Water Management Plan Status Report

June 6, 2023

LCRA
ENERGY • WATER • COMMUNITY SERVICES

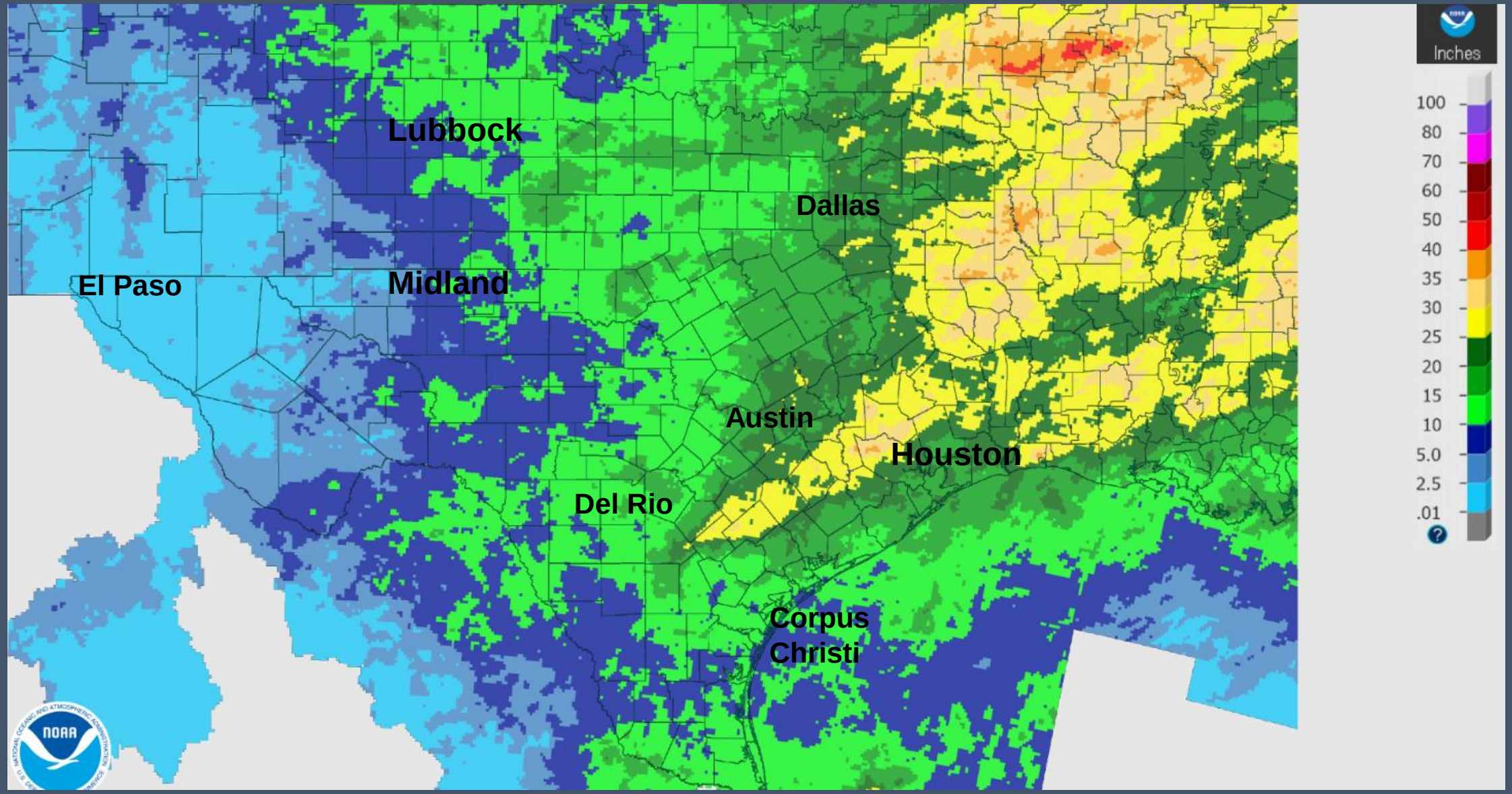
Agenda

- Weather outlook
- Basin conditions update
- Water Management Plan overview
- Firm water projected demands and interruptible allocations
- Actual water use
- Water Management Plan update process

