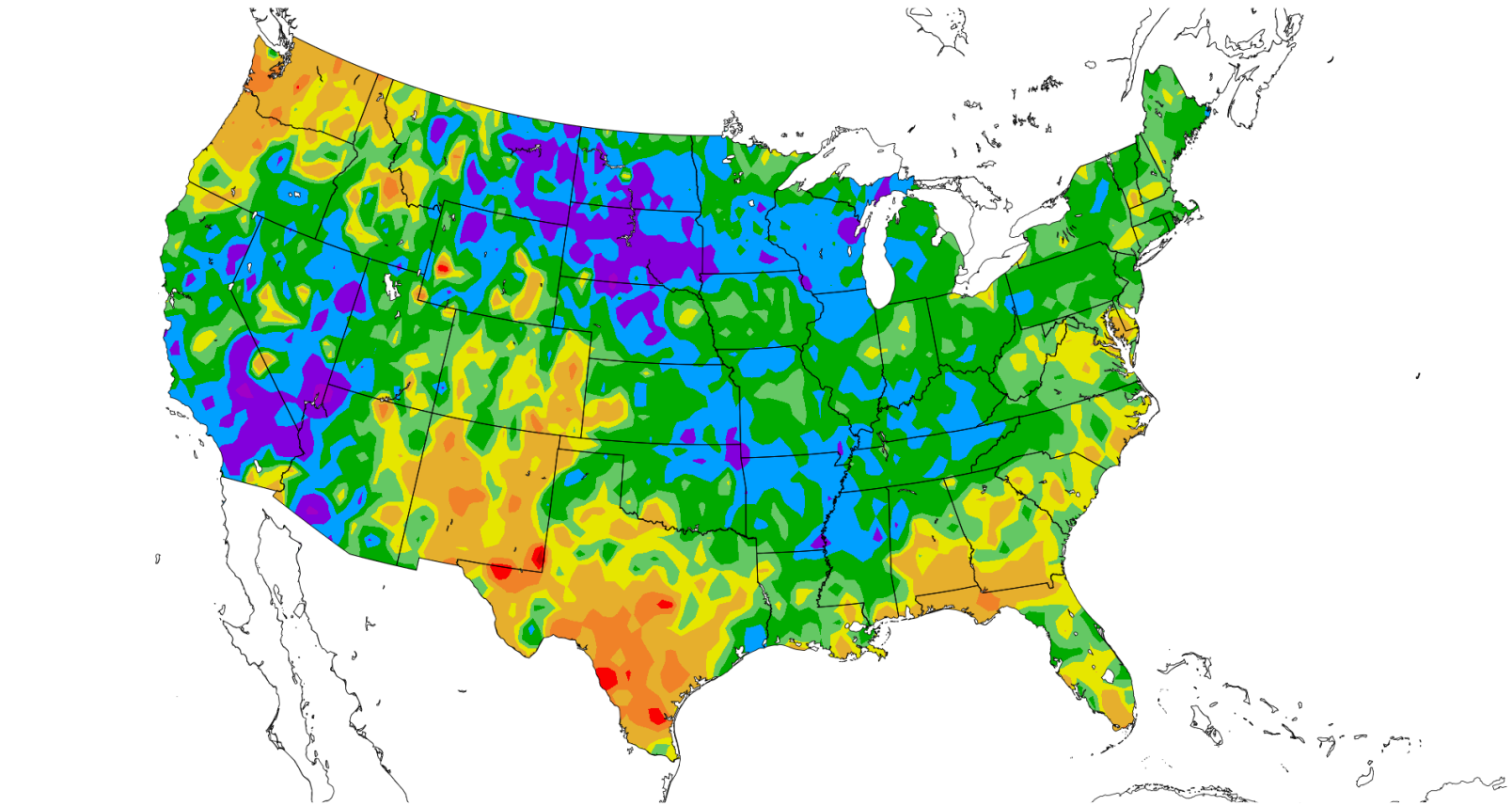
La Nina – 2021-2023



The Year of 2019

- Was an El Nino
- 2019 was a wet year
- In 2020 a strong La Nina formed

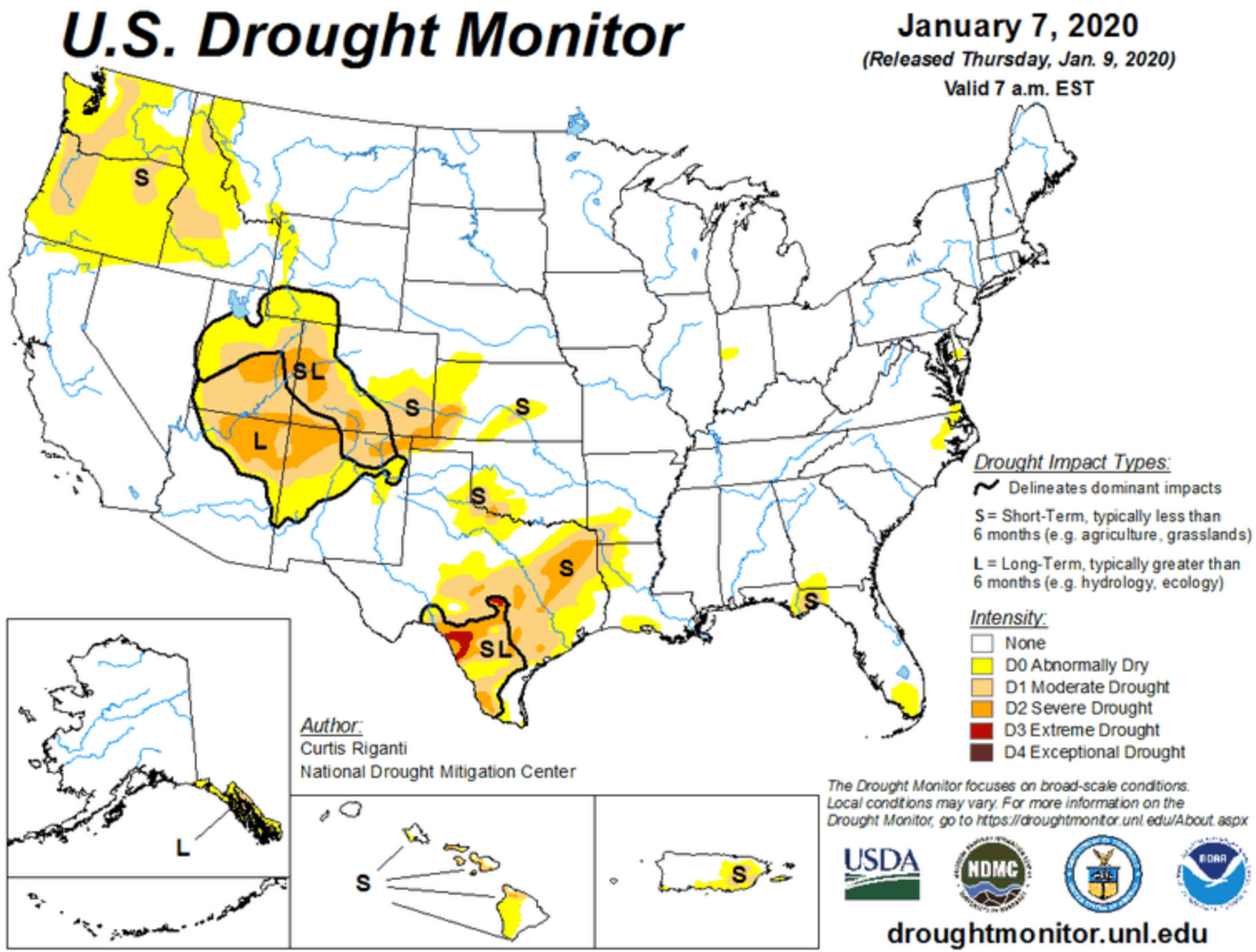
Percent of Normal Precipitation (%)
1/1/2019 – 12/31/2019



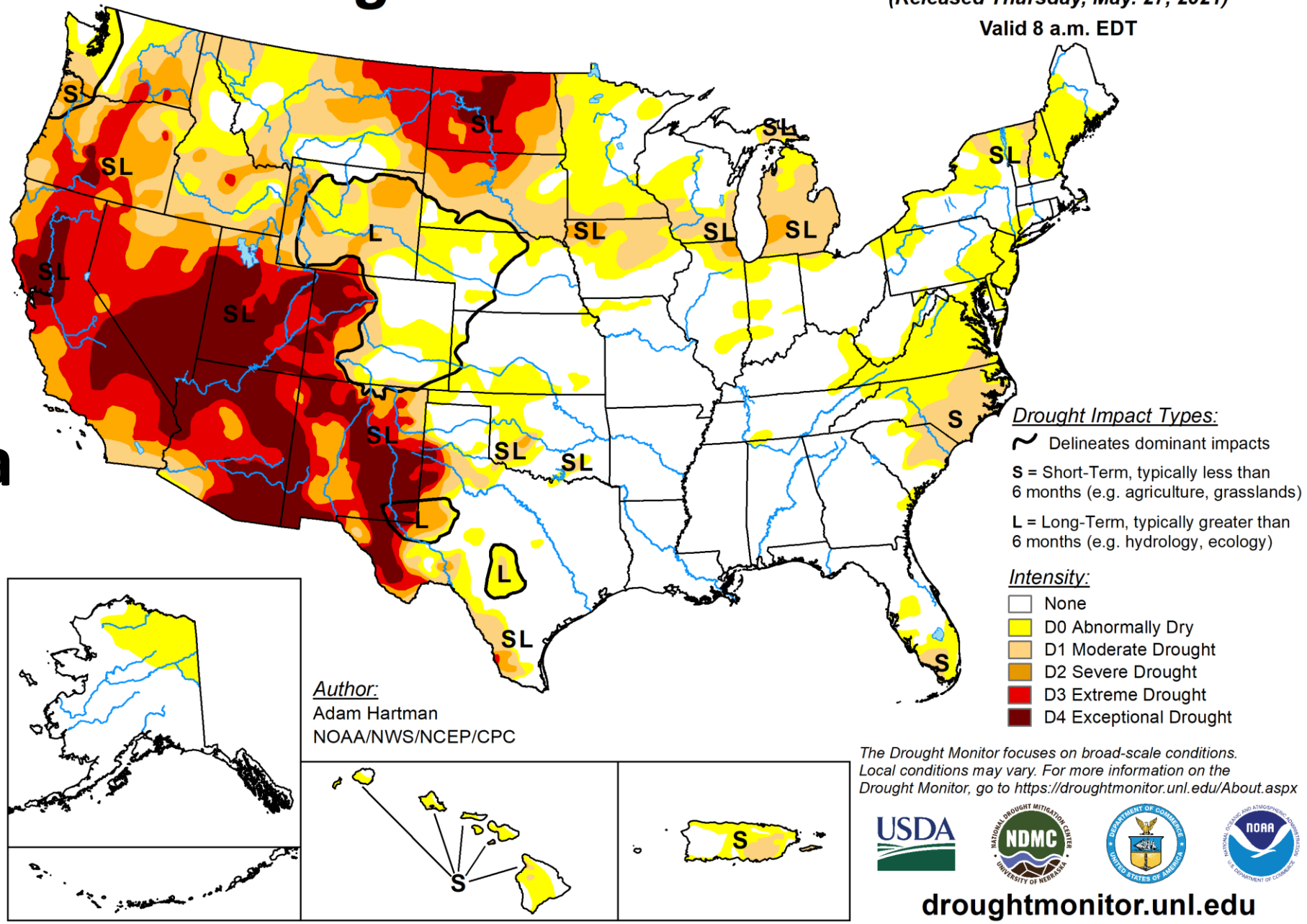
Generated 1/20/2020 at HPRCC using provisional data.

