

# **US Dry Bean Conference Long Term Variables Impacting Ag Markets and Ag Operator Risks in the Decade Ahead**



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## History Repeats-Or At Least Rhymes



What has been will be again,  
what has been done will be  
done again; there is nothing new  
under the sun

~ Solomon

AZ QUOTES



# **Key Factors Impacting US Agriculture for the Decade Ahead**

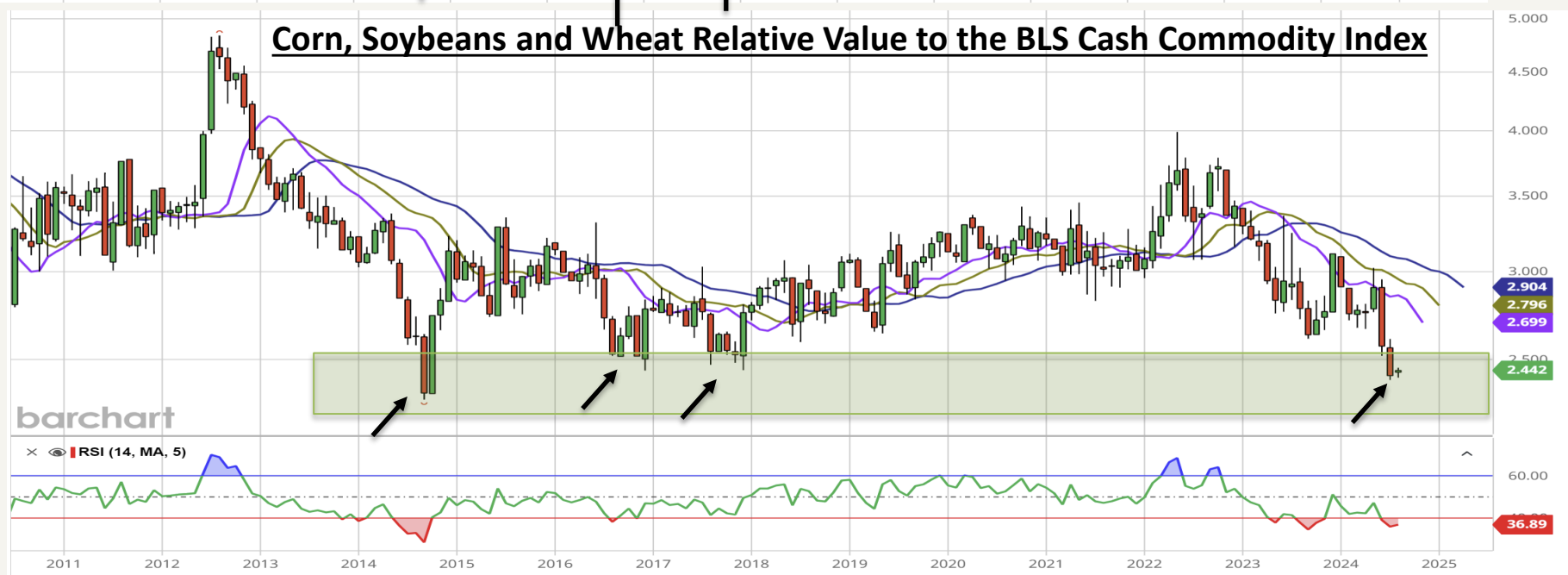
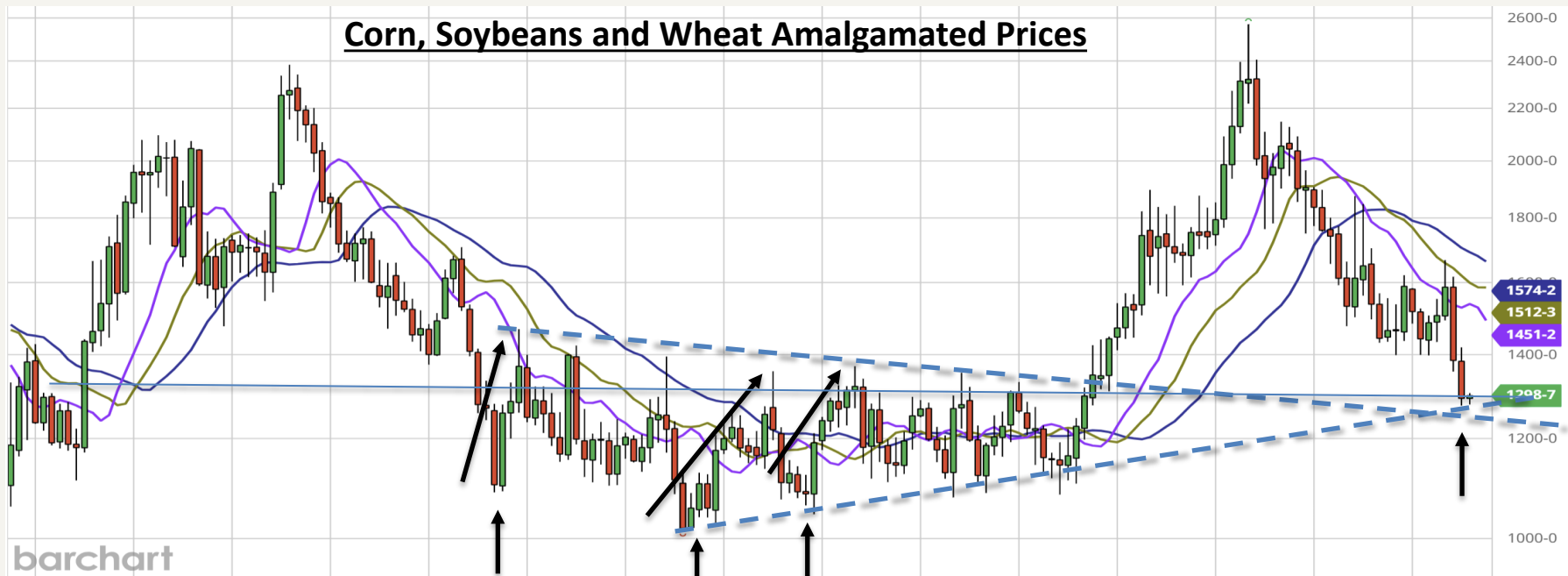
- 1) US reserve currency status in Peril-Excessive debt, higher interest rates, need for constant liquidity/money printing and escalating geopolitics-**
- 2) Demographics Matter-China's sun is setting while India's sun is rising demographically-Food demand impacts and how does Artificial Intelligence and Quantum Computing fit in?-**
- 3) Enhanced weather/climate Volatility-The 220-Year reduced solar activity cycle, the 89-Year Gleissberg Cycle and the 60-Year sea surface temperature cycle converge for the first time in 400-years-**
- 4) Brazilian Amazon Deforestation- Impacts to long term atmospheric river precipitation patterns and implication for long term crop yields and production-**
- 5) Animal Disease Proliferation- African Swine Fever, Avian Flu and the overall demand for alternative proteins...?**

# Overall Commodity Trends Suggest a Persistent 12-Year Commodity Inflation Cycle- (1908-1920, 1938-1950, 1968-1980, 1998-2010, 2020-2032?)

Currently in Year 4 Of Commodity Inflation Cycle

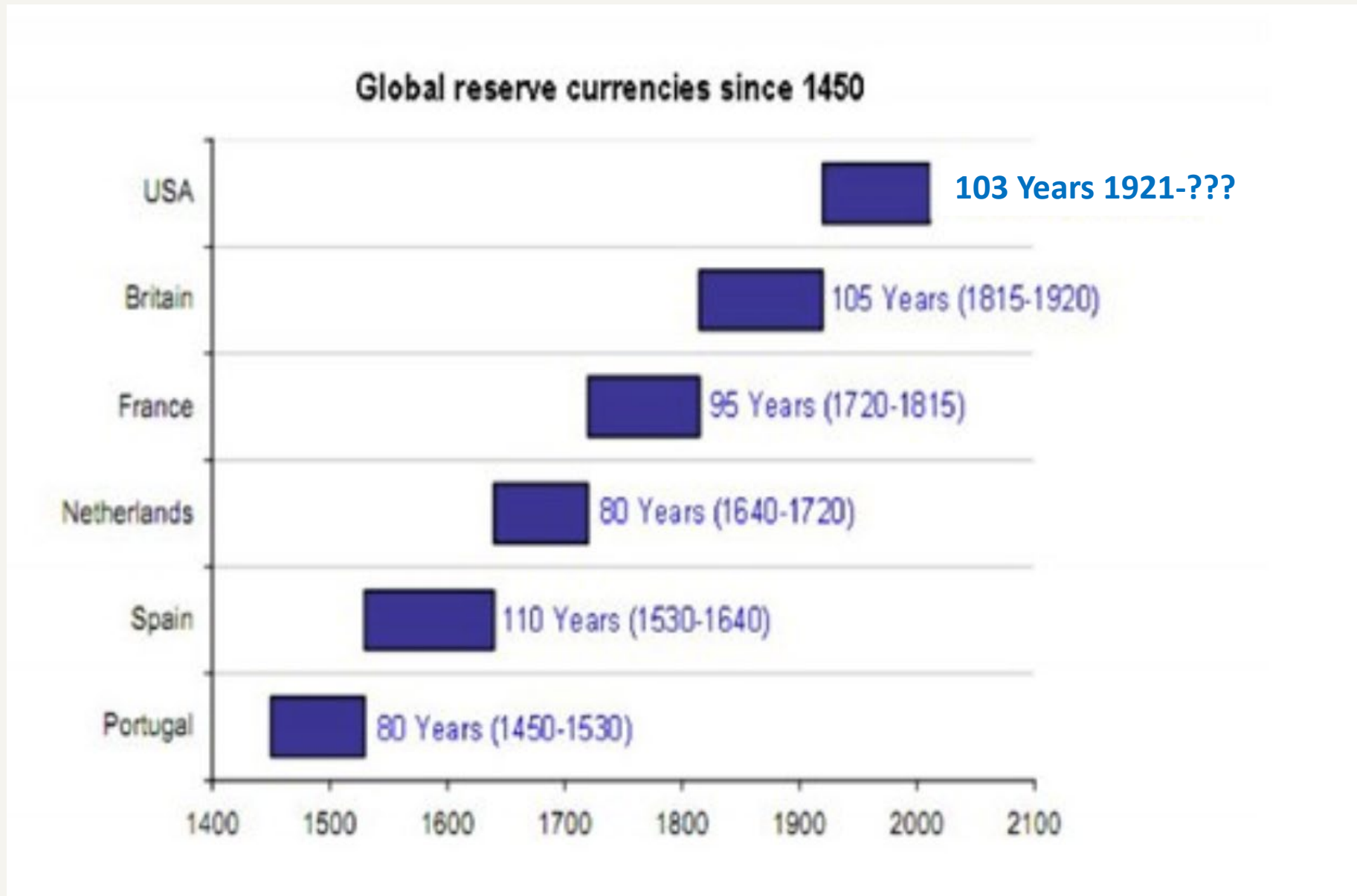


# Grain Markets Relative Value to All Other Commodities is the Second Cheapest Over the Last 15 Years

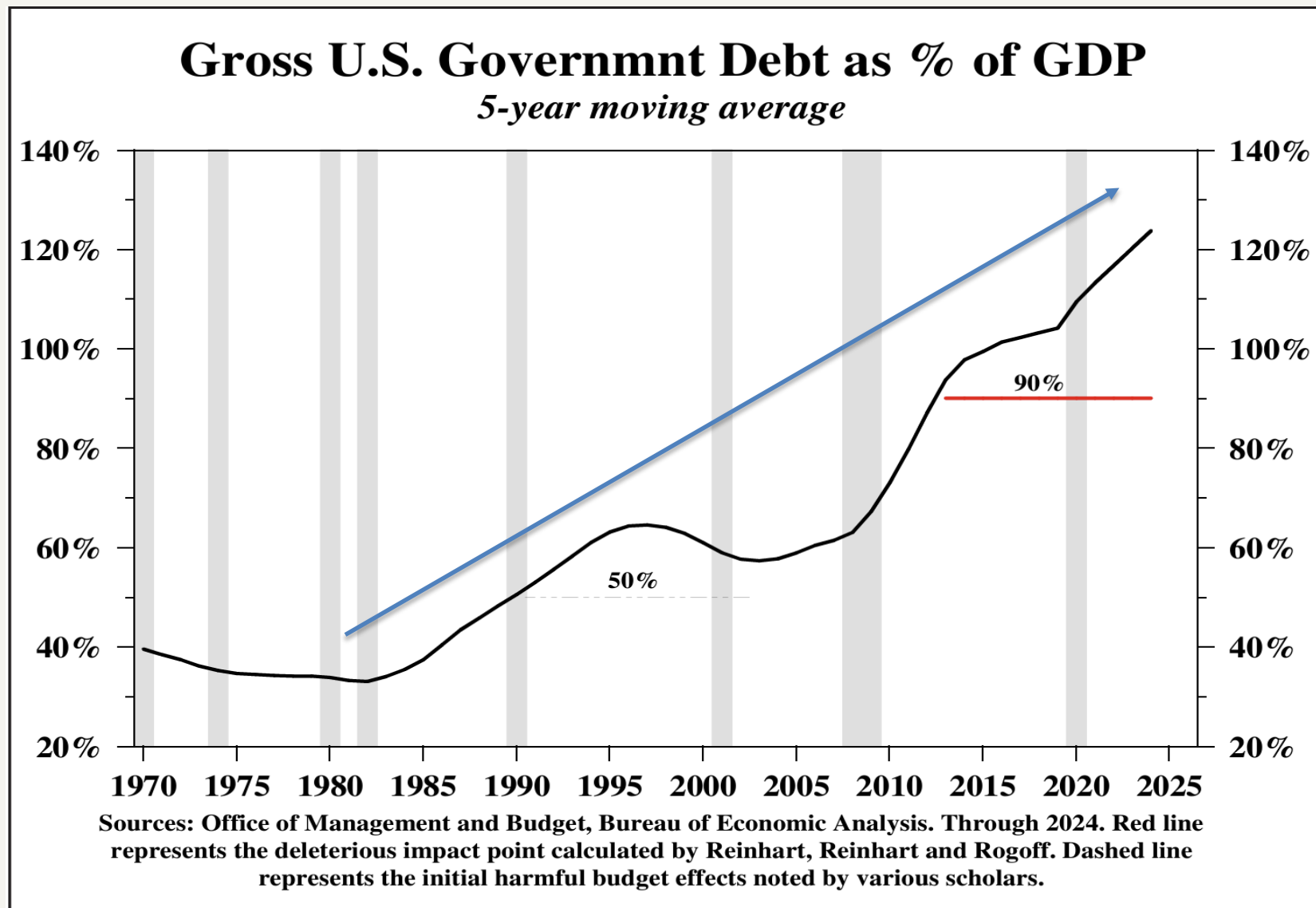




**-Reserve Currencies Since 1400-The Longest Lasting One was Spain at 110 Years-The US Dollar at 103 Years is Stretching Historical Normalcies-**  
**(Japan and Hong Kong Monetary Authority)**



**-Reserve Currencies Since 1400 Started Failing by Over-indebtedness that Caused a Loss of Confidence Stemming from Money Printing Debasement and Soaring Inflation-**



**-Past Reserve Currencies Erode Slowly at First and Then All of a Sudden-How Much More Erosion of US Dollar Reserves by Foreigners to Reach the Tipping Point?-50%?**

## US Dollar Share of World Currency Composition of Official Foreign Exchange Reserves

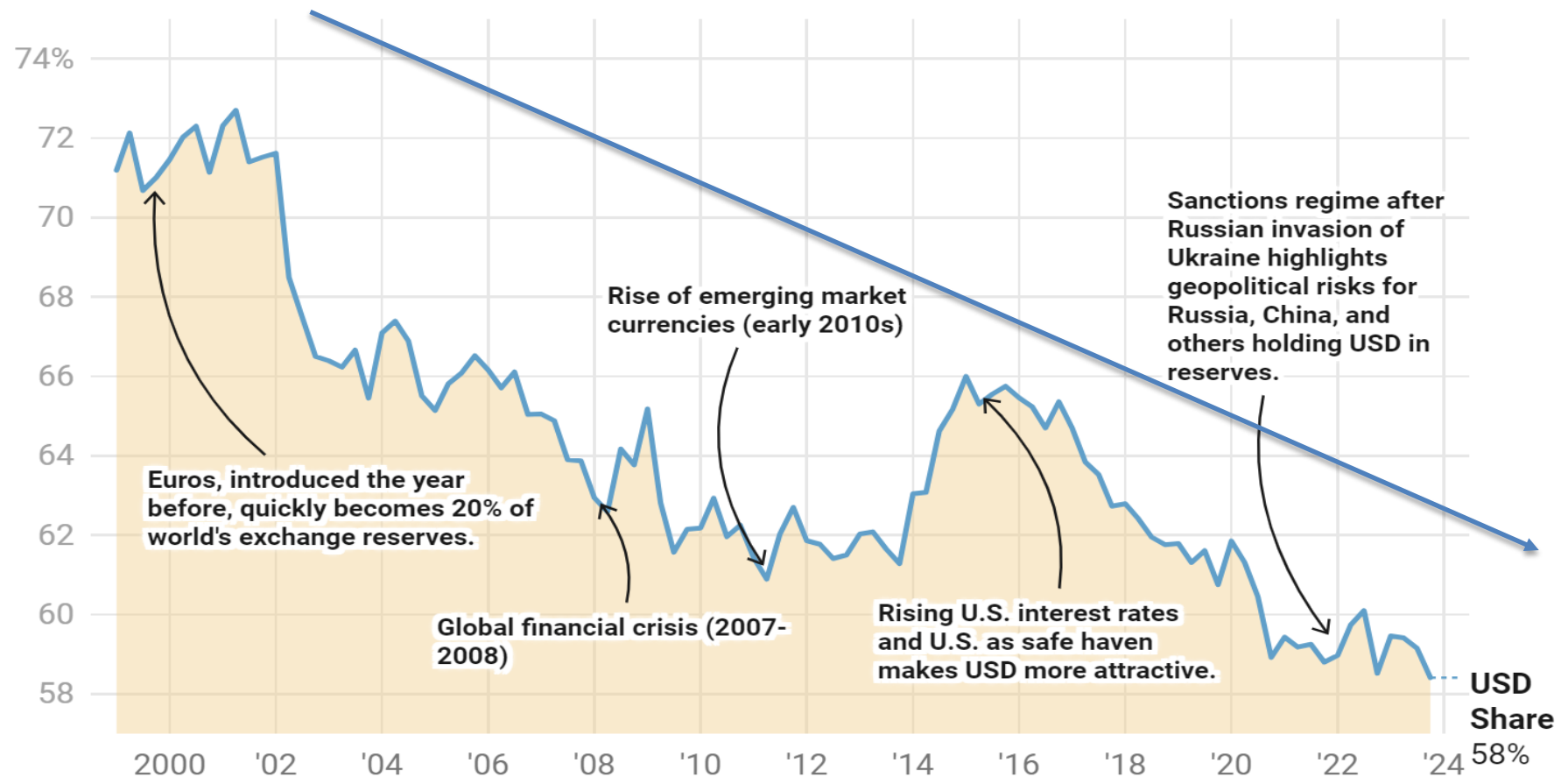
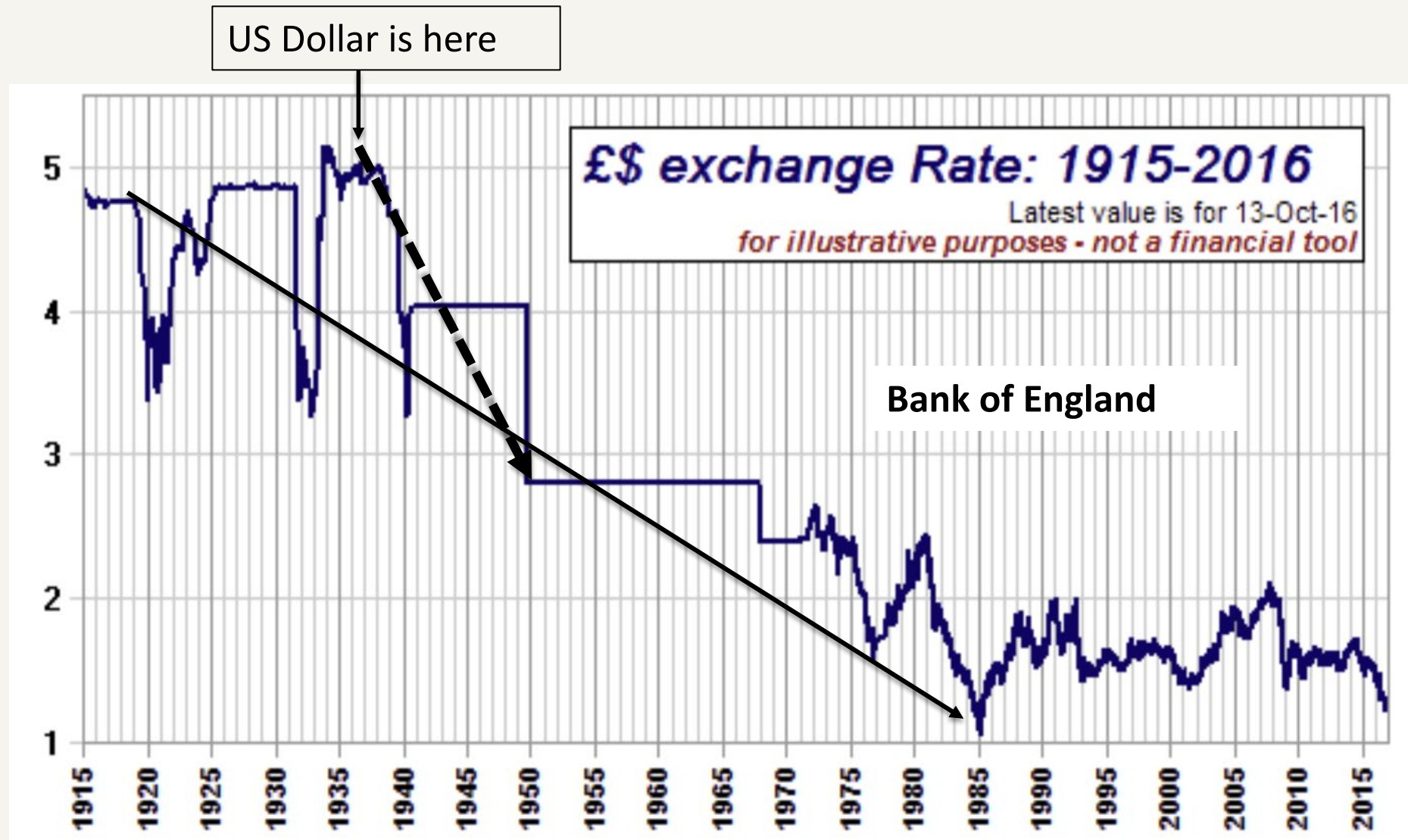


