

# **OBSERVER**

# **REVIEW**

**JANUARY 2025**

## MEET THE CONTRIBUTORS

# RFN



Ben Davidson, a researcher and author, founded the Suspicious Observers YouTube channel, specializing in Earth's space environment, the Sun, and the Cosmos. In 2014, Ben launched The Mobile Observatory Project via Kickstarter, with 800+ sponsors. Ben now focuses on Observer Ranch, an educational campground in central Colorado, aiming to share research on the Sun's impact on Earth and teach sustainable practices like gardening and homesteading.



# BAILEY



Bailey enjoys astronomy and the wonders of the natural world! She has her Bachelor's and Masters in Science Journalism. Bailey is also the founder and operator of [Elara Creatives](#), a Digital Marketing Agency. She lives in Colorado and enjoys skiing, tennis, and astronomy!



# ADRIAN



Adrian D'Amico is a political science major, JD/MBA, who has had a life-long interest in UFOs and obfuscated history. Adrian and Ben Davidson grew up as best friends in Pittsburgh, PA, where he still lives. He has presented at each of the Observing the Frontier conferences and is a key member of the Space Weather News team behind the scenes.



## THE OBSERVER REVIEW

The Observer Review is a monthly publication that discusses the main scientific findings surrounding space weather. Do you want to have your article featured? Email [observerreview@observerranch.com](mailto:observerreview@observerranch.com)

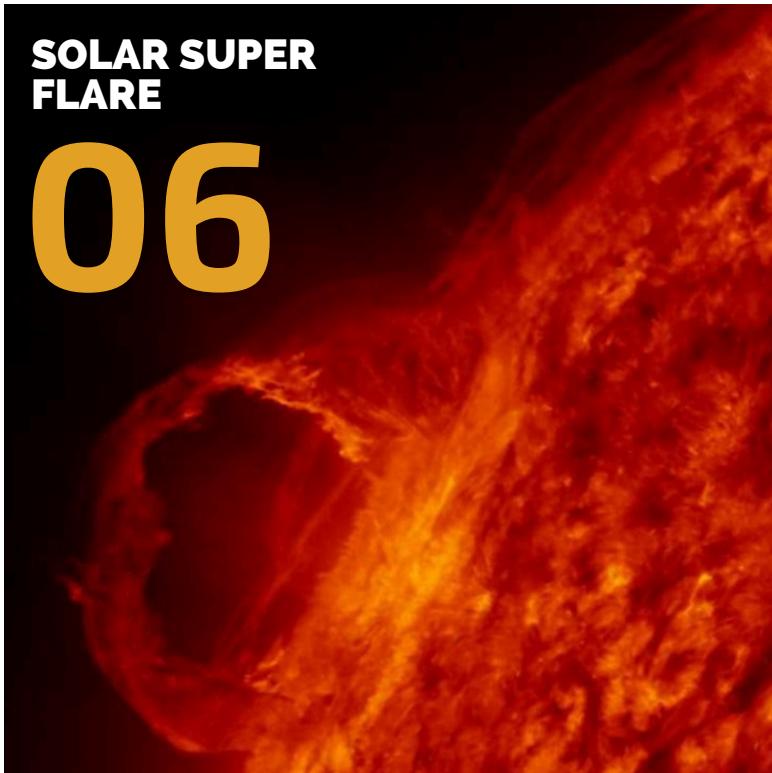
NEW ISSUES COME OUT THE 15TH OF EACH MONTH!

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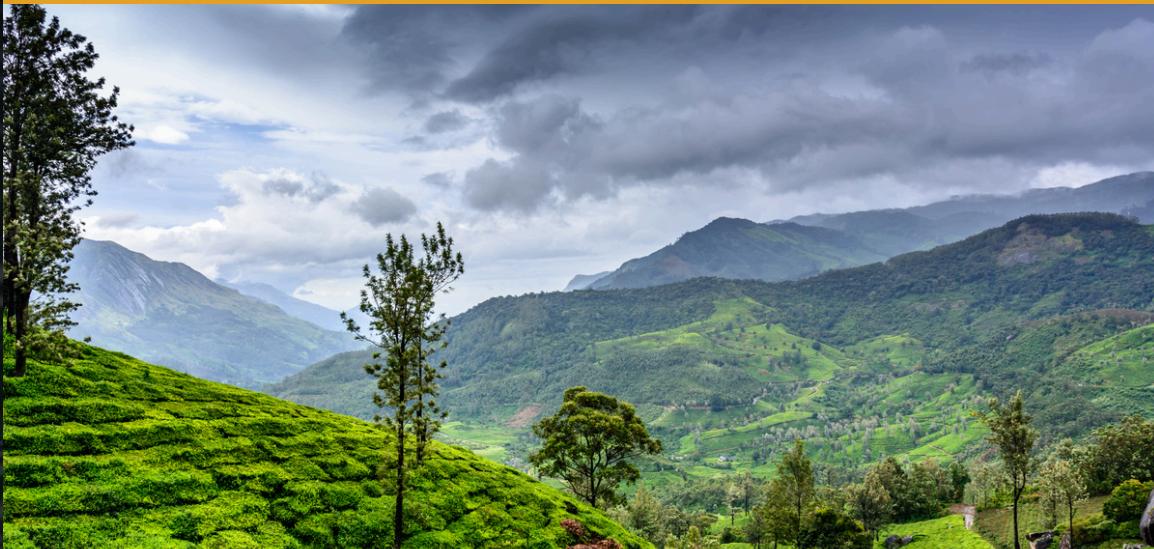
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# SOLAR FORCING INDIA MONSOON

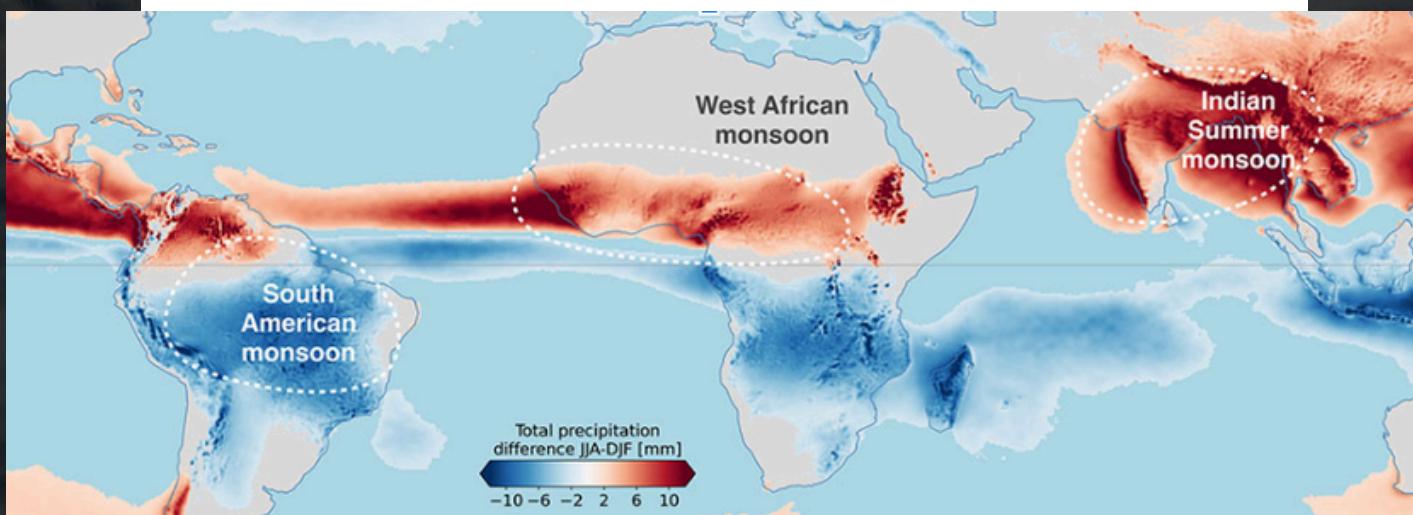
BY: BAILEY LAURISSA

ARTICLE REFERENCED:

INDIAN MONSOON VARIABILITY DURING THE PAST 600 YEARS



The Indian summer monsoon (ISM) is a lifeline for millions, providing the bulk of annual rainfall for agriculture, water resources, and ecosystems. Understanding its variability is crucial for managing water resources and preparing for climatic shifts. A recent study of the Sherla Lake in Haryana, India, has uncovered a few details about monsoon patterns over the past 600 years, shedding light on the influence of solar forcing, El Niño-Southern Oscillation (ENSO), and North Atlantic Oscillation (NAO) on the ISM.



Sherla Lake, located in the Morni Hills of the Siwalik range, offers an ideal setting to study historical monsoon variability. This closed lake's sediment deposits preserve a record of hydrological and climatic conditions, which researchers analyzed using cutting-edge techniques like radiocarbon dating and multi-proxy analysis. These proxies include stable isotope ratios, grain size distribution, and geochemical indicators, offering a comprehensive view of past climatic changes.

Key findings on monsoon variability through time reveal distinct patterns during the Little Ice Age and the Current Warm Period. During the early phase of the Little Ice Age, from 1360 to 1500 CE, proxy data suggest weak monsoon activity characterized by reduced precipitation and dry conditions, with vegetation dominated by drought-tolerant C3 and C4 plants.

In contrast, the later phase of the Little Ice Age, from 1600 to 1780 CE, experienced wetter and more stable conditions, with increased monsoon activity and higher energy river flows.