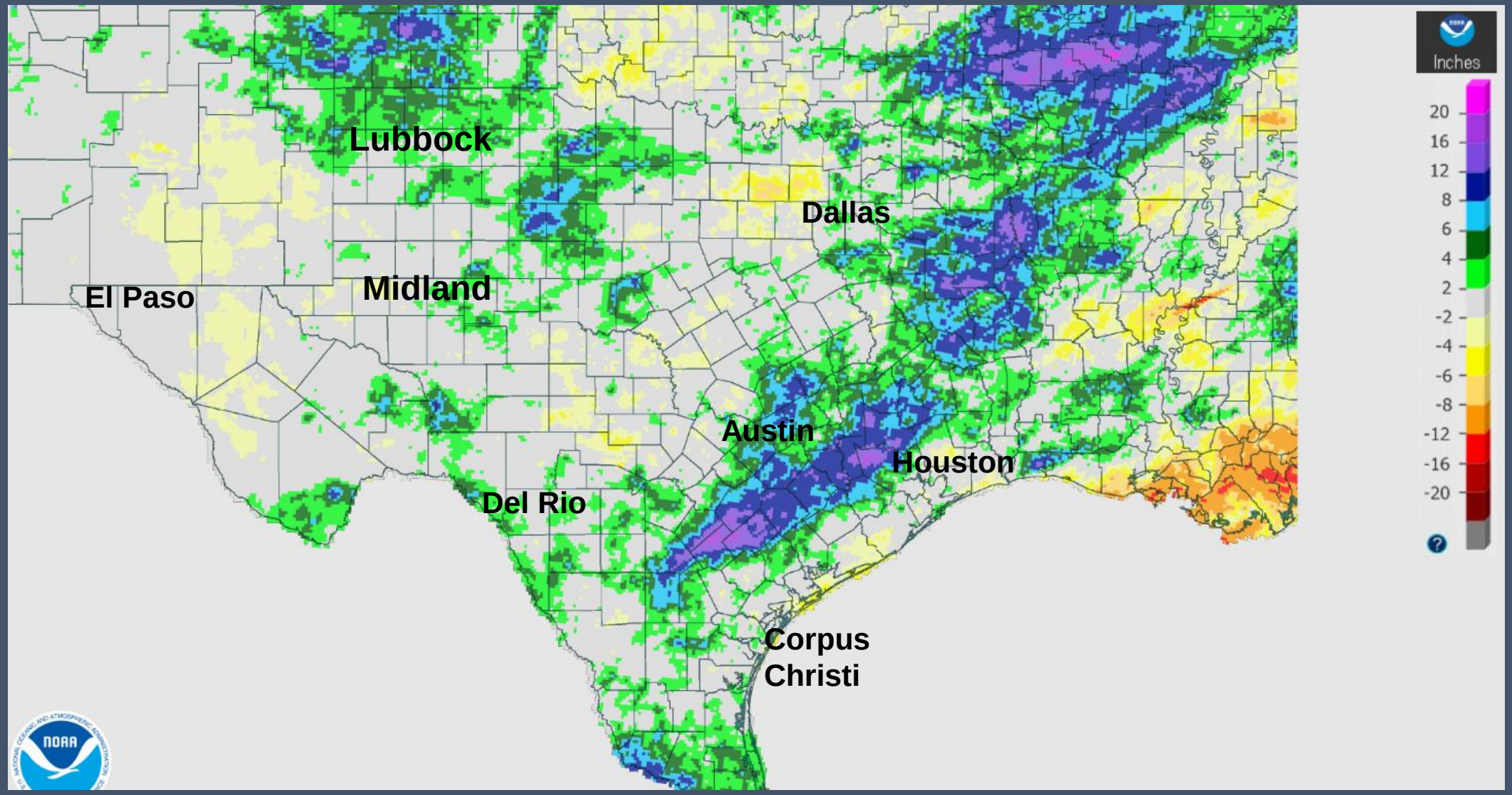
Summer/Autumn Weather Outlook

Bob Rose
Chief Meteorologist

Rainfall Year to Date



Rainfall Departure from Normal -- Year to Date

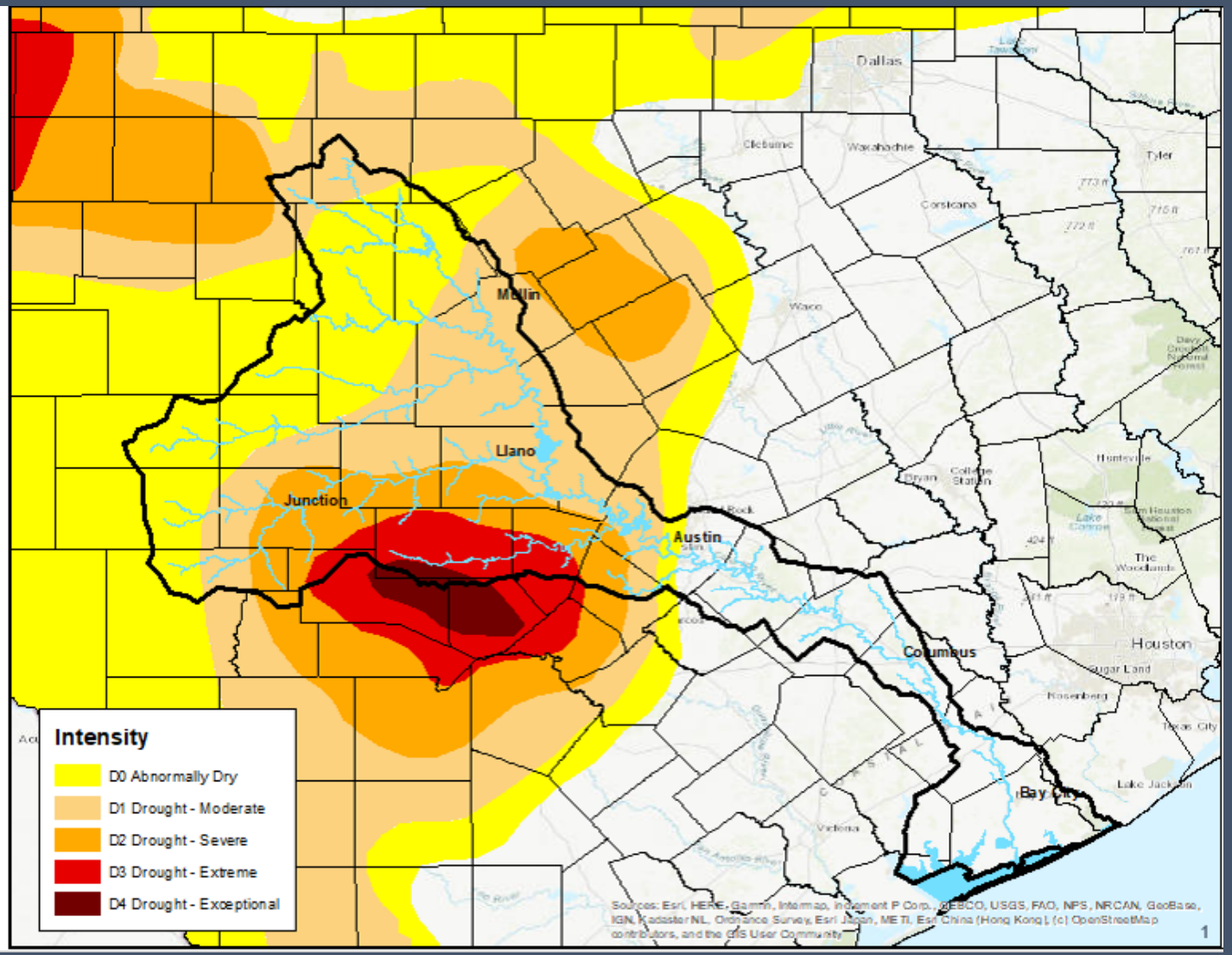


U.S. Drought Monitor

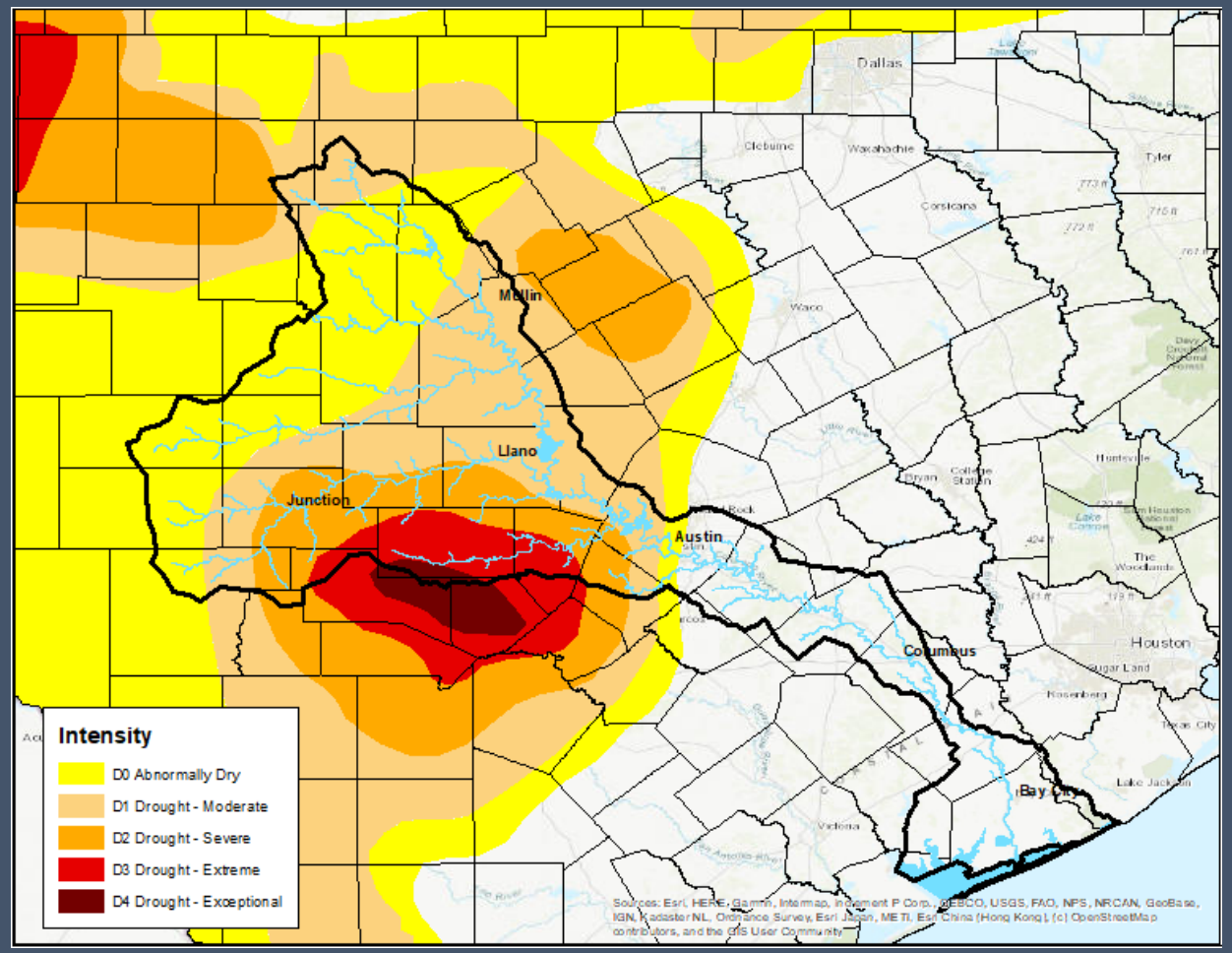
U.S. Drought Monitor

Lower Colorado River Basin

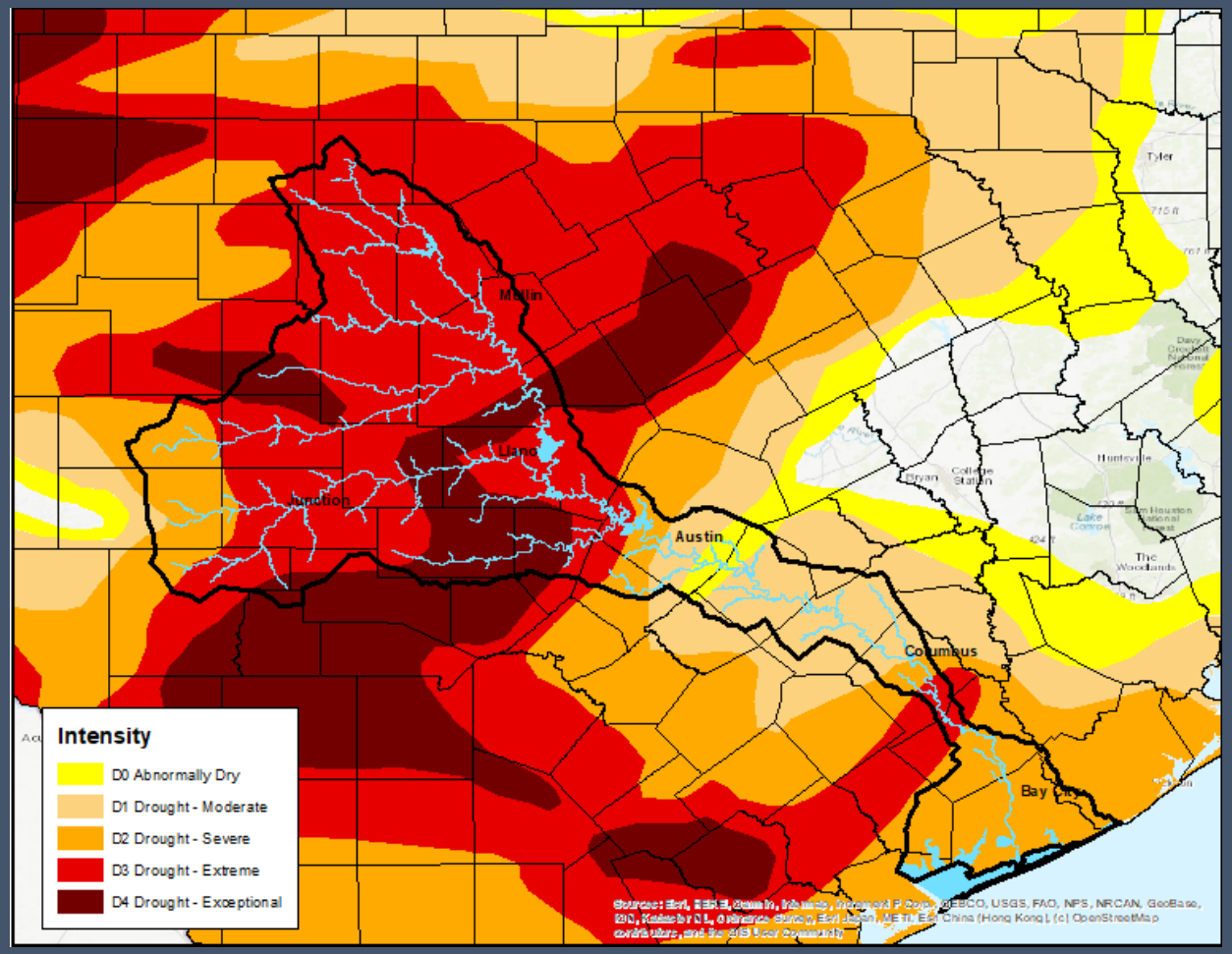
As of May 30, 2023



U.S. Drought Monitor Comparison

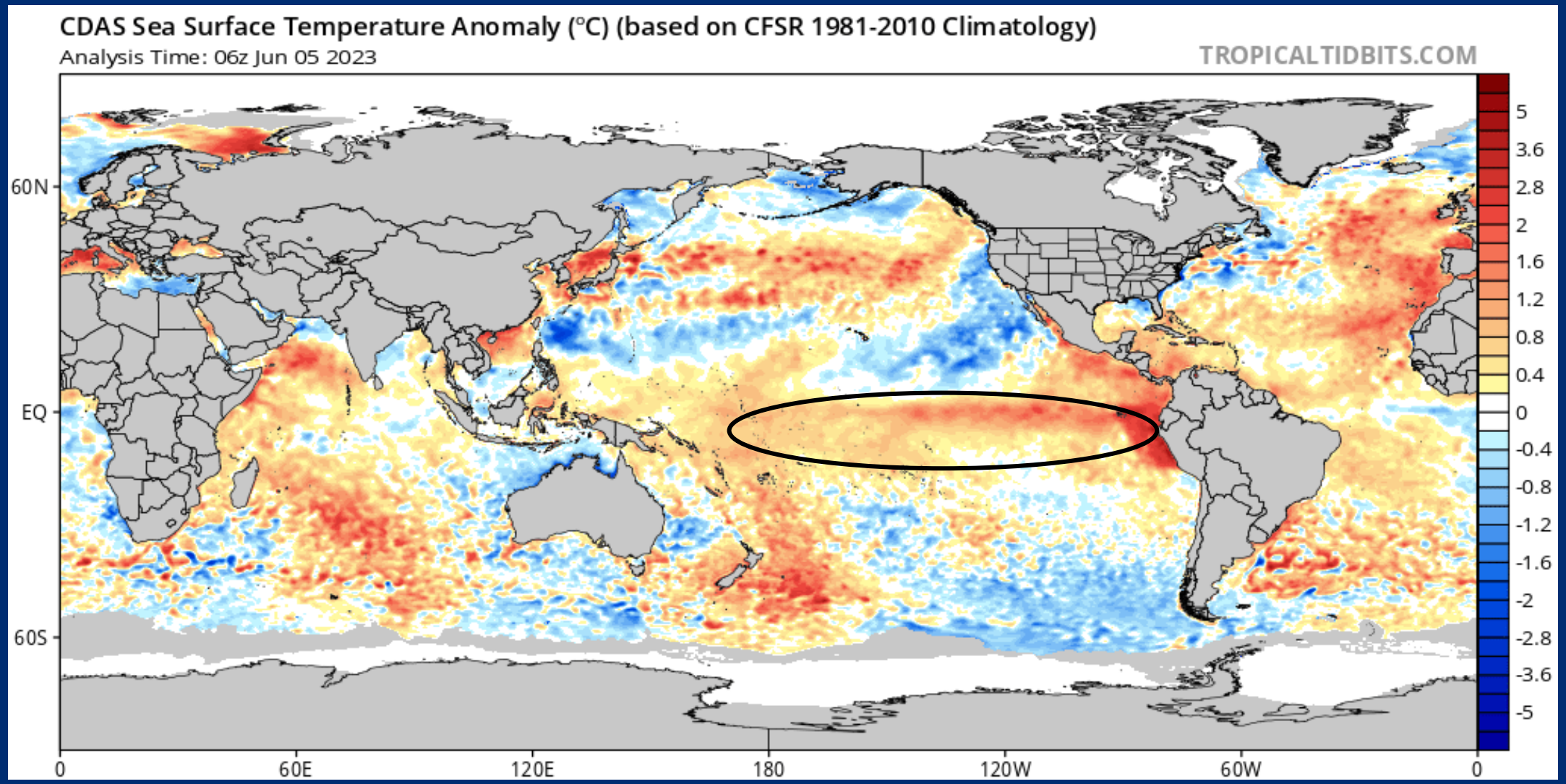