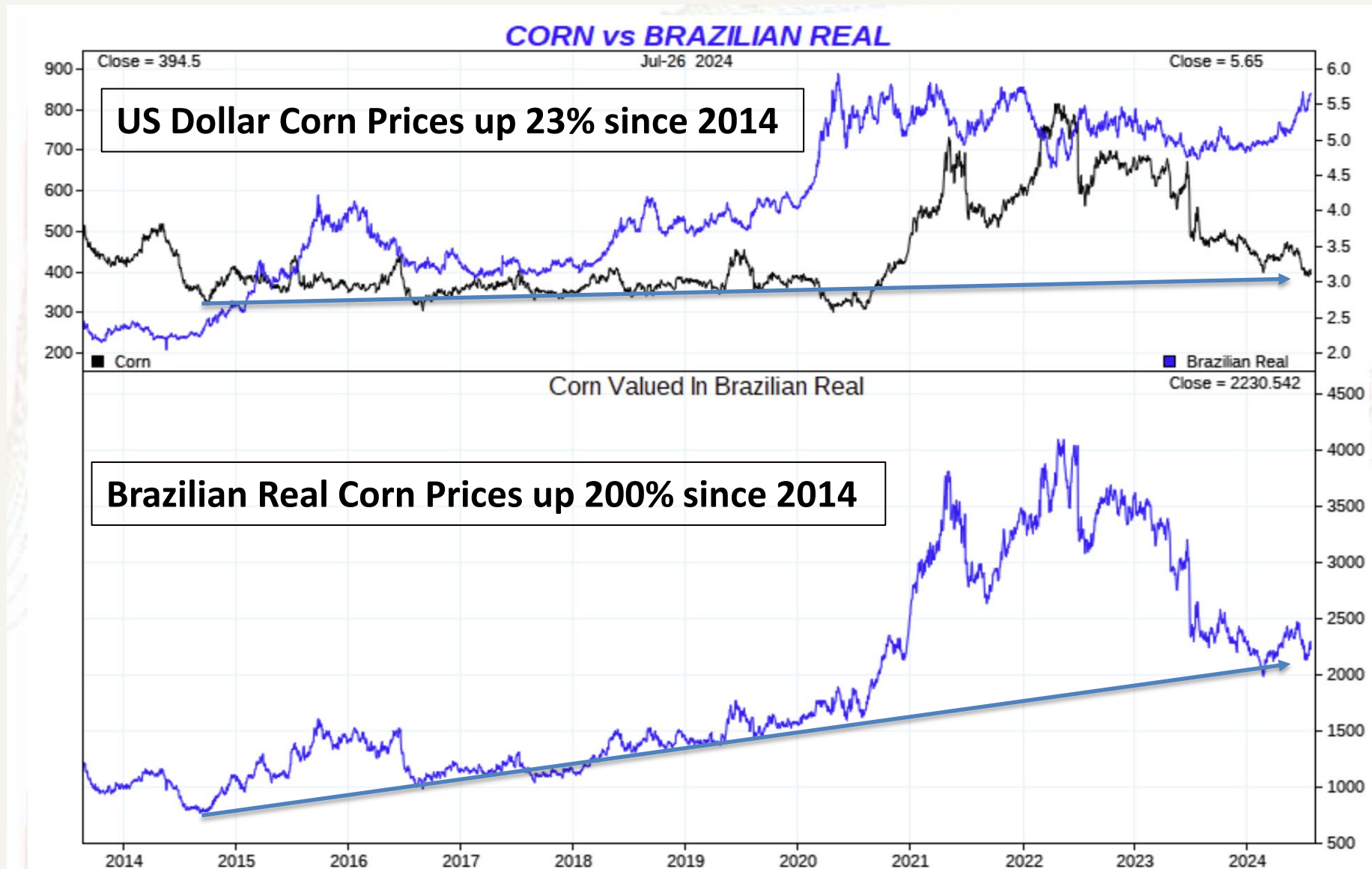
Chart: Investopedia/Peter Gratton • Source: [International Monetary Fund](#) • [Get the data](#)



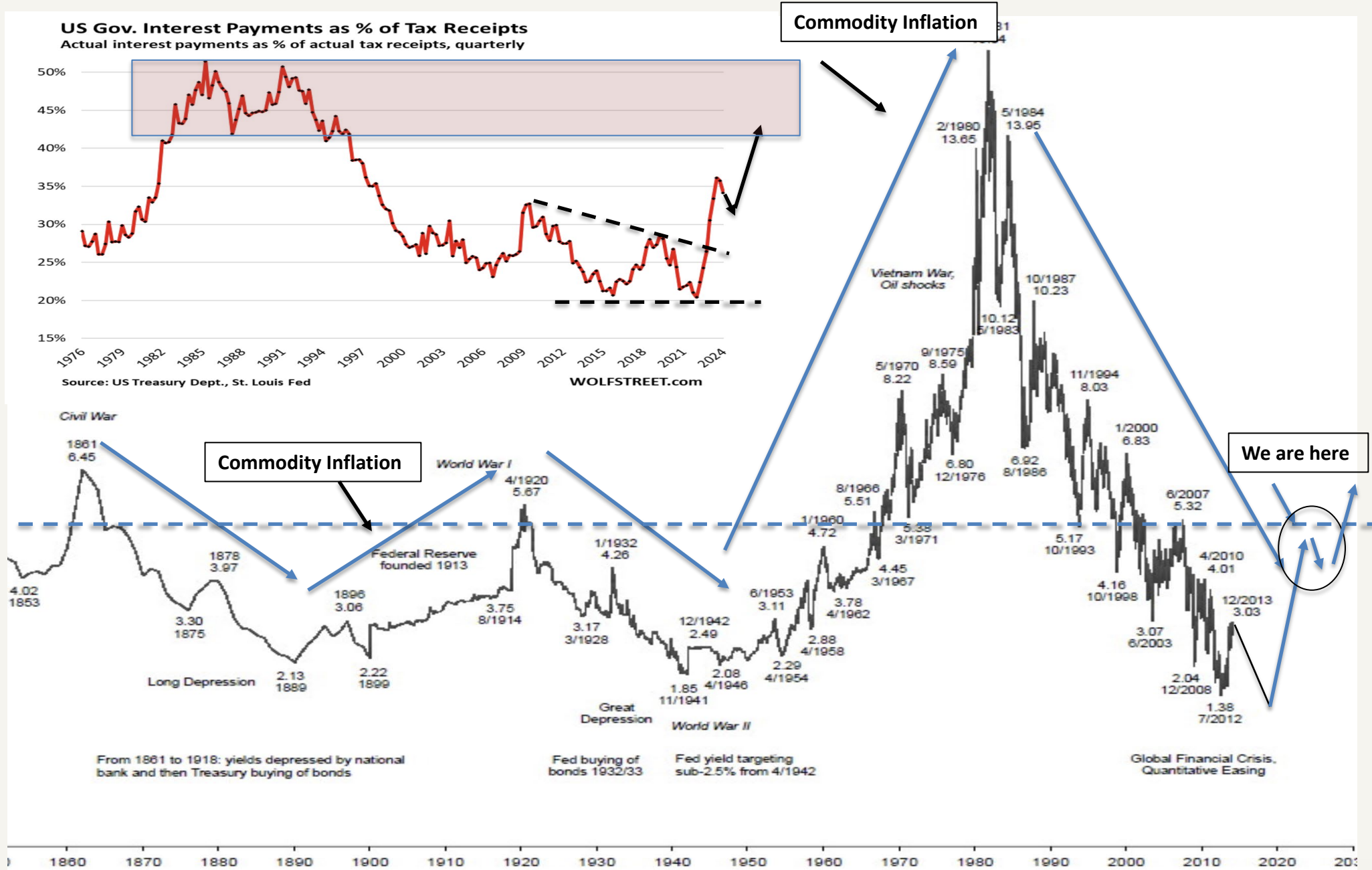
-The Initial Move Down in the British Pound from Losing It's Reserve Currency Status was 32%  
on its Way to Losing 80% of Its Value-



## -Currencies Matter Greatly in Looking at Relative Prices and Farmer Returns at the Local Level-



## The ~30-Year Interest Rate Cycle Has Turned Up Increasing the Long-Term Cost of Capital and Slowing Down Commodity Production Investments-Inflationary





# War Cycle Coming Back Into Play Heading into 2026-2028-Russia/China/Middle East

## Conflict/Civil Unrest-War Over Resources

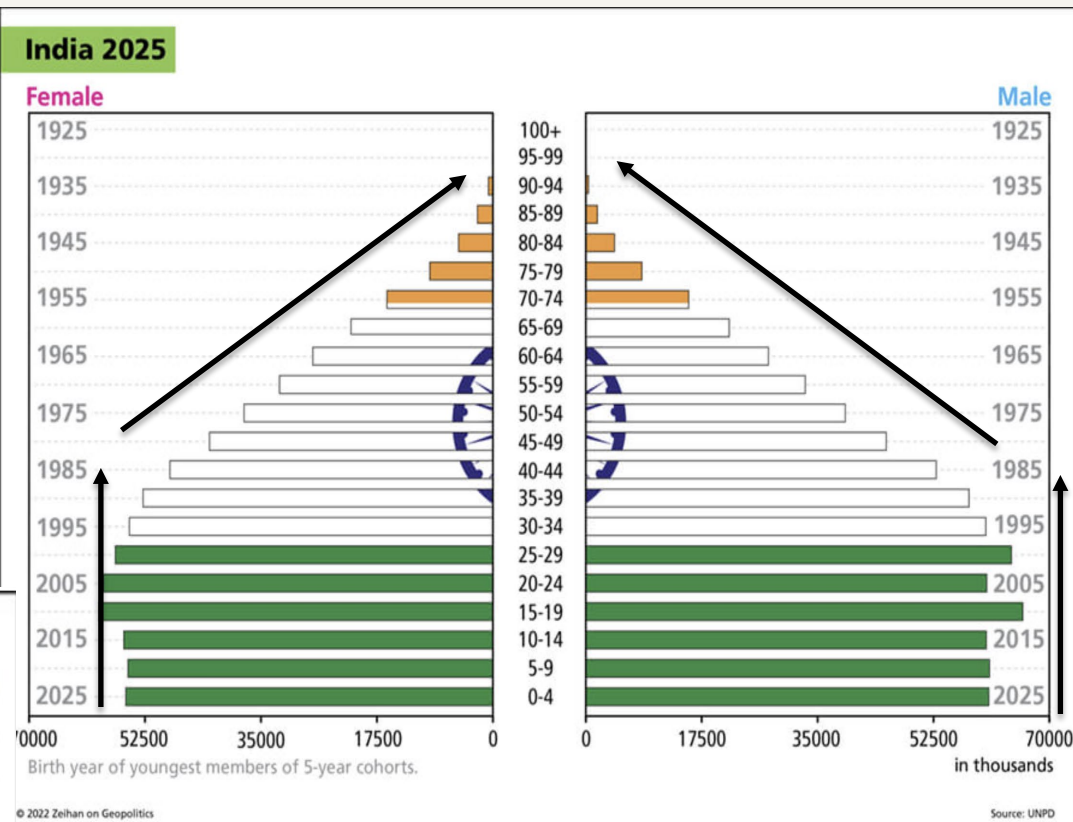
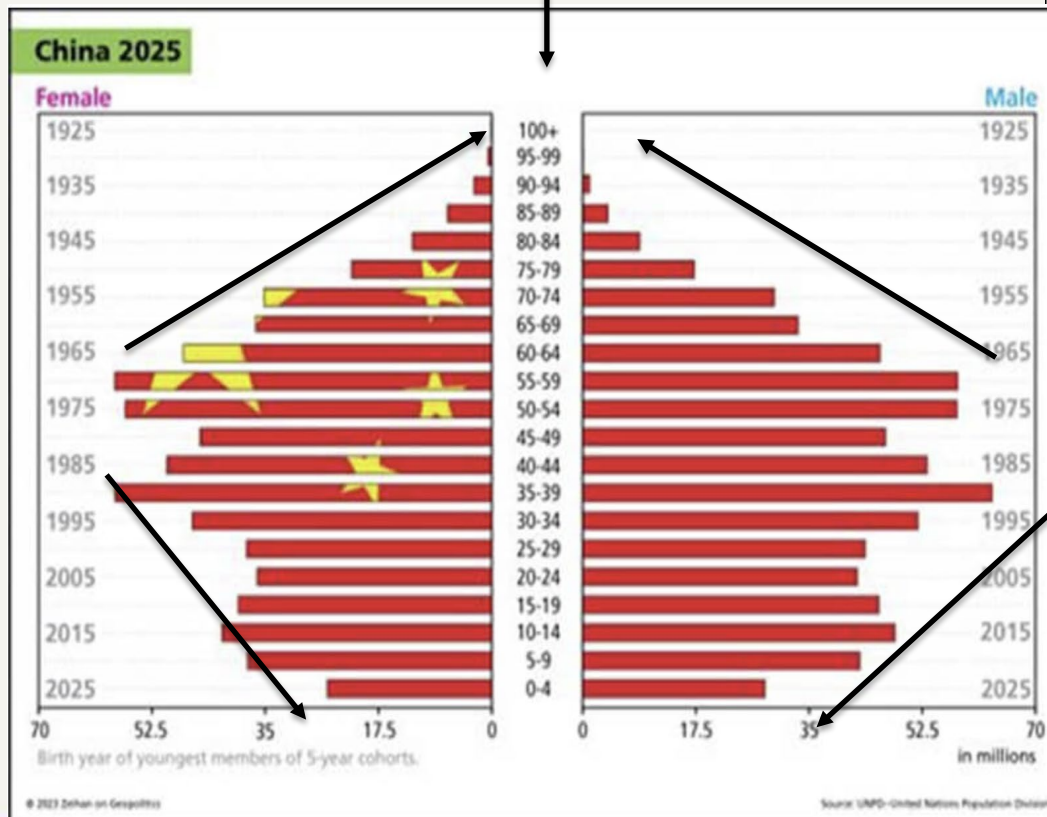


**Wild Spiked in Commodity Inflation Have Occurred Heading into and Through these Peak Warm Time Cycles**

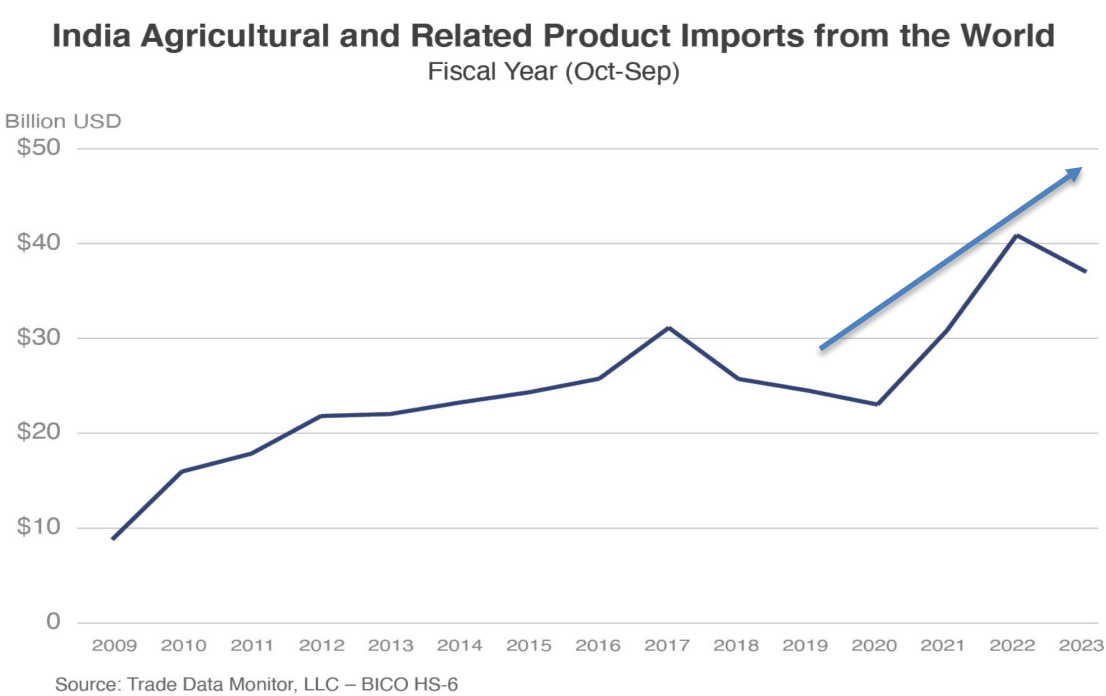
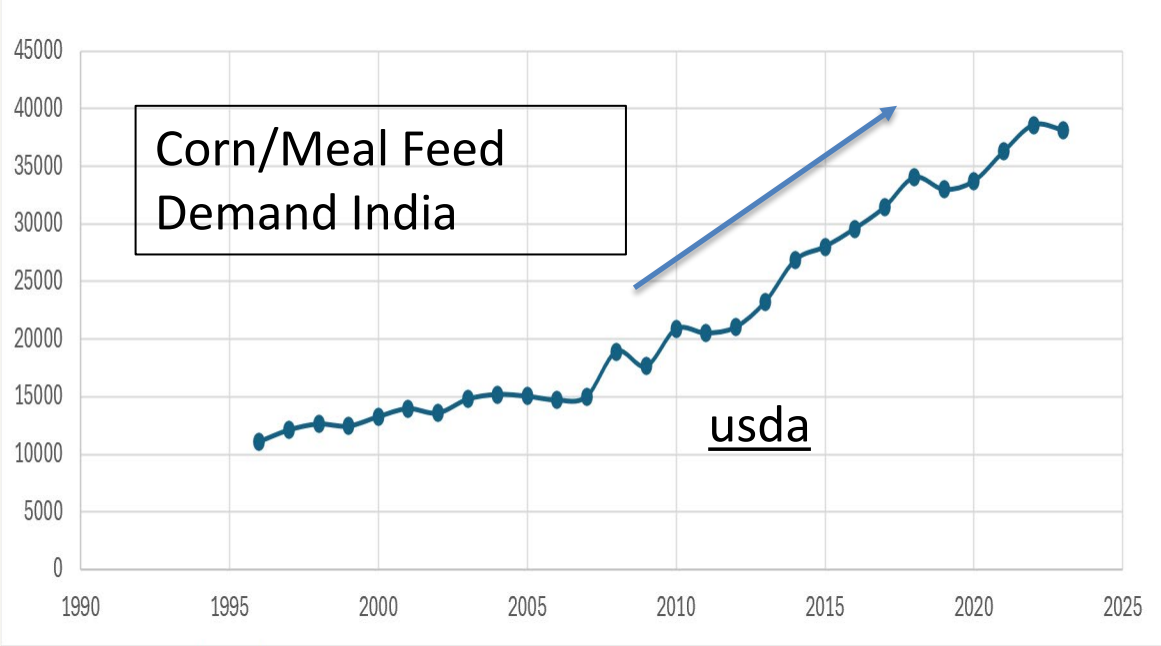


# India Has Very Constructive Demographics Relative to China-Consumerism in India Ready to Explode Higher to Become the New Engine for Commodity Import Demand Growth

**Wide Adoption of Artificial Intelligence and Quantum Computing by China Likely to Offset Negative Demographics over the Next Decade But The Years of Strong Demand are Over**



**India Ag imports Surging While Domestic Demand for Corn and Bean Meal Feed Surge to the 4<sup>th</sup> Largest in the World-Meat Demand on the Rise from the Younger Generation-**

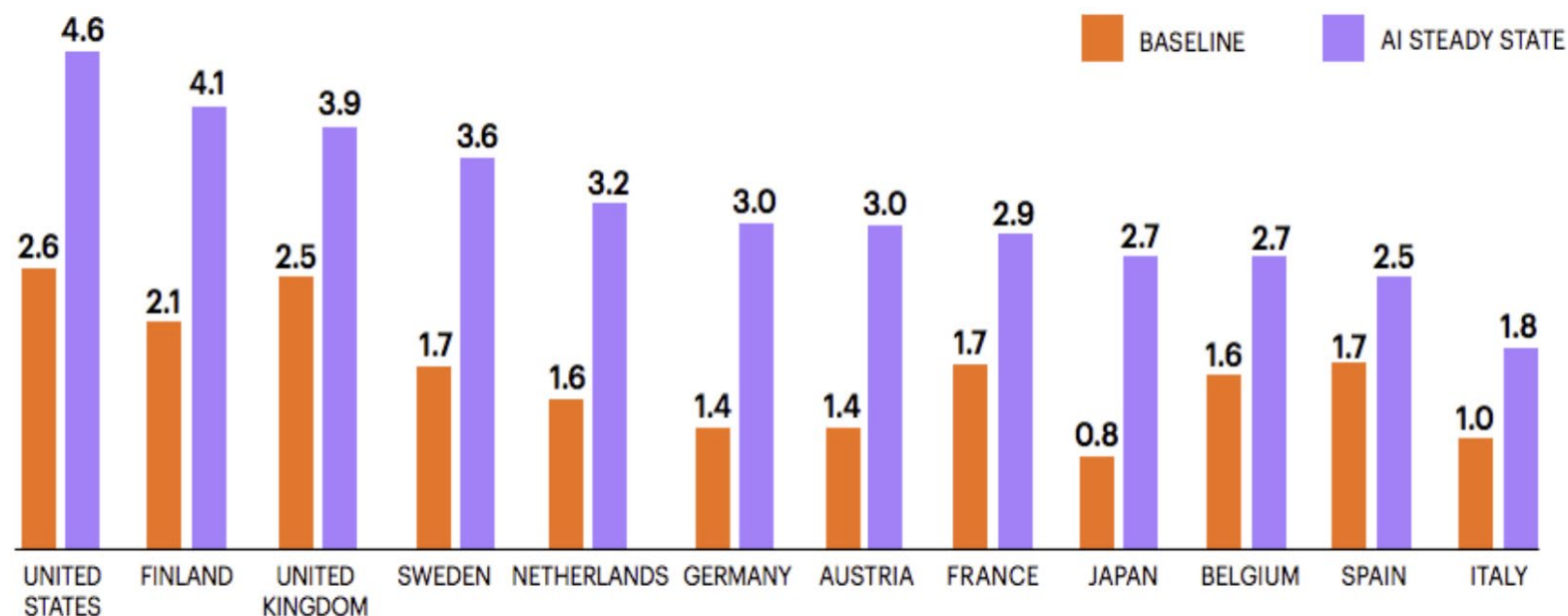




## -How Quickly Can Artificial Intelligence and Quantum Computing Increase Productivity to Offset Poor World Demographics and Escalating Global Debt Levels?-

FIGURE 7: THE ECONOMIC IMPACT OF AI

AI has the potential to double annual economic growth rates in the countries that we analyzed in terms of gross value added (a close approximation of GDP).