This period was influenced by El Niño-Southern Oscillation events, which caused frequent monsoon "breaks" and localized heavy rainfall in the Himalayan foothills. During the Current Warm Period, from 1850 CE to the present, the monsoon has exhibited heightened variability, with particularly weak precipitation phases since the mid-20th century. This increased variability is associated with human-induced climate change and the impacts of solar forcing.

### **DURING PERIODS OF REDUCED SOLAR ACTIVITY, SUCH AS THE MAUNDER MINIMUM (1645–1715 CE), THE MONSOON WEAKENED.**

Conversely, stronger solar activity often correlates with enhanced monsoon rains. The study also highlights the significant role of ENSO, which modulates monsoon strength by altering atmospheric circulation patterns. During El Niño years, the ISM weakens, whereas La Niña years bring stronger monsoon rains. Additionally, the NAO, particularly during its positive phase, amplified winter precipitation in the Himalayan foothills through intensified western disturbances.

**THE SHERLA LAKE STUDY OFFERS A HIGH-RESOLUTION VIEW OF ISM VARIABILITY OVER THE PAST SIX CENTURIES. IT HIGHLIGHTS THE INTERPLAY OF NATURAL DRIVERS LIKE SOLAR FORCING, ENSO, AND NAO IN SHAPING MONSOON DYNAMICS.**

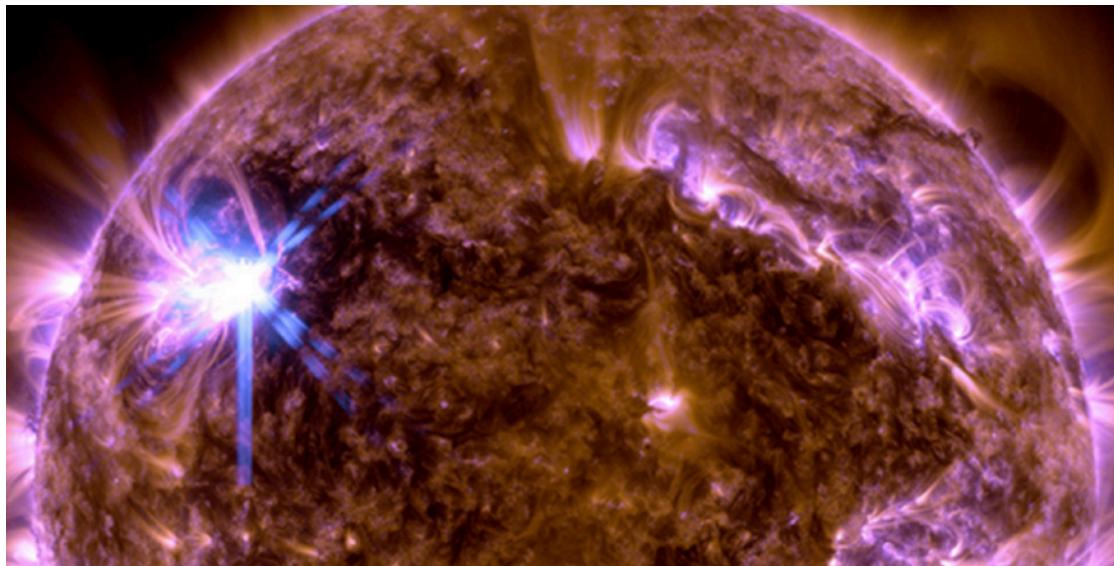
# SOLAR SUPER FLARES

BY: BEN DAVIDSON

ARTICLE REFERENCED:

[SUN-LIKE STARS PRODUCE SUPERFLARES ROUGHLY ONCE PER CENTURY](#)

ONE OF THE MAJOR TOPICS IN SPACE WEATHER, AND LIKELY ONE OF THE MAIN REASONS MANY OF YOU FOUND OUR VIDEOS AND BOOKS, IS THE CONCERN FOR WHAT THEY CALL THE “**SOLAR KILLSHOT**”. THIS IS A SOLAR STORM SO LARGE THAT THE ELECTROMAGNETIC ENERGY DELIVERED INTO THE EARTH SYSTEM CAUSES AN EMP-LIKE DESTRUCTIVE EVENT ON ALL TECHNOLOGY. COPPER WIRES, TRANSFORMERS, CIRCUITS, GENERATORS, APPLIANCES, DEVICES - PRETTY MUCH EVERYTHING THAT MAKES OUR MODERN WORLD “MODERN”.



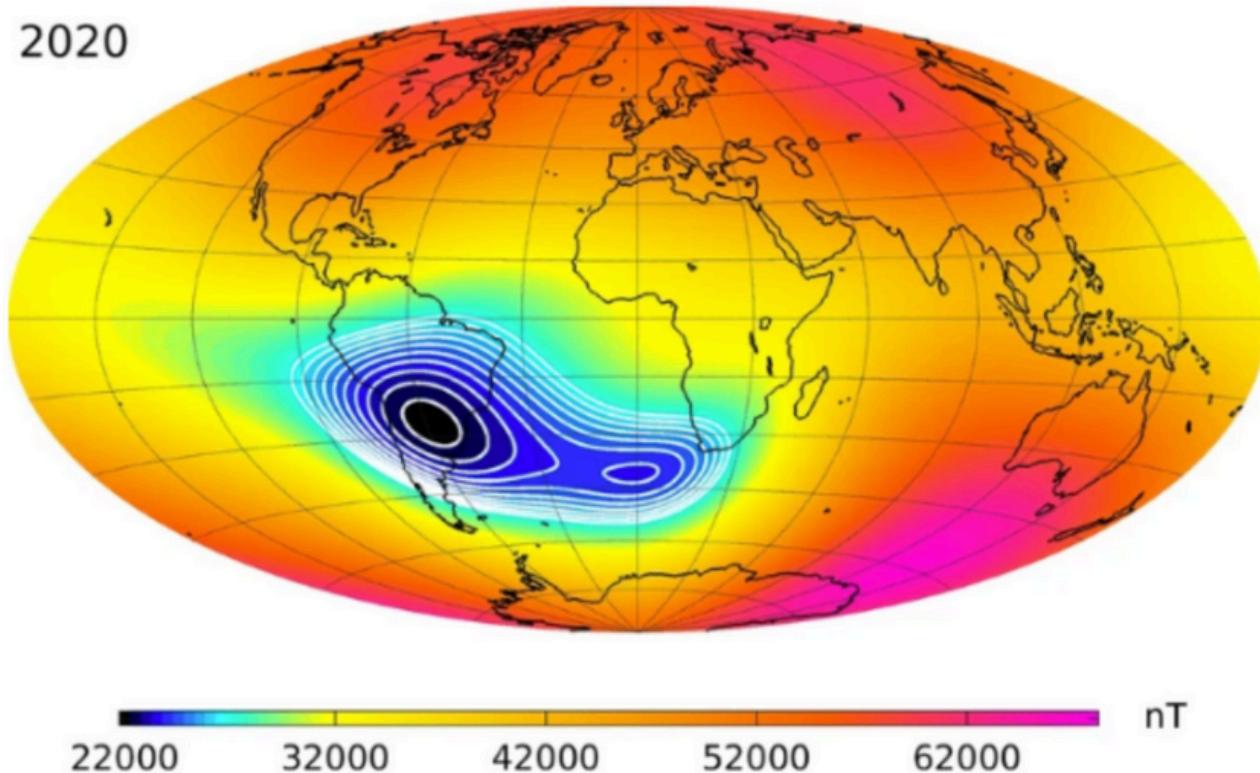
**WHAT DOES THE DATA SHOWCASE?**

Geologic data suggests that these solar storms hit the earth every 150-200 years, and a new study has come at the question of super-flare frequency on the sun from the other side- the solar physics. This new study suggests that the sun produces one of these major blasts every century, once every 100 years.

Considering that about half of these major flares should be on the half of the sun facing earth and half on the opposite side facing away from earth, that means half those once-a-century solar storms miss our planet, meaning that earth takes a hit every other time, on average, about every 200 years.

**THE IMPORTANCE OF THE STUDY**

This new study does a good job confirming what the geologic data shows, but more importantly, it tells us that we're getting better at forecasting long-term magnetic activity on the sun. The bad news is that the last one to hit earth was in 1859, so we're in the 150 to 200 years range, and with earth's magnetic field weakening due to the ongoing magnetic pole shift, an even smaller solar storm could have the same effects now.