May 30, 2023

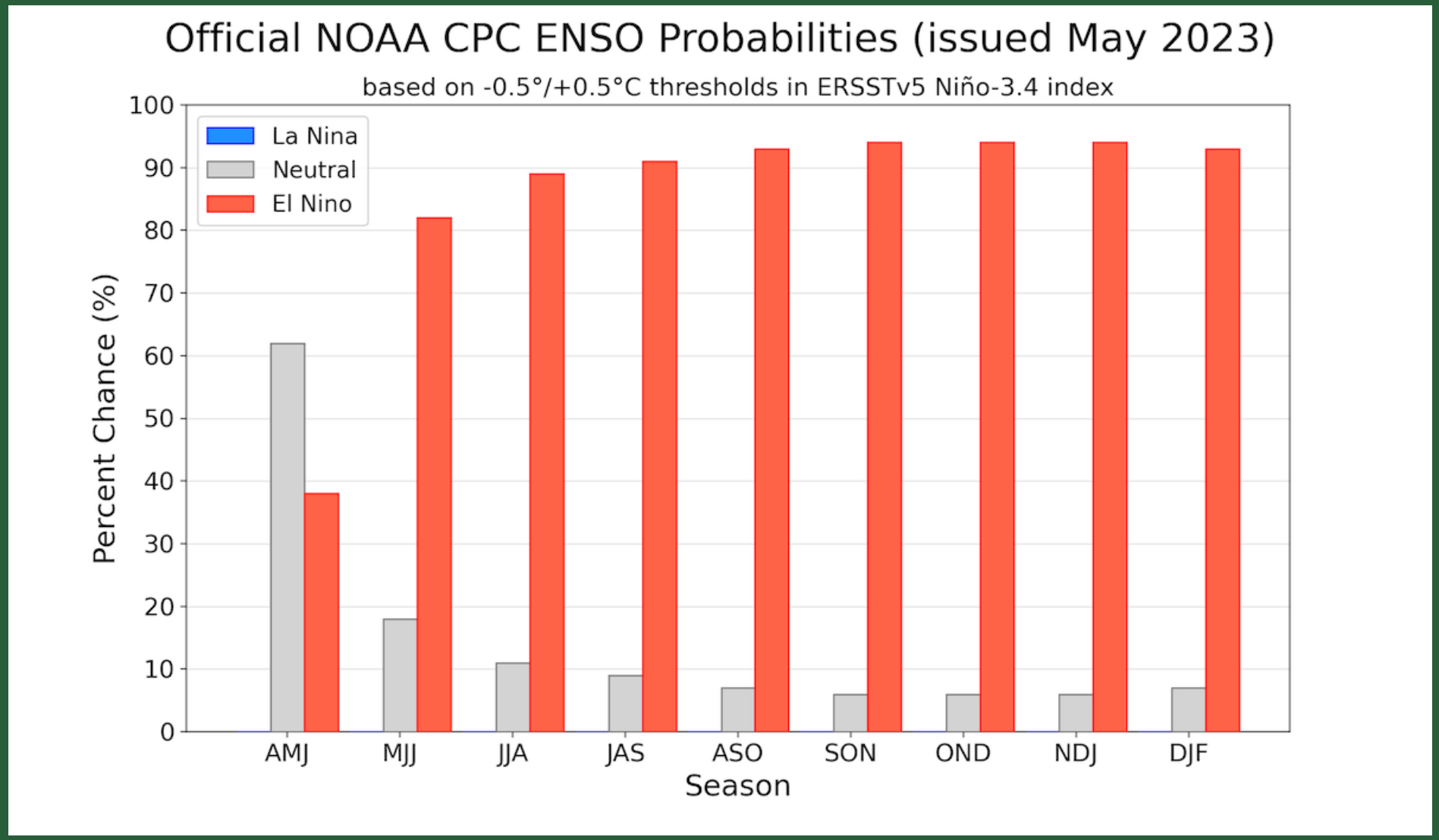


May 31, 2022

June 2023: A Neutral Pacific is Still in Place



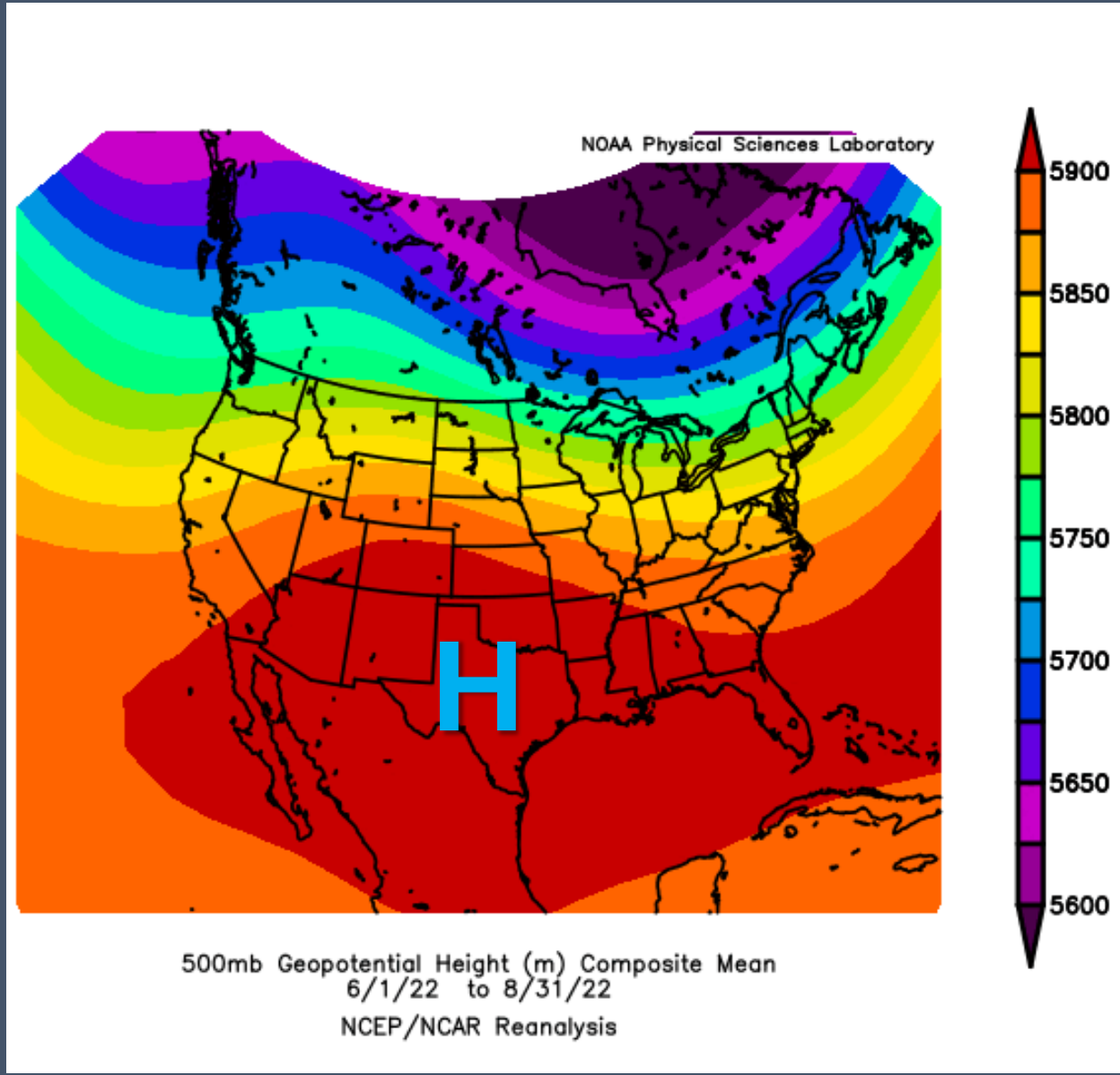
Increased Odds for El Niño to Develop this Summer



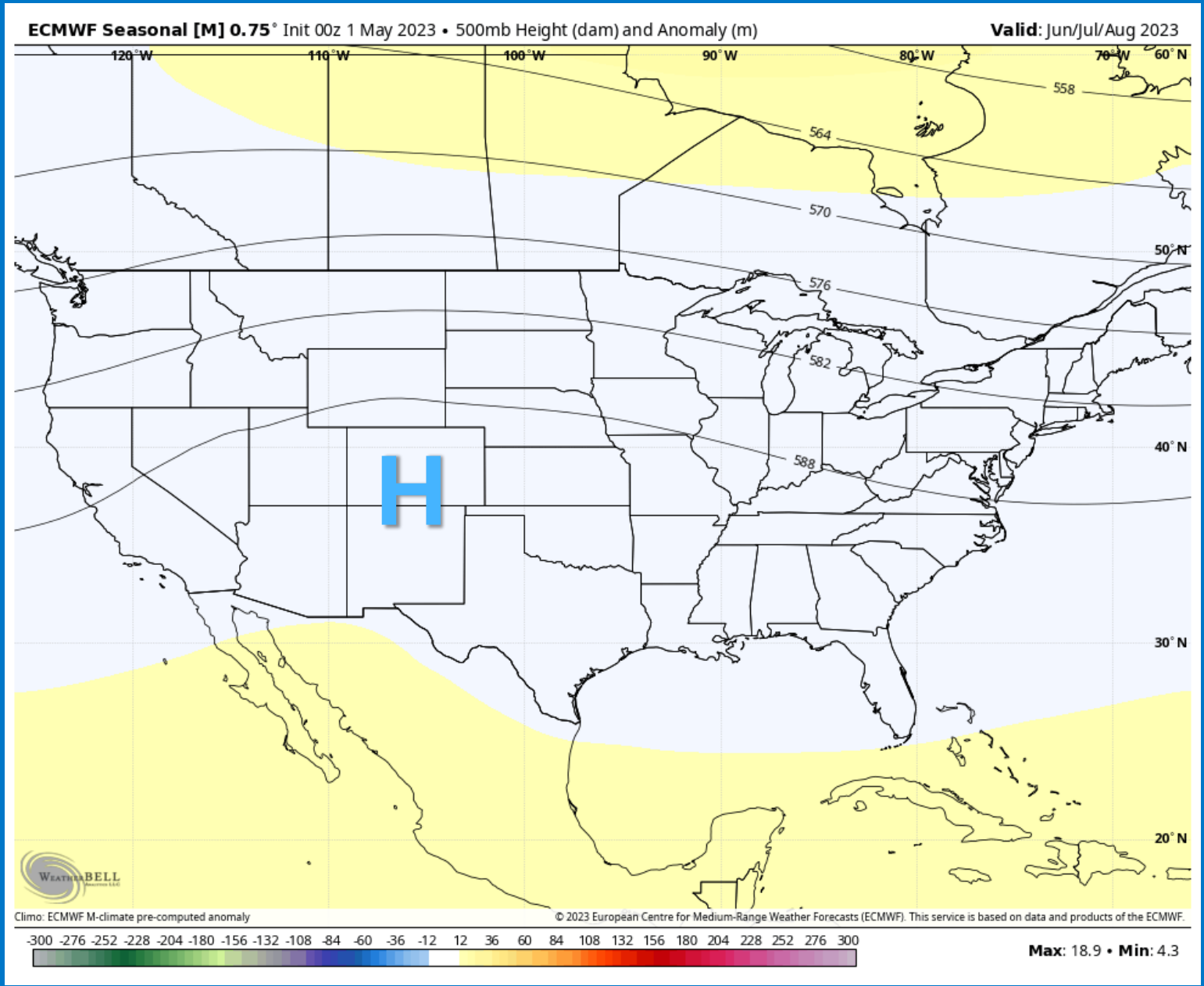
The Climate Prediction Center's Projection for El Niño

- 80% chance for at least a moderate El Niño
- ~55% chance for a strong El Niño
- ~25% chance of an event greater than 2.0 degrees C