NOAA Regional Climate Centers

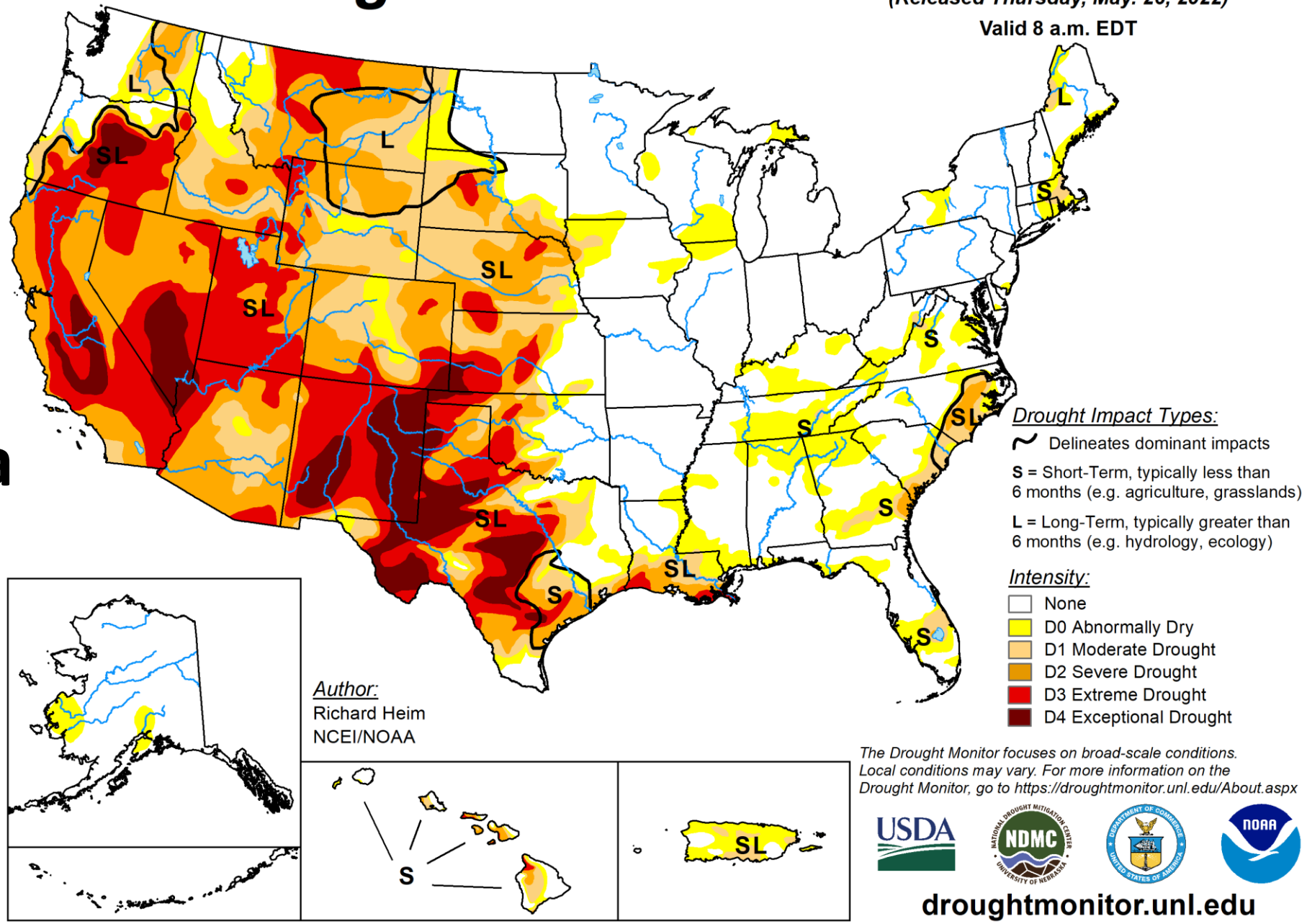
La Nina Starts



La Nina


U.S. Drought Monitor
May 25, 2021
(Released Thursday, May. 27, 2021)
Valid 8 a.m. EDT
Drought Impact Types:
Delineates dominant impacts
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)
Intensity:
None
D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought
Author:
Adam Hartman
NOAA/NWS/NCEP/CPC
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx
droughtmonitor.unl.edu

La Nina


U.S. Drought Monitor
May 24, 2022
(Released Thursday, May. 26, 2022)
Valid 8 a.m. EDT
Drought Impact Types:
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Author:
Richard Heim
NCEI/NOAA
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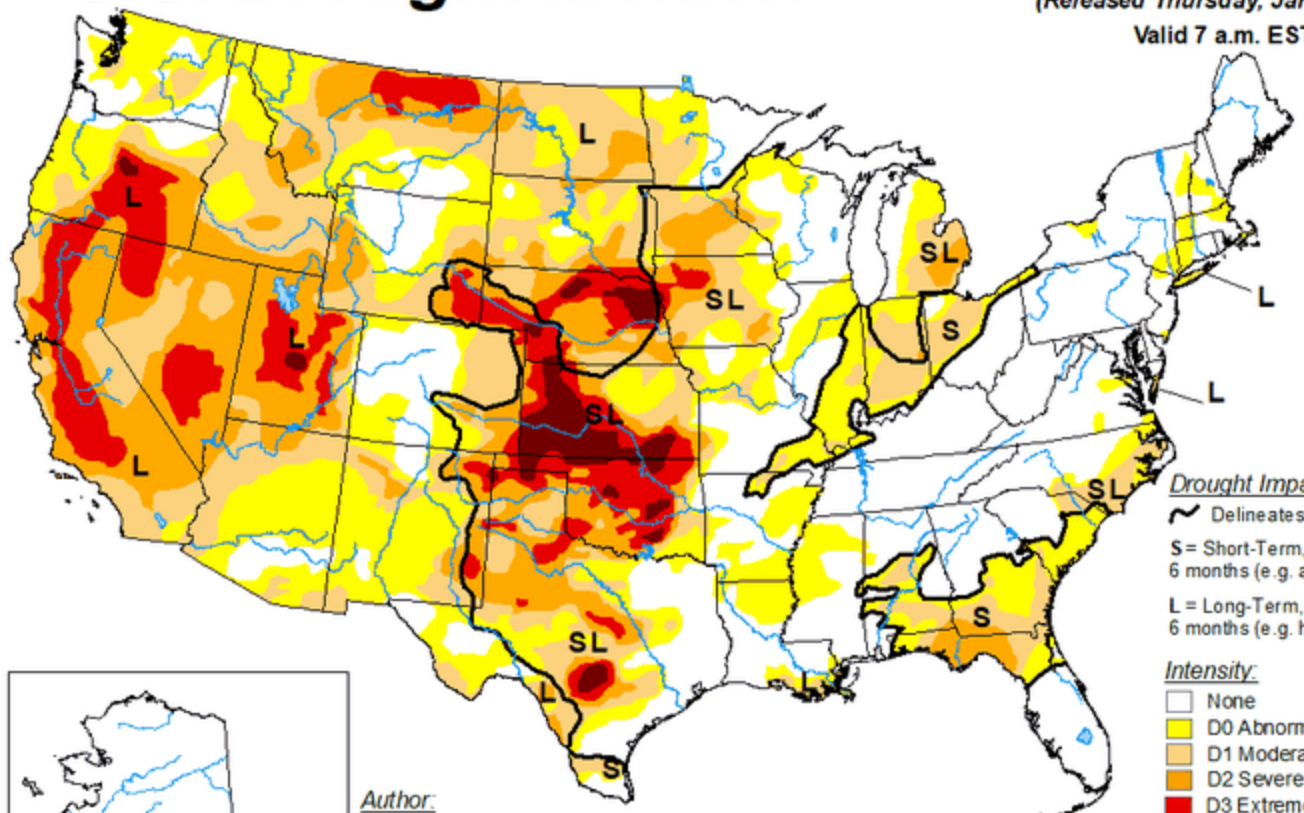
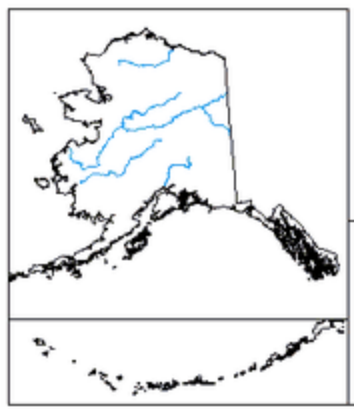
U.S. Drought Monitor

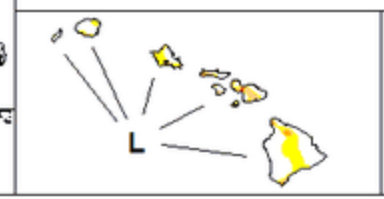
January 3, 2023

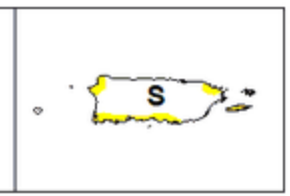
(Released Thursday, Jan. 5, 2023)