"Magnetic field intensity map of the South Atlantic Magnetic Anomaly in 2020, showing the weakening of Earth's magnetic field over the region." (2024)

# MORE ODDITIES FROM THE MAY SOLAR STORM

BY: BEN DAVIDSON

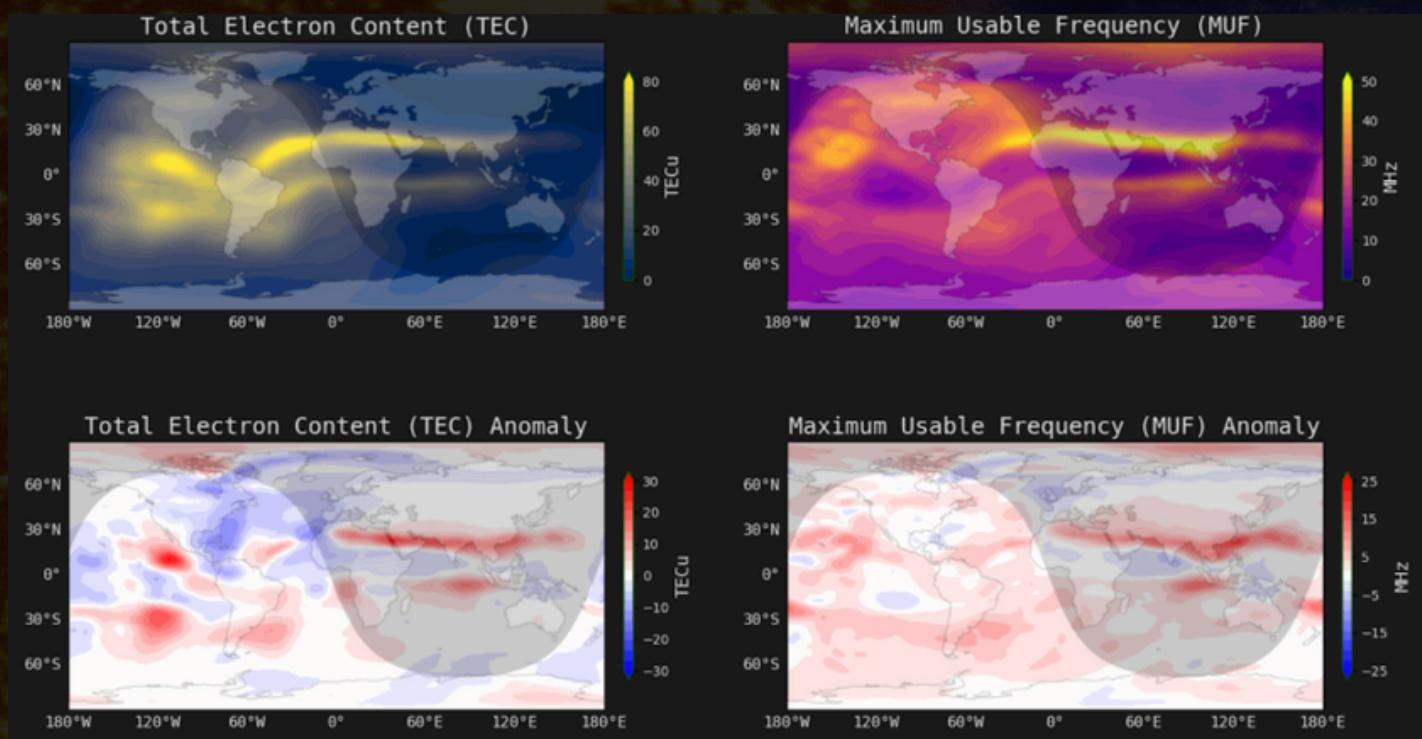
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[HTTPS://AGUPUBS.ONLINELIBRARY.WILEY.COM/DOI/10.1029/2024JA033148](https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2024JA033148)

Yes folks, as predicted, the scientific papers on the May 2024 solar storm keep coming out - I'd get used to it; they will be studying this one for years.

Two studies this past month added to an already long list of anomalies and broken records from the big solar event of last year.



## MAY 2024 SOLAR STORM RECAP

In May 2024, the most intense solar storms of Solar Cycle 25 caused significant geomagnetic disturbances, including a G5-class storm with vivid auroras visible as far south as Florida and Texas. The storm, triggered by multiple powerful X-class solar flares and merging coronal mass ejections, disrupted satellite operations, GPS systems, and posed risks to power grids.

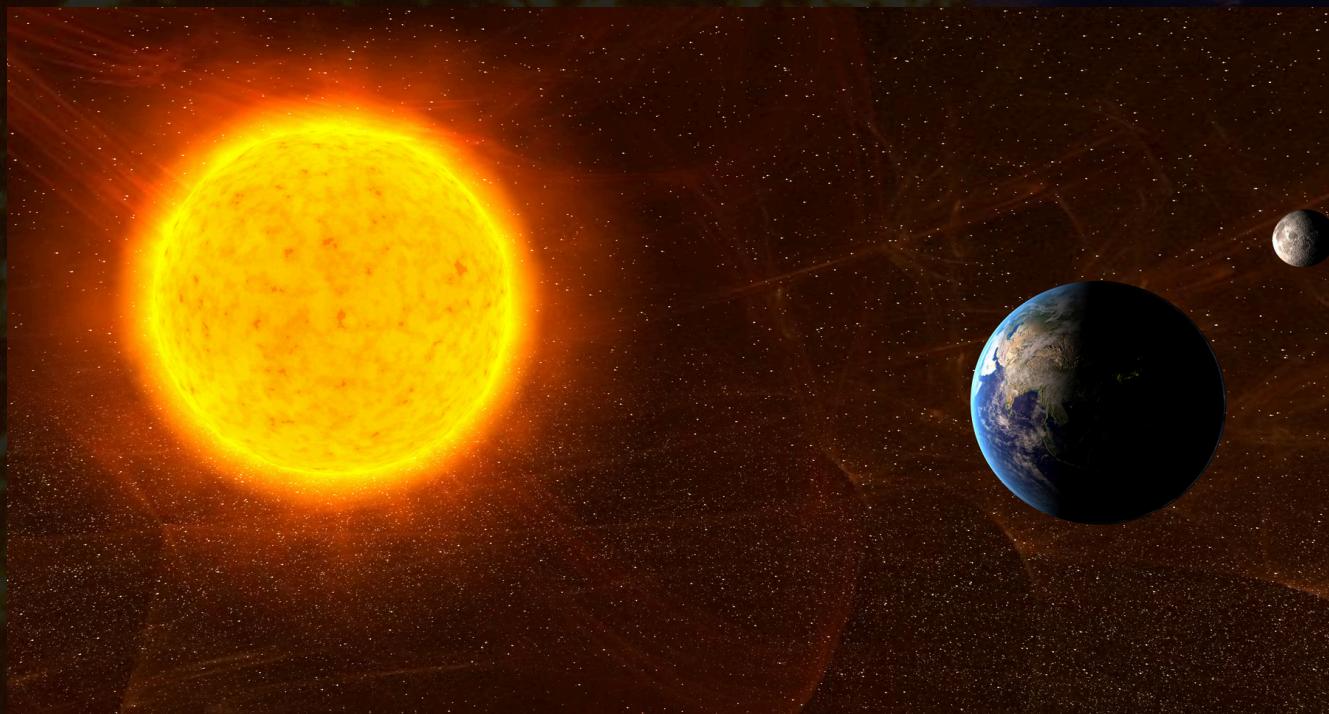
**HERE ARE THE HIGHLIGHTS:**

**A PECULIAR IONOSPHERE RESPONSE:**

Scientists have found that the extreme injection of charged particles created record electron content in the upper atmosphere, and a first-ever motion against the expected path of the electric anomaly. The extra particles were there because earth's magnetic field is weakening, allowing more of those particles to enter the earth system.

**ELECTRO-CHEMICAL REACTIONS:**

The electro-chemical reactions in the thermosphere created record-breaking effects- by far the largest event of the space age. This is a major problem, because the 2005, 2003, 1991, 1989, and 1970s solar activity was much stronger than what we had in May 2024. Just as the excess auroral displays told us how much weaker earth's magnetic field had become, these record events in the ionosphere are the direct result of that same excess vulnerability of our planet to the sun.



It seems that every few weeks we learn of yet another way in which the May 2024 solar storm was unprecedented. The earth effects certainly were, but the solar activity that caused them was not. Like a light breeze blowing down a building... We have to ask if there was a problem with the building... That it was just waiting for a little push to fall down. Welcome to 2025.