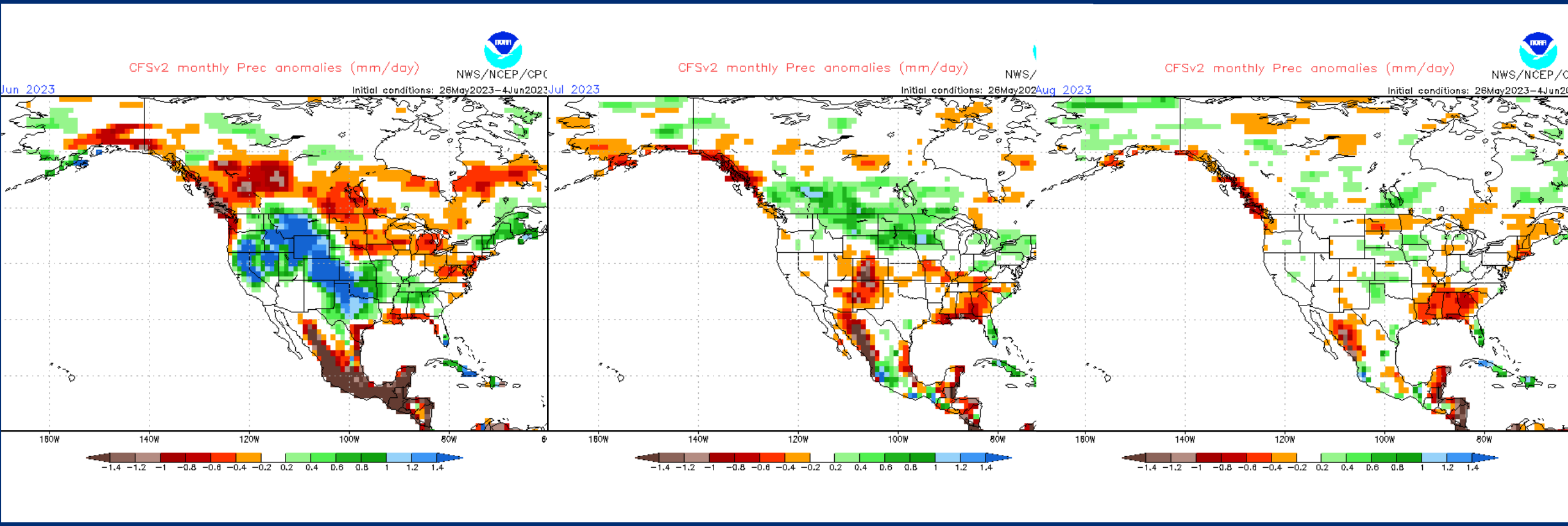
The Summer 2022 Heat Dome



Jet Stream Pattern Forecast for Summer 2023

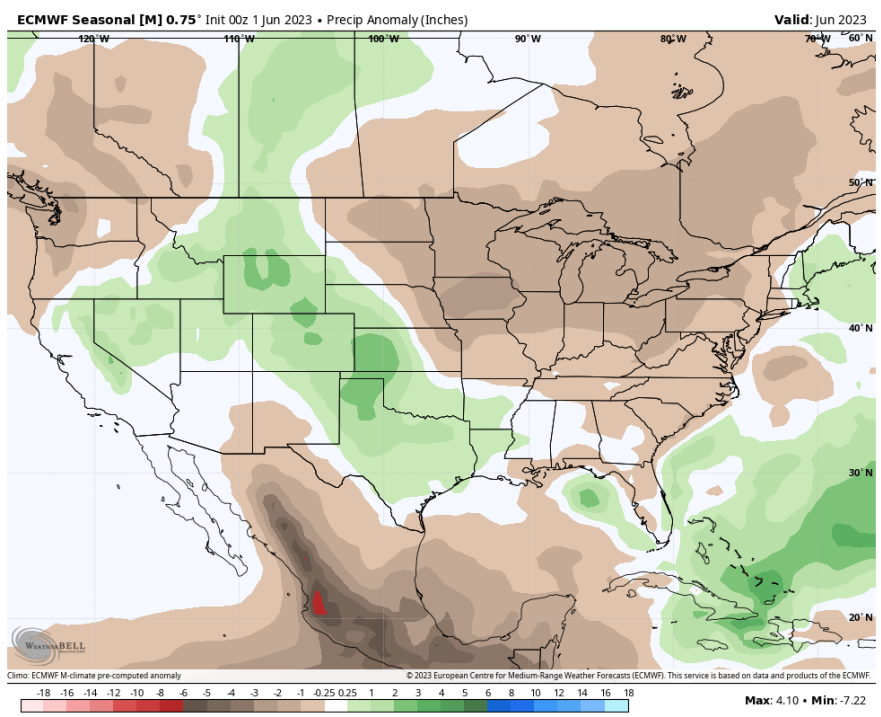


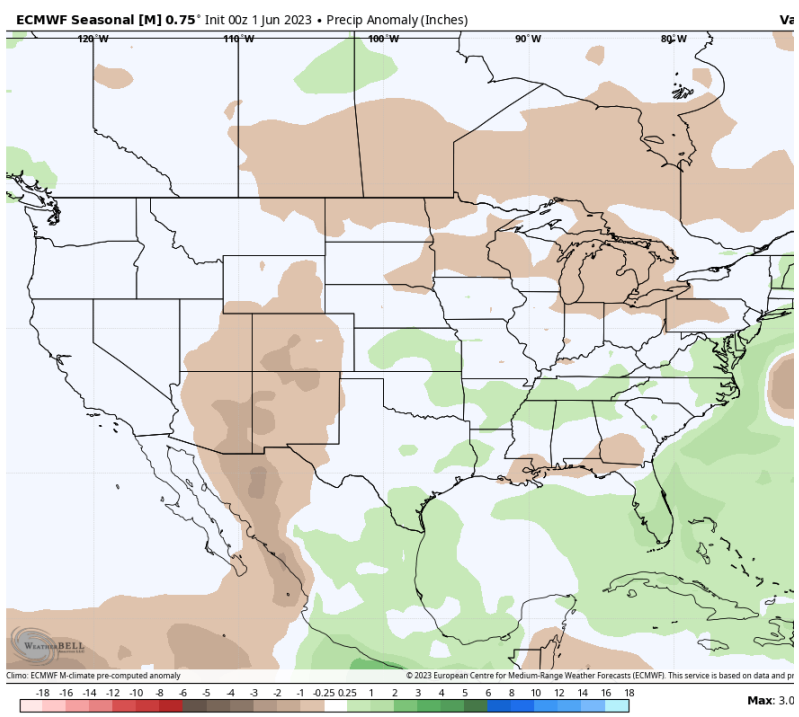
Summer Rainfall Outlook – CFS Model

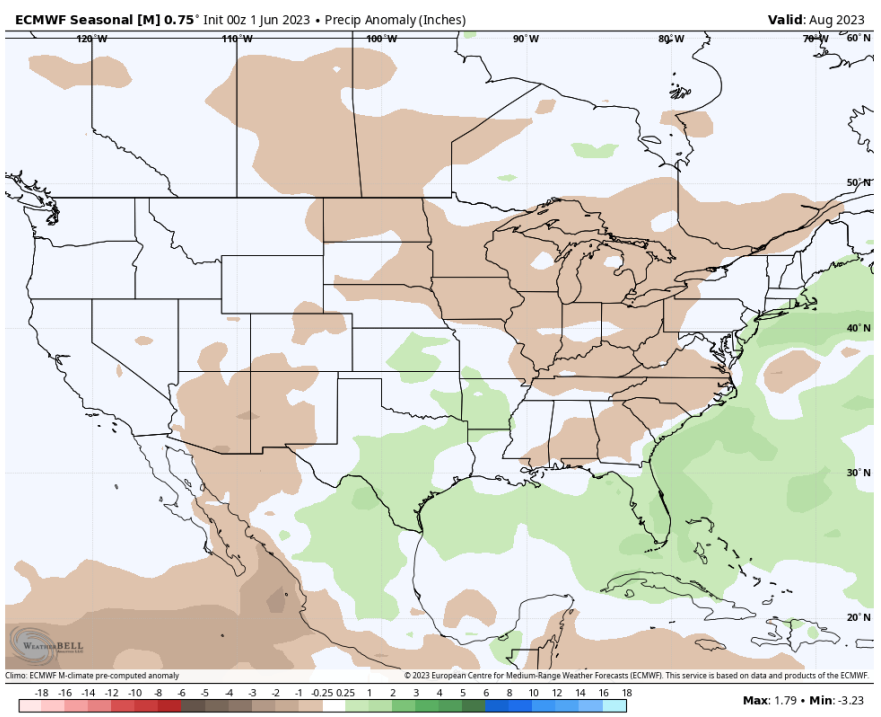


June July August

Summer Rainfall Outlook – European Model

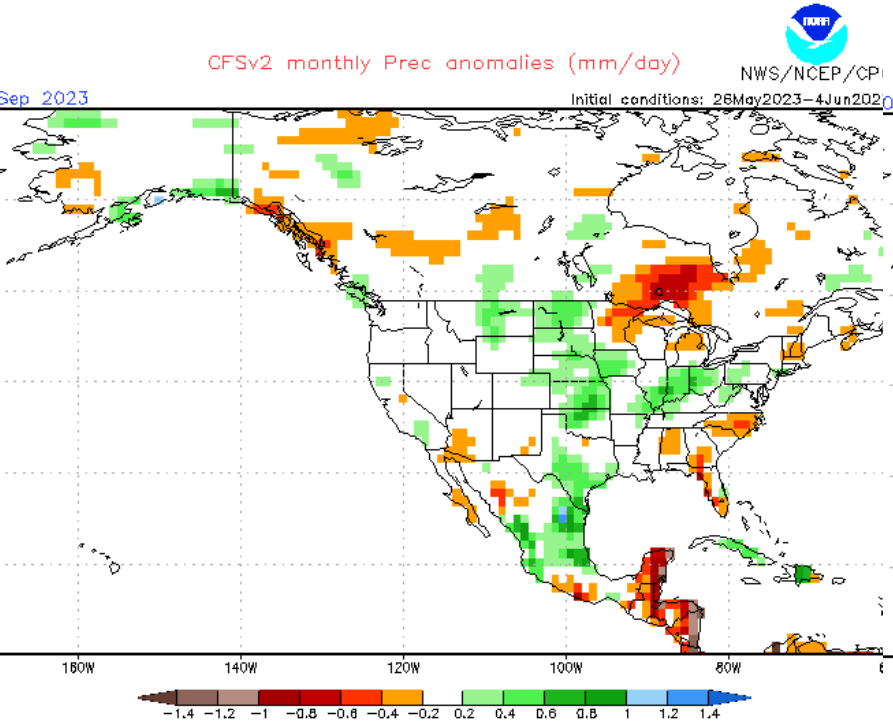


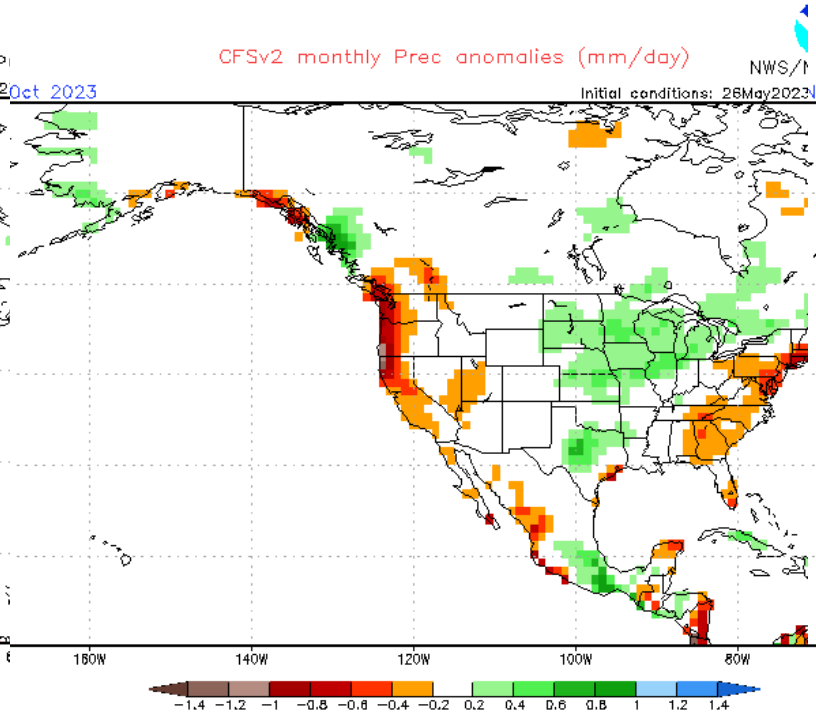


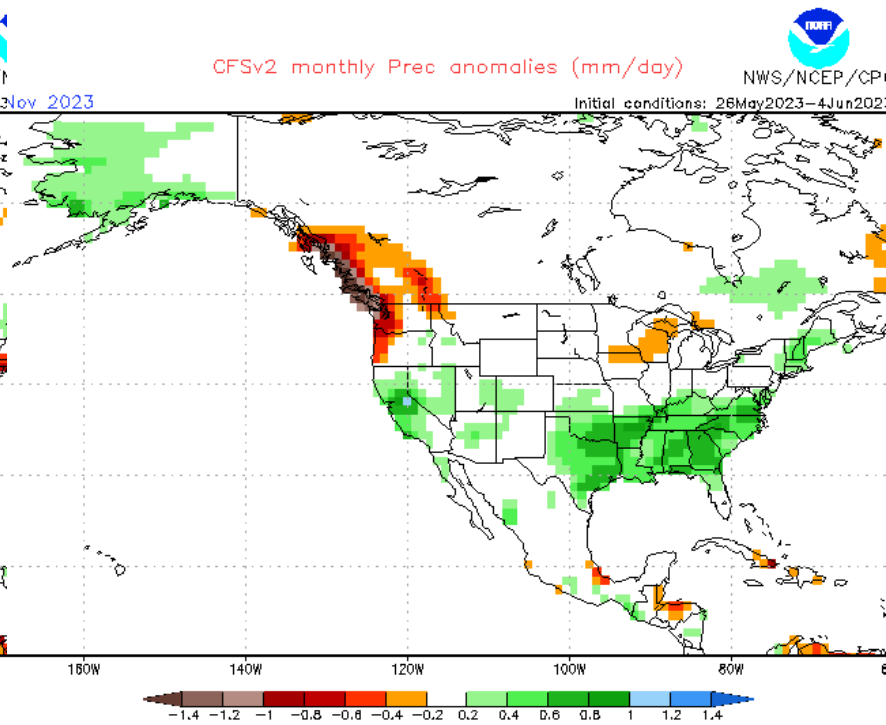


June | July | August

Autumn Rainfall Outlook – CFS Model