Valid 7 a.m. EST









Author:
Brad Pugh
CPC/NOAA

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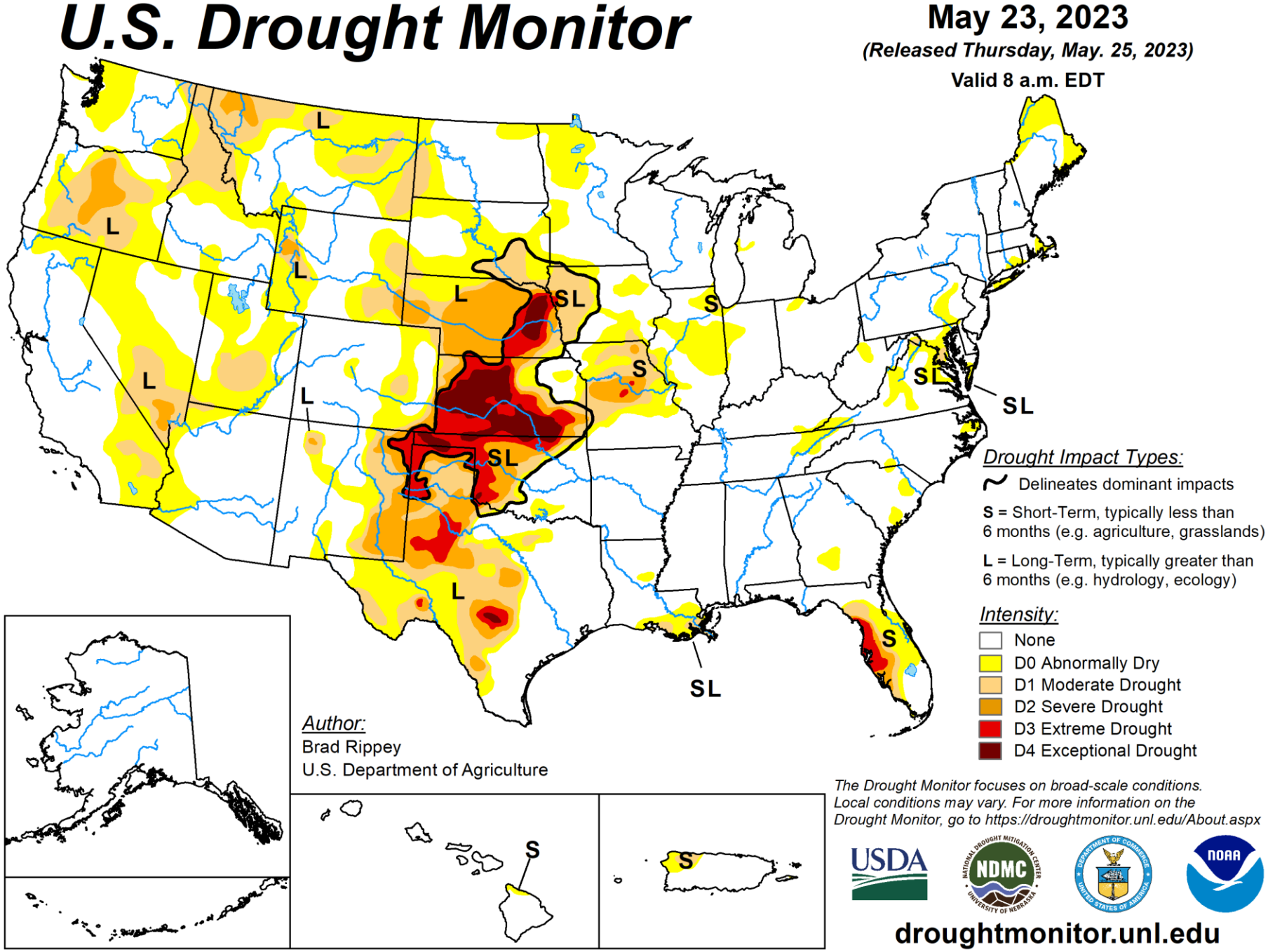
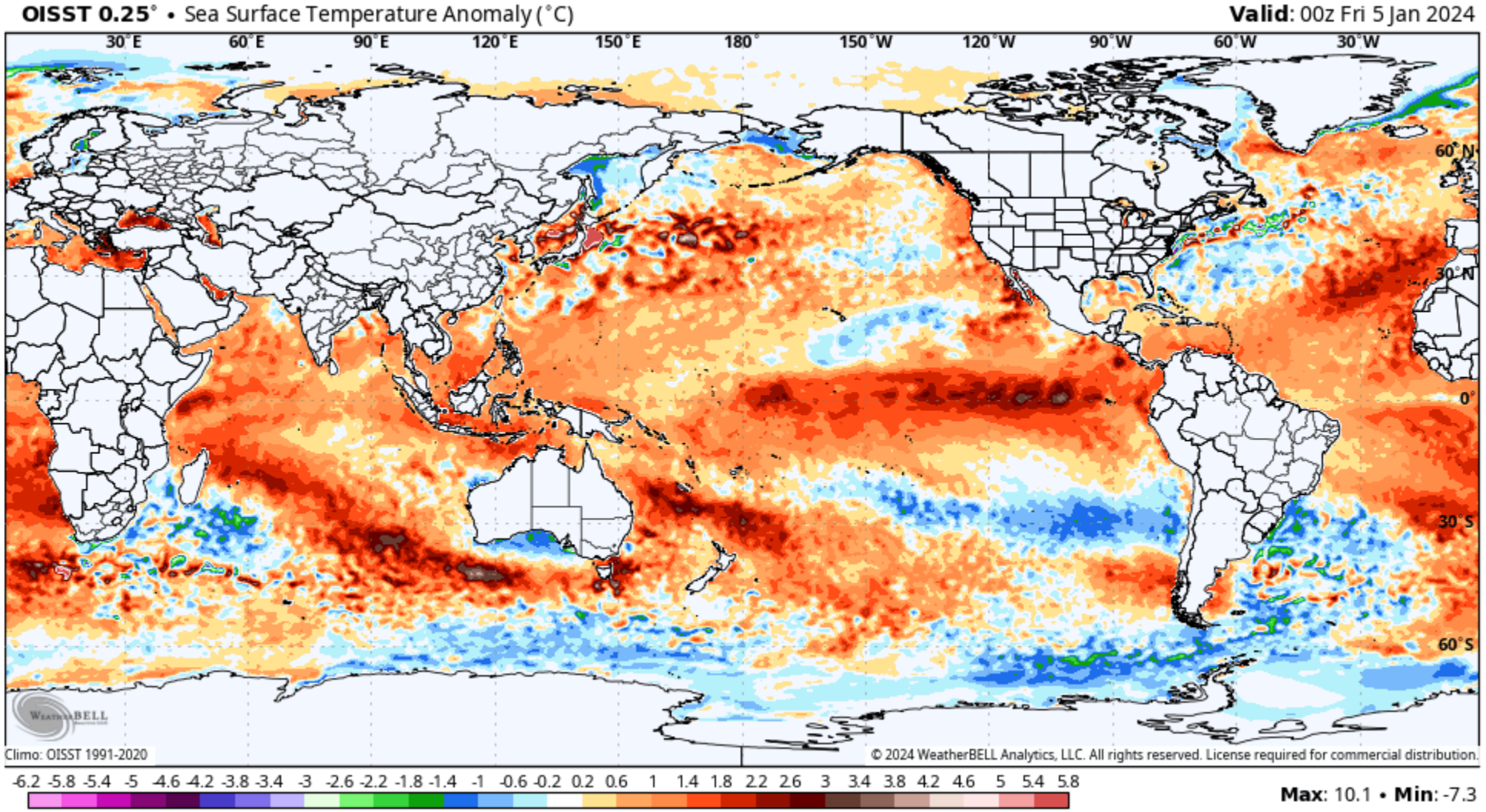
USDA NDMC NOAA