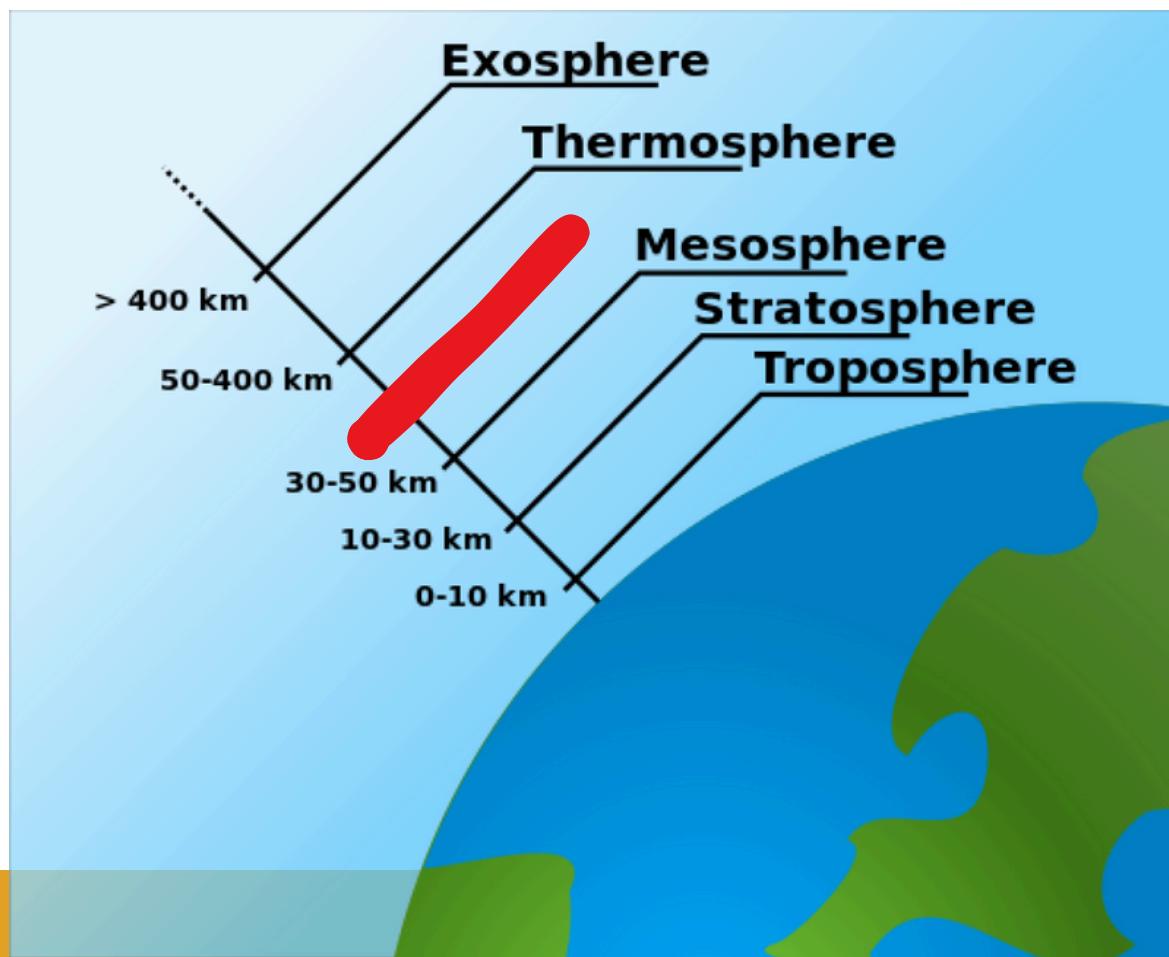
# SOLAR FORCING OF WIND

BY: BAILEY LAURISSA

ARTICLE REFERENCED:

DIAGNOSTICS OF THE SOLAR ACTIVITY INFLUENCE ON THE GLOBAL ATMOSPHERIC CIRCULATION IN THE THERMOSPHERE AND MLT AREA: WAVE–MEAN FLOW INTERACTION EFFECTS

Recent studies using advanced models like the Middle and Upper Atmosphere Model have provided fascinating insights into how solar activity influences the intricate dynamics of winds and atmospheric waves in the upper atmosphere.



**THIS STUDY FOCUSES ON THE MESOSPHERE AND LOWER THERMOSPHERE REGION, A LAYER EXTENDING BETWEEN APPROXIMATELY 50 KILOMETERS AND 120 KILOMETERS ABOVE EARTH'S SURFACE, AS WELL AS THE THERMOSPHERE ABOVE IT.**

These regions are influenced by various atmospheric phenomena, including large-scale oscillations known as planetary waves and tides driven by solar and lunar forces.

Together, these processes interact with the mean atmospheric circulation to shape global wind patterns.

Using the Middle and Upper Atmosphere Model, researchers simulated atmospheric behavior under conditions of high and low solar activity.

## A FEW KEY FINDINGS:

### CHANGES IN WAVE ACTIVITY

Let's focus on the decreased wave activity in the mesosphere and lower thermosphere. Between altitudes of 100 kilometers and 170 kilometers, activity from planetary waves diminishes during periods of high solar activity. This reduction is linked to higher temperatures, increased air viscosity, and steeper vertical temperature gradients in this region.

### INCREASED WAVE ACTIVITY AT HIGHER ALTITUDES

Above 170 kilometers, wave activity intensifies. This increase is attributed to the growing influence of atmospheric tides, which dominate over planetary waves at these altitudes.

### TIDES AS THE DOMINANT FORCE

Atmospheric tides, driven by solar and lunar gravitational forces, emerge as the primary influence in shaping the dynamics of the thermosphere during periods of high solar activity. Their amplitudes increase with solar activity, while the influence of planetary waves becomes relatively weaker.

### STRENGTHENING OF THE RESIDUAL MEAN CIRCULATION

At altitudes above 200 kilometers, the overall mean atmospheric circulation intensifies. This strengthening is driven mainly by changes in the large-scale motion of the atmosphere, known as the Eulerian circulation. These changes are linked to the increased reflection of planetary waves caused by steeper vertical temperature gradients at high altitudes.

**THE SOLAR ACTIVITY ALSO ALTERS THE TEMPERATURE STRUCTURE OF THE ATMOSPHERE, WHICH IN TURN INFLUENCES WAVE BEHAVIOR, LIKE CREATING STEEPER VERTICAL TEMPERATURE GRADIENTS IN THE THERMOSPHERE ENHANCE THE REFLECTION OF PLANETARY WAVES.**

**THIS ACTIVITY RESULTS IN SHIFTS IN WIND PATTERNS, CAUSING UP TO A 10 PERCENT VARIATION IN THE RESIDUAL MEAN CIRCULATION WITHIN THE MESOSPHERE AND LOWER THERMOSPHERE.**

# SOLAR FORCING OF RAIN

ARTICLE REFERENCED:  
ANALYZING THE INTER-ANNUAL VARIABILITY OF RAINFALL IN THE  
BRAZILIAN SEMI-ARID REGION

BY: BAILEY LAURISSA

The Brazilian semi-arid region, characterized by its harsh climate and water scarcity, faces significant challenges in sustaining agriculture and livelihoods. A groundbreaking study by researchers Francisco Monteiro, Almir Miranda Ferreira, and Rebecca Luna Lucena delves into the complex dynamics of rainfall variability in the Intermediate Geographic Region of Caicó (IGRC) in northeast Brazil. This research explores the interplay between solar cycles, oceanic patterns, and their collective impact on regional precipitation.



BRAZILIAN  
CLIMATE  
REGIONS

**Climate zones in Brazil**

- Equatorial climate (hot all year round with constant rainfall)
- Equatorial climate with a short, relatively dry season
- Tropical climate with a dry season and a rainy season
- Tropical climate with a long, very hot dry season
- Temperate tropical climate of the highlands
- Humid subtropical climate

The research examined rainfall data from 1913 to 2020, focusing on correlations between precipitation, solar activity (measured by sunspots), and major teleconnection patterns like the El Niño-Southern Oscillation (ENSO) and the Atlantic Dipole. These factors are crucial in understanding how global climatic forces shape local weather patterns.

The IGRC is part of Brazil's semi-arid region, which experiences intermittent and often unpredictable rainfall. The region's vulnerability to drought underscores the importance of understanding the factors influencing rainfall patterns.

The study revealed a weak negative correlation (-0.2) between solar activity, indicated by sunspots, and rainfall over the long term (1913–2020). This means that periods of higher solar activity slightly coincide with reduced rainfall, though the relationship is not strong.

A stronger correlation was observed between ENSO phases and rainfall. Specifically, regions Niño 1+2 and Niño 3 of ENSO showed correlations of 0.4 and 0.3, respectively, suggesting that El Niño and La Niña events significantly influence rainfall in the region.

The Atlantic Dipole and Sea Surface Temperatures (SSTs) in the North Atlantic also showed a moderate positive correlation with rainfall, emphasizing the oceans' role in modulating the regional climate.

The findings highlight the multifaceted nature of climate systems. Solar activity, ocean temperatures, and atmospheric conditions interact in complex ways, affecting rainfall patterns.

### **BRAZILIAN SEMI-ARID REGION FINDINGS**

#### **ENSO EVENTS**

El Niño phases often suppress rainfall, while La Niña enhances it, directly impacting agriculture and water availability.

#### **ATLANTIC DIPOLE**

Changes in the Atlantic Ocean's temperature gradients further influence regional climate dynamics.

### **THE STUDY OF RAINFALL VARIABILITY IN NORTHEAST BRAZIL SERVES AS A MODEL FOR OTHER REGION AS WE LOOK INTO SOLAR FORCING OF RAINFALL MORE.**

# SOLAR FORCING OF TEMPERATURE AND PRESSURE

BY: BAILEY LAURISSA

LATITUDINAL FEATURES OF TROPOSPHERIC RESPONSE TO 27-DAY CYCLIC VARIATIONS OF SOLAR ACTIVITY

ARTICLE REFERENCED:

This article delves into the findings of a recent study examining the effects of 27-day cyclic variations in solar activity on the troposphere, the atmospheric layer closest to Earth. The study reveals intriguing connections between solar ultraviolet (UV) radiation and variations in temperature, pressure, and wind patterns, offering insights that could refine weather forecasting and our understanding of Earth's atmospheric dynamics. Solar activity follows a repeating 27-day cycle as the sun rotates on its axis. During this period, areas of heightened solar UV radiation periodically align with Earth. This solar forcing can influence atmospheric parameters, particularly through variations in UV radiation at a wavelength of 205 nm, which directly impacts the upper and lower layers of the atmosphere. The researchers analyzed 20 such 27-day solar cycles across a latitude range of 0° to 80°N, focusing on four longitudes: 30°E, 180°E, 240°E, and 330°E. Atmospheric data from the NOAA Physical Sciences Laboratory were used, including parameters such as, Sea level pressure, Tropospheric temperature at 1000 hPa pressure, Stratospheric temperature at 50 hPa pressure, and Zonal wind speeds.