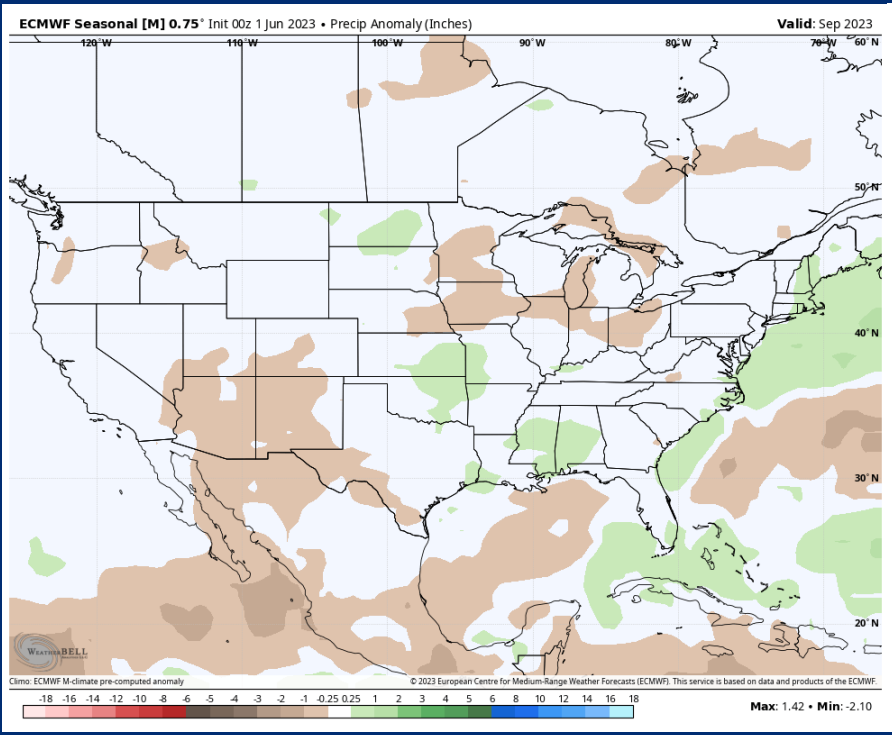


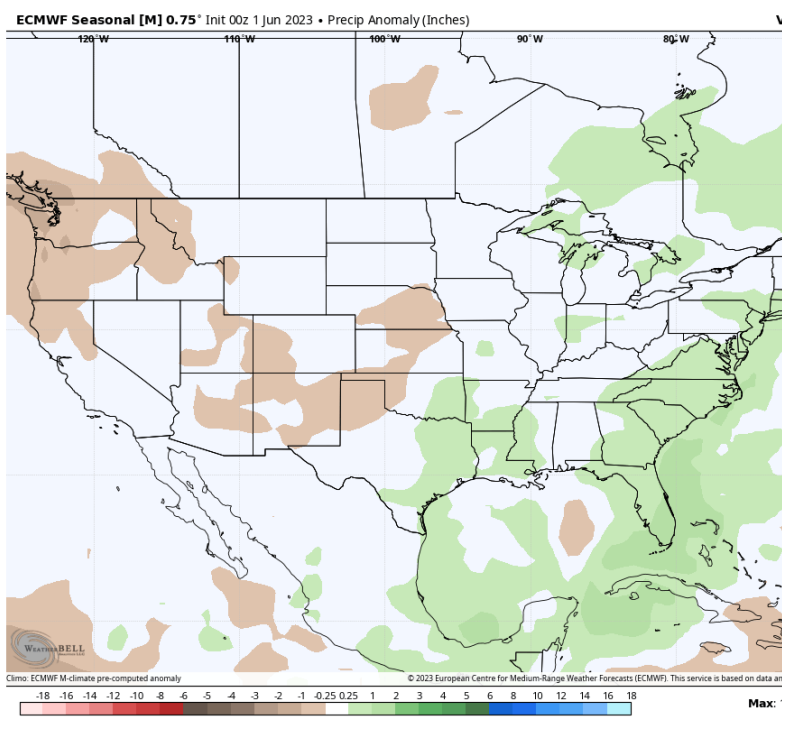


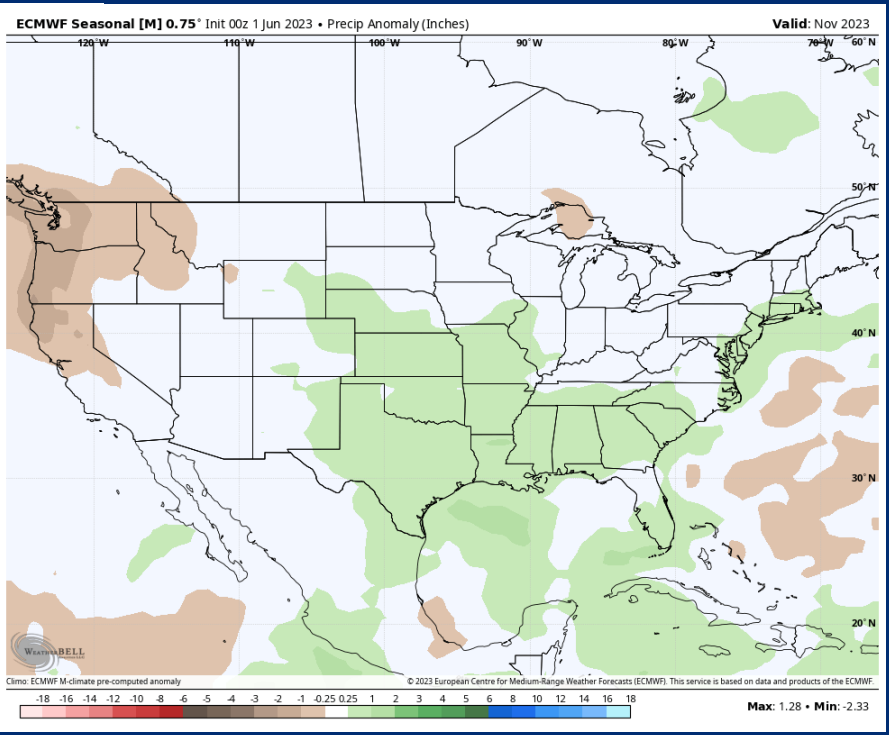


September **October** **November**

Autumn Rainfall Outlook – European Model

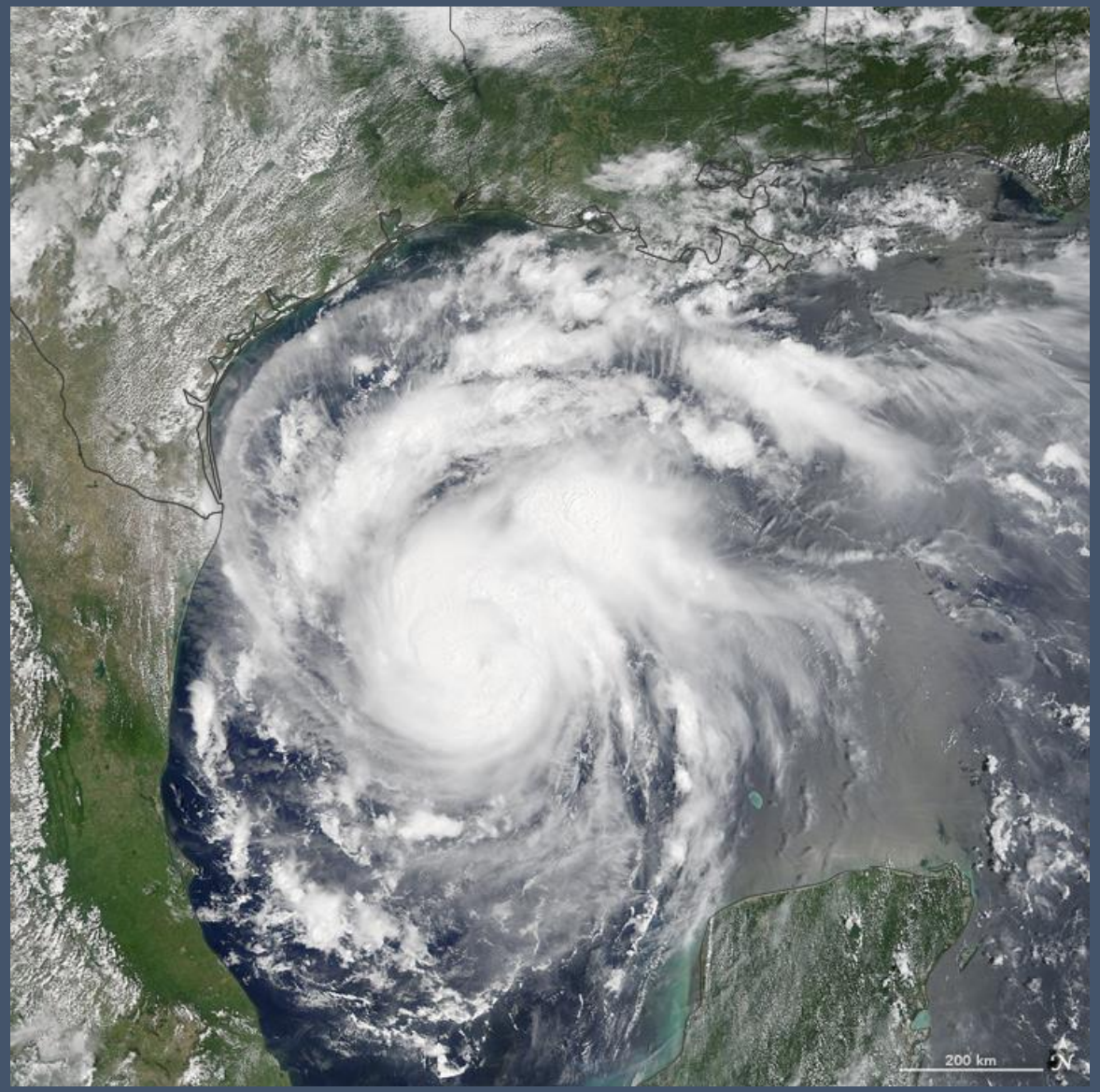




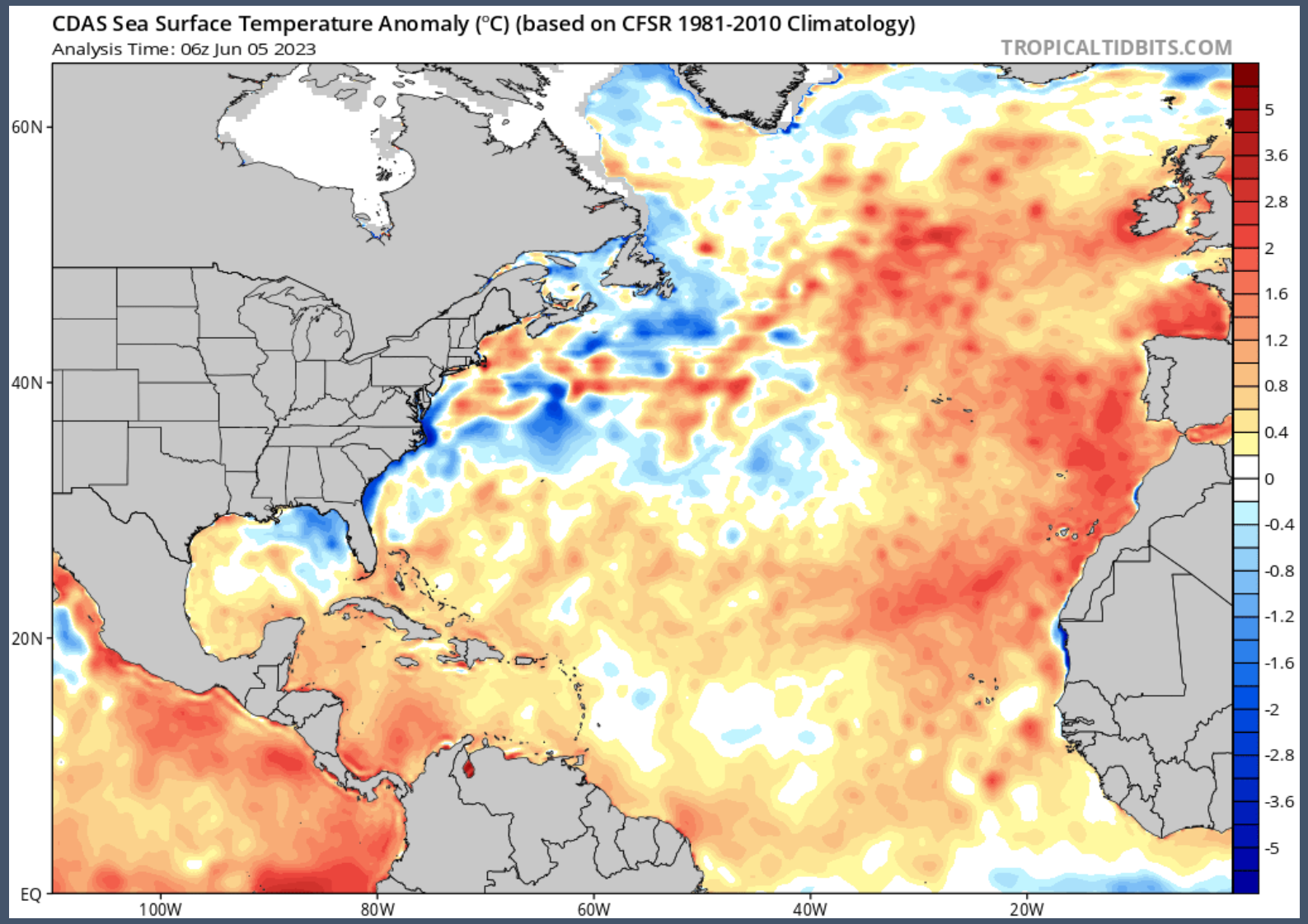


September October November

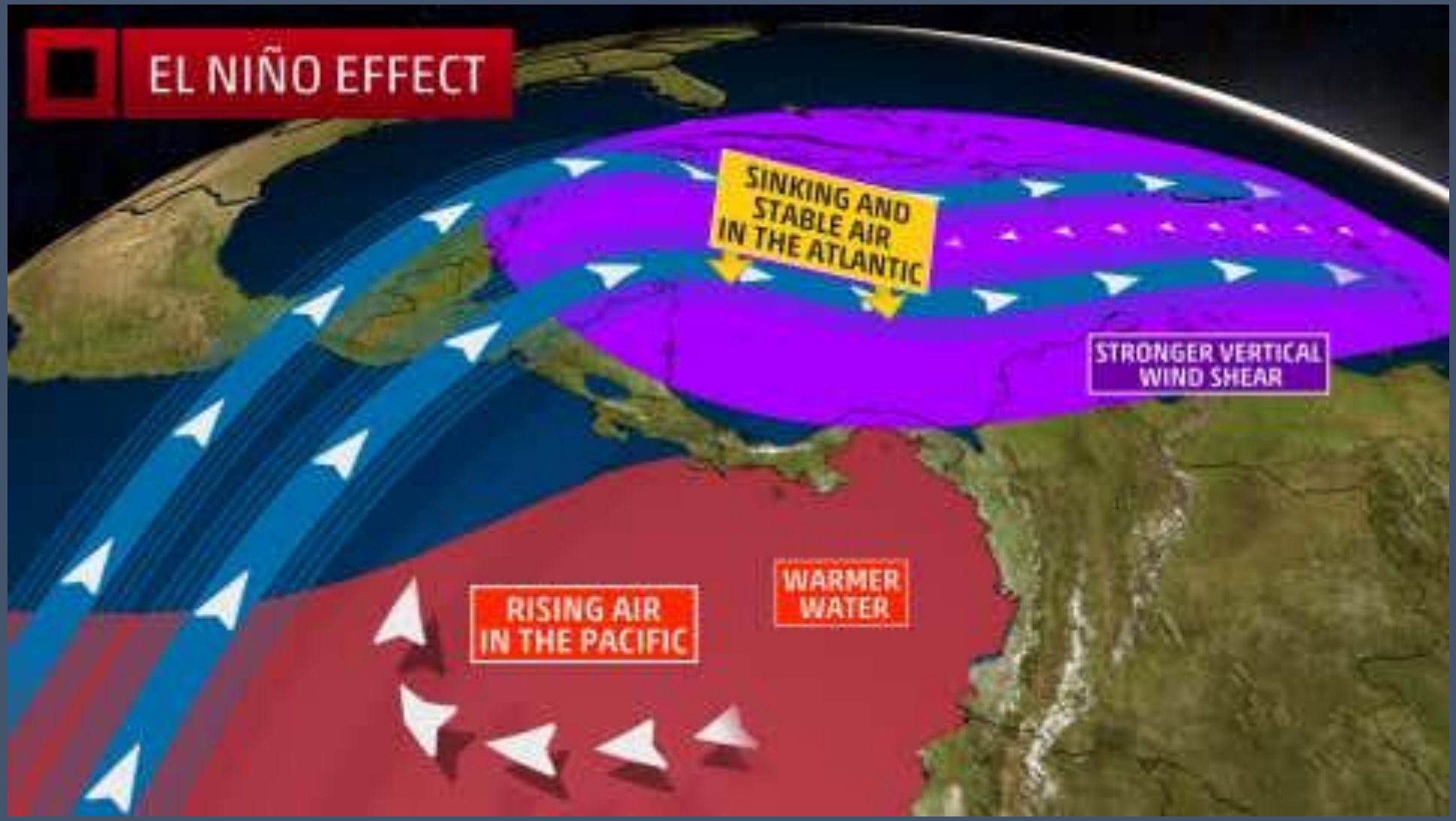
Hurricane Season 2023



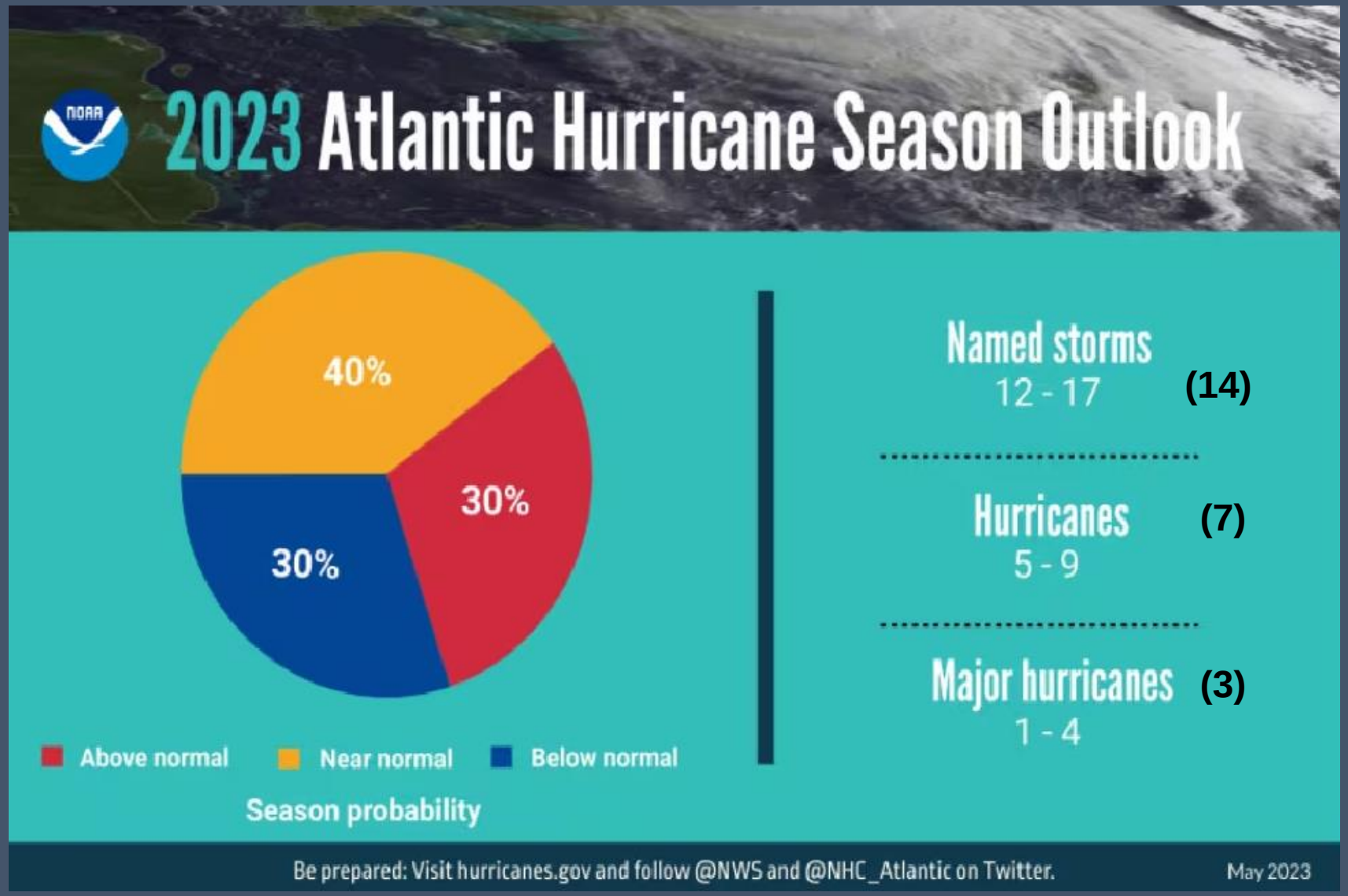
Latest Sea Surface Temperature Anomaly Analysis



Increased Wind Shear with El Niño