droughtmonitor.unl.edu

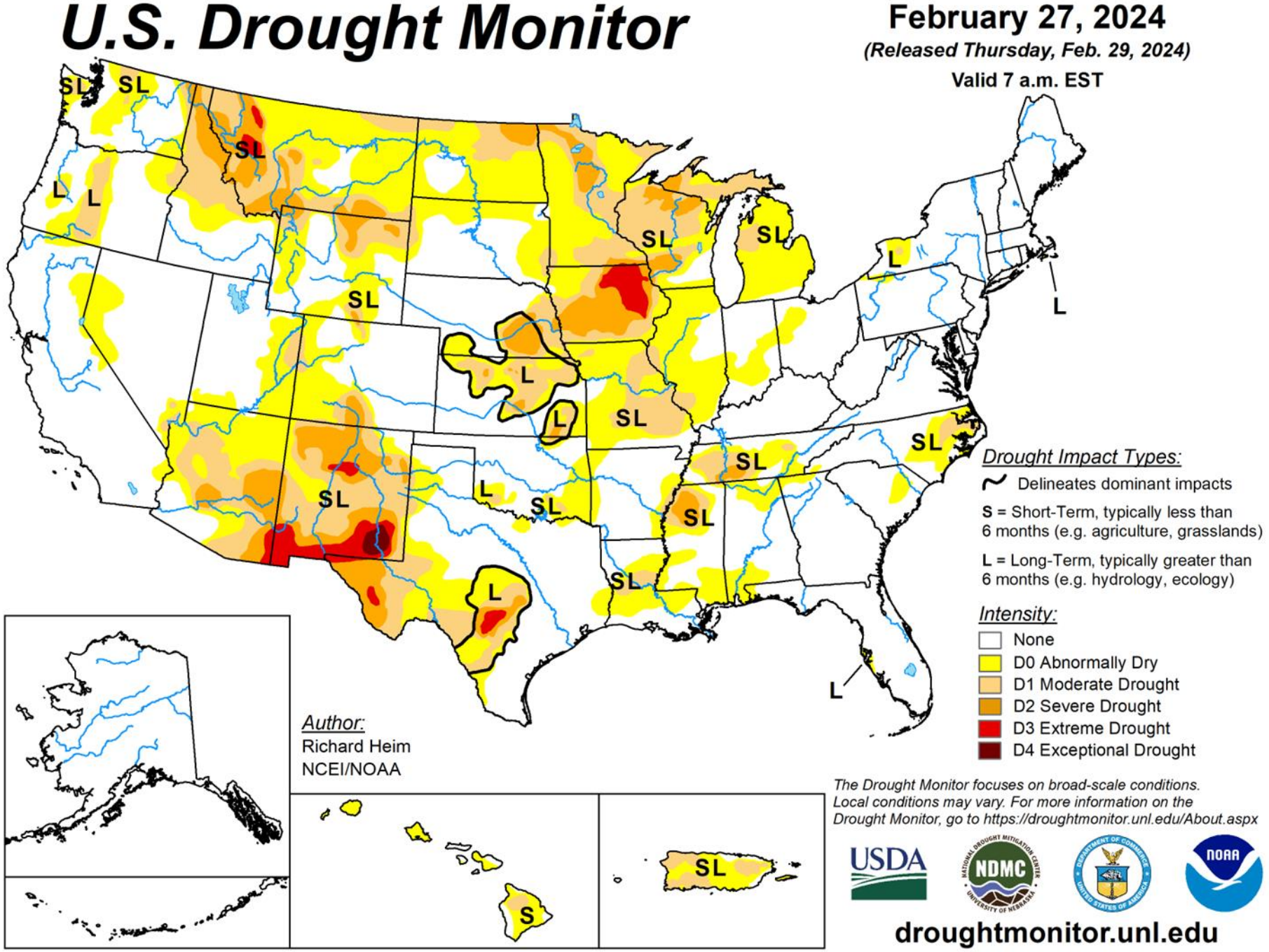
El Nino Started



El Nino– Late 2023 to early 2024



El Ninc


U.S. Drought Monitor
February 27, 2024
(Released Thursday, Feb. 29, 2024)
Valid 7 a.m. EST
Drought Impact Types:
Delineates dominant impacts
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
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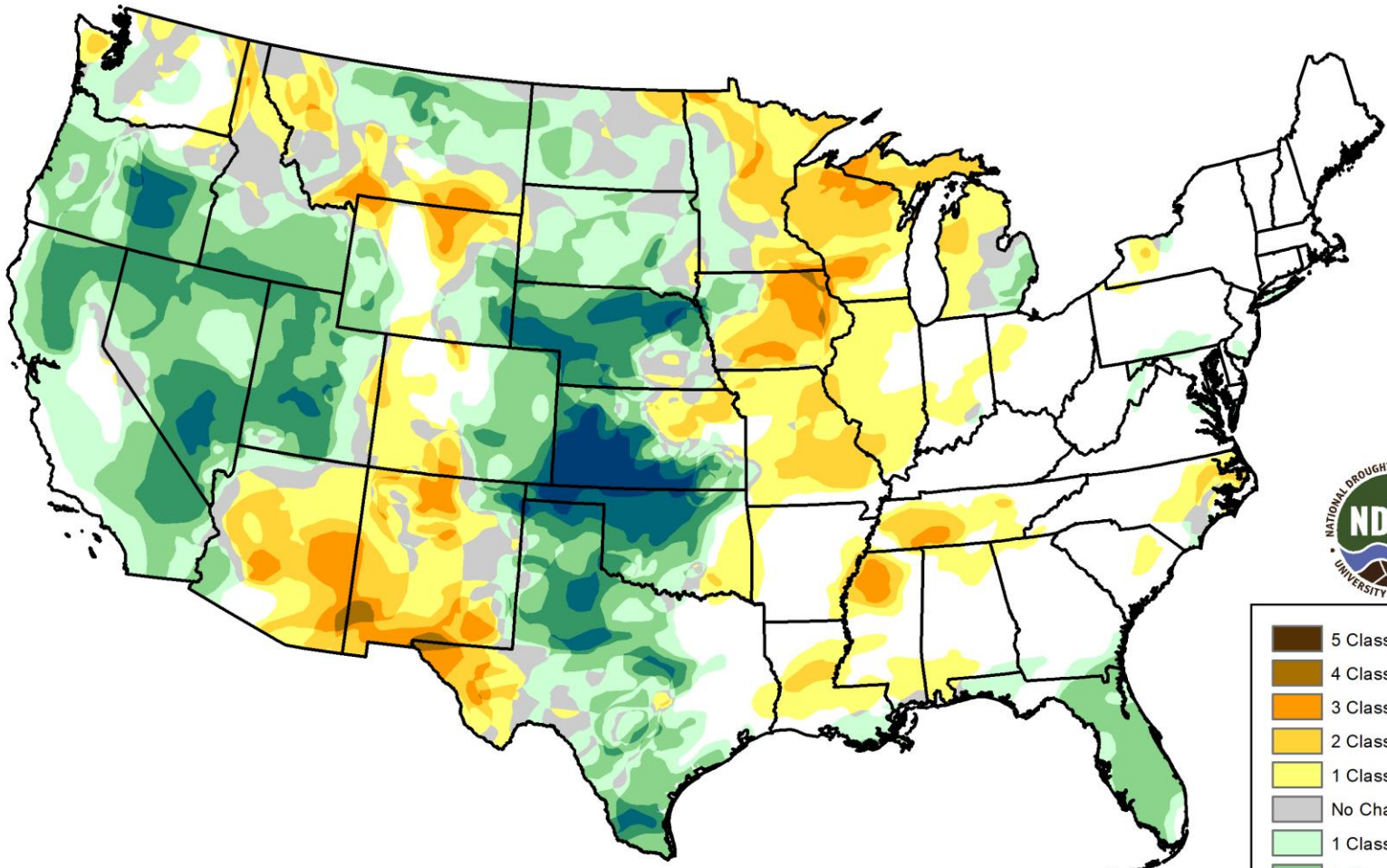
USDA
NDMC
NOAA
droughtmonitor.unl.edu

U.S. Drought Monitor Class Change - CONUS

52 Week

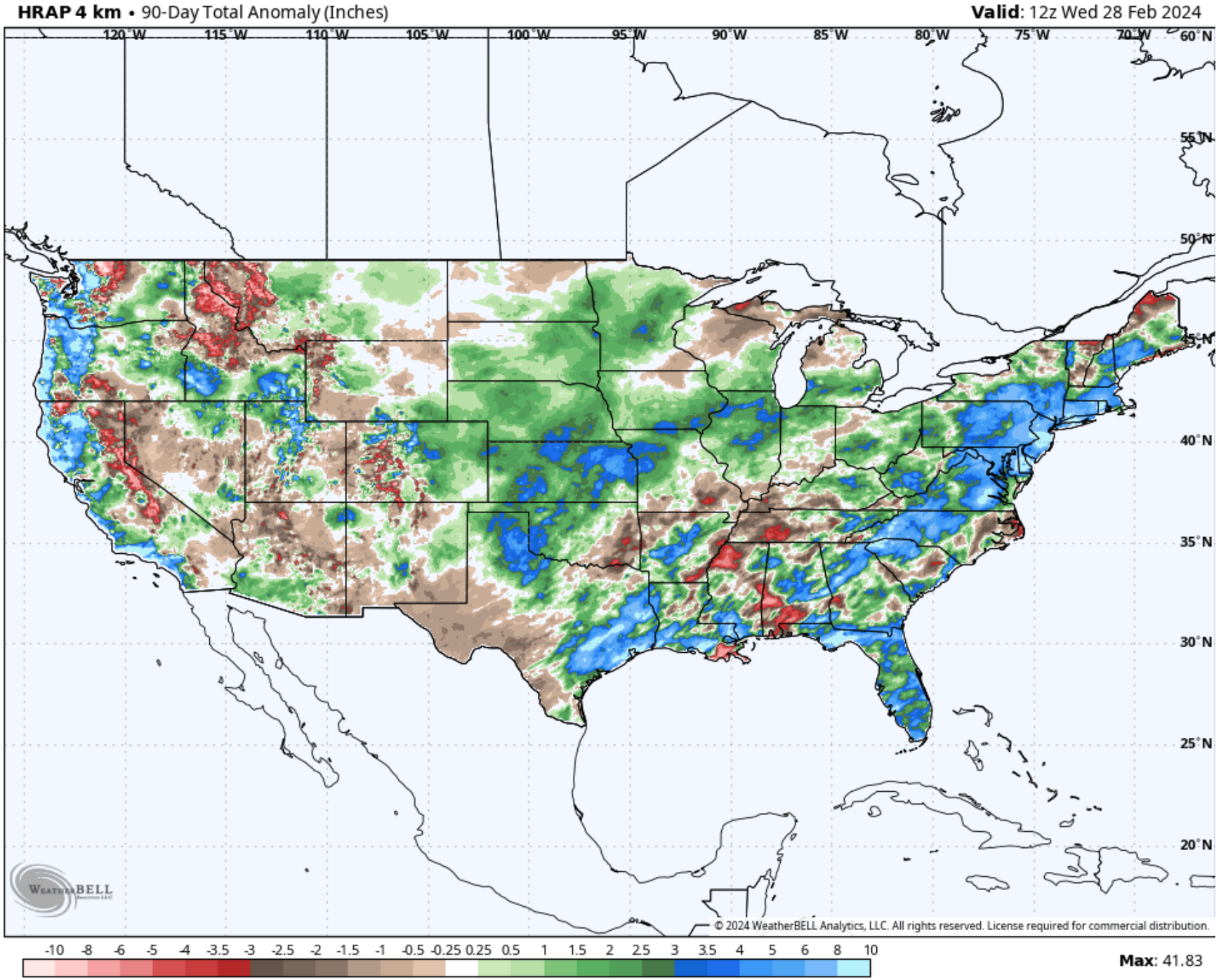


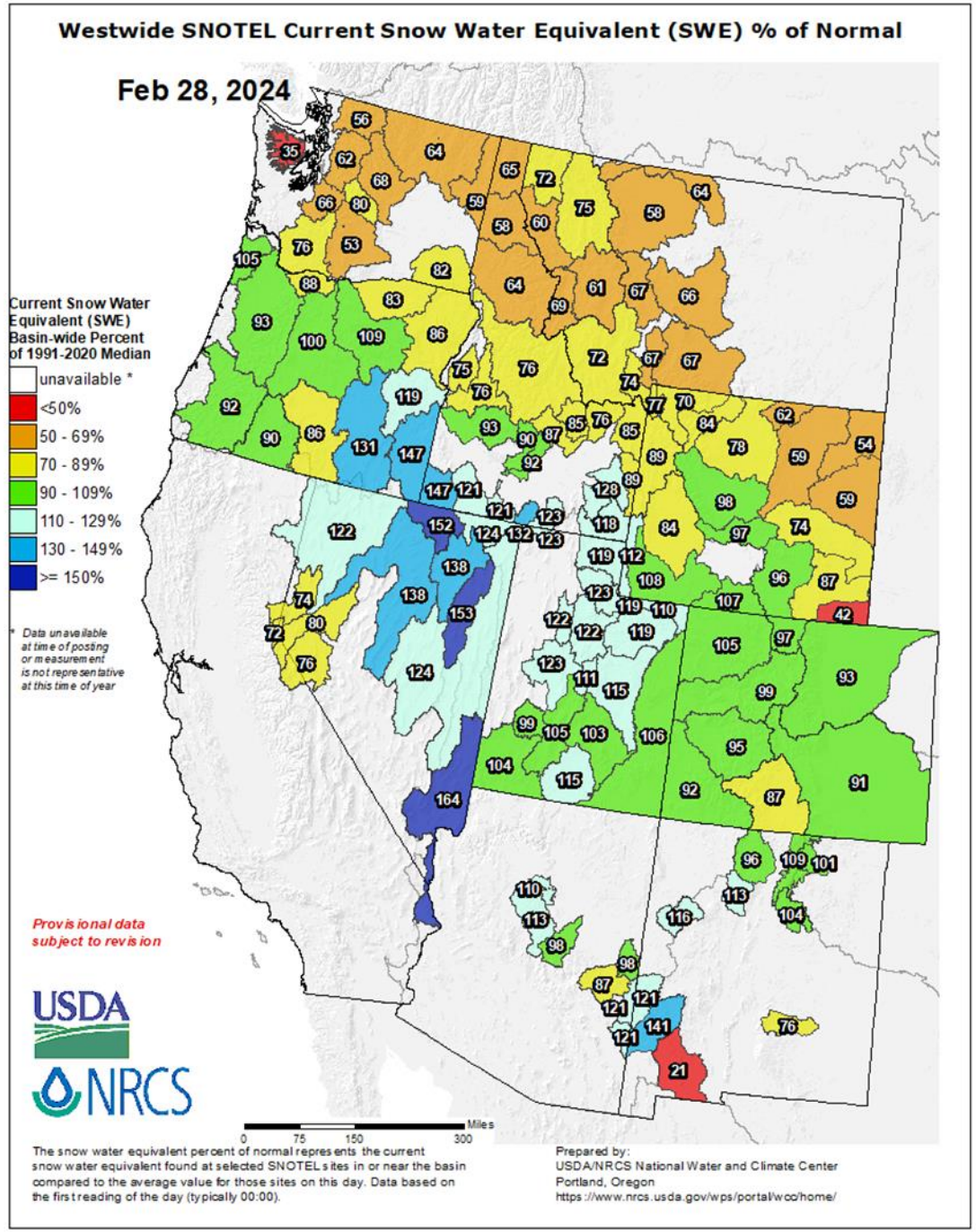
- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