**Real gross value added (GVA) (% growth)**

*Source: Accenture and Frontier Economics*

**US Economy would double in 16 Years  
versus the current 28 Year Run Rate if  
Productivity Doubles-**

## The Decade of Increased Global Weather Volatility Remains Ahead



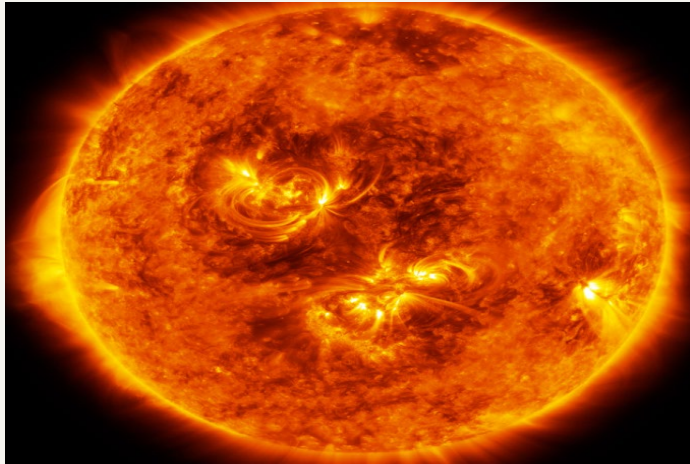
## Rowan Atkinson “Mr. Bean” Is a World Dry Bean Advocate Who Can Get into a “Foul” Mood



Rowan said Friends lifted the iconic turkey moment straight from Mr Bean (Picture: NBC/ITV/GETTY)



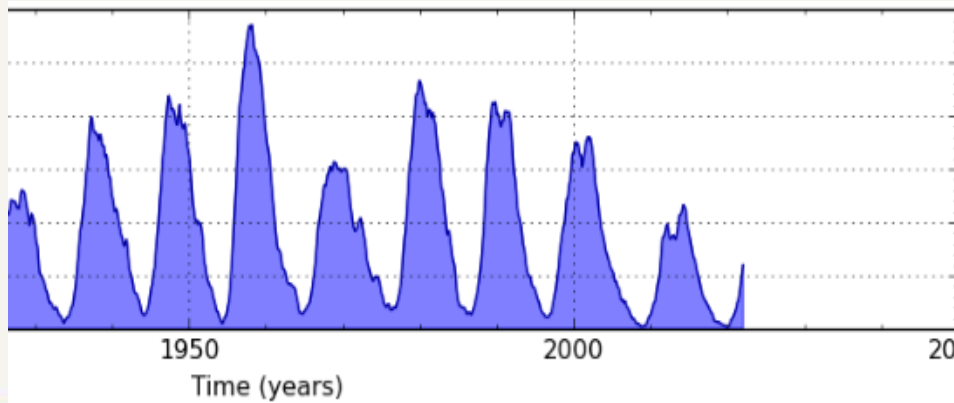
# 3-Major Climate Cycles Collide for the First Time in 400 Years Projecting Historic Weather and Price Volatility for the Next 10-15 Years



**220-Year Grande Solar Cycle Minimum**

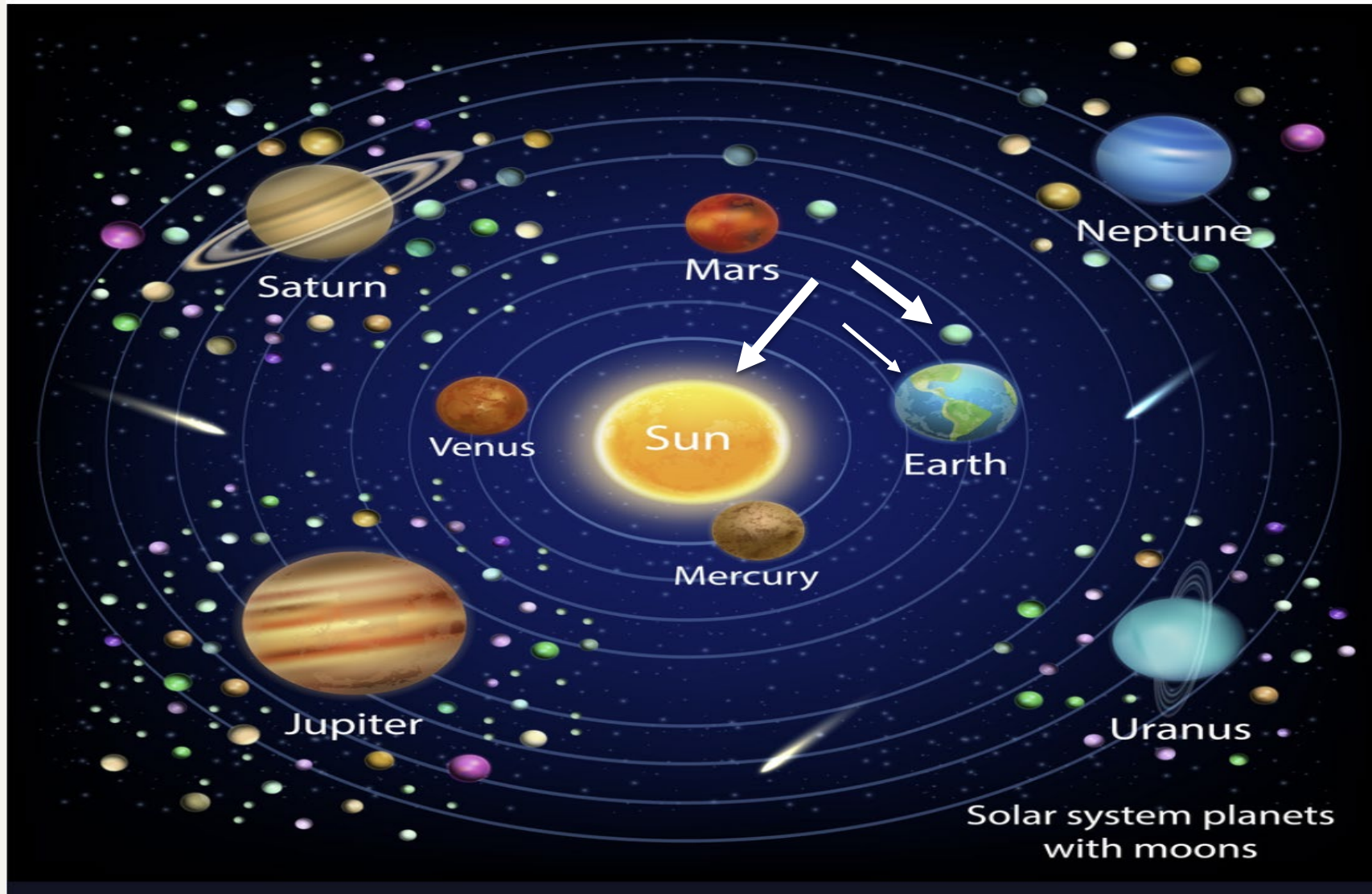


**60-Year-Sea Surface Temperature Cooling  
Cycle-Pacific and the Atlantic Oceans**



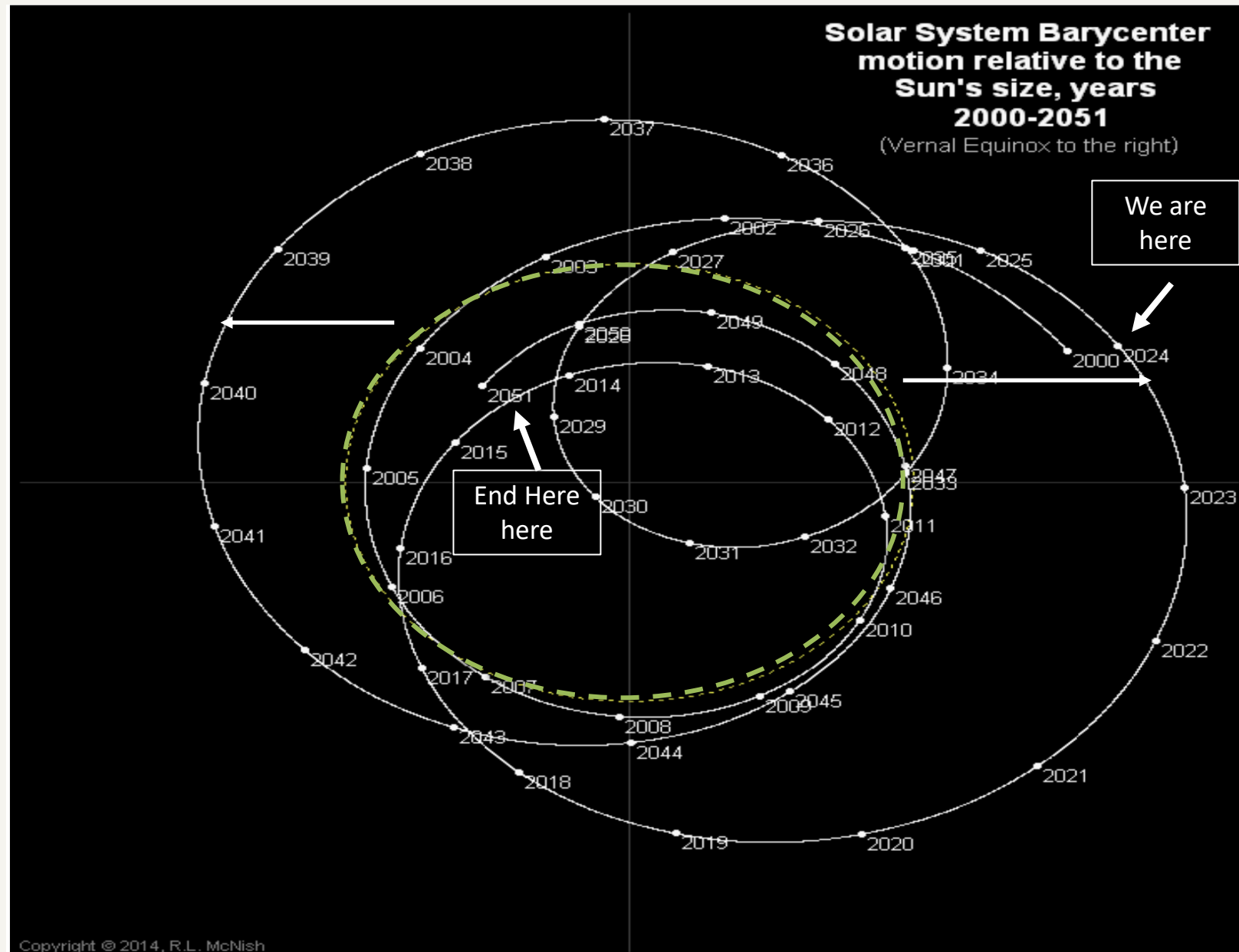
**90-Year Gleissberg Solar Cycle Completion**

**The Solar System Acts Like an Electric Circuit where Gravimetric, Magnetic and Torsional Forces of the Planets and the Moon Acting on the Suns Output Influencing Climate on Earth-Orbital Theory of Climate Change**





**When Planets are Closest to the Sun they Help Reduce Solar Wind and Activity by Causing a More Accentuated Wobble by the Sun Around the Center of Mass of the Solar System**  
**(Harald Yndstad)**



# When Planets are Closest to the Sun they Help Reduce Solar Wind and Activity (Harald Yndstad)

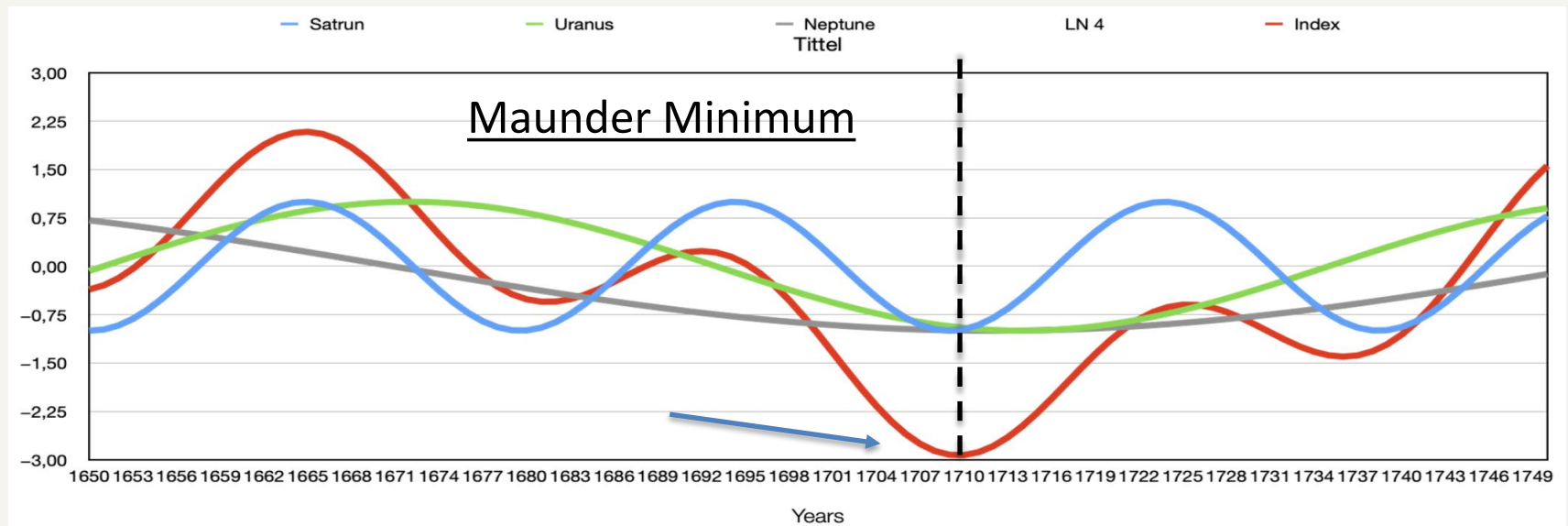


Figure 2. Planetary periods for Saturn (blue), Uranus (green), Neptune (grey) and TSI index (red) for the years 1650-1750 AD.

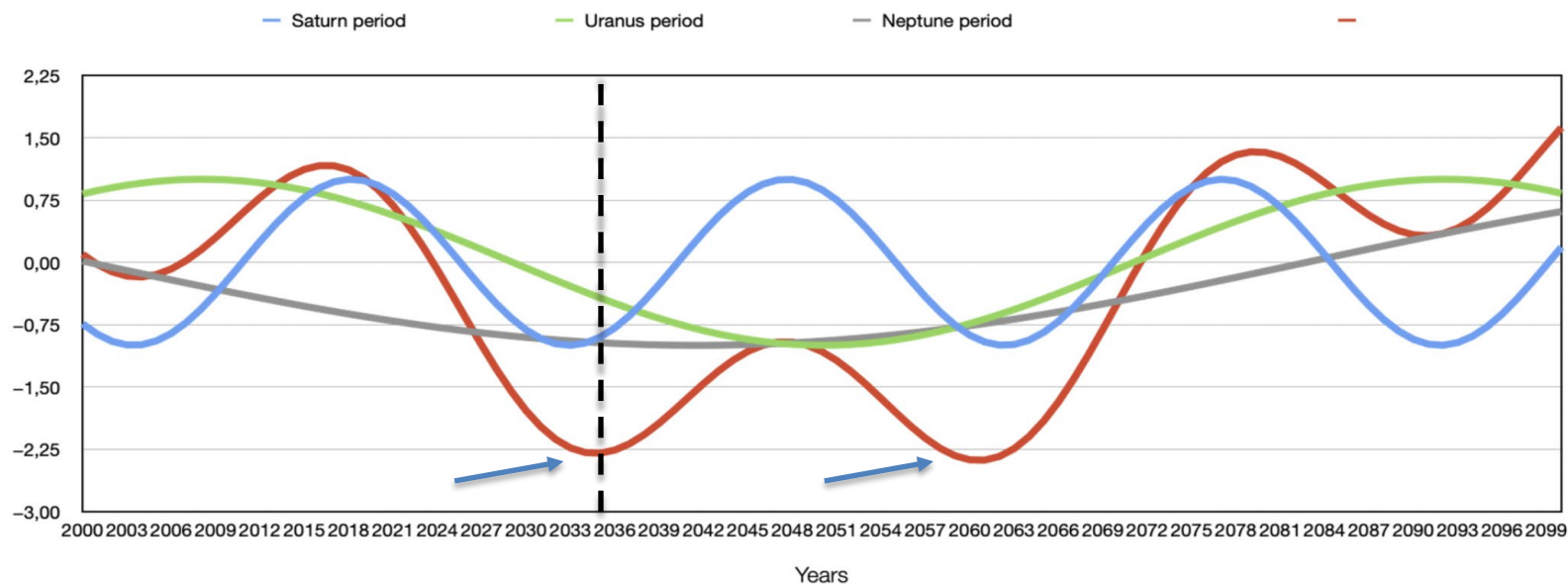
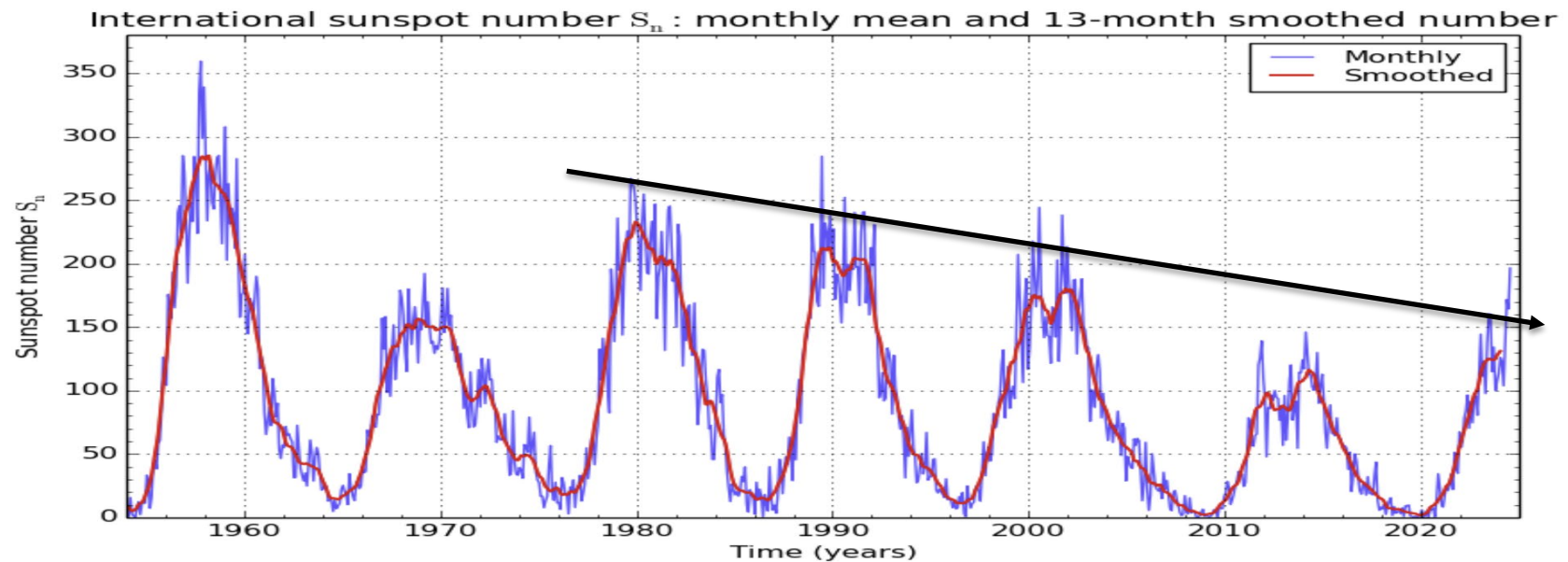
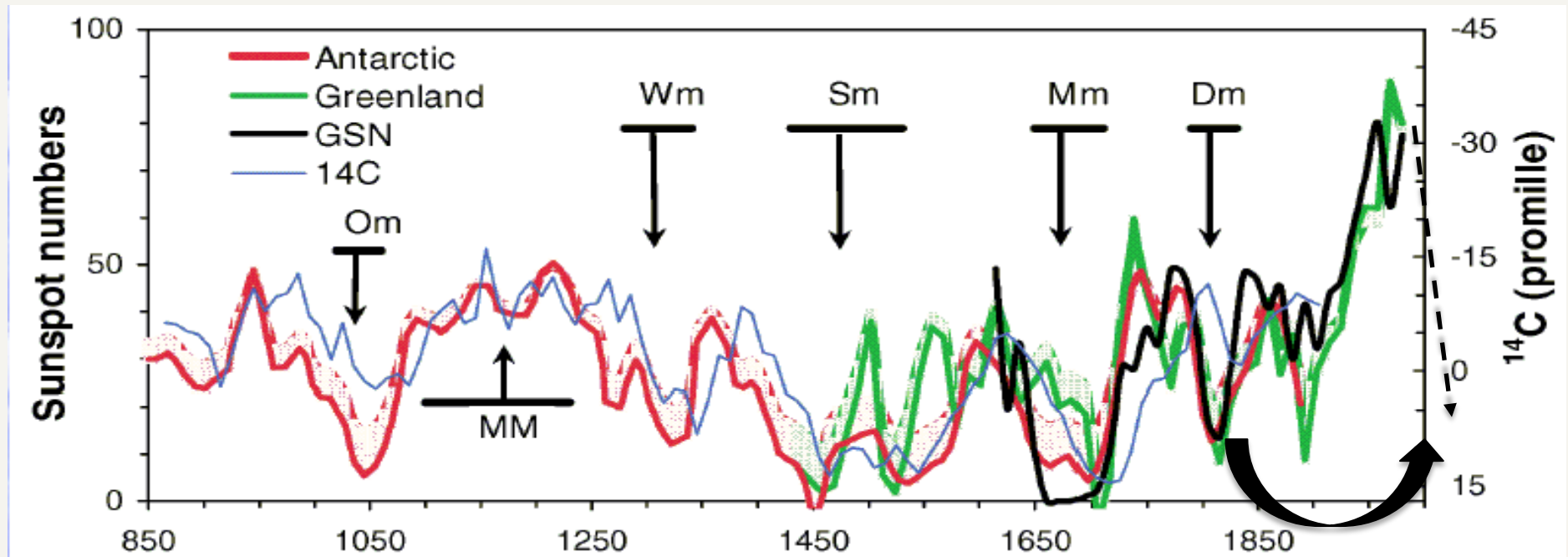


Figure 3. Planetary periods for Saturn (blue), Uranus (green), Neptune (grey) and TSI index (red) for the years 2000-2100 AD.