Sea level pressure exhibited notable cyclic variations, reaching up to 12 hPa, particularly in mid- and high-latitude regions. Tropospheric temperatures showed changes as large as 5.3 K, while stratospheric temperatures varied up to 3.5 K, with a relative amplitude of around 1.3% closely correlating with solar UV radiation fluctuations at a wavelength of 205 nm. Interestingly, anti-phase behavior was observed in temperature variations between the troposphere and stratosphere—when one layer warmed, the other cooled. Similarly, pressure patterns between continents and oceans displayed anti-phase changes, highlighting the geographical influence on solar forcing effects.

The study also identified a shift in tropopause height of approximately 1 km, marking a transition zone where temperature changes reversed with altitude. Furthermore, stratospheric zonal wind speeds at 60°N exhibited dramatic fluctuations, with variations reaching tens of percent, underscoring the sensitivity of atmospheric circulation to solar forcing. Notably, these solar effects persisted across seasons, being strongest during winter but still observable in summer, albeit with reduced amplitude.

The study attributes the observed atmospheric responses to the role of Rossby waves—large-scale planetary waves that govern weather patterns and atmospheric circulation. These waves act as mediators of solar forcing, propagating the effects of UV radiation fluctuations across the globe. The findings underscore the troposphere's sensitivity to even small changes in solar radiation. This sensitivity is amplified by stratosphere-troposphere interactions, where energy exchange between these layers magnifies the solar signal.

# PRE-EARTHQUAKE SIGNALS

BY: BAILEY LAURISSA

ARTICLE REFERENCED:

- [HTTPS://WWW.MDPI.COM/2072-4292/16/22/4162](https://www.mdpi.com/2072-4292/16/22/4162)
- [HTTPS://AGUPUBS.ONLINELIBRARY.WILEY.COM/DOI/FULL/10.1029/2024EA003687](https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2024EA003687)
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## THESE HIGHLIGHTED STUDIES EXPLORE PRE-EARTHQUAKE SIGNALS SHOWING PROMISING INSIGHTS INTO THE INTERACTIONS BETWEEN THE EARTH'S SUBSYSTEMS.

Anomalies in ionospheric electron density, air temperature, electromagnetic (EM) signals, and other parameters have been identified as potential precursors to seismic activity. I explore and synthesize the findings from six recent studies, highlighting the multi-layered nature of earthquake precursors and the advances in detection techniques that help us aid in this field of study.

### HOW TO IONOSPHERE PLAYS A ROLE

The ionosphere, a charged layer of the atmosphere, reacts to disturbances in the Earth's crust caused by tectonic stress. The ionosphere's Total Electron Content (TEC) has emerged as a reliable parameter for detecting earthquake precursors. TEC anomalies, characterized by significant deviations from expected levels, were observed 20–40 days before major earthquakes in Japan and China.

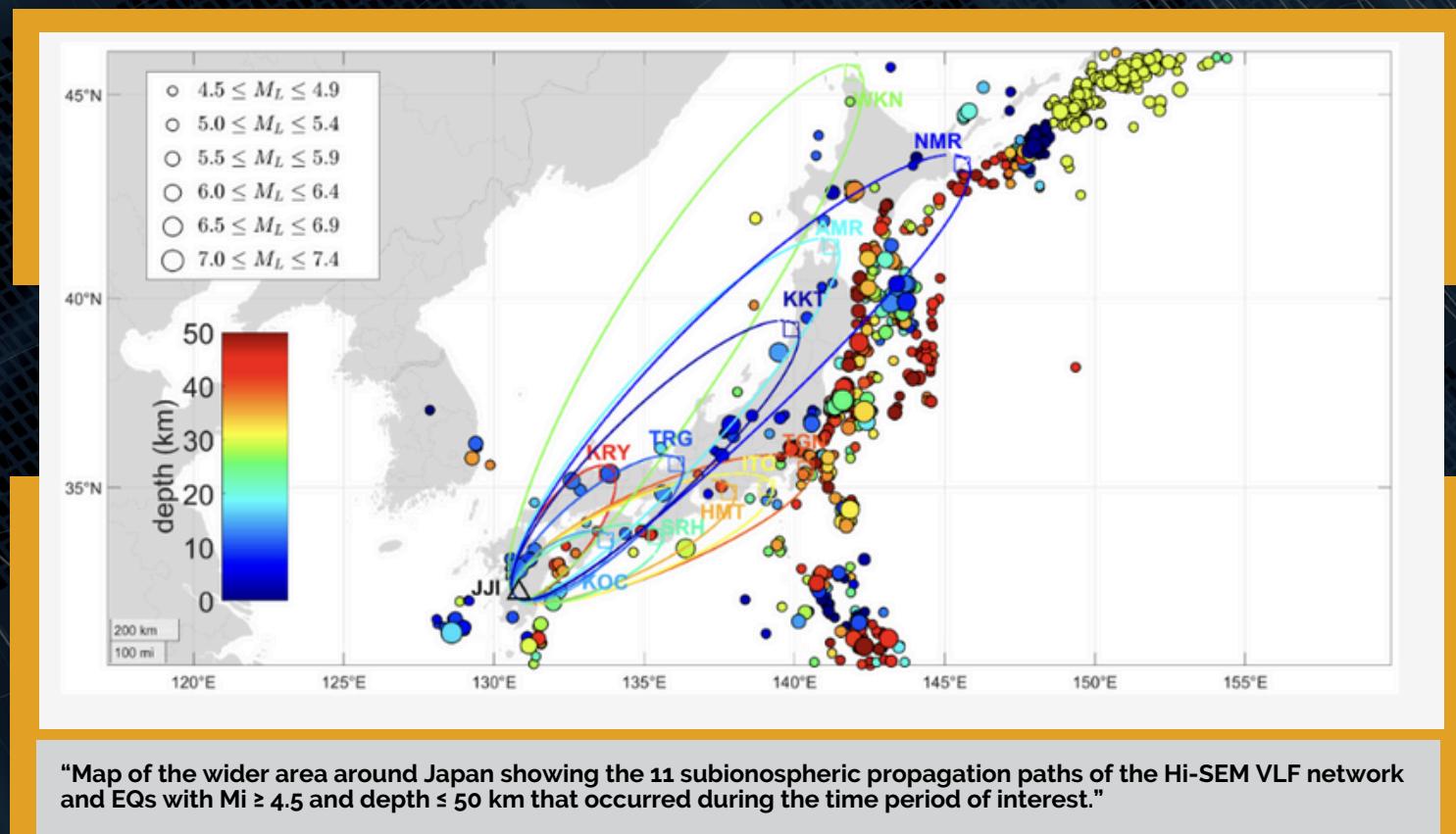
The Noto Peninsula Earthquake in (2024) showed a localized TEC decline exceeding 5 TECU that was detected 22–23 days prior to the Mw 7.5 event, aligning with Dobrovolsky's theoretical earthquake preparation radius.

Dobrovolsky's theoretical earthquake preparation radius refers to the area around the epicenter of an earthquake where physical or geophysical precursors to the event might occur. In addition, the Maduo Earthquake in 2021 recorded anomalies in electron density that were collected 40 days before the Mw 7.3 earthquake, exhibiting patterns of "appearance-continuation-disappearance."

These studies confirm the spatial coherence of TEC anomalies within earthquake preparation zones and underscore the value of advanced statistical methods, such as the Improved Pattern Informatics method, for identifying these perturbations.

**IN ADDITION, LOW-FREQUENCY RADIO SIGNALS, TRANSMITTED FROM THE GROUND AND REFLECTED BY THE IONOSPHERE, ARE SENSITIVE TO CHANGES IN IONOSPHERIC CONDITIONS CAUSED BY SEISMIC ACTIVITY.**

**A SIX-YEAR STUDY IN JAPAN ANALYZED THE TIMING SHIFTS IN SIGNAL PATTERNS AND FOUND THAT THESE SHIFTS OFTEN OCCURRED ONE TO SEVEN DAYS BEFORE EARTHQUAKES.**



The role of solar activity, a key driver of ionospheric variability, was also meticulously examined. Data on solar flares—categorized as C-, M-, and X-class events—were obtained.

To provide a broader context, the researchers analyzed the 13-month smoothed sunspot number, a reliable indicator of solar cycle phases, obtained from the World Data Center for Sunspot Index and Long-Term Solar Observations.

At the beginning of the study period, sunspot numbers approached their peak, gradually declining toward their minimum by the end of the observation window. This trend is mirrored in the declining frequency of solar flares over the same period, confirming the weakening solar activity.

**THE INTEGRATION OF GEOMAGNETIC AND SOLAR ACTIVITY DATA INTO THE ANALYSIS OF VERY LOW FREQUENCY (VLF) SIGNAL ANOMALIES STRENGTHENS THE UNDERSTANDING OF THEIR CONNECTION TO SEISMIC EVENTS. DURING GEOMAGNETICALLY CALM PERIODS, THE IONOSPHERIC DISTURBANCES OBSERVED PRIOR TO EARTHQUAKES ARE MORE LIKELY TO BE ATTRIBUTED TO TECTONIC STRESS RATHER THAN EXTERNAL GEOMAGNETIC OR SOLAR INFLUENCES.**

For example, the study highlighted a consistent pattern of VLF terminator time shifts occurring 1 to 7 days before earthquakes of magnitude 4.5 or greater, particularly under low geomagnetic activity conditions.

The temporal alignment of ionospheric anomalies with low Dst and Kp indices, coupled with the decreasing influence of solar activity, underscores the tectonic origin of these disturbances. This refined analysis enables researchers to filter out noise from geomagnetic storms and solar flares, isolating the seismogenic signals that may serve as reliable earthquake precursors.