February 27, 2024
compared to
February 28, 2023

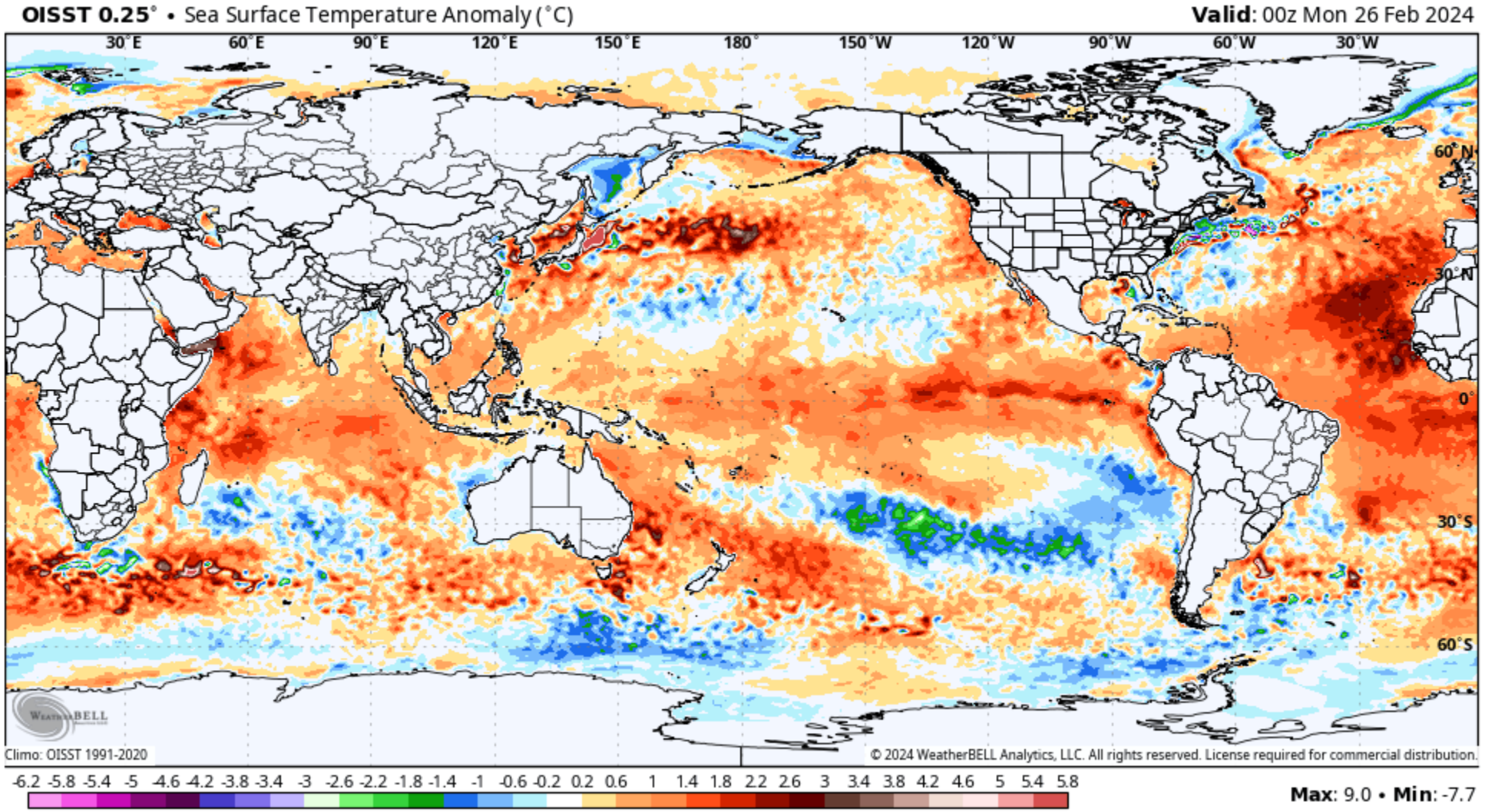
droughtmonitor.unl.edu

Precipitaton
Anomaly
Last 90 days




Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal
Feb 28, 2024
Current Snow Water Equivalent (SWE) Basin-wide Percent of 1991-2020 Median
unavailable *
<50%
50 - 69%
70 - 89%
90 - 109%
110 - 129%
130 - 149%
>= 150%
* Data unavailable at time of posting or measurement is not representative at this time of year
Provisional data subject to revision
USDA
NRCS
0 75 150 300 Miles
The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).
Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
https://www.nrcs.usda.gov/wps/portal/wcc/home/

El Nino


OISST 0.25° • Sea Surface Temperature Anomaly (°C)
Valid: 00z Mon 26 Feb 2024
30°E 60°E 90°E 120°E 150°E 180° 150°W 120°W 90°W 60°W 30°W
60°N
30°N
0°
30°S
60°S
Climo: OISST 1991-2020
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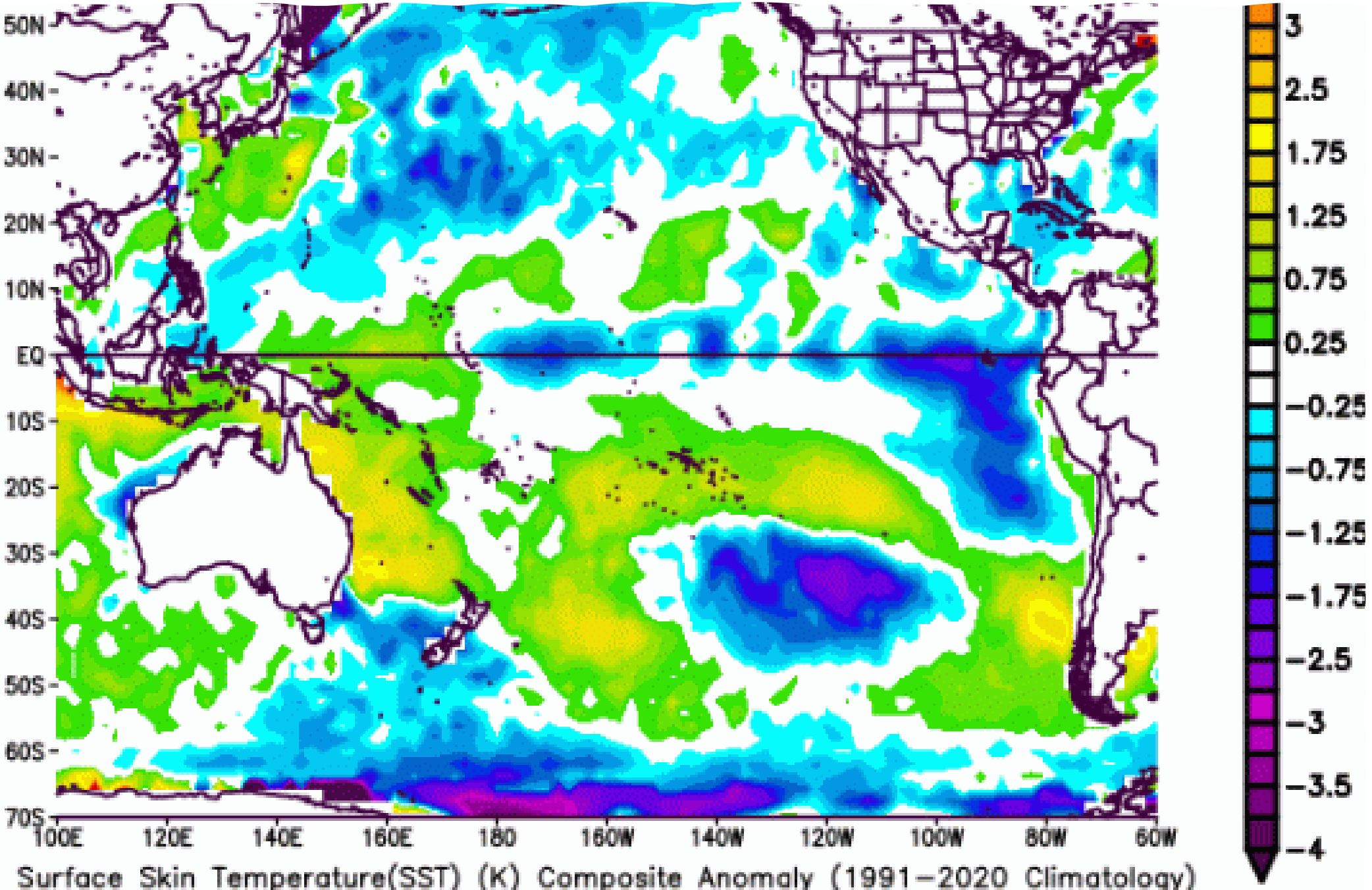
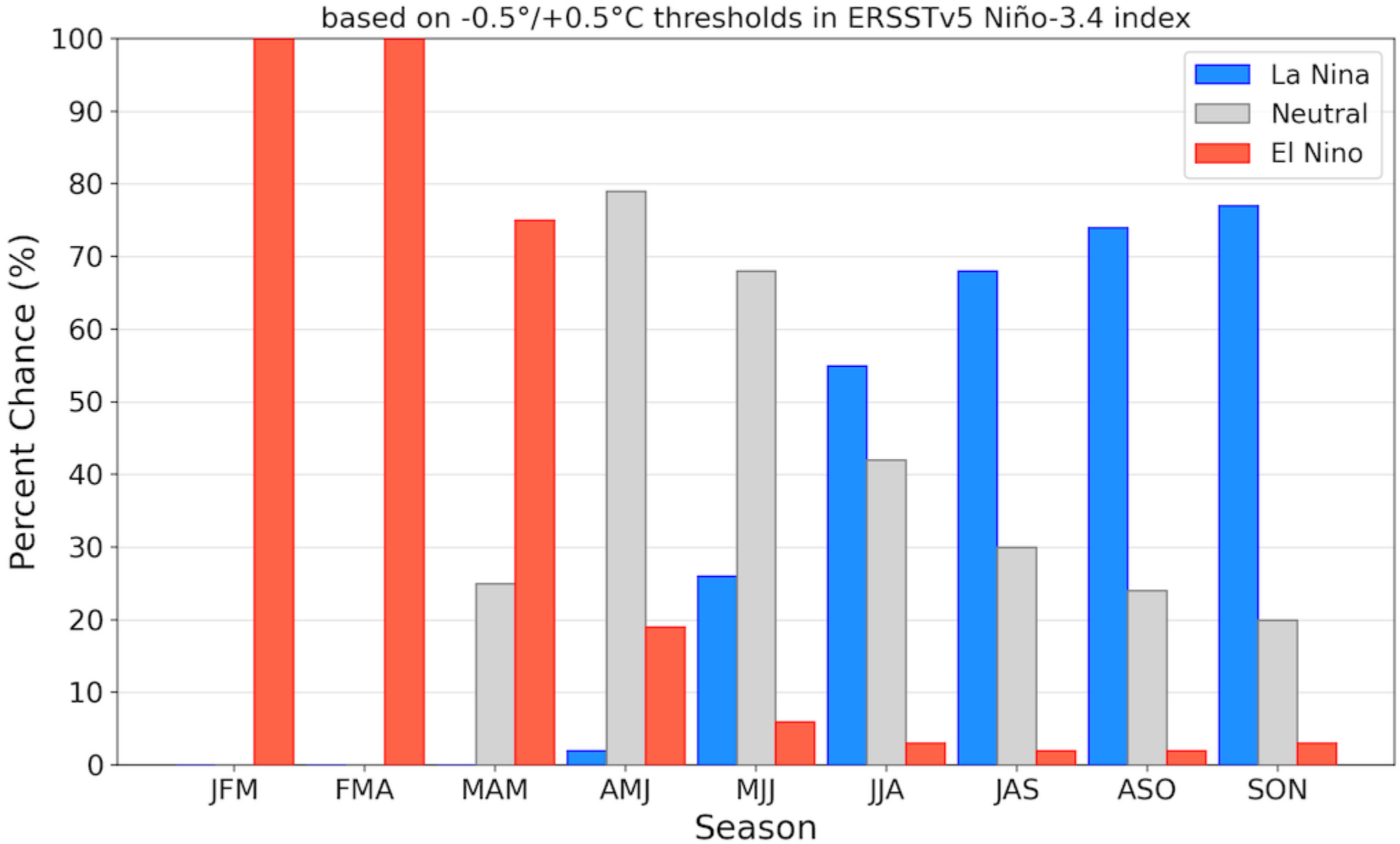
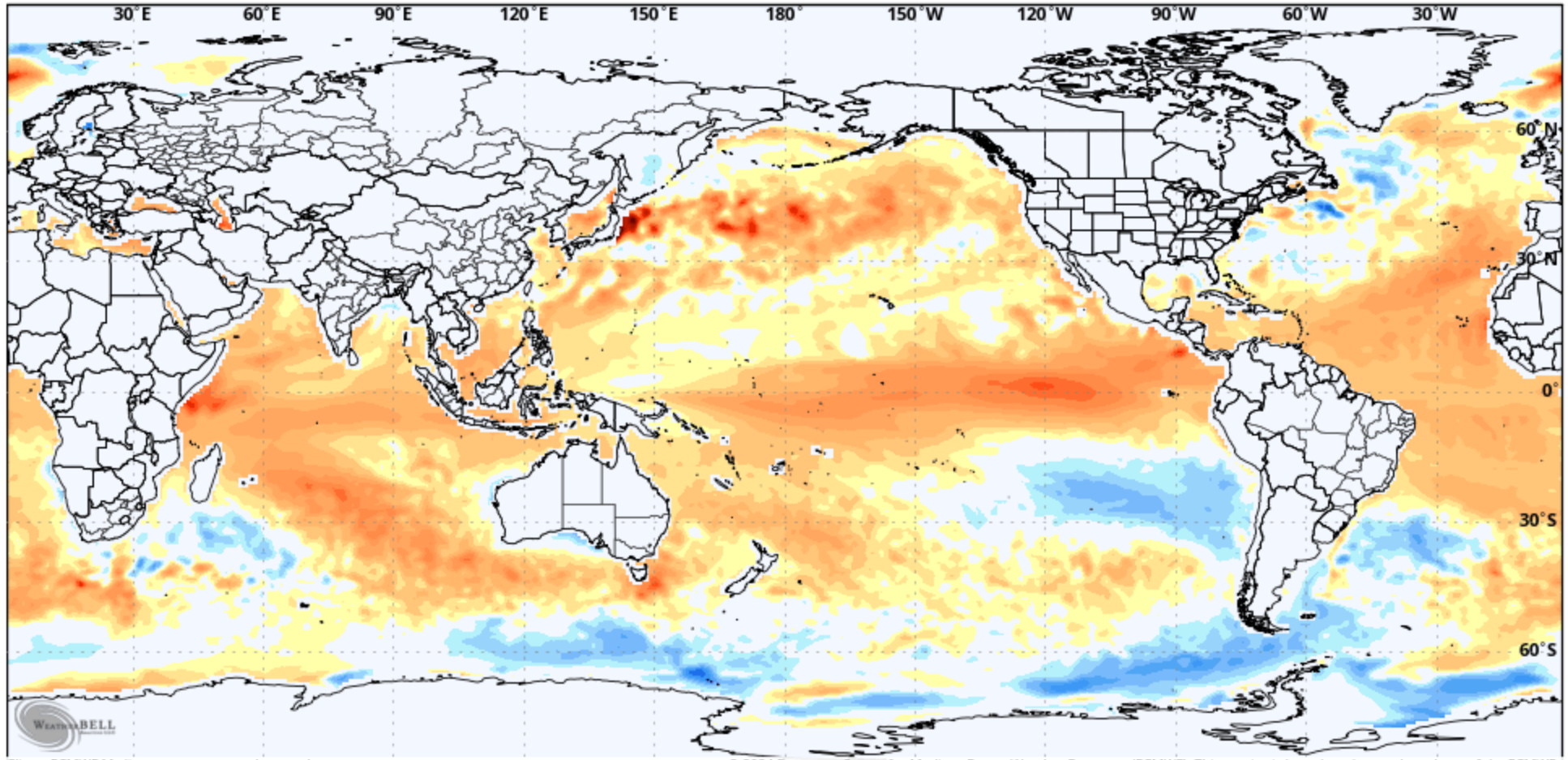
-6.2 -5.8 -5.4 -5 -4.6 -4.2 -3.8 -3.4 -3 -2.6 -2.2 -1.8 -1.4 -1 -0.6 -0.2 0.2 0.6 1 1.4 1.8 2.2 2.6 3 3.4 3.8 4.2 4.6 5 5.4 5.8
Max: 9.0 • Min: -7.7