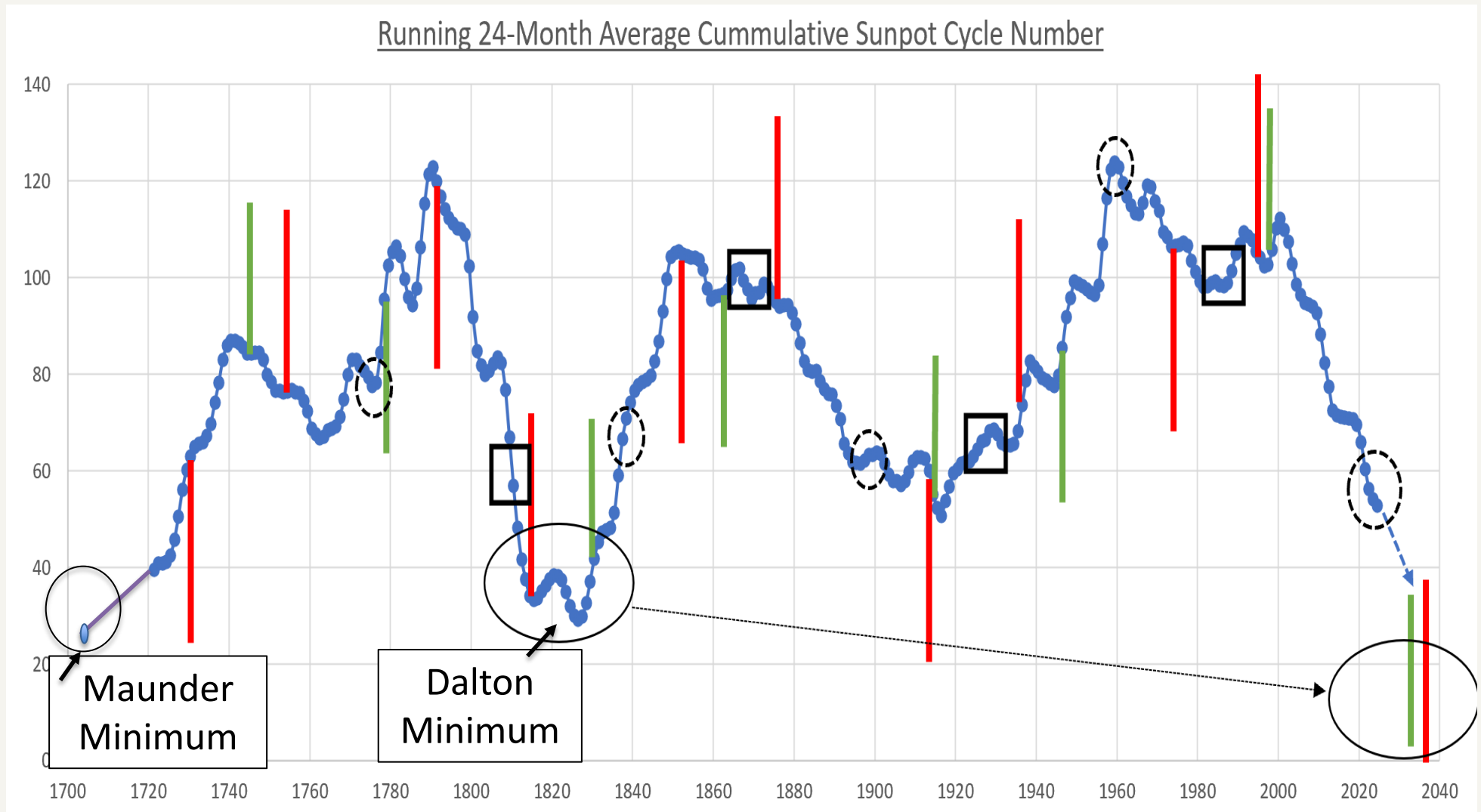
# Solar Activity on the Decline Verifying the Onset of an Extended Period of Reduced Solar Irradiation (SILSO)



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium 2024 August 1

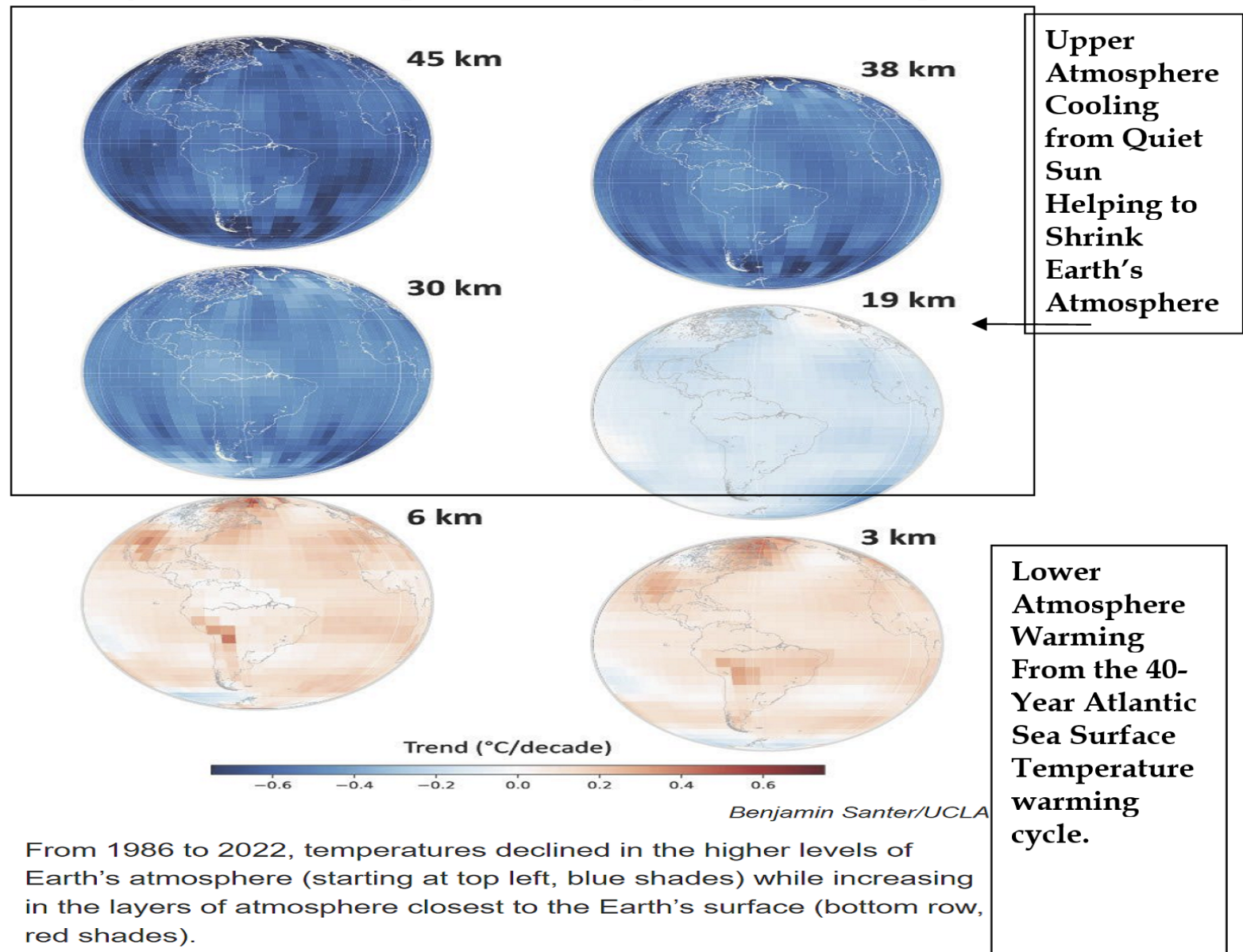


## Cumulative 24-Month Average Sunspot Number Continues to Decline (SILSO)



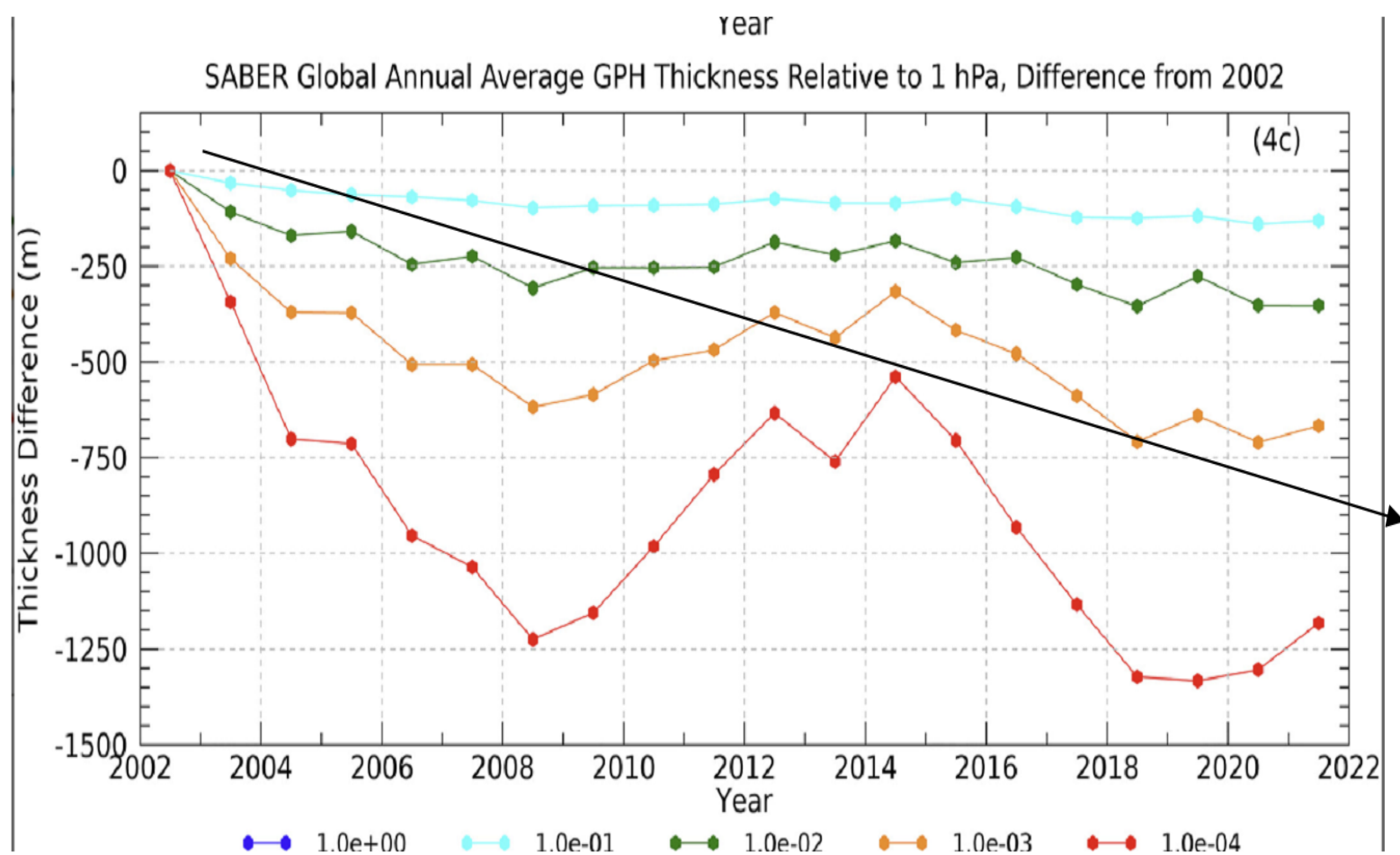


**Atmosphere temperature Changes Since 1986-Notice that the Top Half of Earth's Atmosphere Has Cooled Dramatically Primarily the Result of Less Energy Coming from the Sun-Notice that the lower atmosphere where Humans Live Has Been warming Primarily from the 40-Year Atlantic Sea Surface temperature cycle in the Warming Phase that Keeps the Lower Atmosphere Warm**





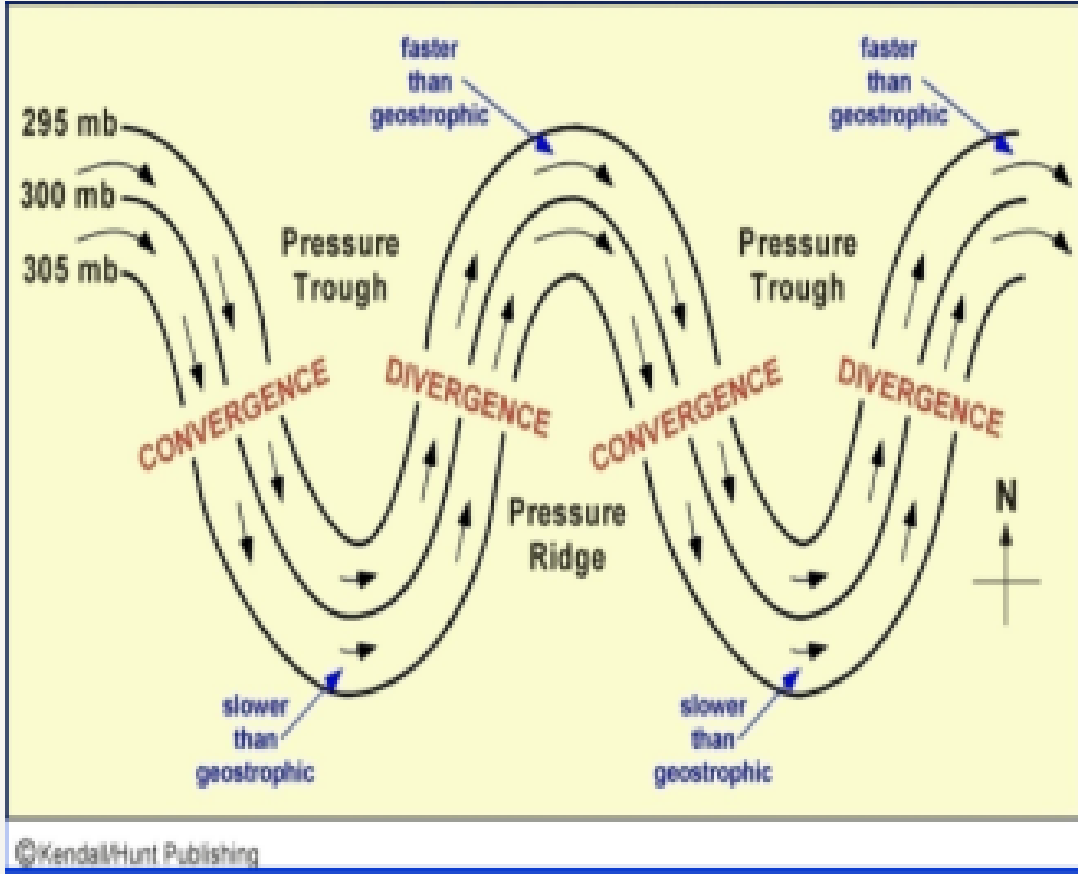
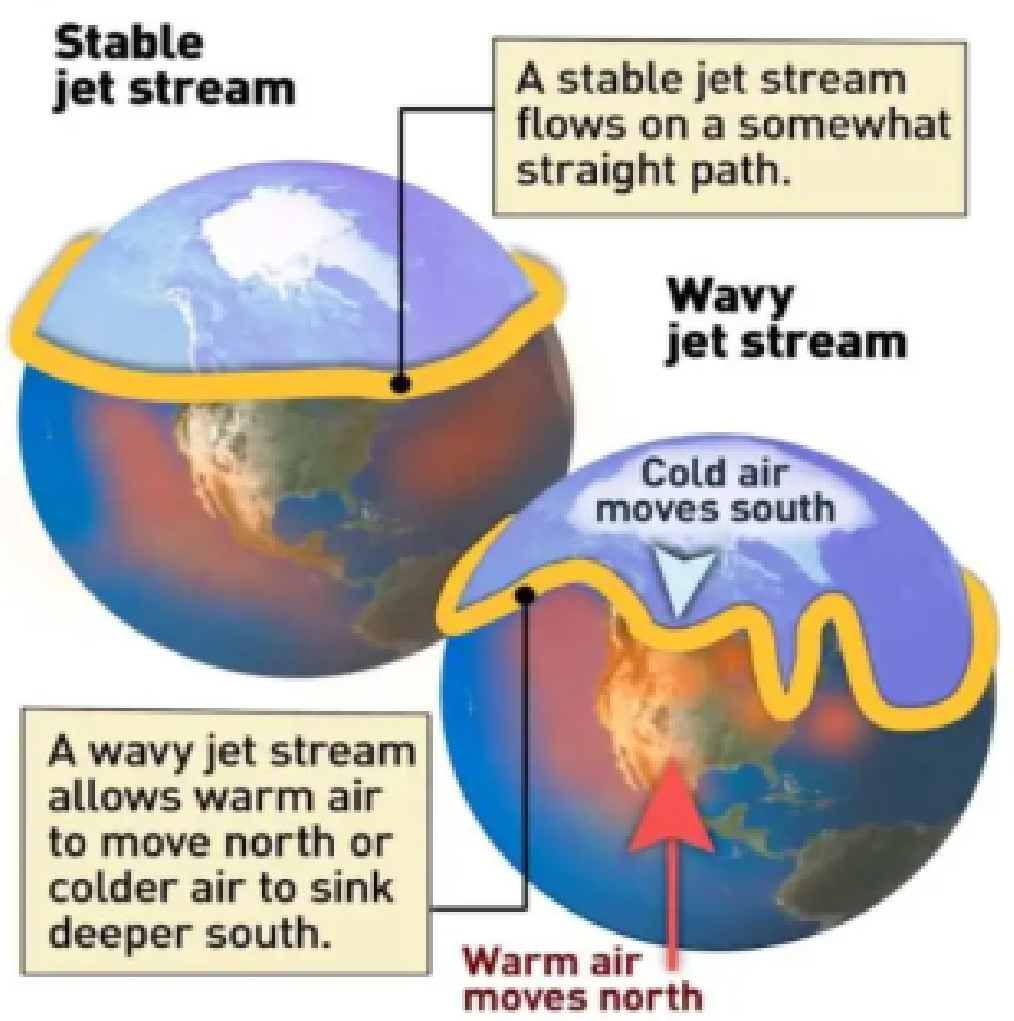
There Has Been a Major Contraction of Earth's Atmosphere Over the Last 20-Years Stemming from the Cooling of the Outer Atmosphere from the Lower Solar Output from the Sun-Thus Far the Contraction Has Equaled ~4400 Feet and Counting



(Journal of Geophysical Research)