**THEN, WE BRING OUR ATTENTION TO THE ATMOSPHERE AND PRESSURE VARIATIONS IN RELATION TO PRE-CURSOR SIGNS.**

Thermal anomalies in the atmosphere have been documented as significant precursors to earthquakes.

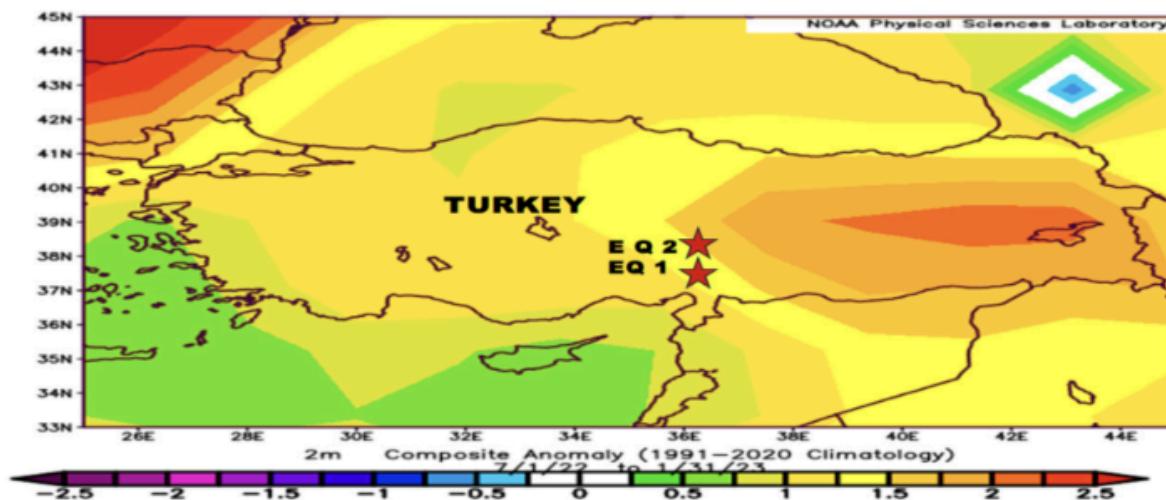
**BEFORE THE MAGNITUDE 6.9 EARTHQUAKE IN HUALIAN, TAIWAN, IN 2022, AIR TEMPERATURE NEAR THE EPICENTER ROSE SHARPLY.**

These anomalies began six days before the event and peaked five days prior, with the strongest changes observed at the surface and gradually weakening at higher altitudes.

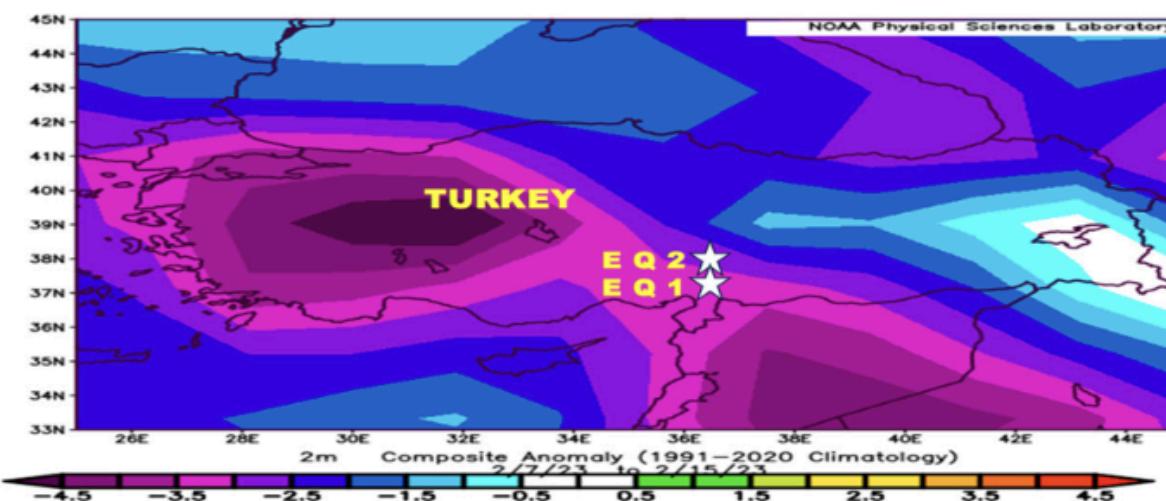
Stable weather conditions during this period supported the conclusion that the anomalies were caused by tectonic activity rather than meteorological factors.

## THE OBSERVER REVIEW

In the Kahramanmaraş region of Turkey, more researchers analyzed the outgoing long-wave radiation and air pressure data preceding two major earthquakes in 2023. Between July 2022 and February 2023, NOAA satellite data recorded a positive anomaly in air temperature at 2 m height, ranging from 1.5°C to 2.7°C above the 1991–2020 climatological baseline in that region. Anomalies in long-wave radiation were observed several weeks before the seismic events, while unusual air pressure patterns developed closer to the main shocks. This anomaly was confined within the Dobrovolsky area and was absent in the prior three years under non-seismic conditions. Likewise, they reflect stress-induced changes in the subsurface, which propagate upward and impact atmospheric parameters.



"NOAA positive composite anomaly map of air temperature at 2 m height AT for Pazarcık (EQ1) and Elbistan (EQ2) earthquakes in Türkiye between July 2022 and 6 February 2023. (Red stars represent focal points of the earthquakes.)"

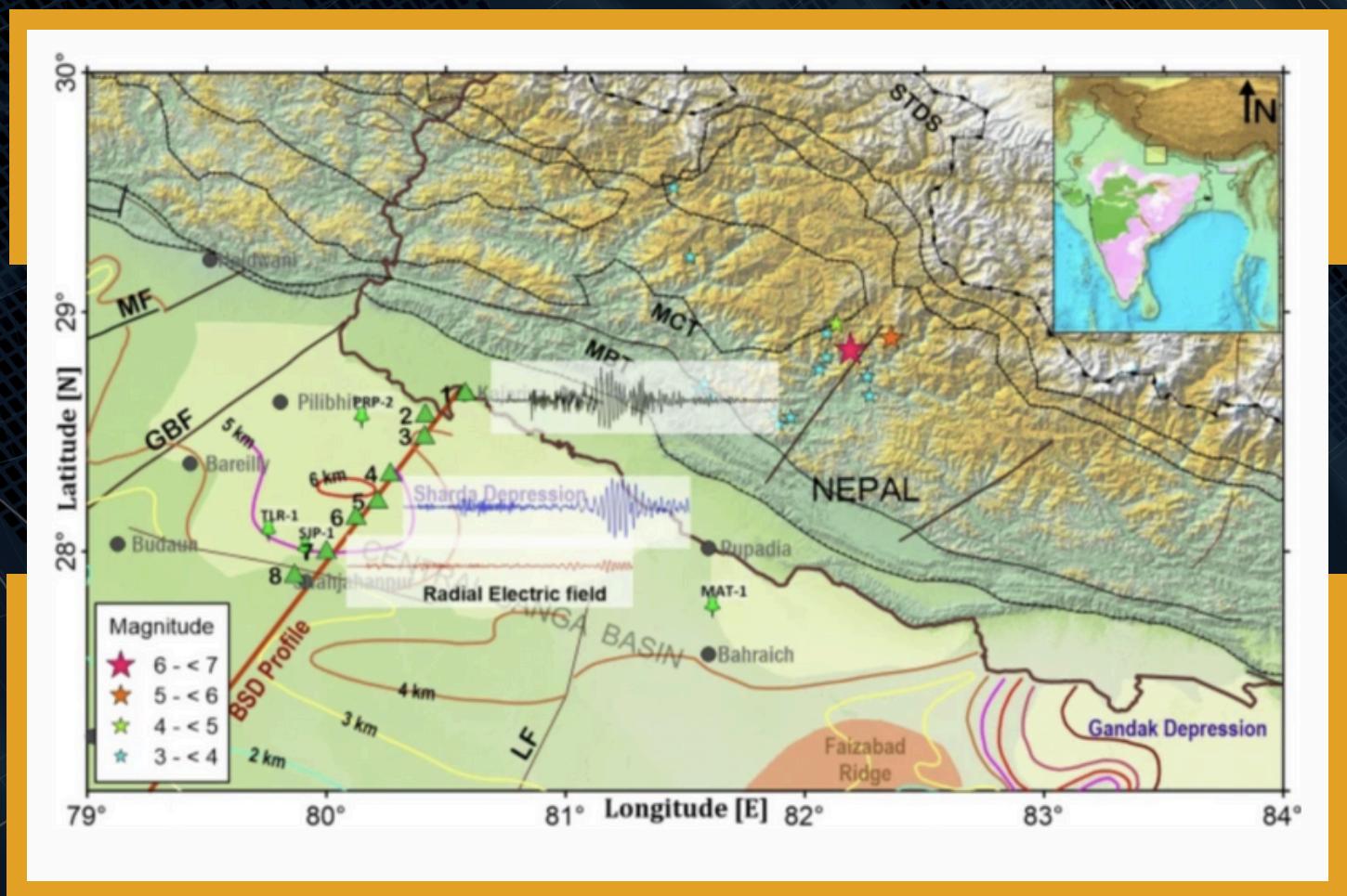


"3. NOAA negative composite anomaly map of air temperature at 2 m height AT after Pazarcık (EQ1) and Elbistan (EQ2) earthquakes in Türkiye during 7 February 2023 and 15 February 2023 (white stars represent focal points)."