National Hurricane Center Outlook



Summer/Autumn Weather Outlook

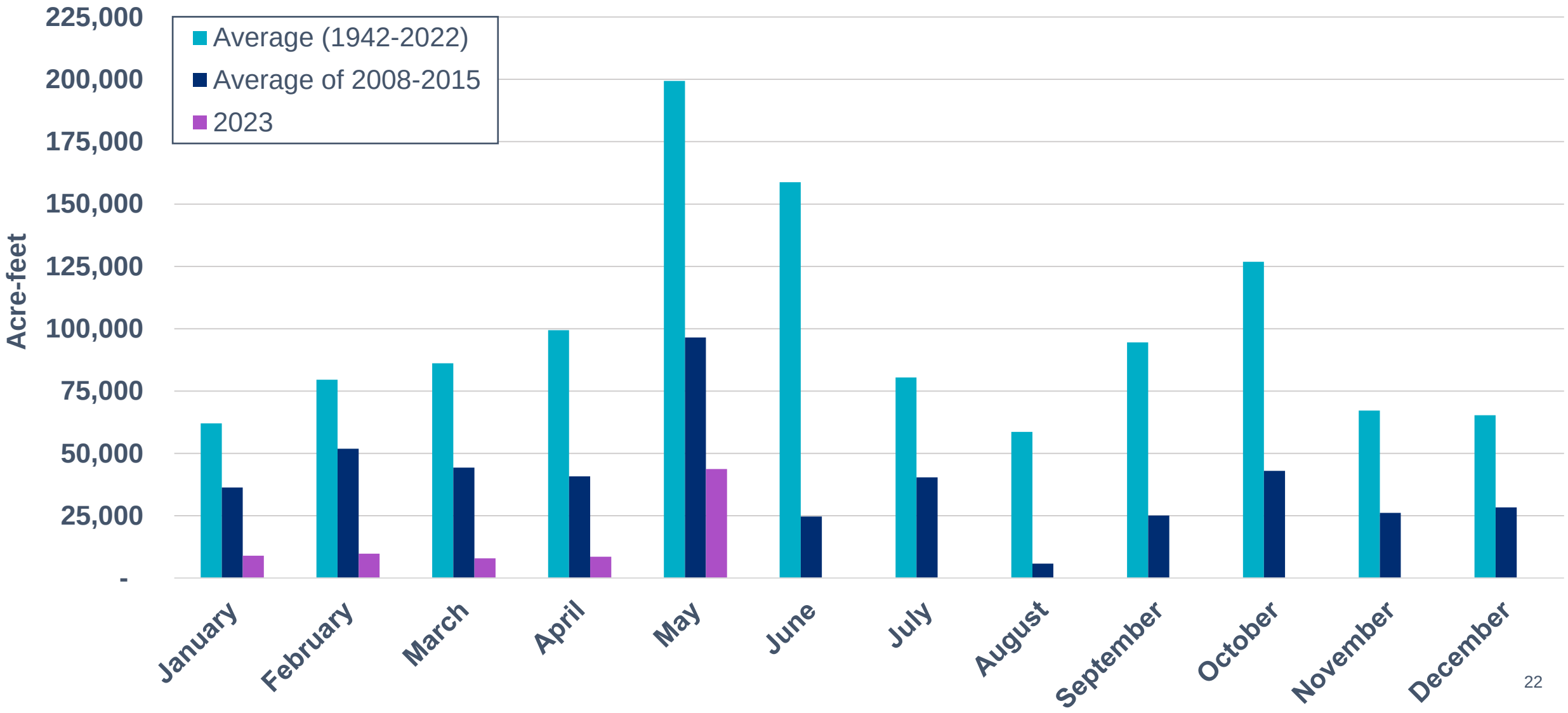
- Strong odds El Niño will develop this summer and persist through the upcoming winter
- Near-normal rainfall expected this summer
- A trend toward above-normal rainfall predicted for the fall
- Summer temperatures not as extreme as last summer
- Summer temperatures to average around 1-1.5 degrees above normal across Central Texas
- Near-normal hurricane activity expected this summer
- Hurricane activity may become quite active