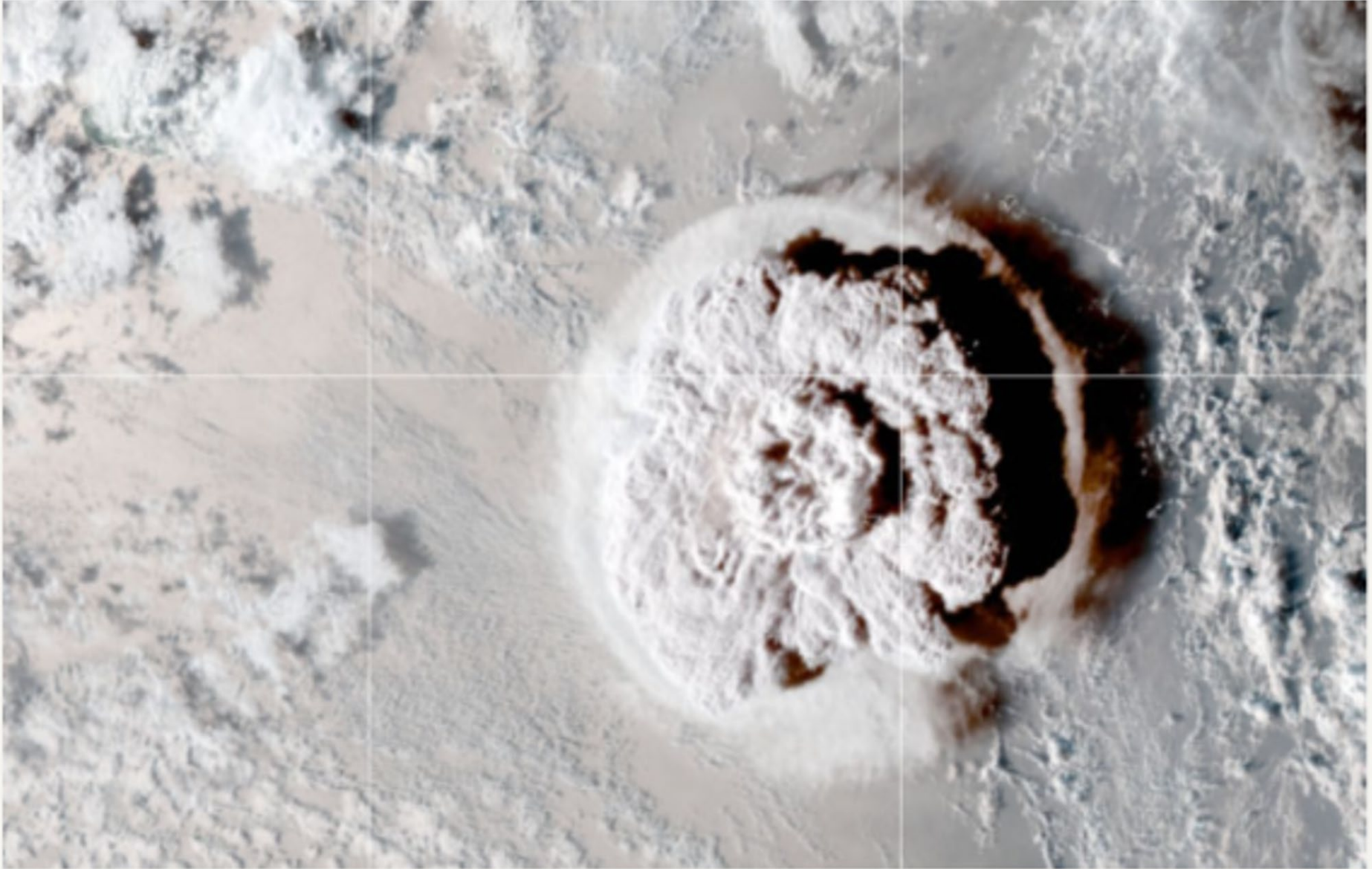
# A Quiet Sun Causes the Outer Atmosphere to Shrink that Changes the Jet Stream Airflow Pattern from Zonal to Wavy that Enhances the Destabilization of the Southern and Northern Polar Vortices

## The Changing Jet Stream



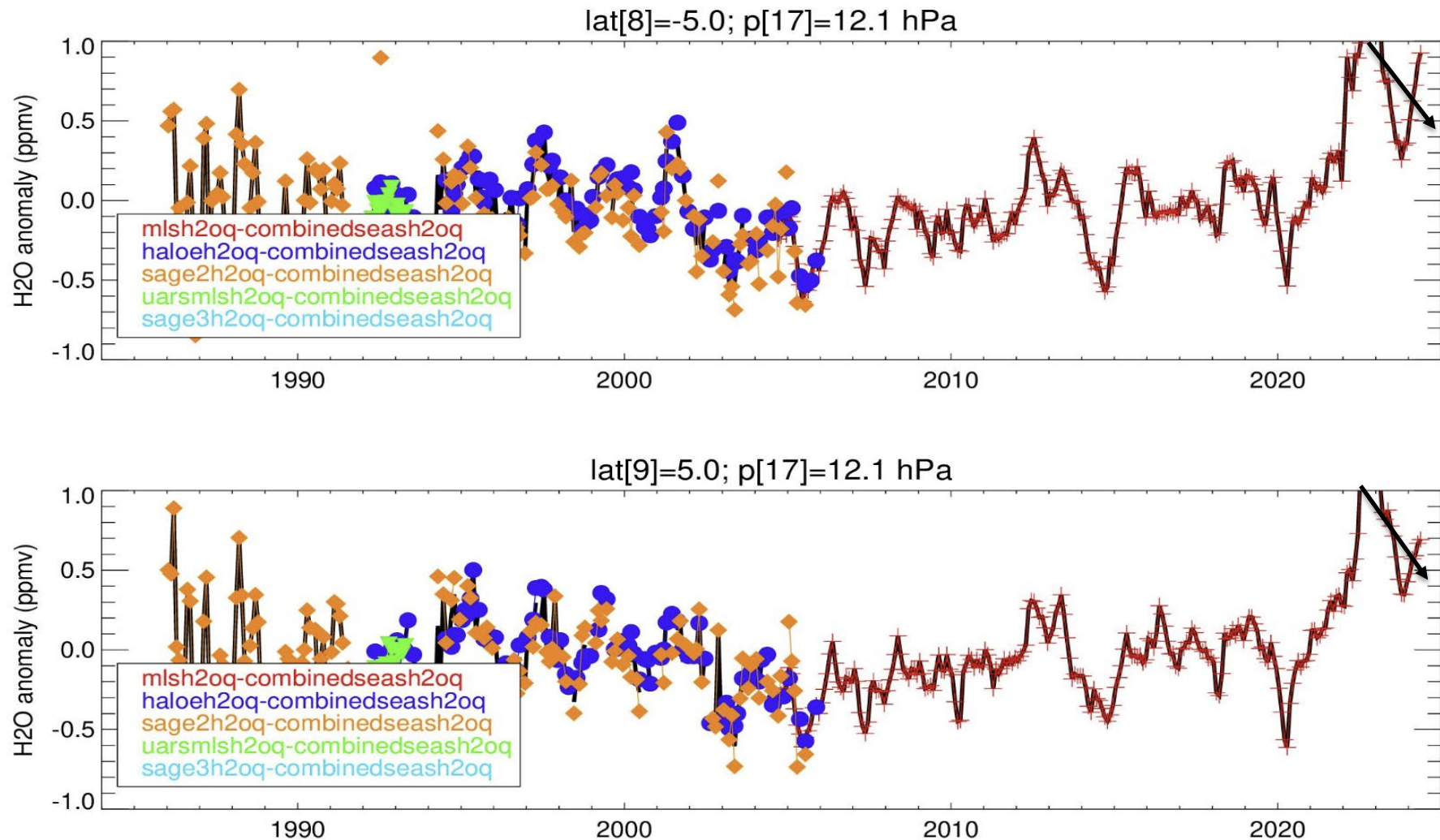
**January 15<sup>th</sup> 2022-Tonga Volcanic Eruption-1 in 1000 Year VEI-6 Water Vapor Effect in the Stratosphere**

**(NASA)**

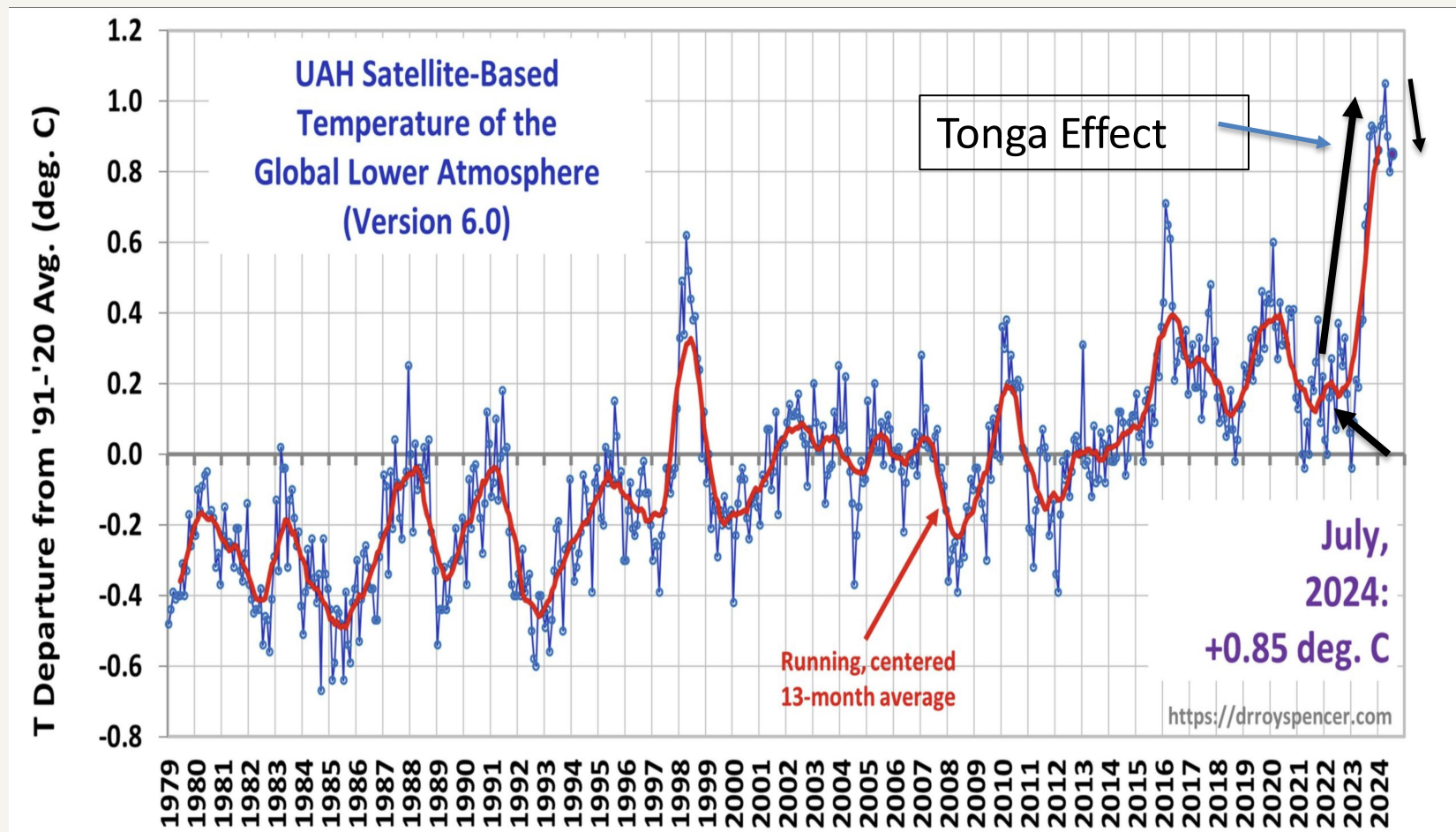




## -Atmospheric Water Vapor Aerosol Concentrations in the Stratosphere Still Elevated but Starting to Precipitate Out-The Hot Tonga Effect Nearing the End-



**-Notice the Spike Higher in Global Temperatures Resulting from the Heating Effects of the 1 in 1000 Year Water Vapor Aerosol Tonga Eruption-**

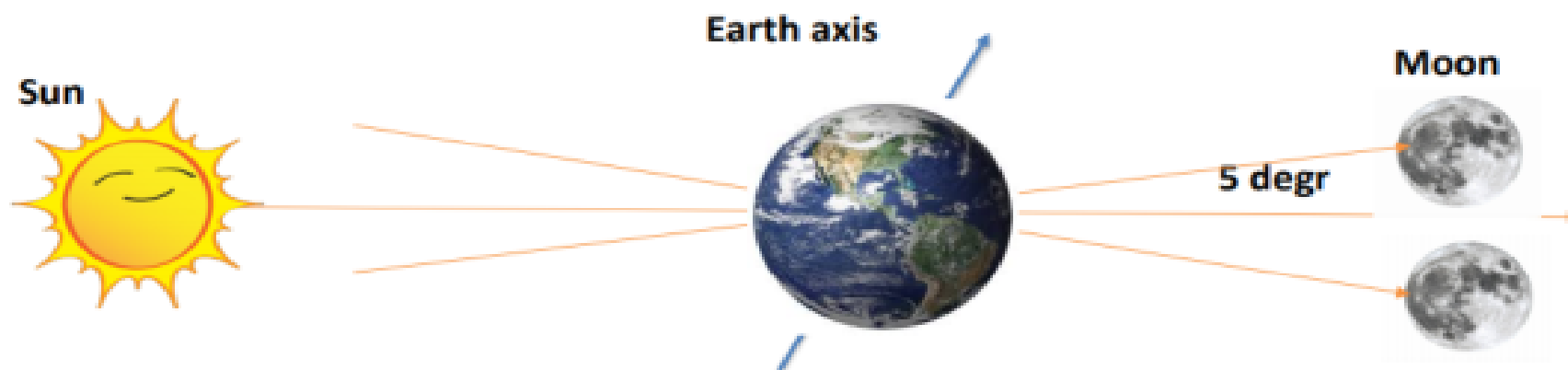




# Tidal Forces on Earth's Oceans are Driven by the Sun and the Moon Relative to the Earth-(2023-2025 Next Occurrence)

## **The Earth-Moon-Sun oscillation**

**The 18.6-year Earth axis oscillations Nutation cycle**

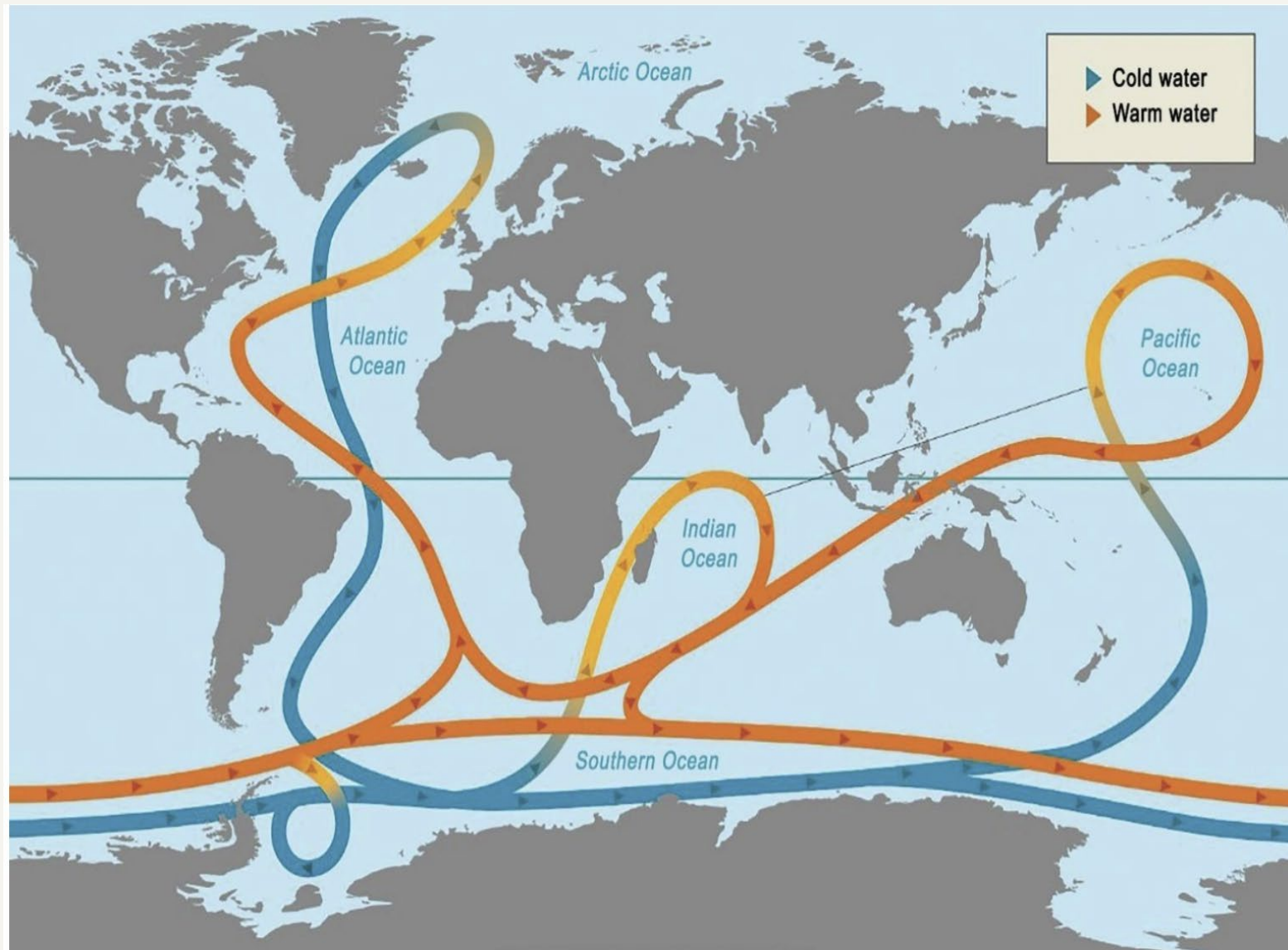


**Wobbling Earth Axis:  $23.5 \pm 5$  degrees**

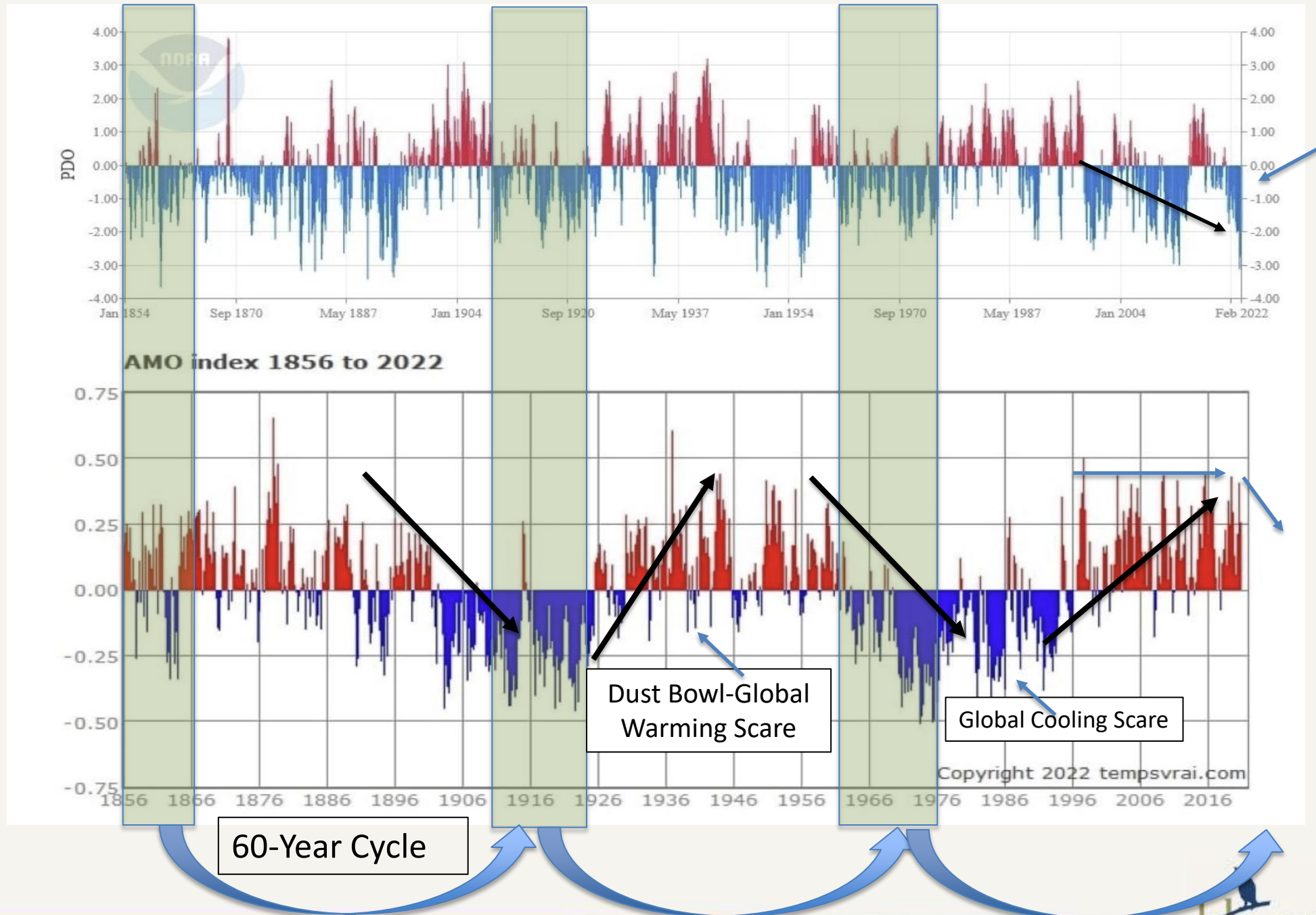
**Earth nutation: Dominant period of 18.6 years**

(James Bradley (1693-1762))

# The Thermohaline Current Controls Our Oceans Sea Surface Temperatures in Addition to the Upwelling or Downwelling Currents Drive by the Sun-Moon-Earth Nutation Cycle