Now, let's talk about electromagnetic signals as signs - something we are all very familiar with. Electromagnetic signals are seen generated in the Earth's crust during the final stages of fault rupture.

During the magnitude 6.4 earthquake in Nepal in 2023, researchers detected two low-amplitude peaks in electric field data that occurred 70 and 43 seconds before the event. These signals were observed across a network of monitoring stations and are believed to be caused by fast-propagating electromagnetic waves generated just before the rupture.

A setup of eight LMT stations was operational along a 120-km segment of the BSD profile in the northern Ganga Basin during the earthquake and its aftershocks.



Furthermore, the amplitude of these electromagnetic signals decreased significantly during the aftershock of magnitude 5.6, highlighting the dependence of signal strength on earthquake magnitude and the geological characteristics within the region.

By combining ionospheric total electron content measurements, very low frequency signal analysis, atmospheric monitoring, and electromagnetic detection, researchers are gaining a deeper understanding of the processes leading up to earthquakes.

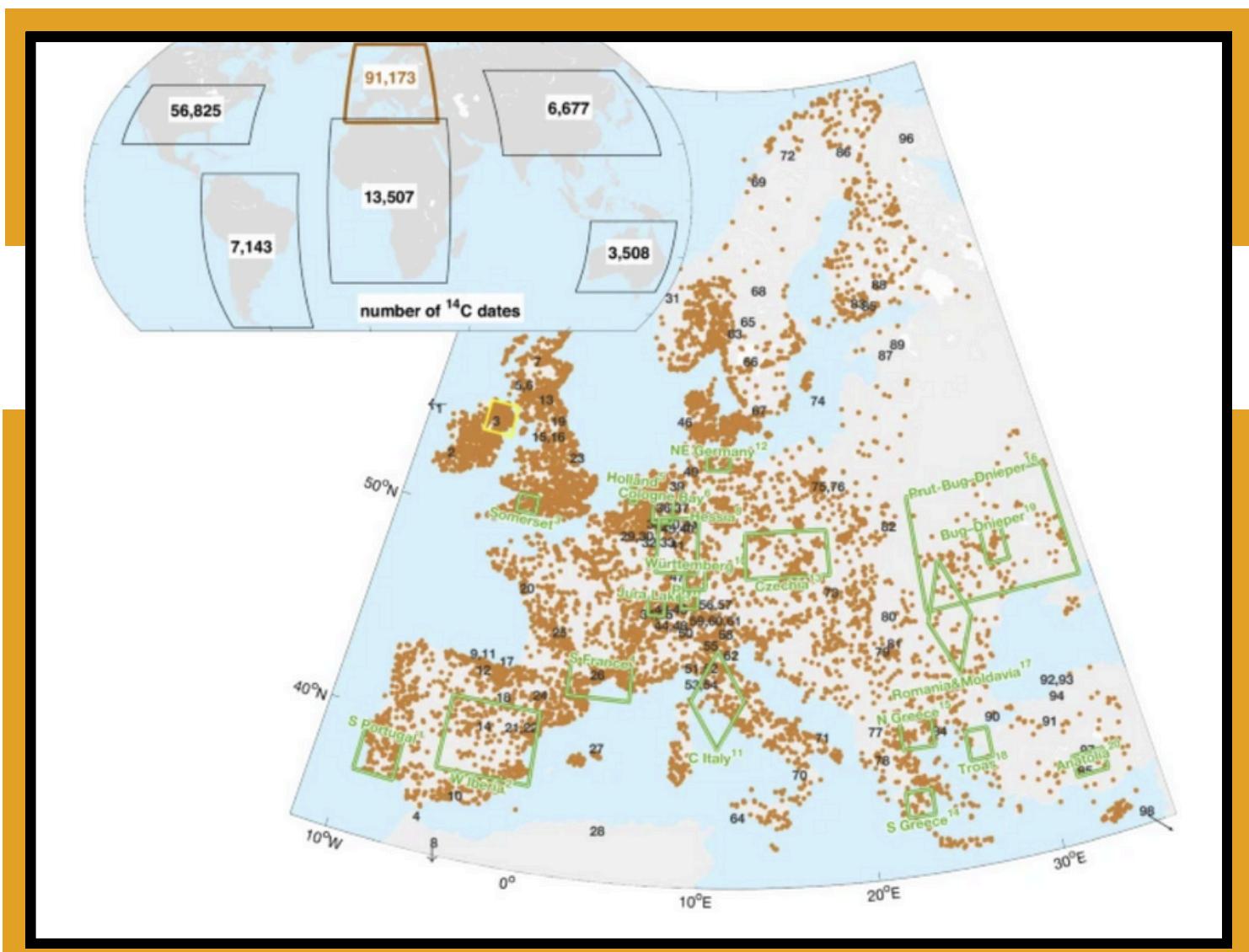
# CIVILIZATION AND THE SUN

## ARTICLE REFERENCED:

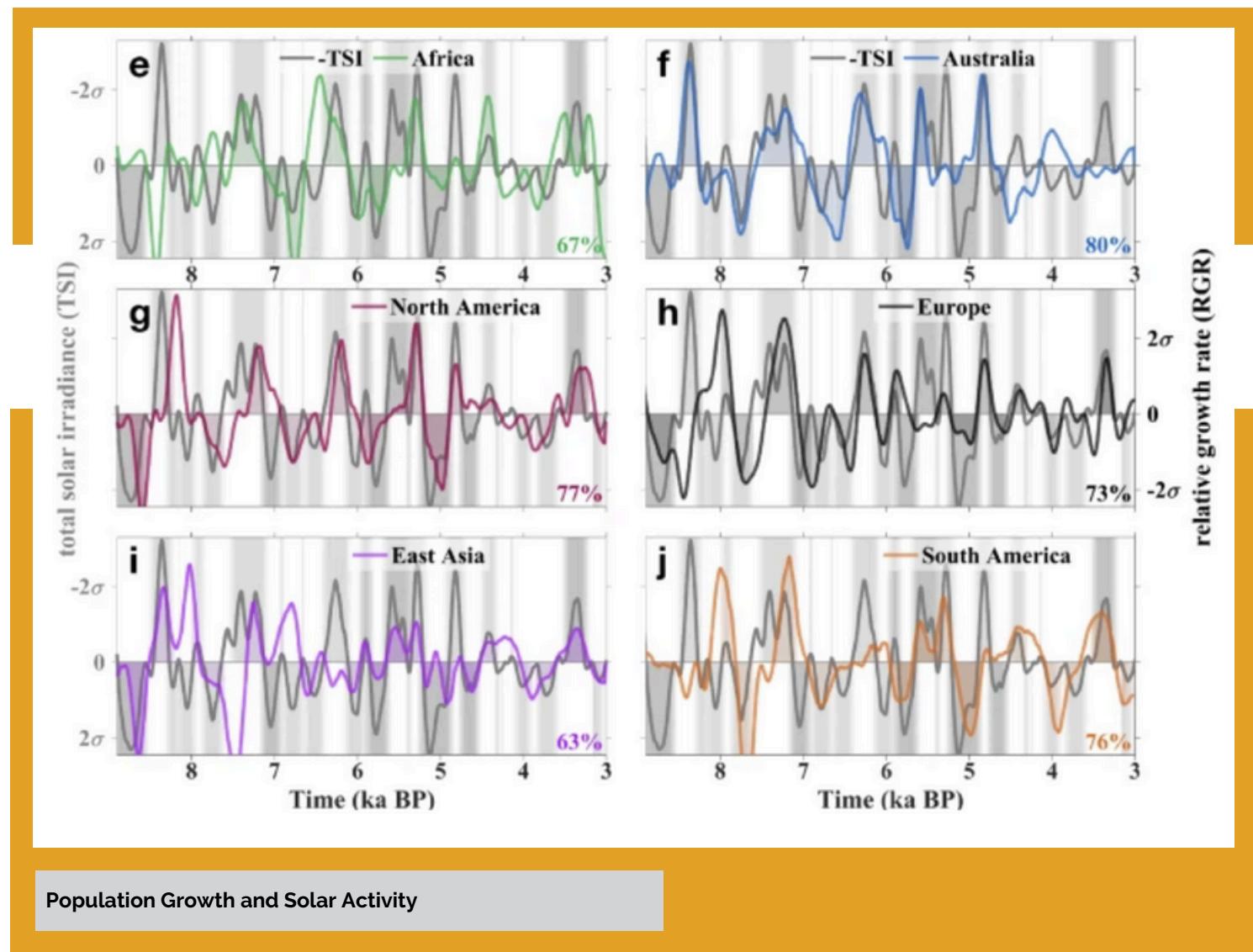
### MULTICENTENNIAL CYCLES IN CONTINENTAL DEMOGRAPHY SYNCHRONOUS WITH SOLAR ACTIVITY AND CLIMATE STABILITY

BY: BAILEY LAURISSA

The relationship between human civilization and the environment is a topic that has garnered our attention for millennia. A groundbreaking study delves into this relationship by analyzing population growth cycles over thousands of years in the context of solar activity and climate stability. The findings reveal a remarkable synchronization between multi centennial population cycles and solar activity across all inhabited continents. This research highlights how the Sun's behavior indirectly shaped human societies by influencing climate stability, which, in turn, affected agricultural success and subsistence patterns.