50N
40N
30N
20N
10N
EQ
10S
20S
30S
40S
50S
60S
70S
100E
120E
140E
160E
180
160W
140W
120W
100W
80W
60W
3
2.5
1.75
1.25
0.75
0.25
−0.25
−0.75
−1.25
−1.75
−2.5
−3
−3.5
−4
Surface Skin Temperature(SST) (K) Composite Anomaly (1991−2020 Climatology)

Official NOAA CPC ENSO Probabilities (issued Feb. 2024)



ECMWF Seasonal [M] 0.75° Init 00z 1 Jan 2024 • SST Anomaly (°C) **Valid**: Feb 2024



Climo: ECMWF M-climate pre-computed anomaly

-9.5 -8.5 -7 -6.5 -6 -5.5 -5 -4.5 -4 -3.5 -3 -2.5 -2 -1.5 -1 -0.5 0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5 5.5 6 6.5 7 8 9

Max: 5.9 • **Min**: -2.1

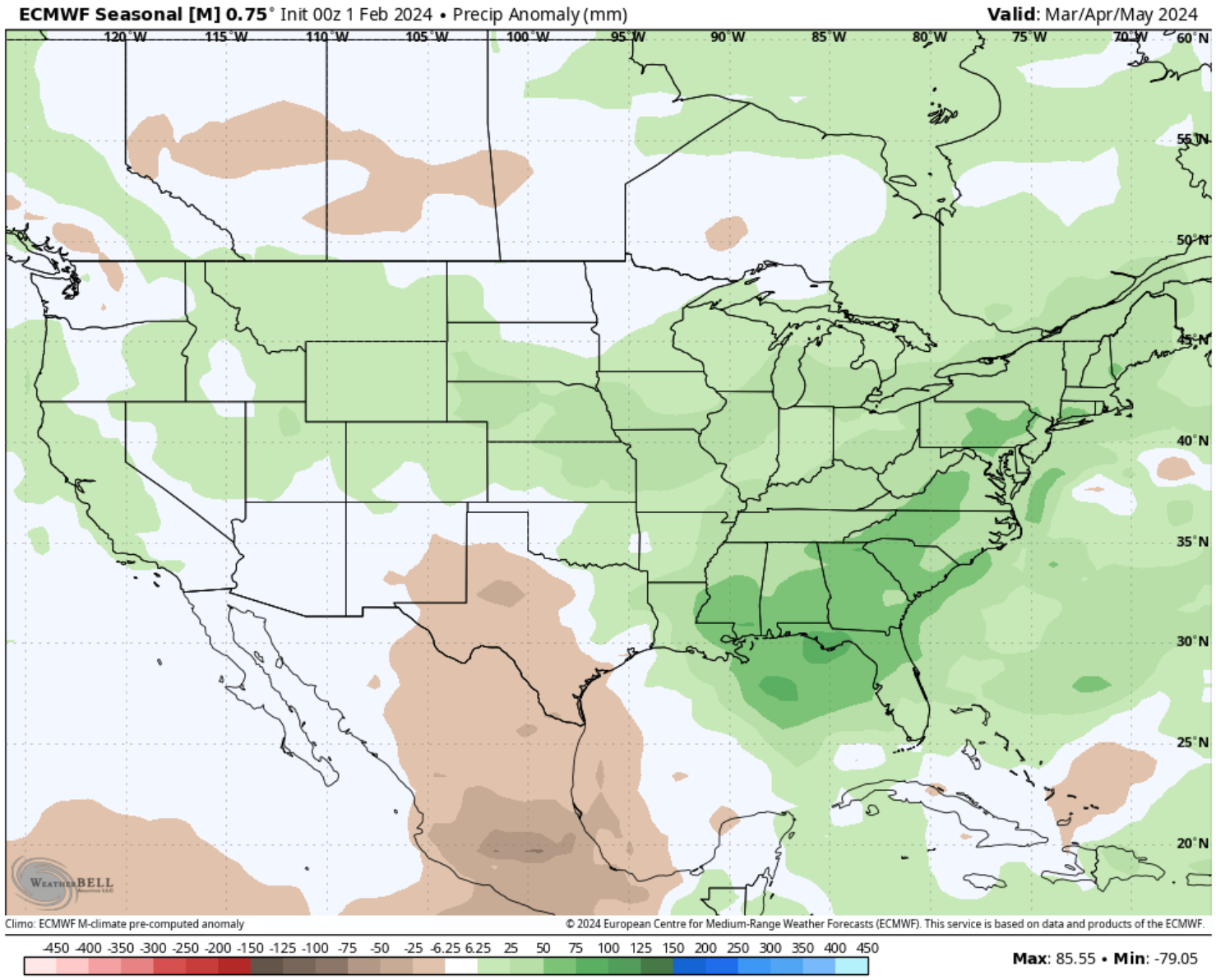
What Does This all Mean for rest of Winter 2024?

- With El Nino fading, El Nino impacts lessen by late spring but will continue through Feb/March and maybe early April
- Rest of winter should play out colder and more stormy
- Colder temperatures in February/March
- Snowpack should improve as pattern gets more active, there is time to recover