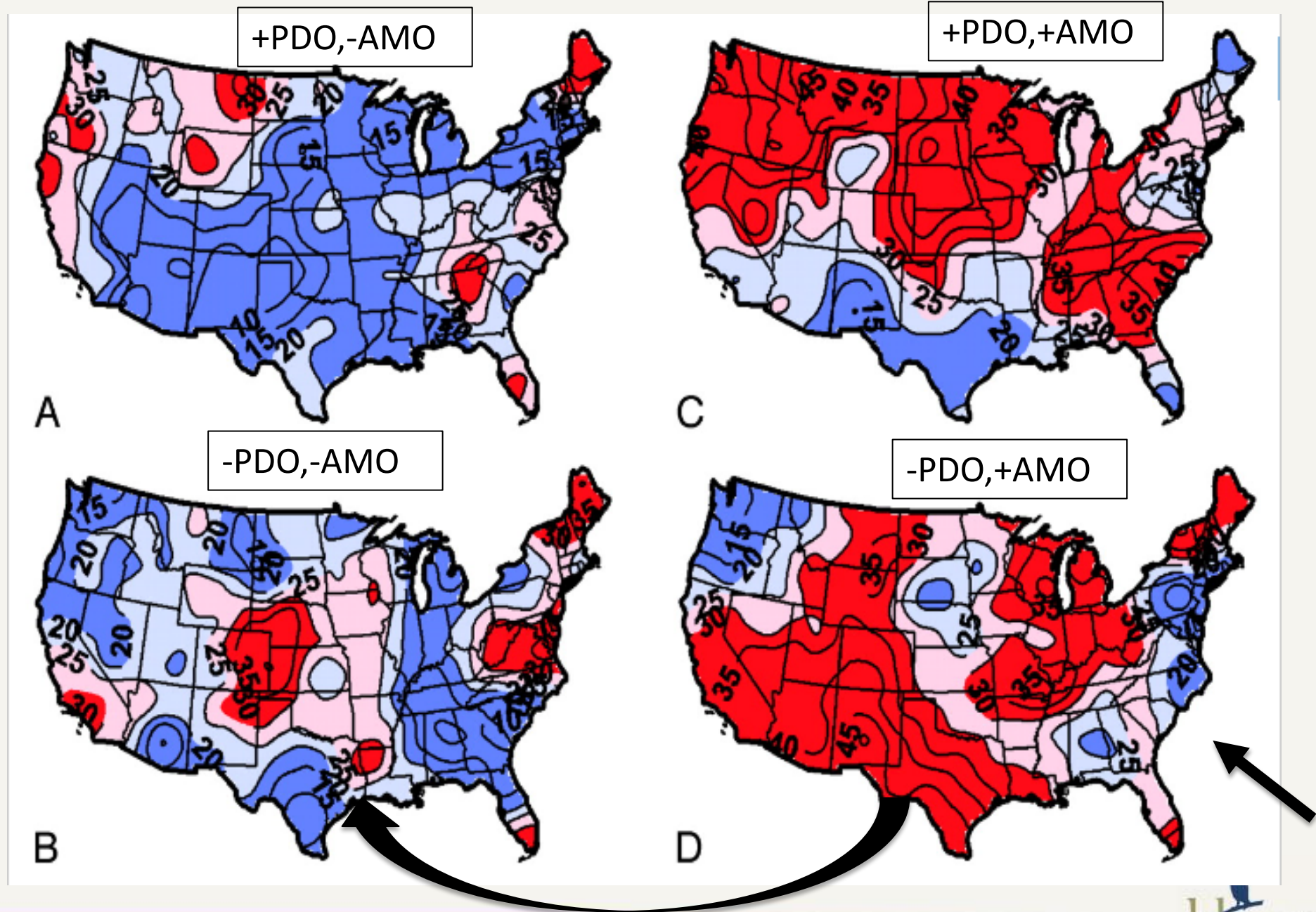


# The Atlantic Ocean is Expected to Turn Cold Post 2025 and Join The Already Cold Pacific Ocean and Usher in Increased Weather Volatility Heading Into 2035





# Pacific Decadal Oscillation(PDO) and the Atlantic Multidecadal Oscillation(AMO) Modulate US Moisture Patterns (Gregory McCabe)





# Peak Hot Climate Set Up for Mid 2020's While Late 2030's into Late 2040's Peak

## Cold Climate- (Harald Yndestad)

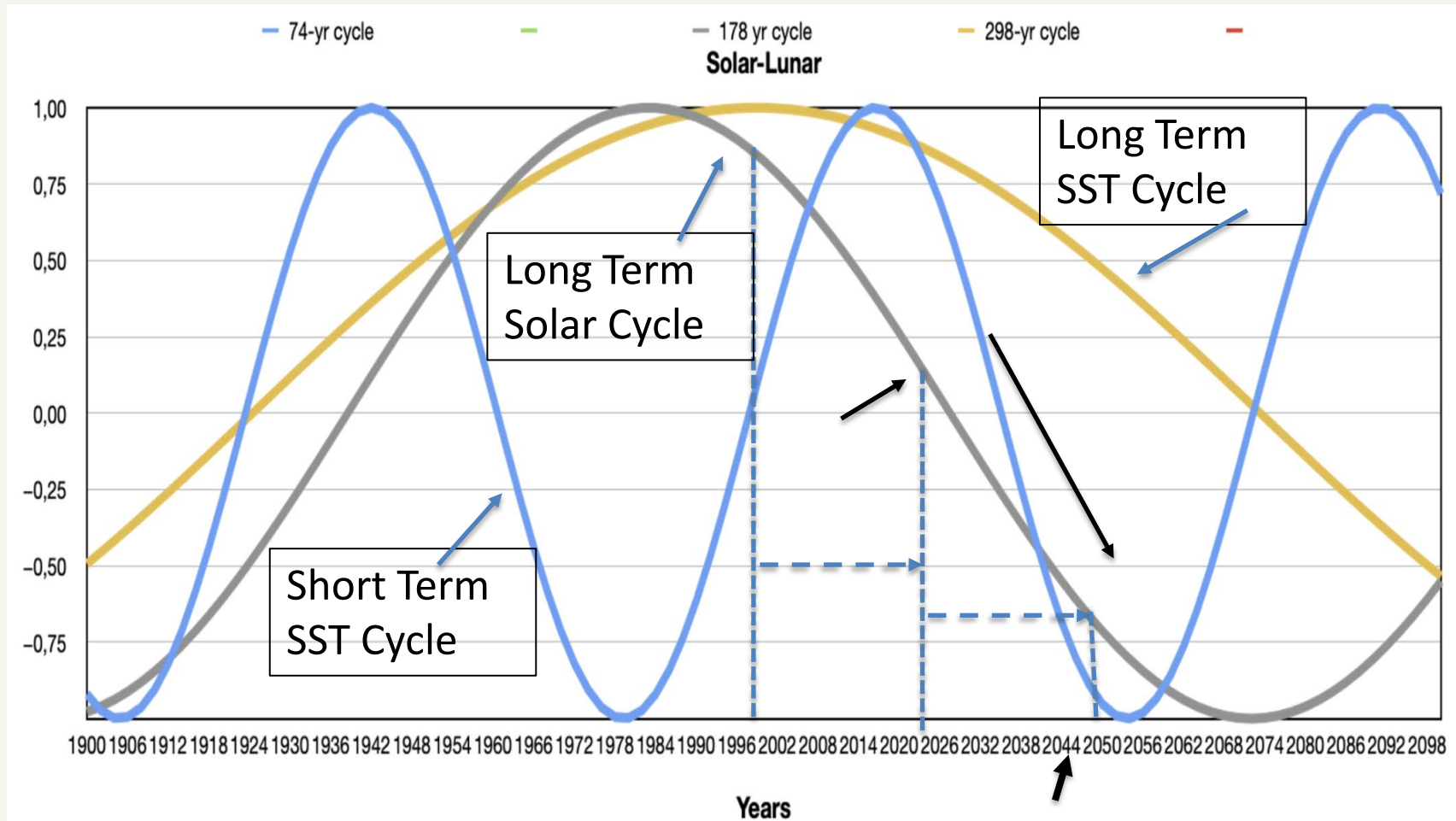
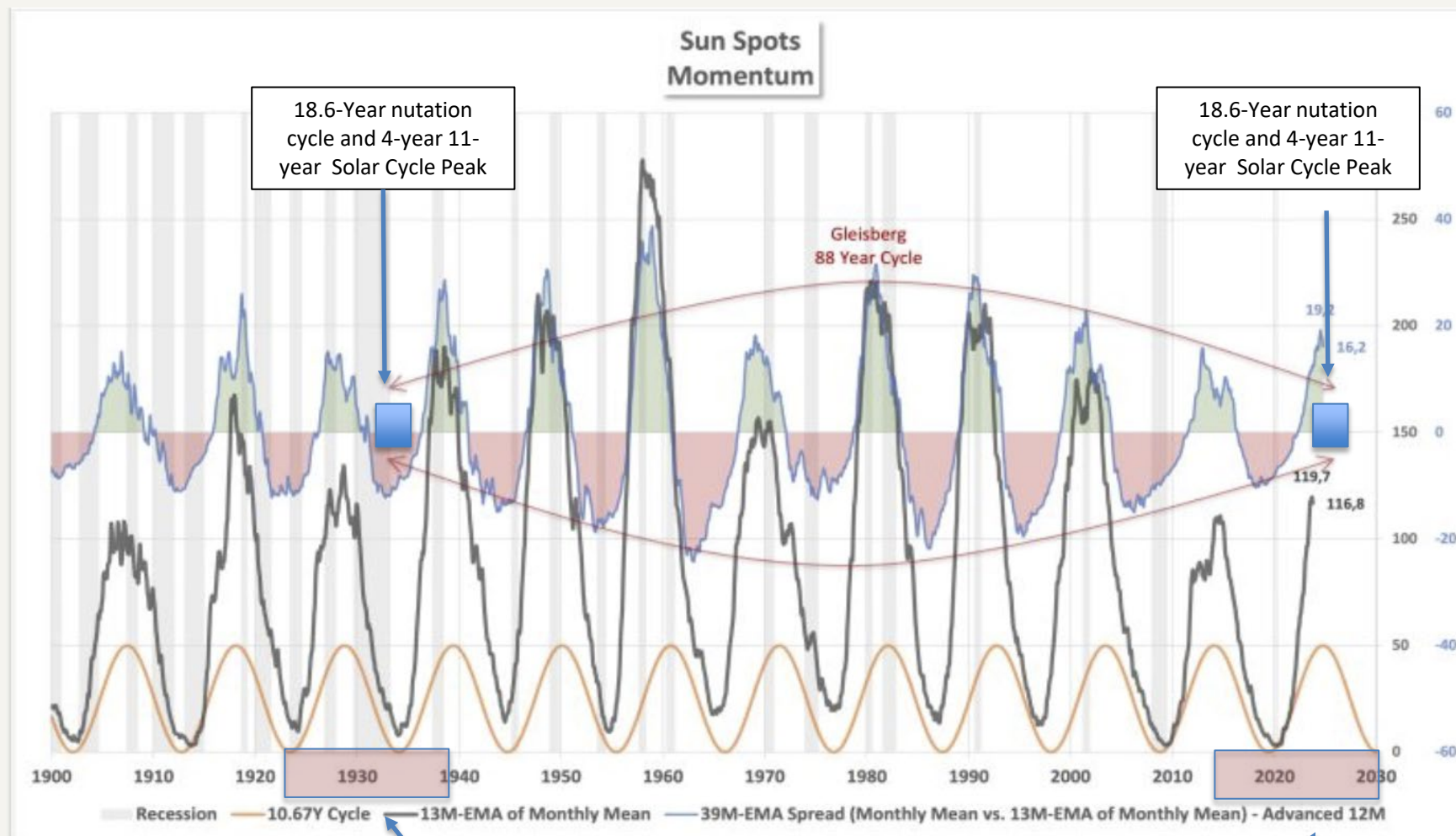


Figure 3 Moon-driven climate cycle of 74 years (blue) and 298 years (yellow). Solar-driven climate cycle of 178 years (grey) from 1900 to 2100.

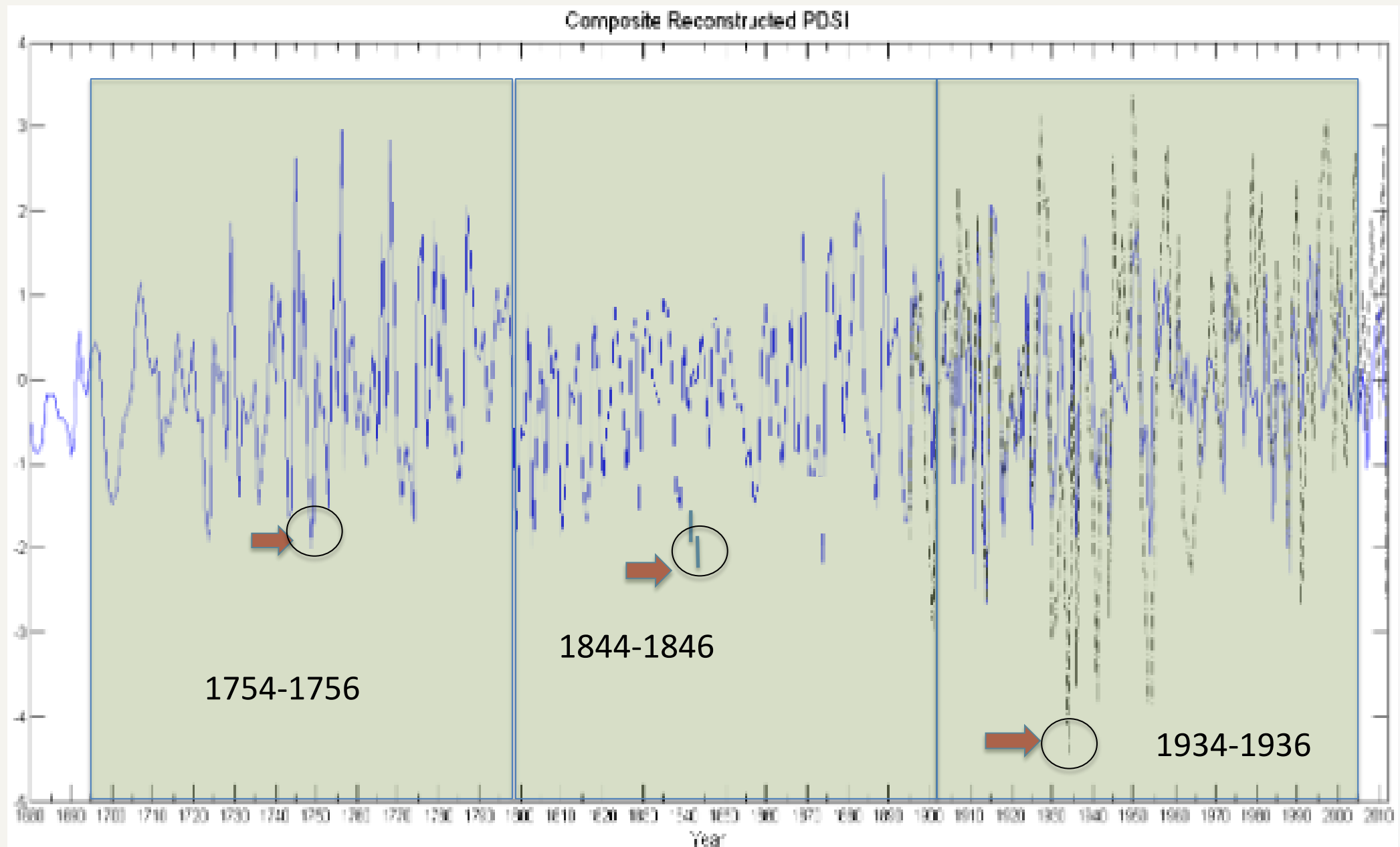
# Peak Warm Climate Set Up for the Mid 2020's as a 1 in 100 Year Midwest Drought Elevated for 2025-2027-(89 Year-Gleissberg Cycle)

(Paul Wootton)



Increased Weather Volatility 89-Year Gleissberg Cycle From Peak Warm SST's and Global Temperatures

# Beware of the 89-Year Gleissberg Cycle-Projects a 1 in 100 Year US Midwest Drought for 2025-2027



Palmer Drought Index Reconstructed From Tree Rings Analysis(Indiana University)

**Beware of the 89-Year Gleissberg Cycle-Projects a 1 in 100 Year US Midwest  
Drought for 2025-2027**  
**(<http://iridl.ldeo.columbia.edu/>)**

**Gleissberg Cycle Century Droughts Verified Since the Year 955**

**Avg between Gleissberg Cycles=89 Years**

955=89

1043=89

1132=89

1221=92 ←

1313=88

1401=88

1489=90 ←

1579=91 ←

1670=87

1757=90

1847=87

1934/1936 → Avg+89=

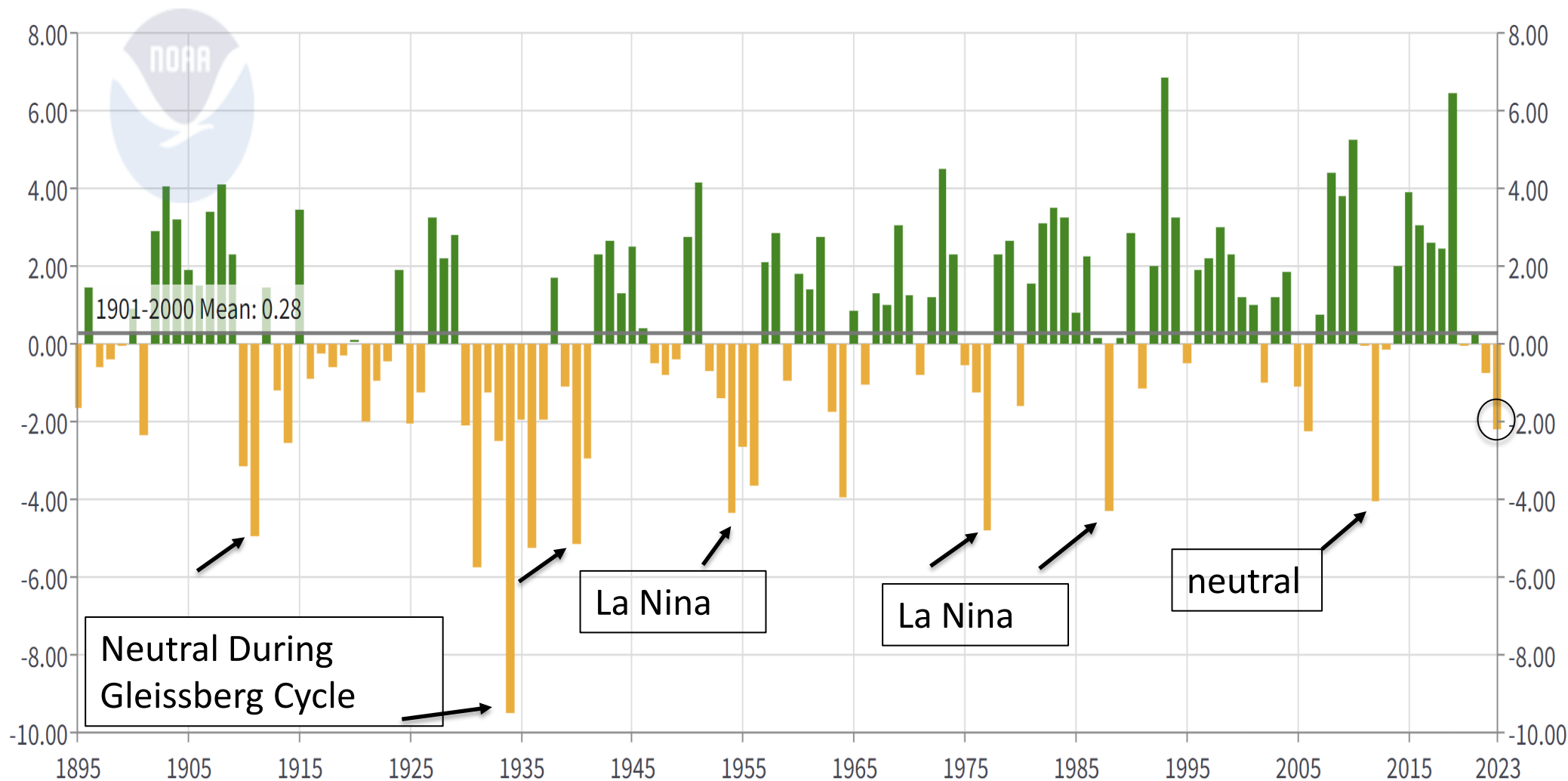
**Statistically best Window  
the years 2025-2027**