Basin Conditions Update

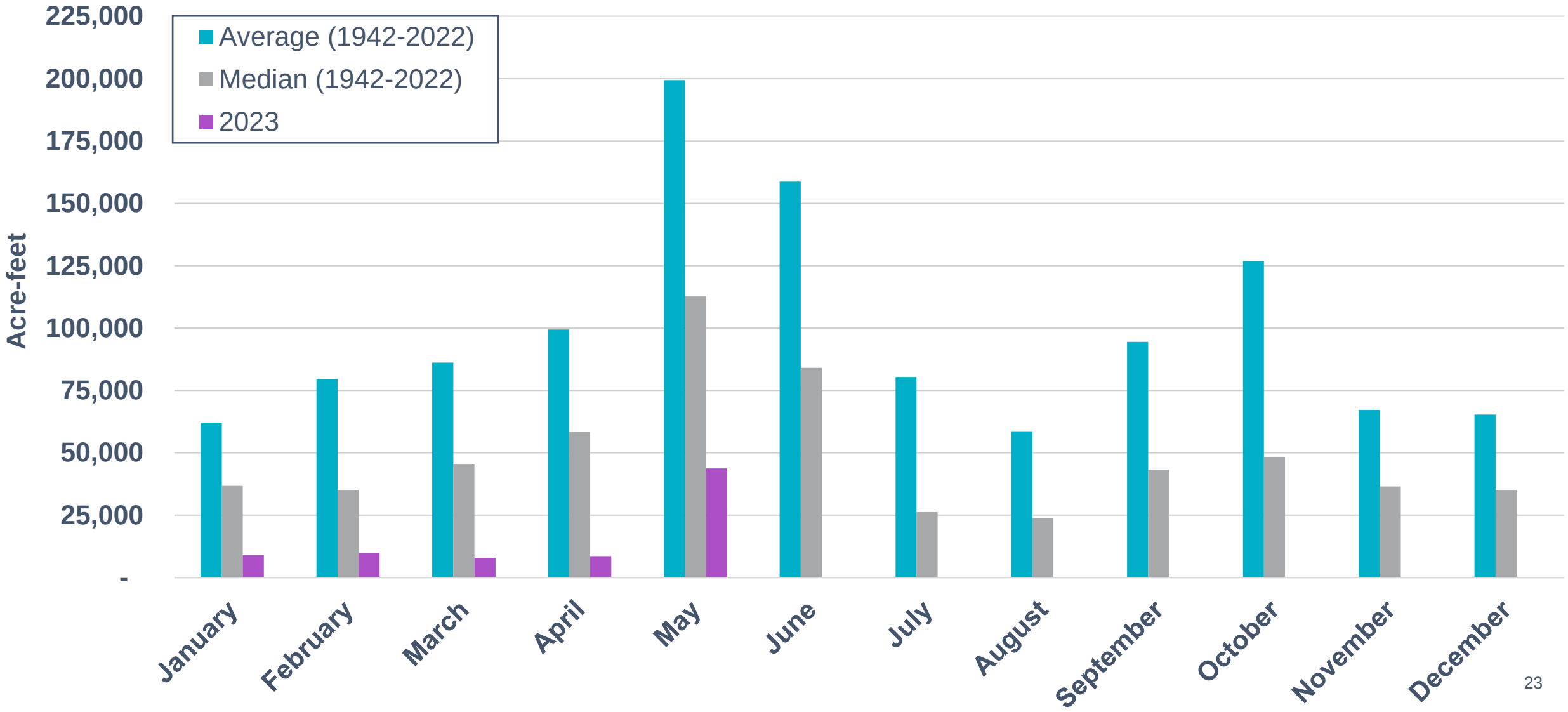
John Hofmann

Executive Vice President of Water

Water Flowing Into Lakes Buchanan and Travis

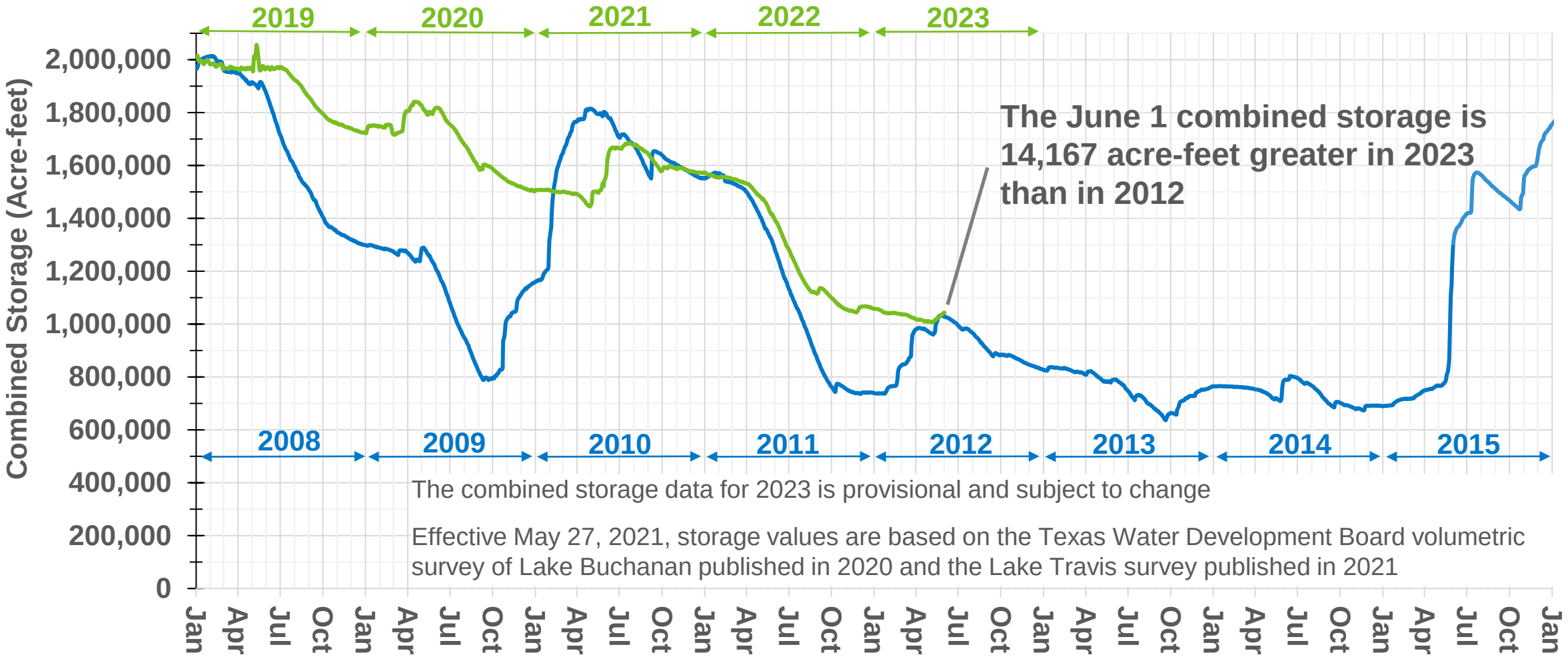


Water Flowing Into Lakes Buchanan and Travis – Median



Combined Storage of Lakes Buchanan and Travis

Comparison of 2019-2023 and 2008-2015

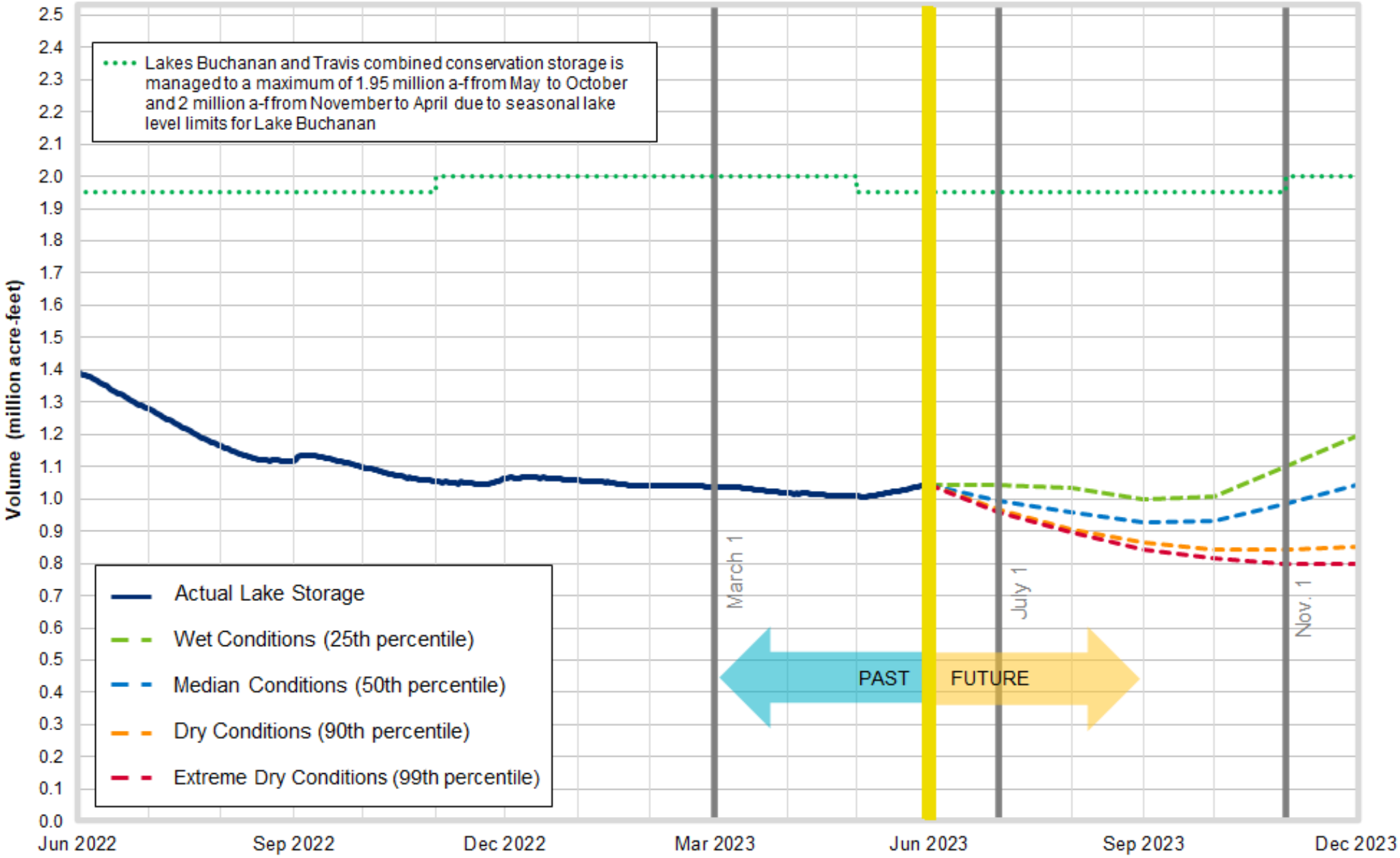


The combined storage data for 2023 is provisional and subject to change

Effective May 27, 2021, storage values are based on the Texas Water Development Board volumetric survey of Lake Buchanan published in 2020 and the Lake Travis survey published in 2021

As of June 1, 2023

Lakes Buchanan and Travis Total Combined Storage Projections



Date: June 1, 2023

Note: One acre-foot equals 325,851 gallons

2020 Water Management Plan

Monica Masters

Vice President of Water Resources

Over the Last Year

- No interruptible stored water availability for non-Garwood operations for second growing season in 2022 and for both growing seasons in 2023
- Water supply condition is Extraordinary Drought
- Environmental flow criteria remained at Subsistence
- Bay inflow criteria remained at Threshold.

LCRA's Water Management Plan

- Operations plan for supplying water from lakes Buchanan and Travis to users throughout the lower Colorado River basin
- Allows for supply of interruptible water provided we continue to meet the needs of our firm customers
- Helps meet the environmental needs of the lower Colorado River and Matagorda Bay
- Developed with significant input from participants, and approved by the Texas Commission on Environmental Quality

2020 Water Management Plan

- **WMP substantially revised in 2015, with additional updates in 2020**
- **WMP has safeguards and is responsive to:**
  - Inflows
  - Storage conditions
  - Actual operations and demands
  - Possible future conditions
  - Increased firm demands

WMP Framework

- Set minimum combined storage to 600,000 acre-feet through a repeat of 1940-2016 hydrology
- Three water supply conditions: “Normal,” “Less Severe Drought,” and “Extraordinary Drought”
- Two evaluation dates for interruptible stored water
- Three evaluation dates for environmental flows
- Look-ahead tests

Data in 2020 WMP

- **Water demands projected to 2025**
  - Region K
  - Weather-varied
- **Hydrology through 2016**
  - Hydrology reviewed and approved by TCEQ
- **Updated water rights**

WMP Safeguards – Responsive to Inflow and Storage Conditions

- Storage in the Highland Lakes and recent inflows are evaluated when allocating agricultural interruptible supply
- Separate evaluation dates before first and second growing seasons factor in the most recent conditions
- Water supply condition determined based on storage and inflows

WMP Safeguards – Water Supply Conditions

- **“Normal” if storage is above 1.5 million acre-feet on March 1 or July 1 evaluation dates**
- **Enter “Less Severe Drought” on March 1 or July 1 if:**
  - Storage below 1.5 million acre-feet and three-month inflows less than 50,000 acre-feet; or
  - Storage below 1.4 million acre-feet and three-month inflows below 33rd percentile

WMP Safeguards – Water Supply Conditions (continued)

- **Enter "Extraordinary Drought" on March 1 or July 1 evaluation dates if:**
  - Storage below 1.3 million acre-feet, drought duration since full at least 18 months, and inflows worse than drought intensity curve; or
  - Storage below 1.4 million acre-feet and storage dropped 300,000 acre-feet between March 1 and July 1

WMP Safeguards – Reduced Agricultural Supply and Operational Considerations

- **Allocations for agricultural interruptible supply reduced or cut off based on water supply condition**
  - Curtailment curves for “Normal” or “Less Severe Drought”
  - Cut off if in “Extraordinary Drought”

First Season Interruptible Stored Water Availability

First Season – Normal**		First Season – Less Severe Drought**	
Combined storage on March 1 (million acre-feet)	Interruptible stored water (acre-feet)*	Combined storage on March 1 (million acre-feet)	Interruptible stored water (acre-feet)*
Above 1.3	178,000	Above 1.5	N/A
1.1 to 1.3	107,100 to 178,000	1.1 to 1.499	88,200 to 155,000
Below 1.1	0	Below 1.1	0

Anytime cutoff if storage drops to or below 1 million acre-feet
****Determination of water supply condition considers inflows and other factors***

Second Season Interruptible Stored Water Availability

Second Season – Normal**		Second Season – Less Severe Drought**	
Combined storage on July 1 (million acre-feet)	Interruptible stored water (acre-feet)*	Combined storage on July 1 (million acre-feet)	Interruptible stored water (acre-feet)*
Above 1.4	66,000	Above 1.5	N/A
1.1 to 1.4	39,700 to 66,000	1.1 to 1.499	39,700 to 55,000
Below 1.1	0	Below 1.1	0

Anytime cutoff if storage drops to or below 1 million acre-feet
****Determination of water supply condition considers inflows and other factors***

WMP Safeguards – Reduced Agricultural Supply and Operational Considerations (Continued)

- **Agricultural interruptible supply can be cut off midseason:**
  - If diversions exceed allocations;
  - If releases from Highland Lakes exceed release caps; or
  - If storage falls to 1 million acre-feet