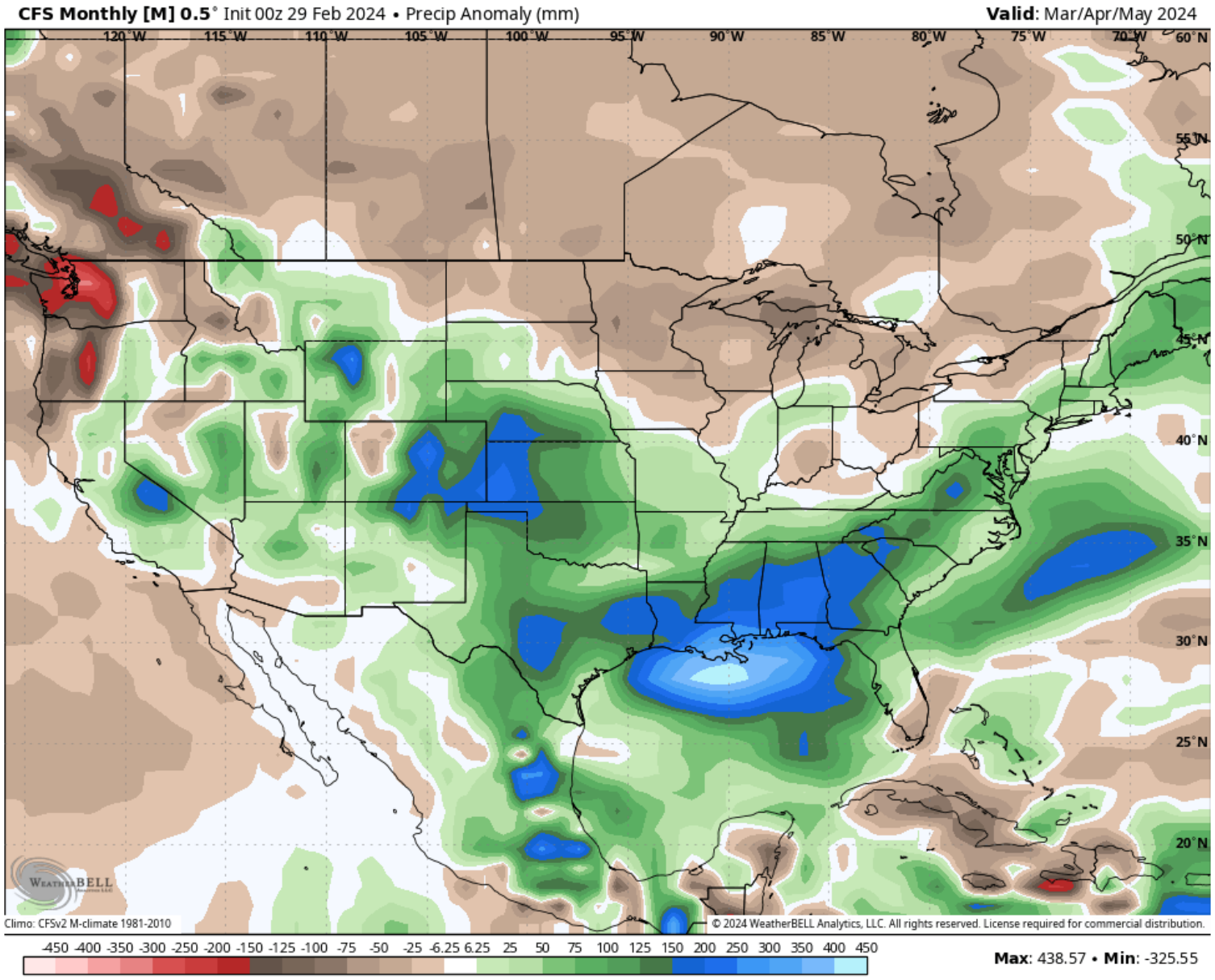
What Does This all Mean for Spring/Summer 2024?

- The transition from El Nino to Neutral will likely result in precipitation and temperatures that will trend to near normal values spring to summer
- Therefore, some hope that precipitation will increase rest of winter through spring
- Don’t see a strong drought signal in this type of pattern for summer
- Too early to say if La Nina developing late summer/fall will be impactful or not

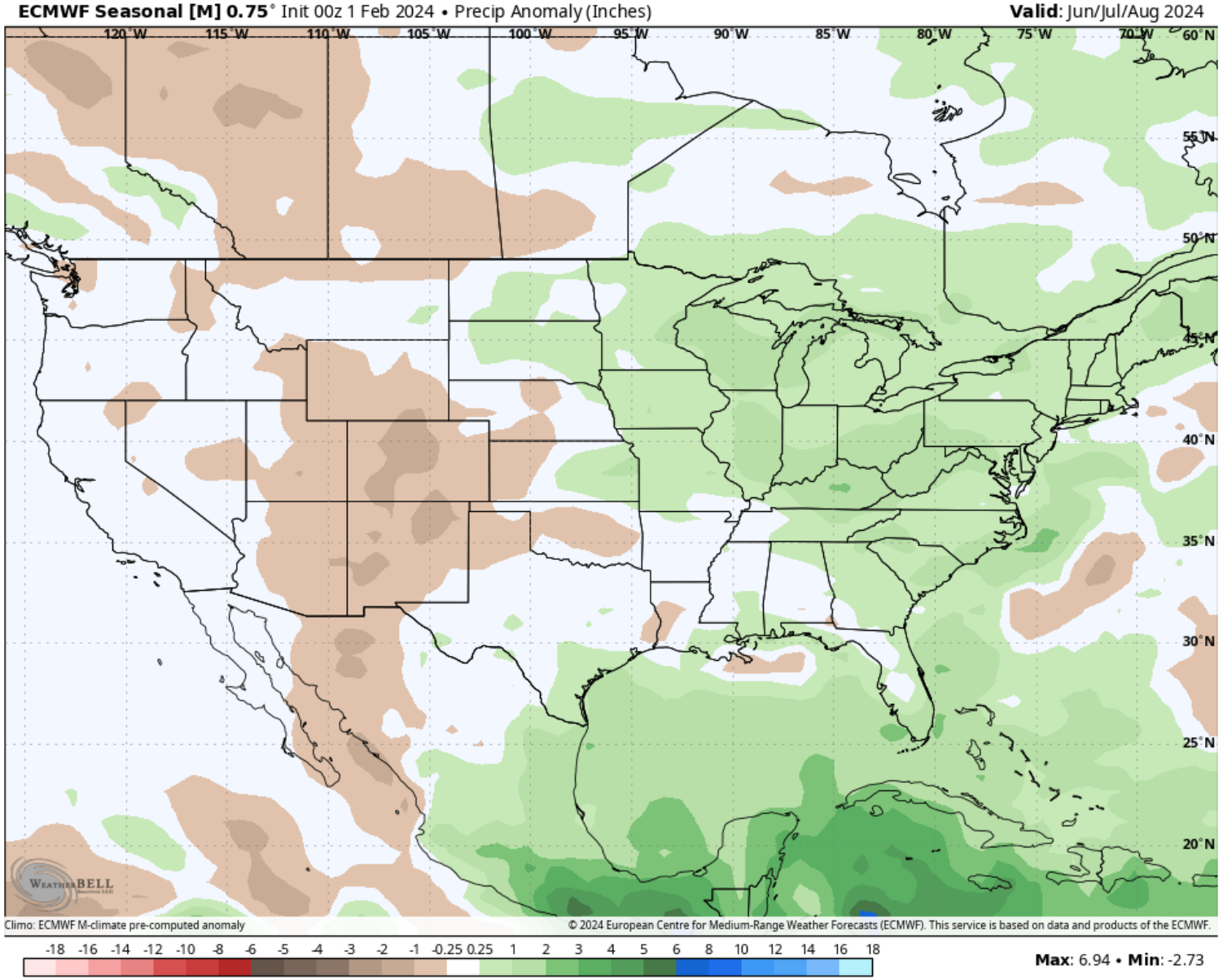
March to May Precipitation Anomaly - European



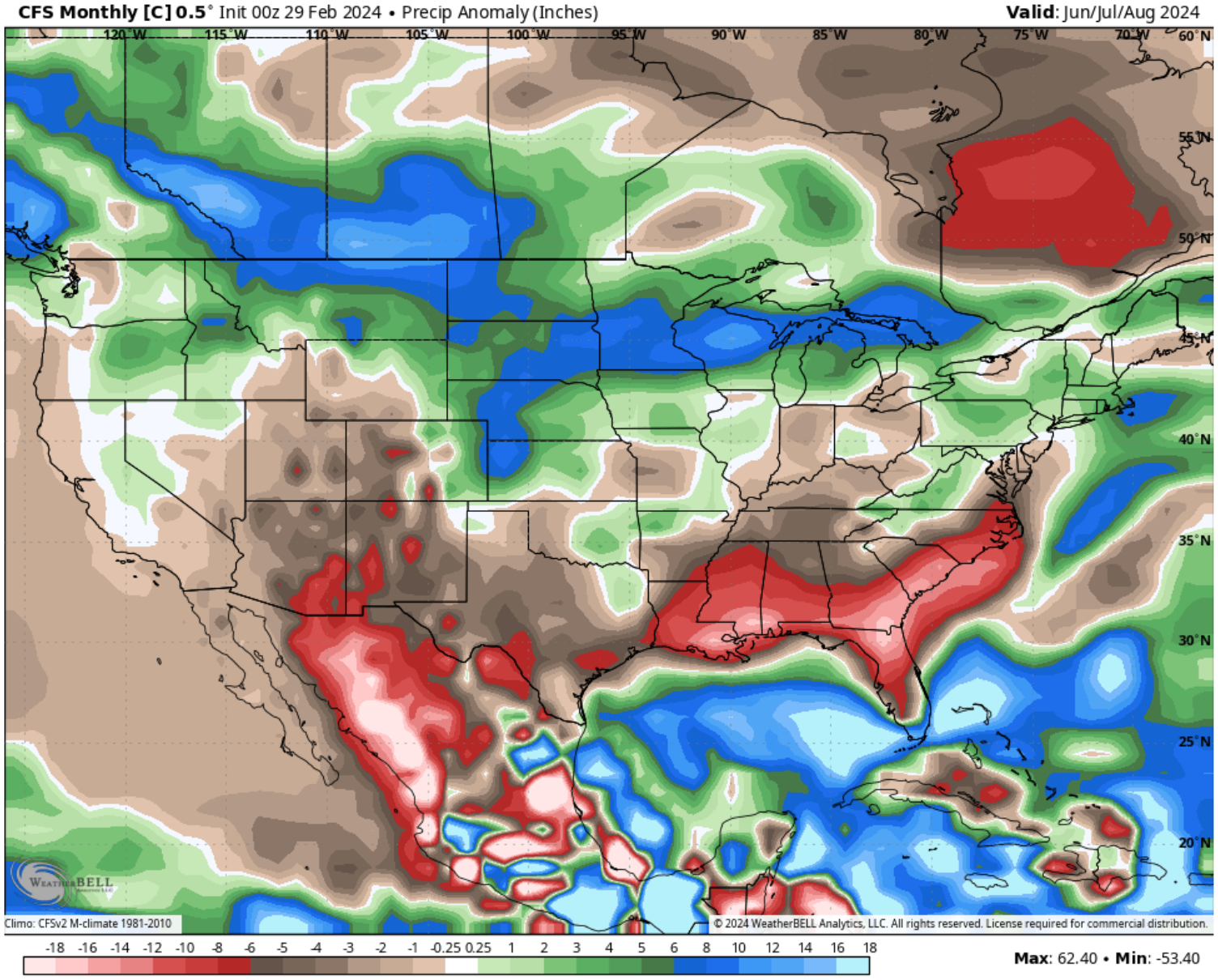
March to May Precipitation Anomaly - CFS