# Palmer Drought Severity Index and the 1934 Gleissberg Cycle-Base ENSO State Must be a La Nina/Neutral State

## Corn Belt (Productivity Weighted) Palmer Drought Severity Index (PDSI)

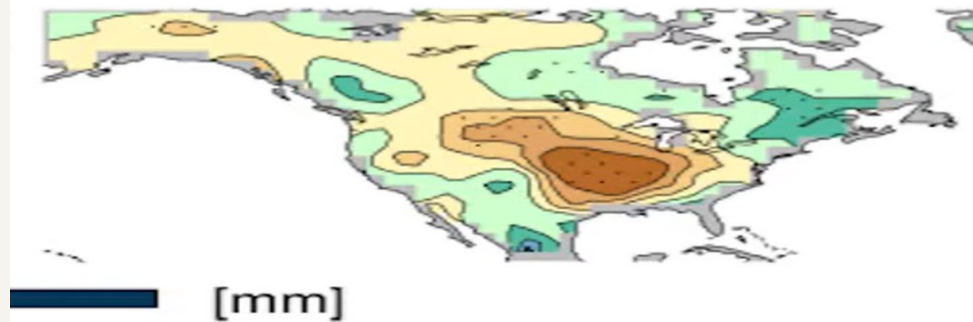
July



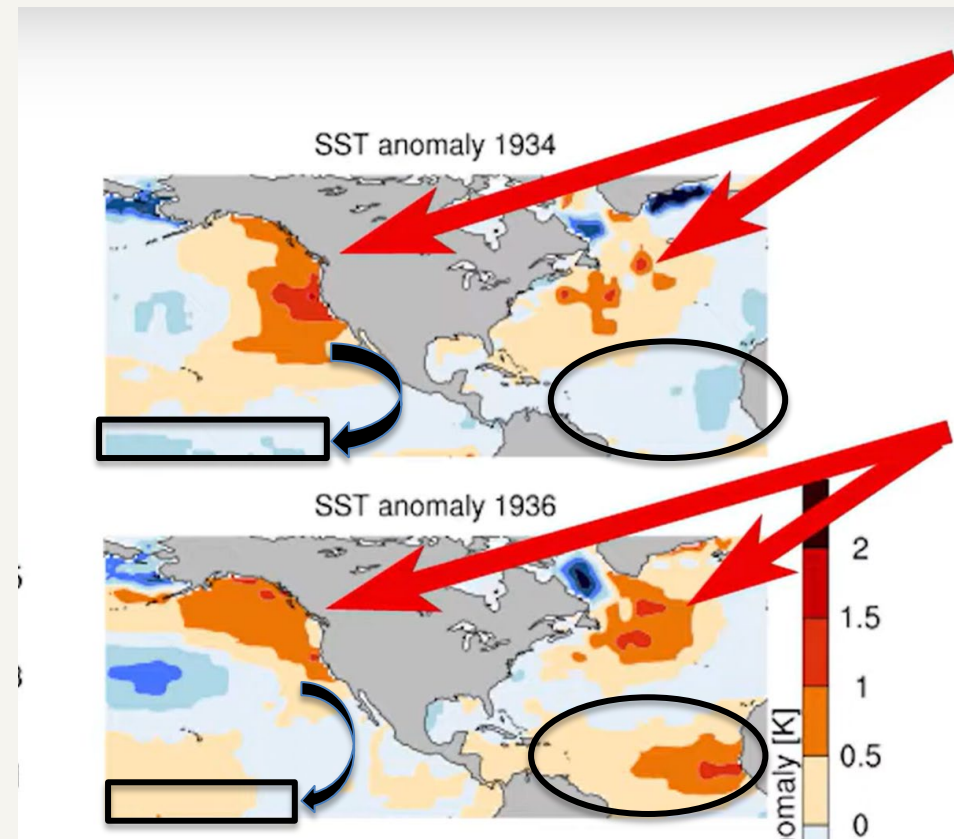
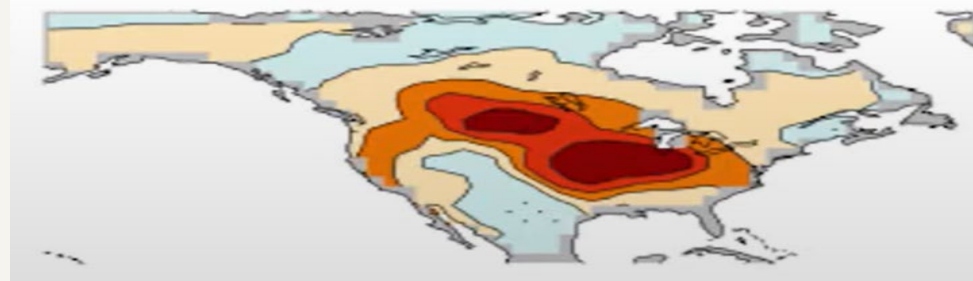
# Dust Bowl SST Anomalies Distributions Both Were Neutral ENSO in Central Pacific with Hot North Pacific/Atlantic

## SST's and Variable Central Ocean SST's (Dr. Markus Donat)

Precipitation anomalies with warm north  
pacific/Atlantic



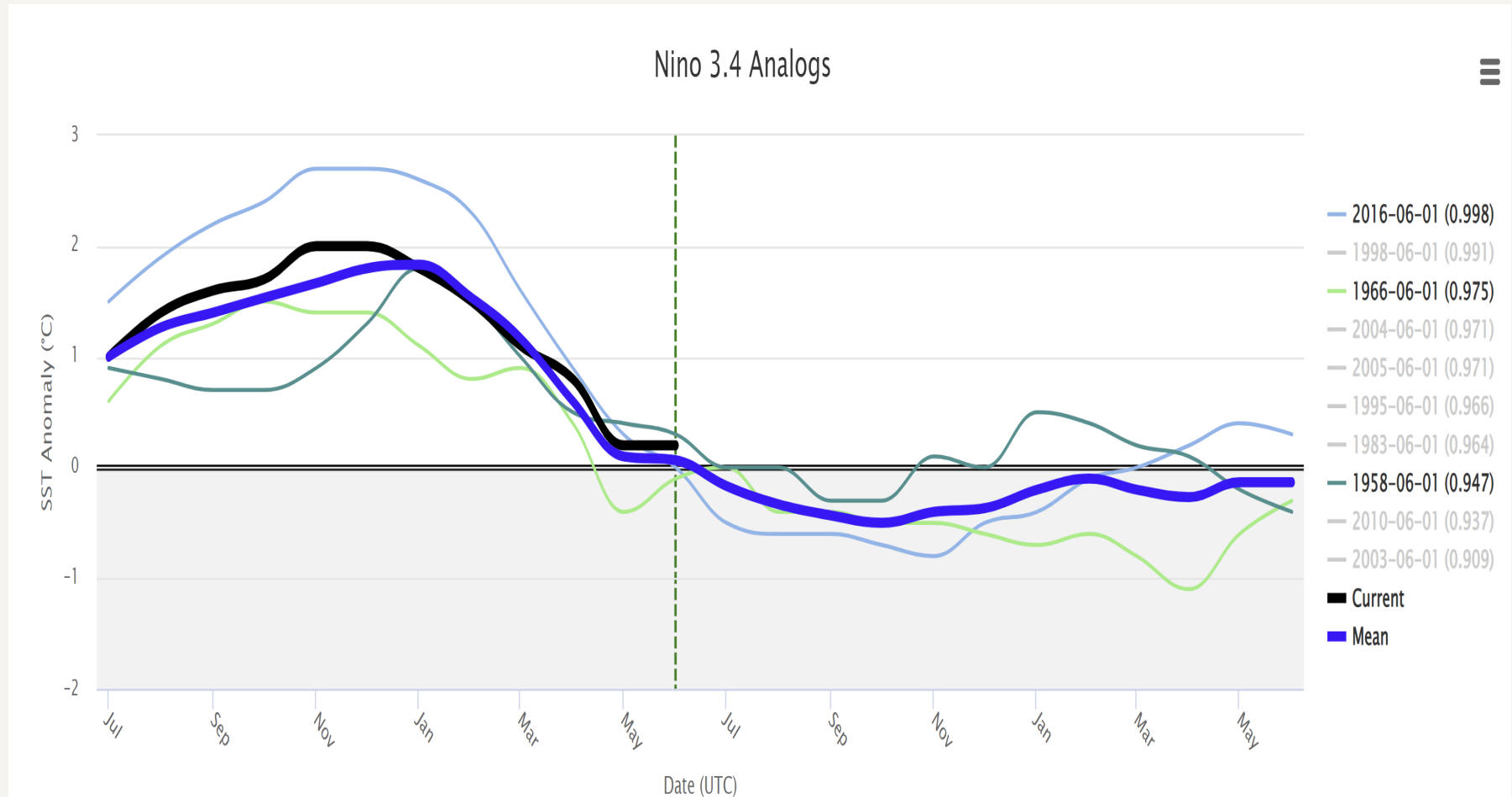
Temperature anomalies with warm north  
pacific/Atlantic



## Central Pacific sst anomalies

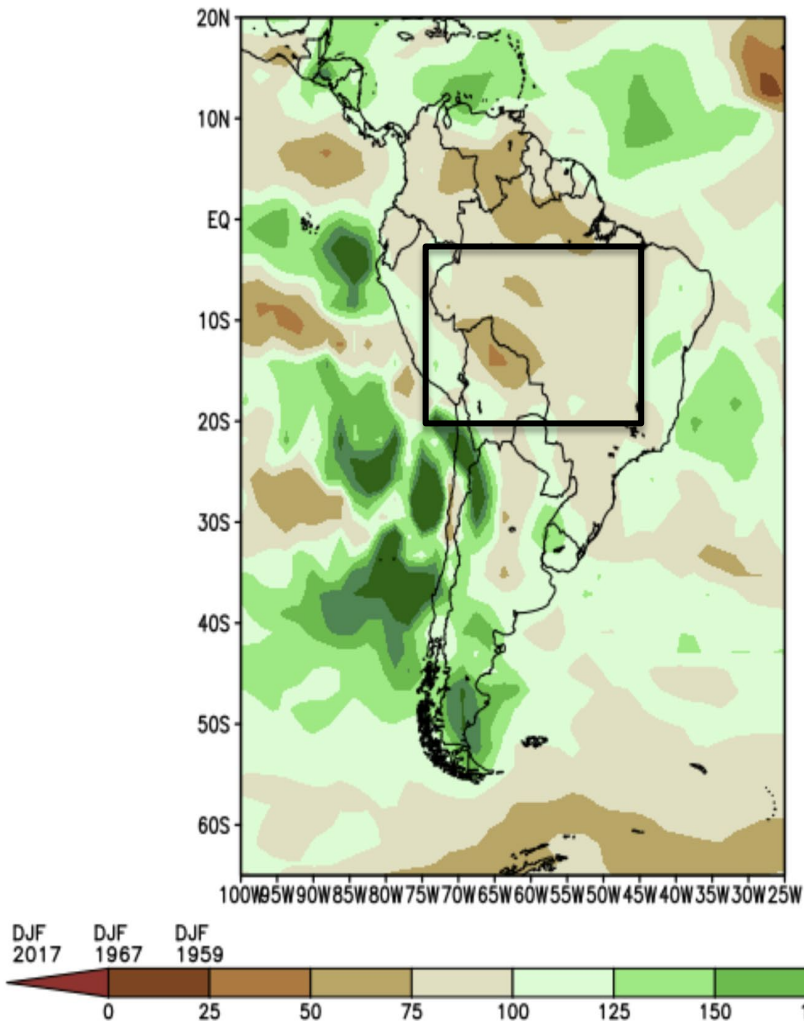
1933	-.059	-.126	-.396	-.497	-.388	-.671	-.769	-.827	-1.014	-1.001	-.987	-1.093
1934	-1.251	-1.214	-1.007	-.651	-.246	-.074	-.133	-.174	.037	.114	-.084	-.141
1935	-.197	-.331	-.511	-.508	-.11	.096	-.055	.017	.322	.412	.364	.372
1936	.193	.156	.319	.44	.513	.474	.292	.249	.206	.138	.258	.361
1937	.34	.206	.218	.082	-.13	-.277	-.292	-.071	.186	.26	.157	-.081

# El Nino Peaked in Early 2024 and Is Collapsing Back to a Neutral/Weak La Nina-The Year 2025/2026 Are Big Risk Years for a Major US Drought and Continuation of Brazil's Historic Drought-

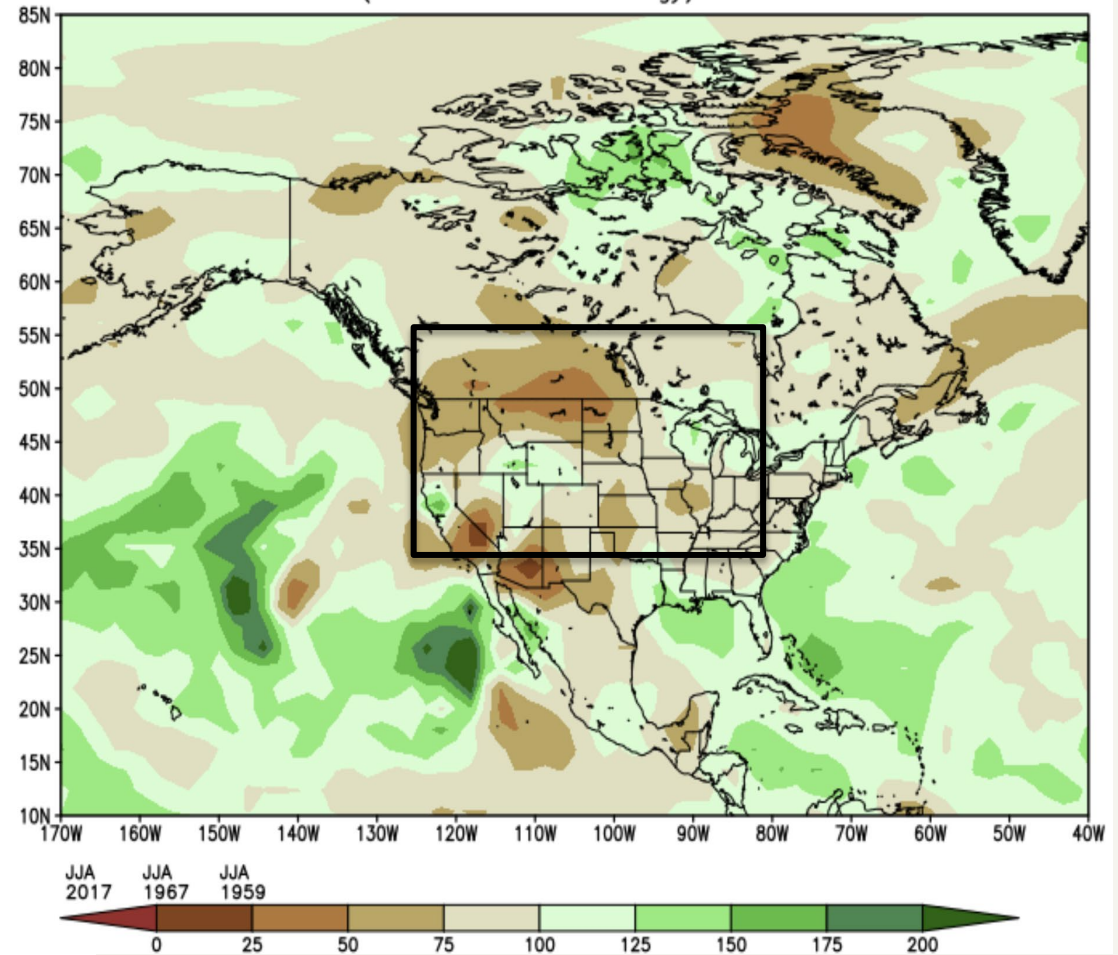


**El Nino Peaked in Early 2024 and Is Collapsing Back to a Neutral/Weak La Nina-The Year 2025/2026  
Are Big Risk Years for a Major US Drought and Continuation of Brazil's Historic Drought-**

Composite precipitation: % of normal  
(1991–2020 Climatology)

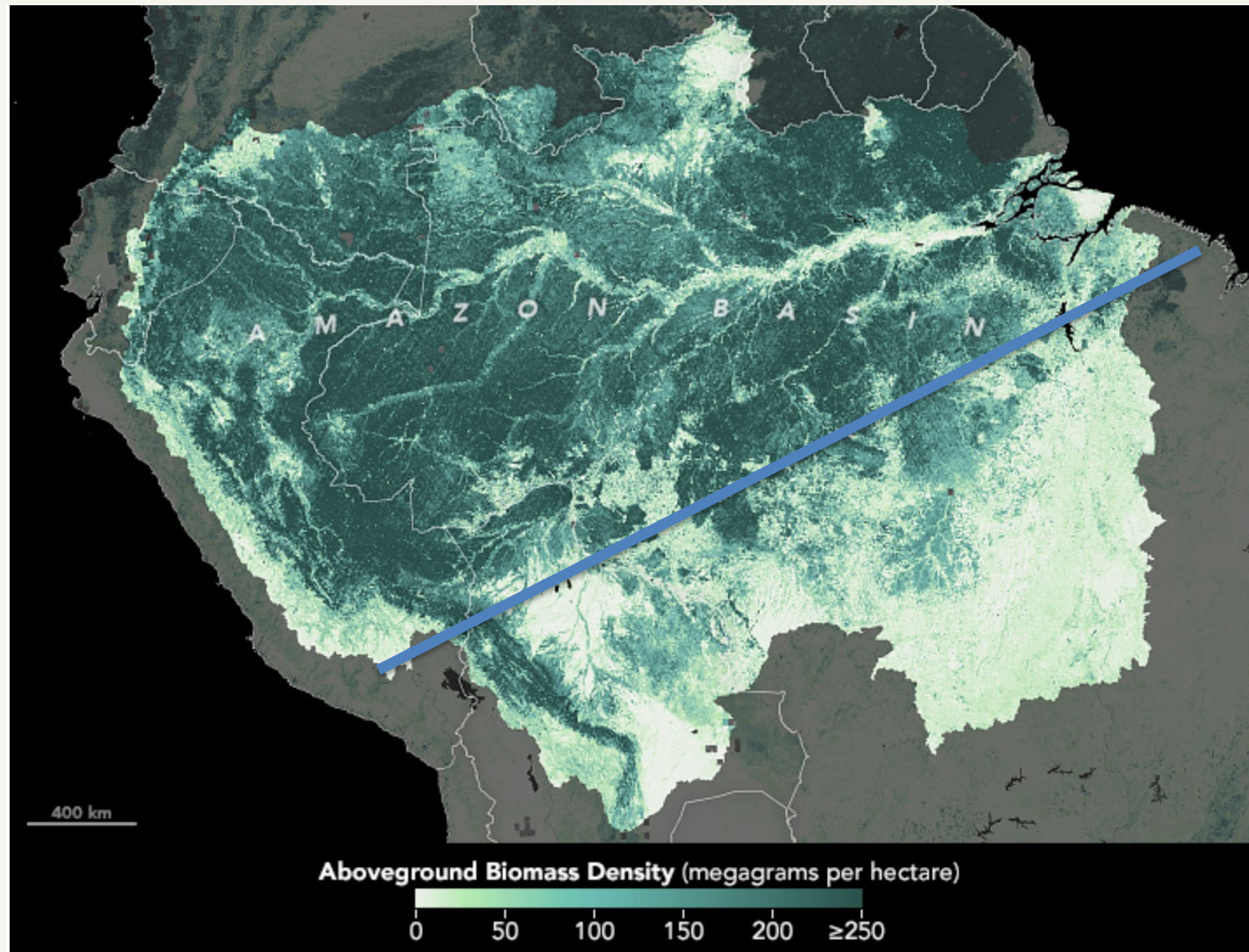


Composite precipitation: % of normal  
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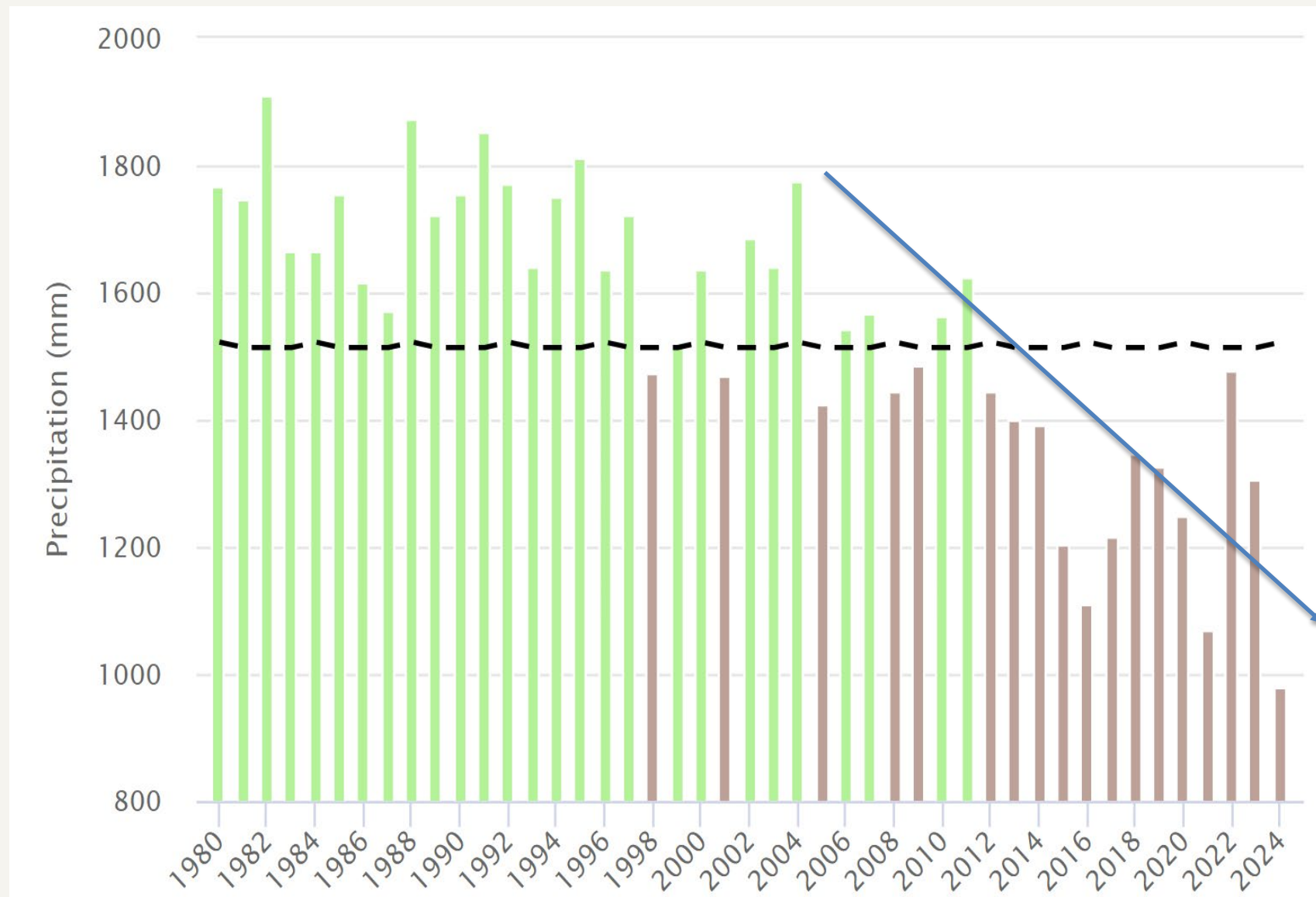