WMP Safeguards – Look-Ahead Test

- **Additional curtailment of agricultural interruptible supply, if necessary to keep combined storage:**
  - Above 900,000 acre-feet for the upcoming season
  - Above 600,000 acre-feet for next 12 months

WMP Safeguards – Drought Worse Than Drought of Record

- **Drought Worse Than Drought of Record declaration**
  - If storage falls below 600,000 acre-feet, drought lasts at least 24 months and inflows are worse than historic drought
  - Would cut off any interruptible stored water not already curtailed and implement mandatory pro rata curtailment of firm water

WMP Safeguards – 2025 Demand Projections

- **WMP firm demands based on year 2025 projections**
- **TCEQ requires that we begin updating the WMP by March 1, 2025, or earlier if firm use reaches certain levels:**
  - Normal/average 2025 demand projections two years in a row; or
  - 90% of high/max 2025 demand projections in one year

Environmental Flows

- **Instream flow criteria: Base-Average, Base-Dry and Subsistence**
- **Bay inflow criteria: Threshold, OP-1, OP-2, OP-3 and OP-4**
- **Limitations on bay obligation:**
  - Limited to storable inflows into Highland Lakes
  - Maximum release as a percentage of storable inflows
  - Maximum monthly release

Key Takeaways

The 2020 WMP is protective and responsive to:

- **Lake storage**
- **Inflows**
- **Actual operations**
- **Possible future conditions**
- **Firm demands**

Upcoming Evaluation Date – July 1

- **Interruptible stored water remains cut off until at least March 2024**
- **Combined storage median projection is about 990,000 acre-feet**
  - To move from Extraordinary Drought Condition, combined storage must have been >1.3 million acre-feet at any time since March 1 and basin conditions must have improved
- **Environmental flow criteria expected to remain at Subsistence**
- **Bay inflow criteria expected to remain at Threshold**

Upcoming Evaluation Date – Nov. 1

- Environmental flow criteria expected to remain at Subsistence
- Bay inflow criteria expected to remain at Threshold

Water Use

Monica Masters

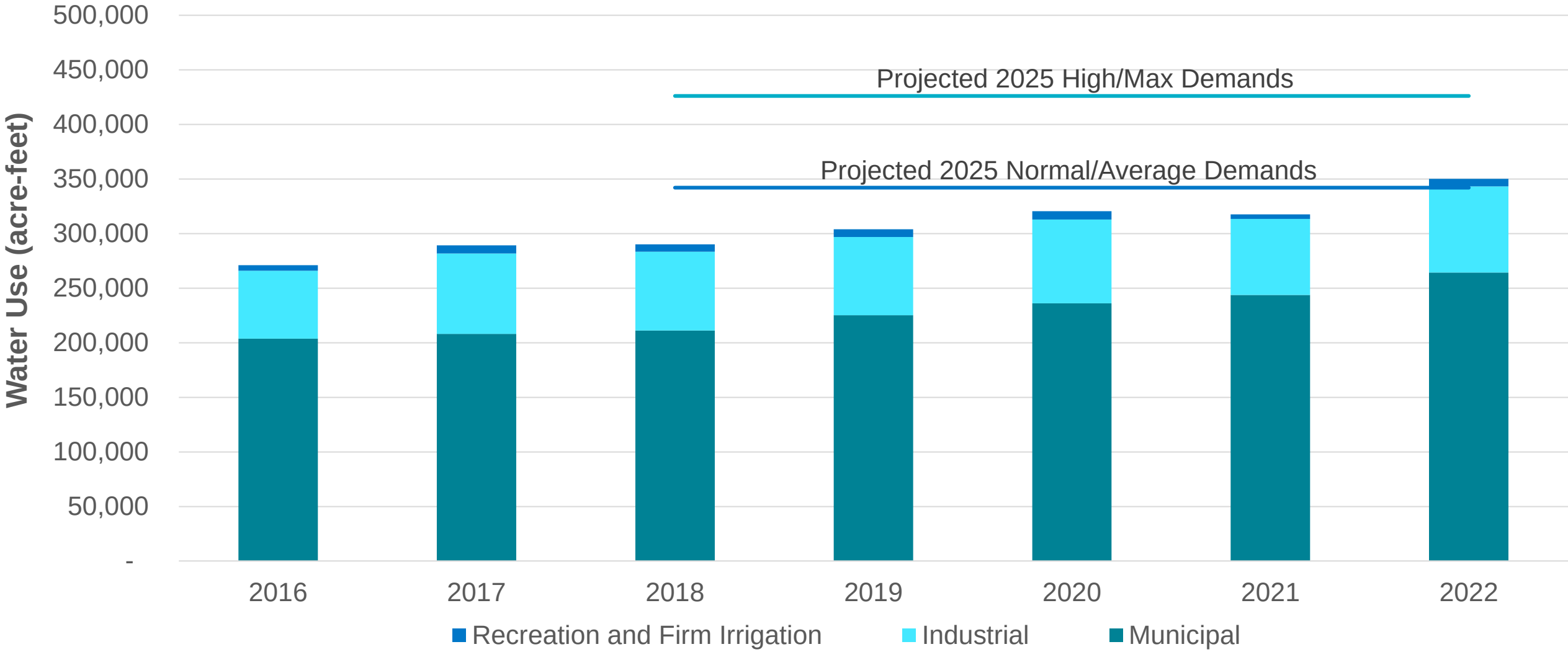
Vice President of Water Resources

2025 Projected Firm Water Demands in WMP

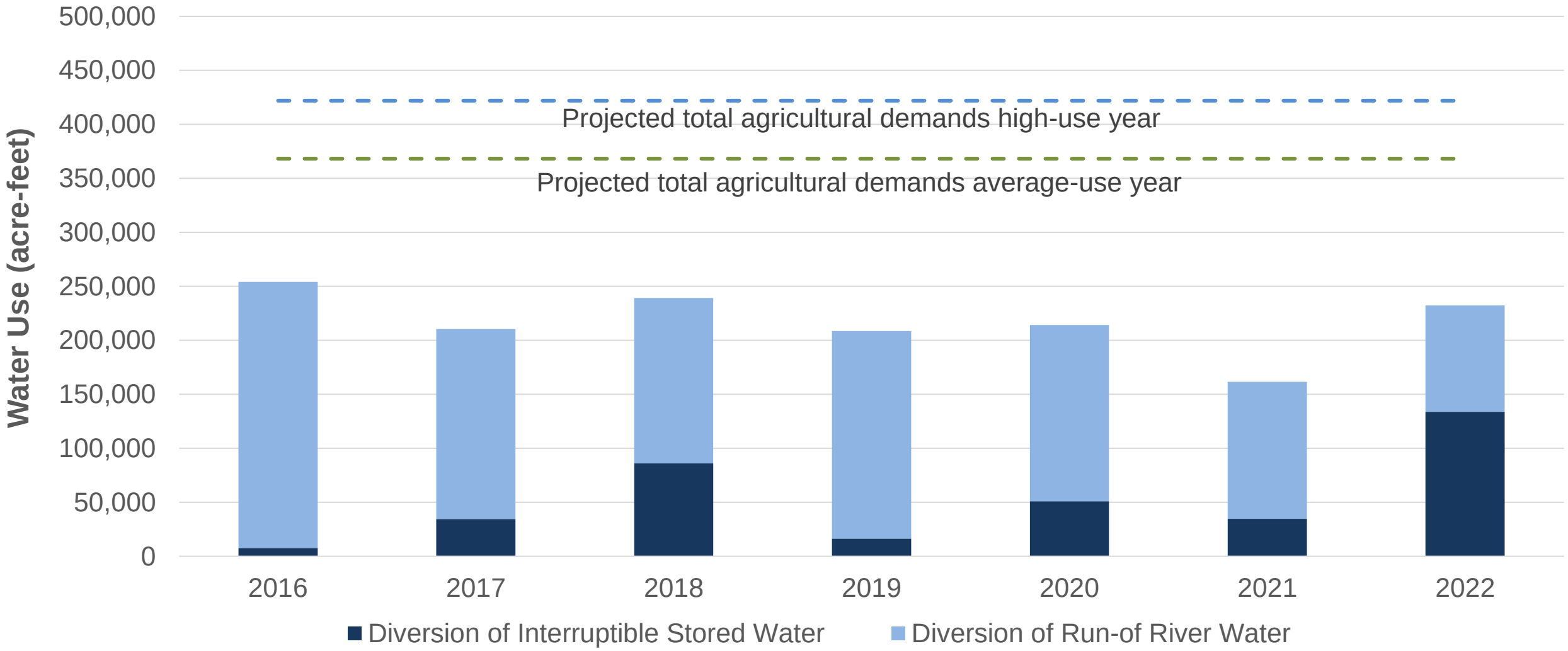
	Normal / Average Use Year (acre-feet)	Max / High Use Year (acre-feet)
Projected Firm Water Use in 2025	342,000	426,000
Projected Total Ag Demands*	368,000	422,000

*Can be met by using stored or run-of-river water

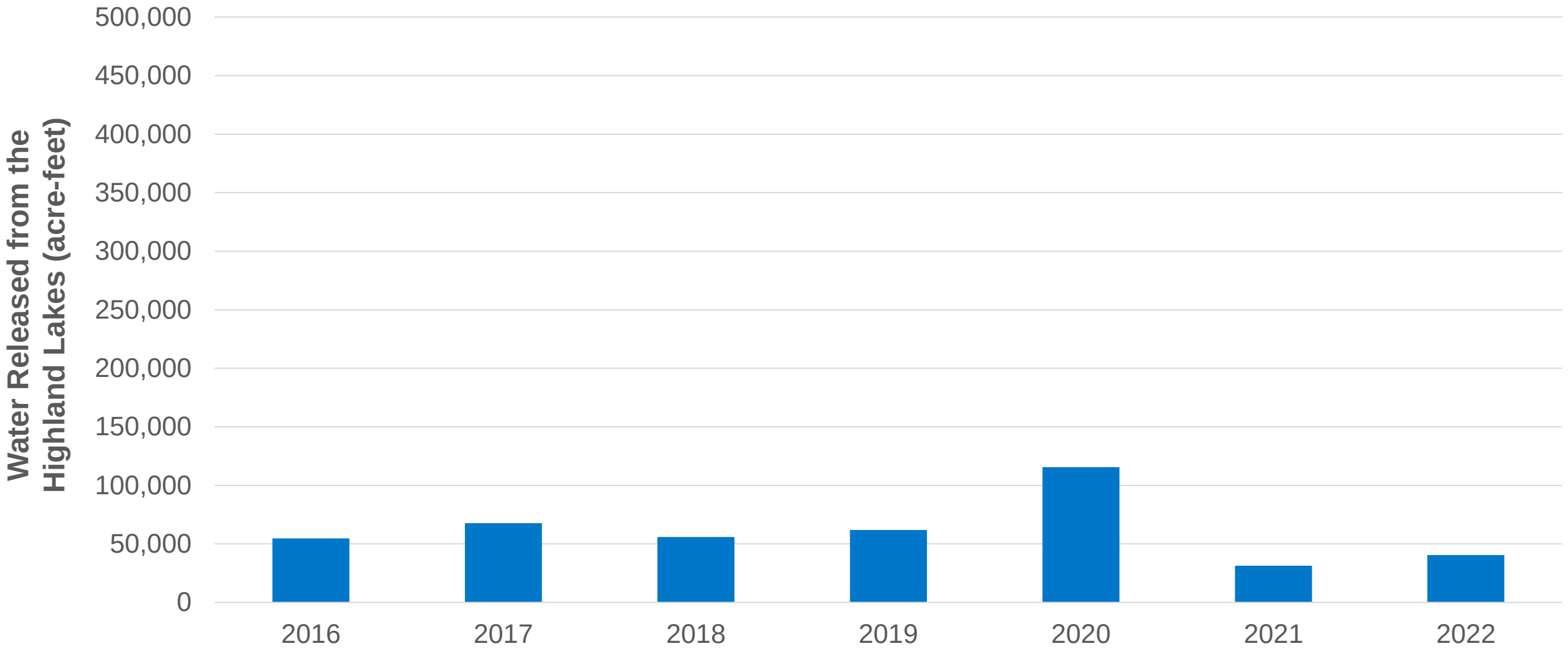
Municipal, Industrial, Recreation and Firm Irrigation Use From Lakes Buchanan and Travis and Colorado River



Use of Interruptible Stored Water and Run-of-River at the Four Downstream Agricultural Operations



Releases to Help Meet Environmental Flow Criteria



Key Takeaways

- 2020 WMP is protective of firm supplies and is responsive to lake storage, inflows, actual operations, possible future conditions and firm demands
- WMP water supply condition likely to remain Extraordinary Drought after July evaluation date
- With the development of El Nino, wetter weather is possible this fall

Key Takeaways

- **The plan is responding to the drought**
- **Water use currently is below provisions that would trigger updating the plan before 2025**
- **Planning for the update process is underway**
  - Participant process to begin in 2025

Questions?

LCRA
ENERGY • WATER • COMMUNITY SERVICES