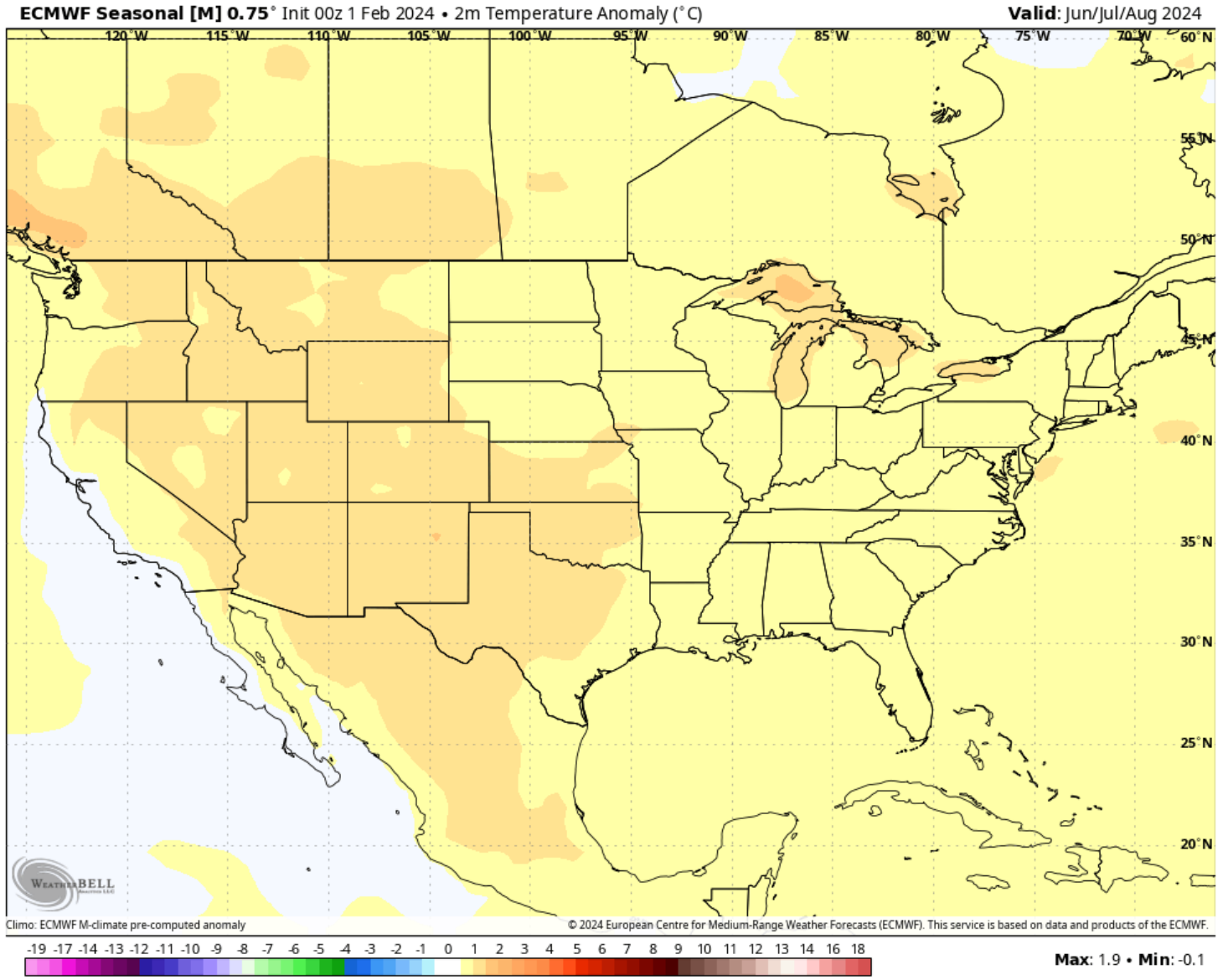
June to August Precipitation Anomaly - European



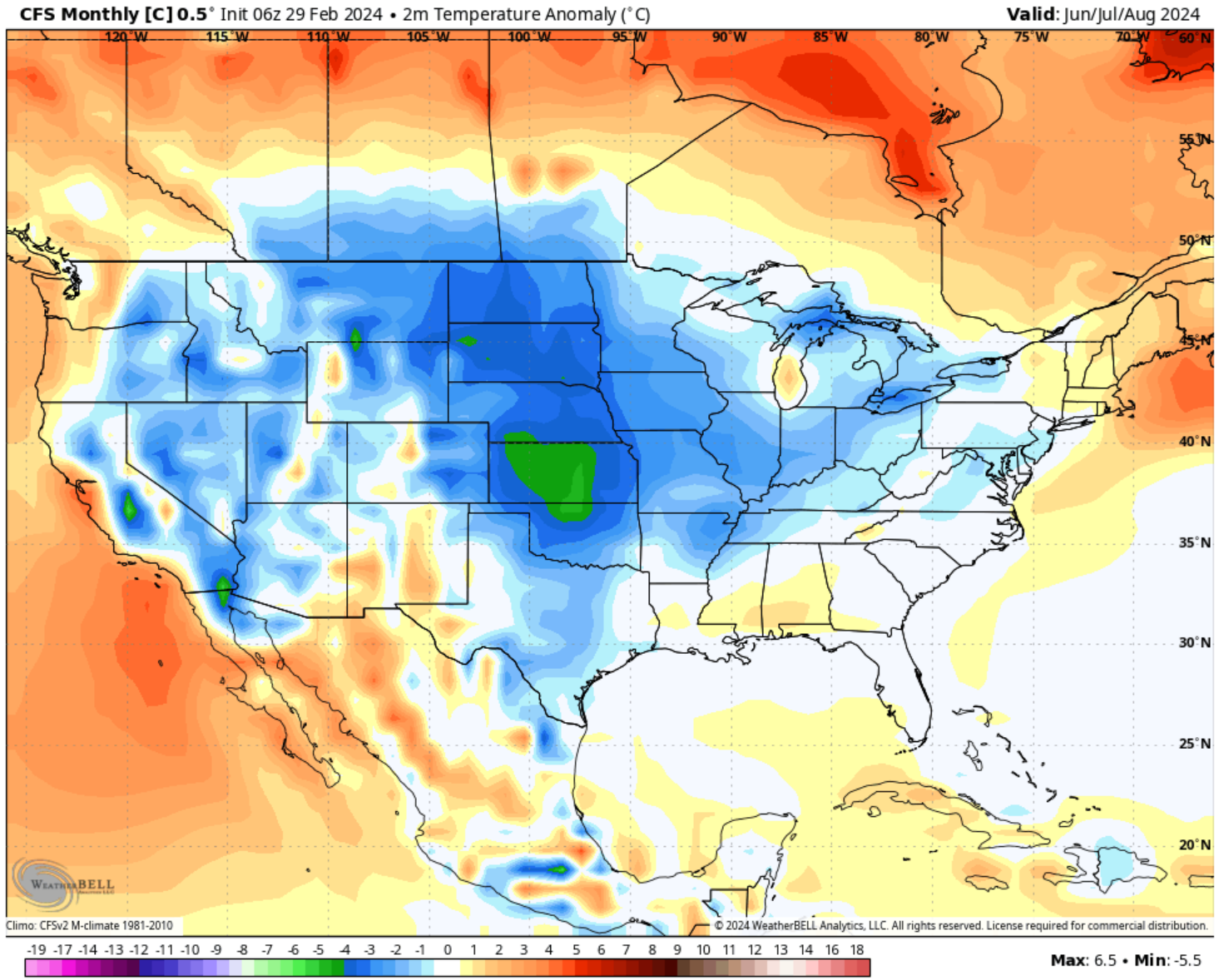
June to August Precipitation Anomaly - CFS



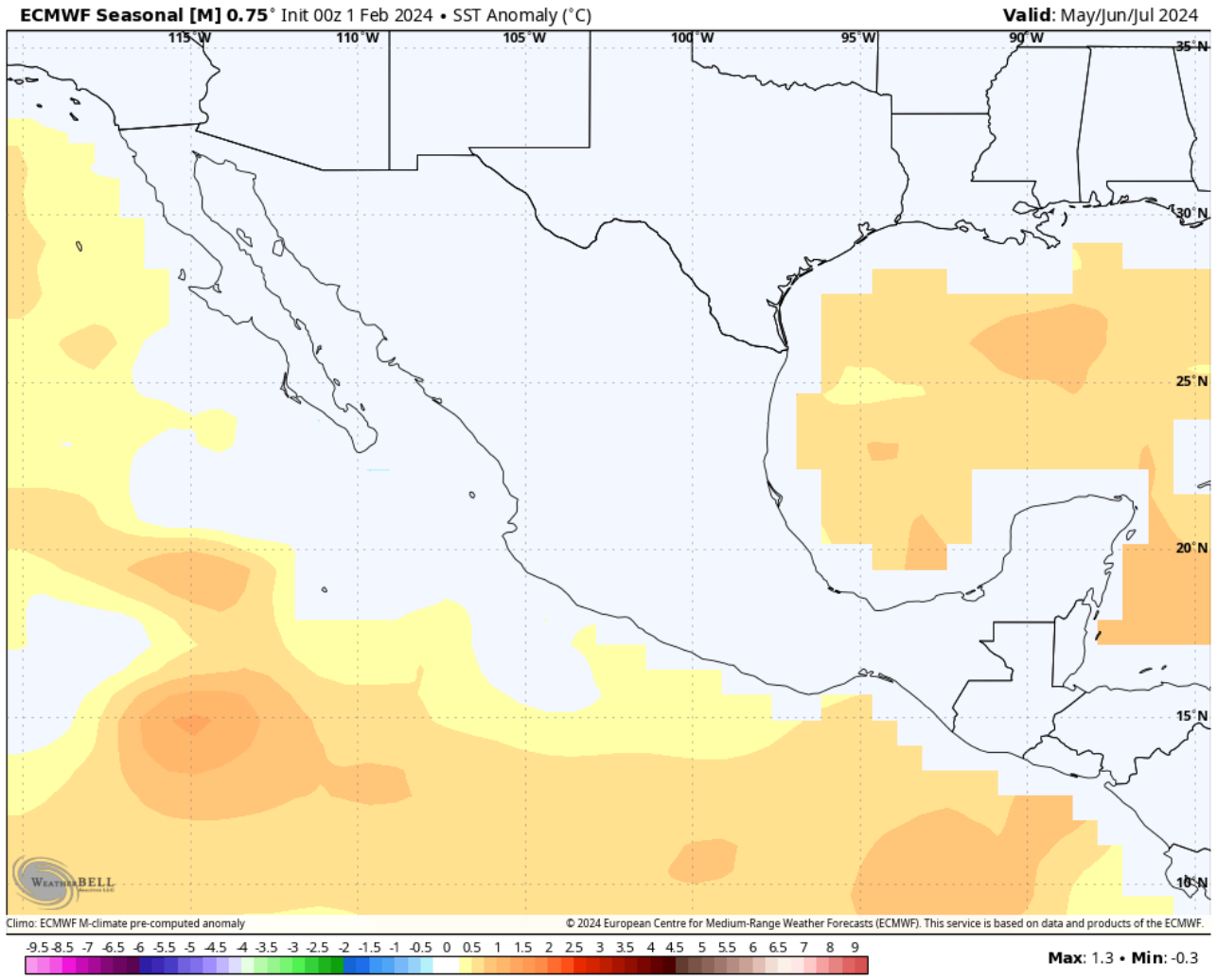
Summer Temperatures June – August - European



Summer Temperatures June – August - CFS



Monsoon Season?



What Does This all Mean for Spring/Summer 2024?

- The transition from El Nino to Neutral to possible La Nina (late summer) will likely result in precipitation and temperatures that will trend to near normal values with some exceptions
- Exceptions – likely drier than normal in the Northern Plains (MT, ND, N. WY, SD),
- Near normal precipitation WY, CO, KS, NE
- Don’t see a drought signal or severe heat in this pattern this summer in our region, however, some Corn Belt areas (IA, IL, WI, MO) could see some dryness
- With El Nino going away better rain prospects for South America late 2024 to early 2025

Questions?