## 2023 Satellite Imagery Confirms that 20% of the Amazon Basin Has Been Deforested by The Advance of Agricultural Production By Brazil-(NASA)



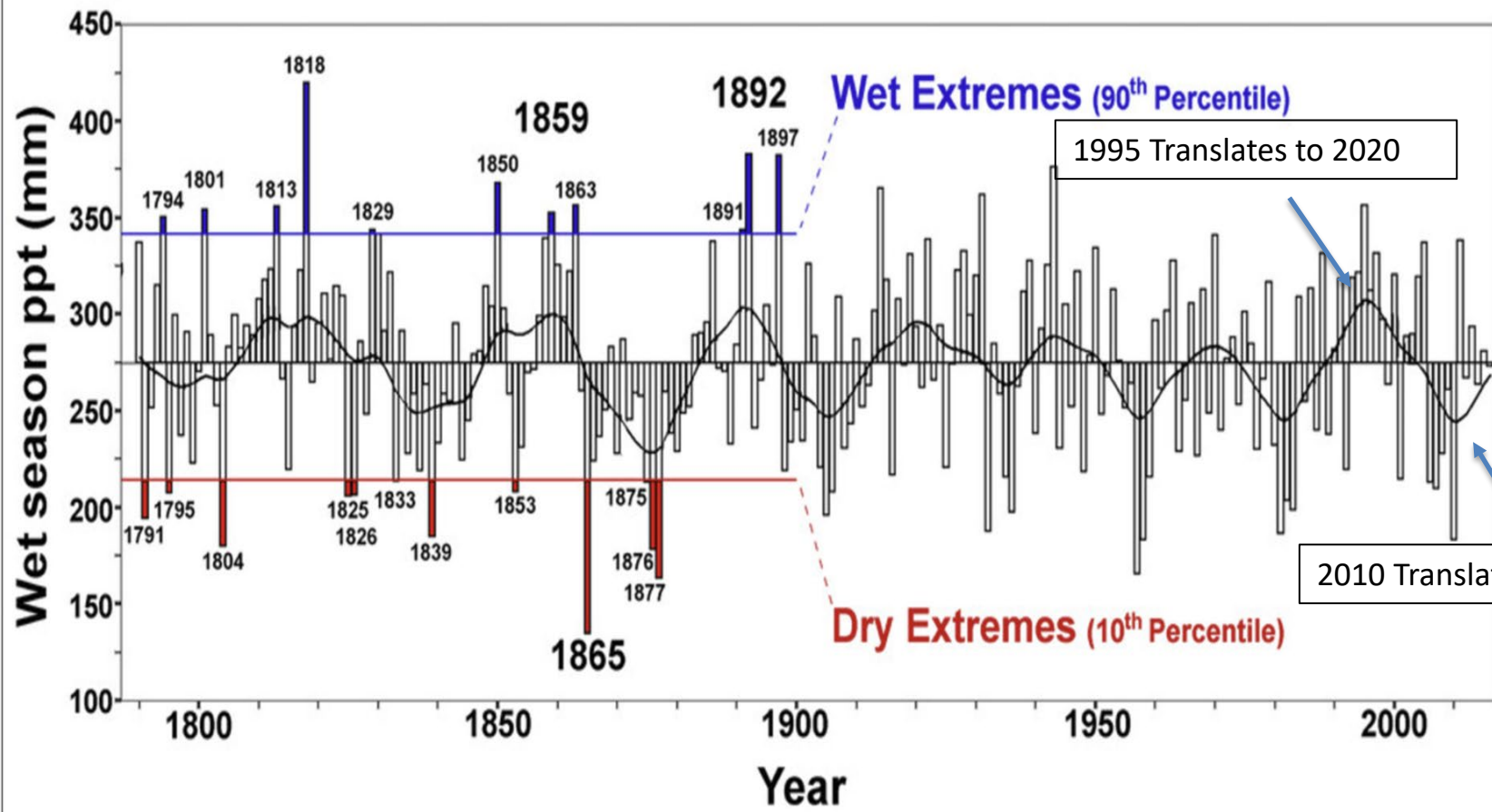
## North Brazil Historic Moisture Pattern Have dropped by 50% Over the Last 20%-Unprecedented



**The 25-Year Amazon River Water Level Cycle Has Entered the Downward Slope Of the Drier Phases Starting in 2020 that Will Continue Reaching the Trough in 2032-Extremely Concerning that We Are Already Seeing Record Low Water Levels**

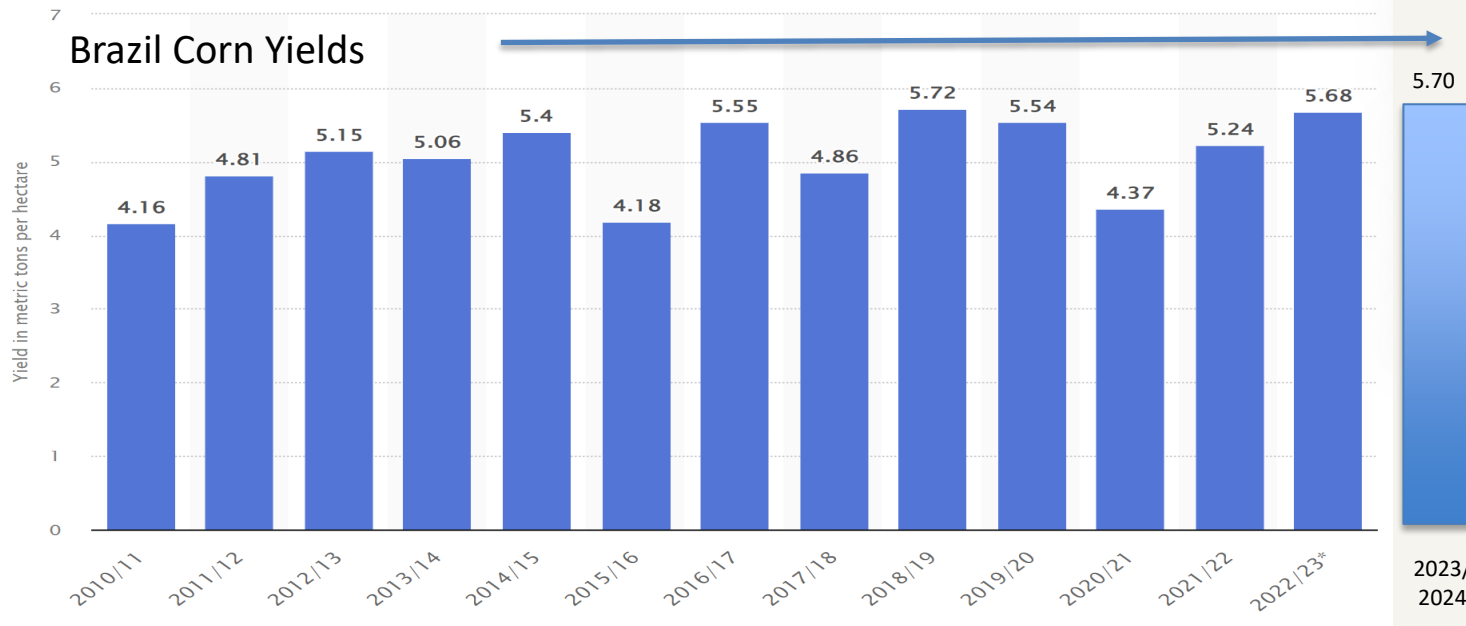
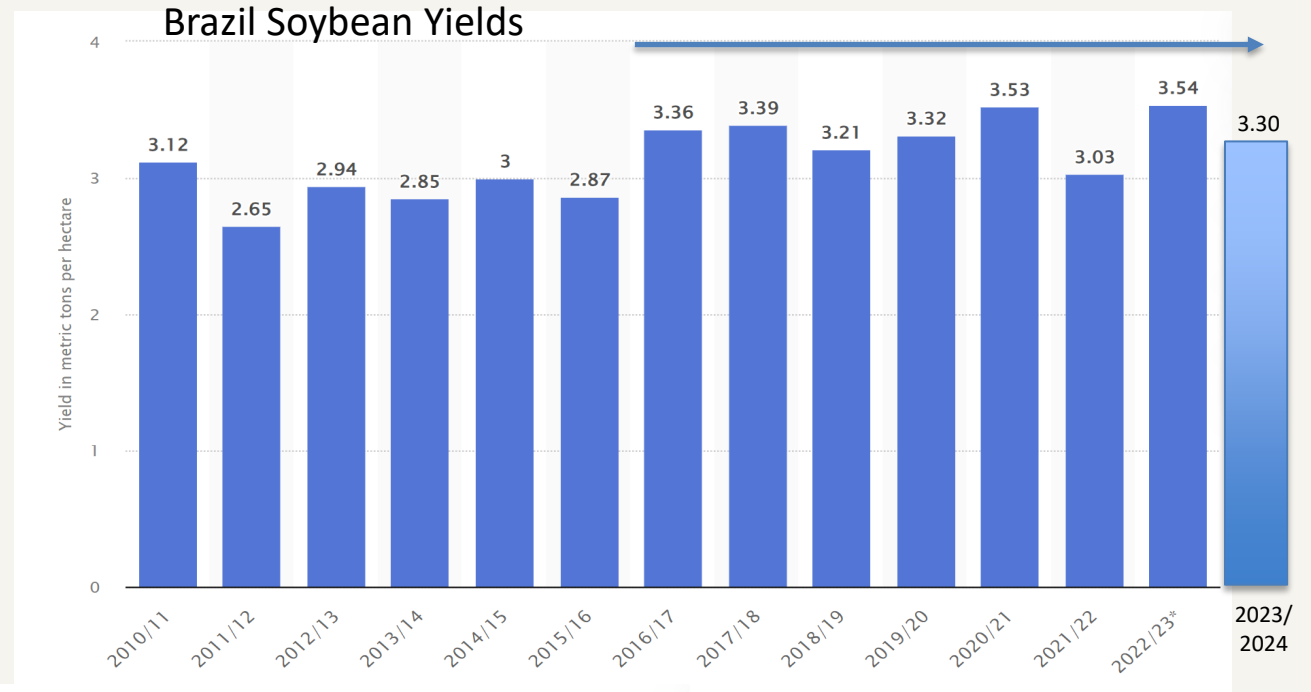
(Daniela Granato-Souza-Journal of climate)

**a. Eastern Amazon 1790-2016**



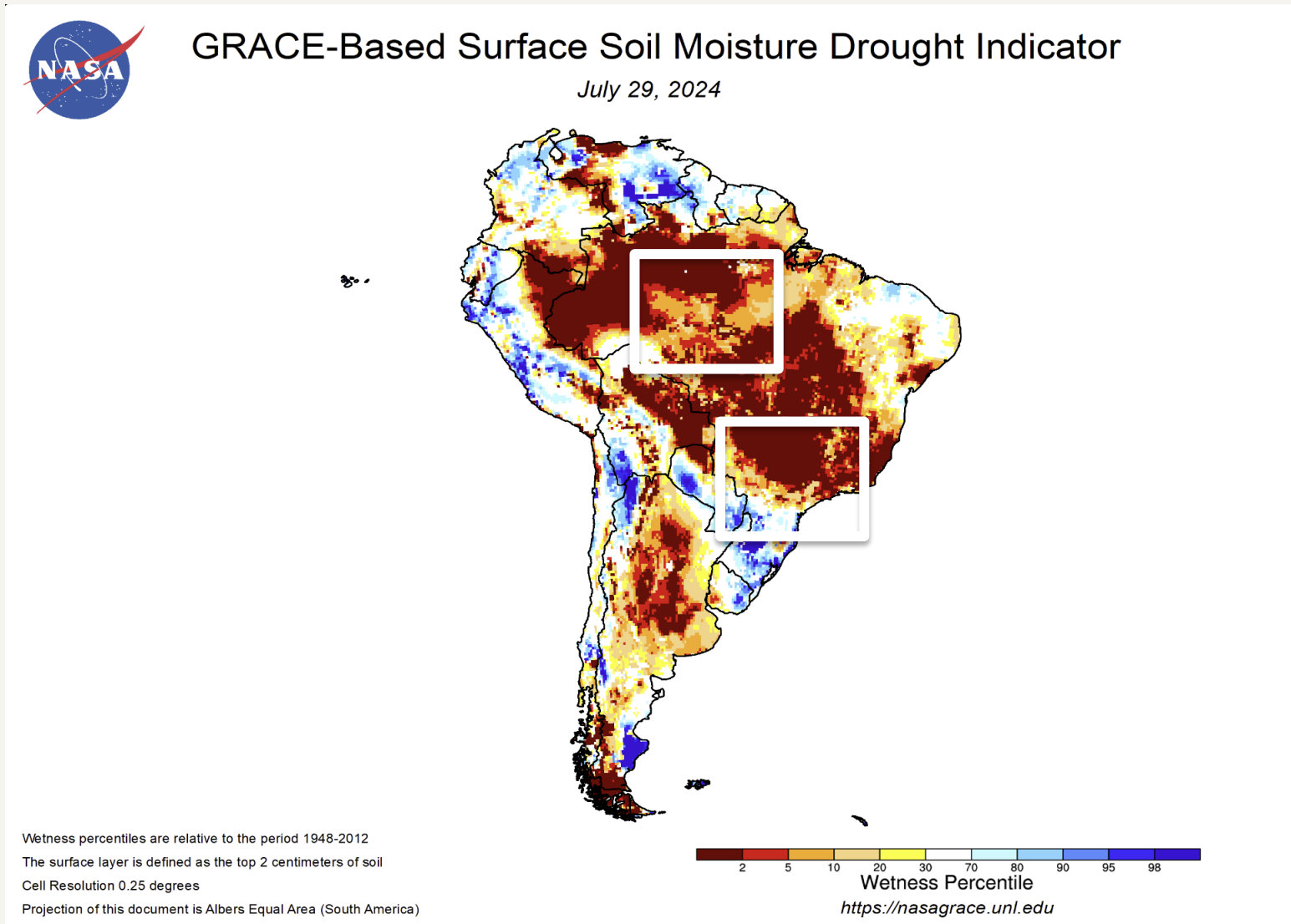
# Brazil Corn and Soybean Yields Have Not Been Growing...What Happens If New Planted Acreage Growth Stops? What Happens if Yields Start Falling Due to Amazon Atmospheric River Collapse Due to Deforestation?

(USDA)

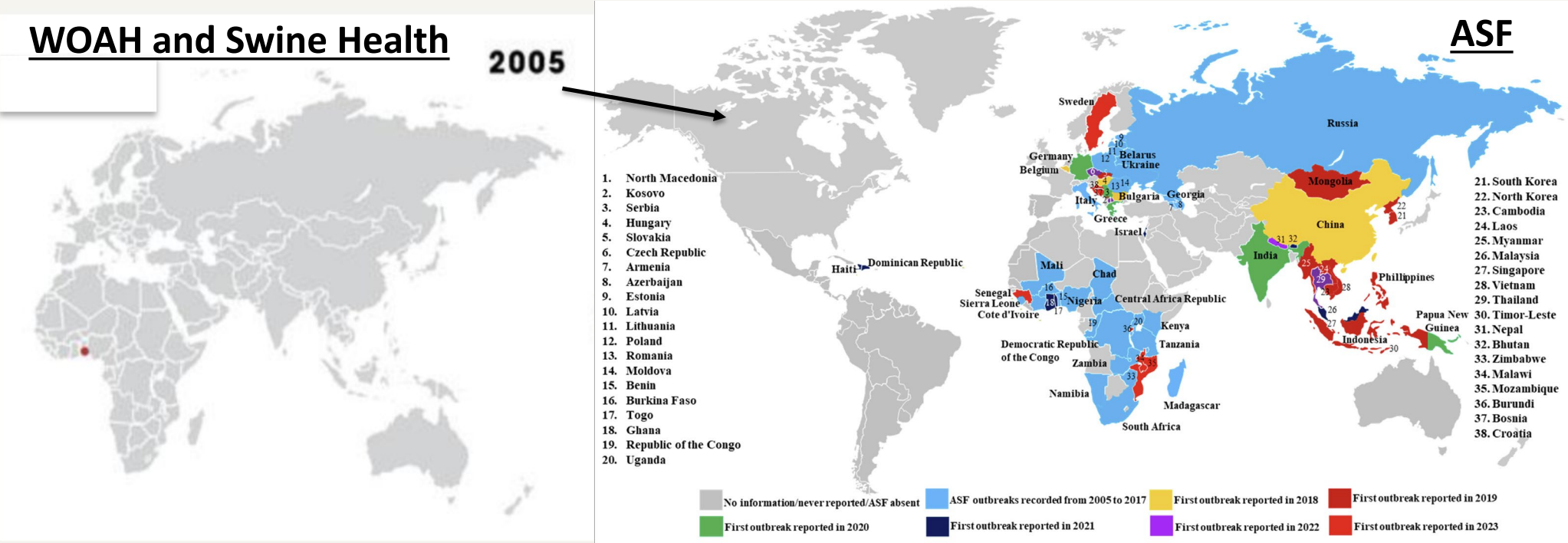




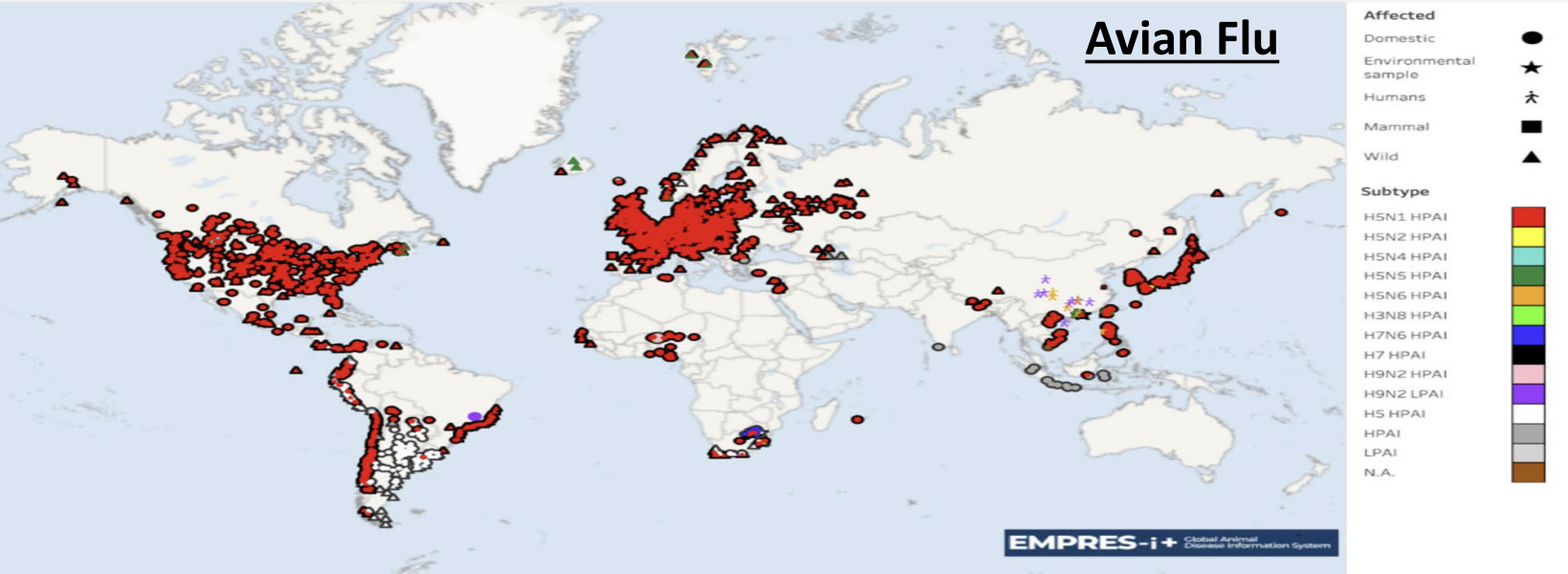
**-Current Brazilian Subsoil Moisture is in the Lowest 2 Percentile of History-Big Risk Factor for the Planting/Growing Season if Rains Fail to Arrive-Central West and Central South Brazil Focal Point-**



**Livestock Diseases Like African Swine Fever and Avian Flu are Likely to Remain a Huge Factor for Ag Prices in the Years Ahead as Mutations Accelerate and Diseases Jump to Other Animals and Humans-Vaccines and Biometric Monitoring Processes Critical to Long Term Sustainability-**



**Map 2.** Global distribution of AIV with zoonotic potential\* observed in the period 1 October 2022 to 30 September 2023 (i.e. previous wave)



## Summary Takeaways

- 1. US Dollar Reserve Currency Status in Jeopardy Possibly Causing a Recalibration Higher for US priced Commodity Assets-**
- 2. The Age of India Consumerism from Positive Demographic Trends is About Take Over as the Dominate Buyer for Most Commodities-While China's Demand Sun is Setting for Commodities, Artificial Intelligence and Quantum Computing to Delay the Day of Reckoning for Now-**
- 3. The Convergence of the 220-Year Reduced Solar Output Cycle, the 89-Year Gleissberg Cycle and the 60-Year Sea Surface Temperature Cycle all Portend Record Weather Volatility Ahead-**
- 4. Brazil Amazon Deforestation Offers Huge Risks to Future Production Potential-**
- 5. Escalating Animal Diseases Will Keep Meat Protein Supply and Demand in Great Flux. Alternative Protein Options Gain Greater Traction-**
- 6. Big Climate Flashpoint Risks for the Next Few Growing Seasons due to a Likely Neutral/Weak La Nina Central Pacific SST's are a Possible Major 1 in 50 to 1 in 100 Year drought in the US Midwest and an Escalating Multi-Year Drought Continuing for Brazil/North Brazil-**



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