Using radiocarbon dating, researchers reconstructed human population dynamics from 9,000 to 3,000 years before the present (BP). Across Europe, Asia, Africa, the Americas, and Australia, they observed recurring "boom-bust" cycles of demographic growth lasting 400–800 years. Notably, these cycles exhibited similar frequencies and timing across continents, suggesting a shared underlying driver.

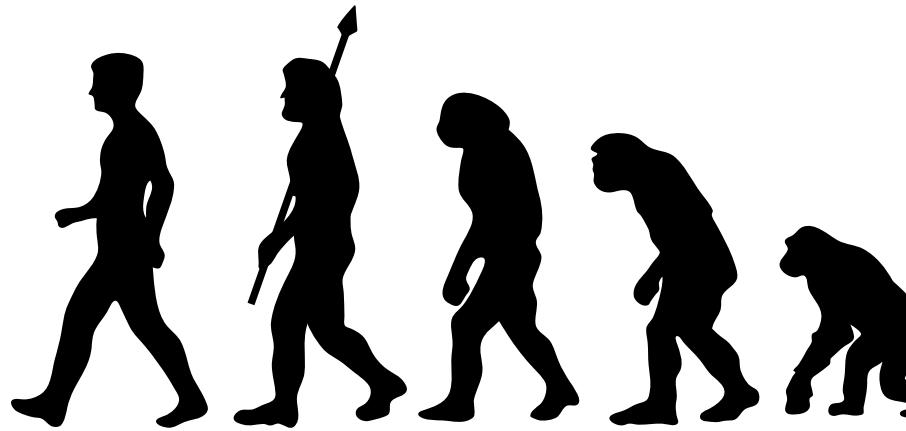


The researchers identified a strong correlation between these demographic cycles and variations in solar activity, as represented by total solar irradiance (TSI). During periods of stable climate, influenced by relatively consistent solar activity, human populations thrived.

In contrast, instability—whether from solar fluctuations or climatic shifts—led to subsistence challenges, increasing mortality and societal disruptions.

A key insight from the study is that climate stability, rather than specific climatic conditions (e.g., colder or warmer periods), played a more critical role in sustaining population growth.

Stable conditions allowed societies to adapt their agricultural practices and subsistence strategies effectively, reducing the risk of widespread famine or societal collapse.

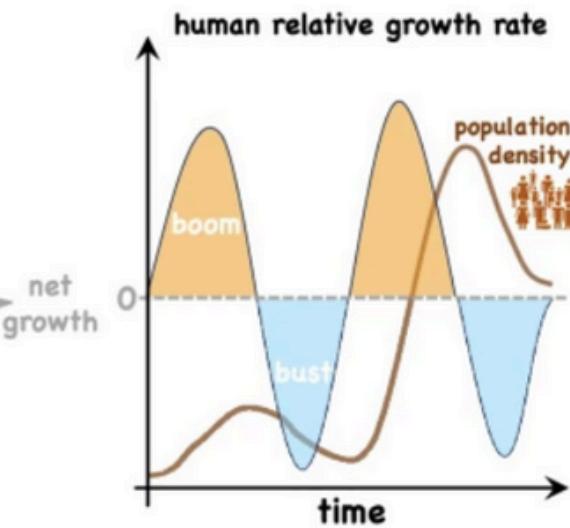
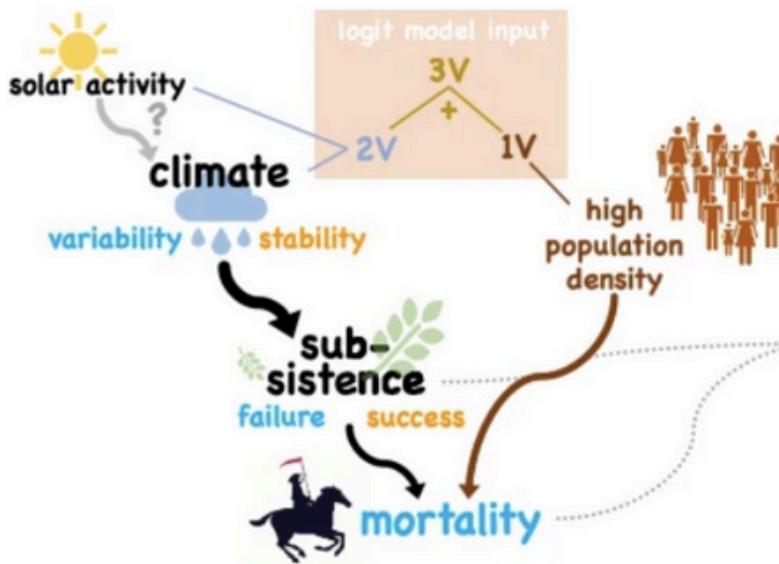


For example, in Europe, the researchers found that periods of population growth coincided with high climate stability, regardless of whether the climate was warm or cold. The 4,200-year dry event, a significant climatic shift, occurred during a period of positive population growth in Southern Europe, suggesting that stability in climatic trends was more important than the direction of change.

Furthermore, it's worth noting that high population densities, typically following a "boom," made societies more vulnerable to environmental and social stressors, leading to subsequent "bust" phases.

Human populations on all continents exhibited synchronized growth cycles. This global synchrony aligns with solar activity patterns, underscoring the Sun's indirect yet profound influence on human societies.

**THE DATA ALSO HIGHLIGHTS THE RESILIENCE OF HUNTER-GATHERER, AGRICULTURAL, AND PASTORALIST COMMUNITIES, ALL OF WHICH RESPONDED SIMILARLY TO THESE MULTI CENTENNIAL SOLAR CYCLES.**

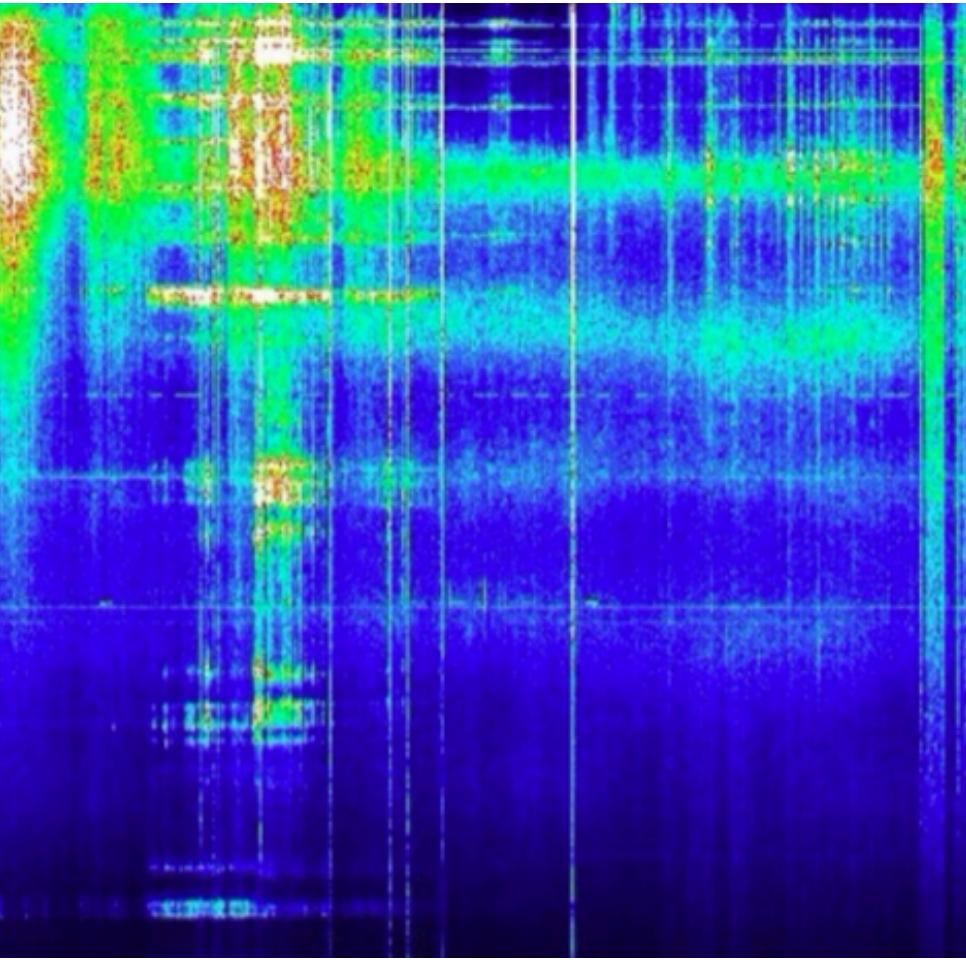


# MAGNETIC POLE SHIFT & CANCER

BY: BEN DAVIDSON

ARTICLE REFERENCED:

STUDY OF THE INHIBITION OF SCHUMANN RESONANCE-INSPIRED ELECTROMAGNETIC FIELD ON CANCER CELL PROLIFERATION



An interesting new study is suggesting a fascinating correlation between the Schumann resonance and cancer. I personally find this one to be highly intriguing, which is unusual for me. 99% of the things you hear about the Schumann resonance online are complete nonsense, and the ones that aren't are usually a function of down-the-line effects. What does that mean?

Let's say you notice that every time the ground is wet, so if your roof. You begin to ask if one causes the other, but you never think about the rain. That's usually what's happening - the resonance and whatever-else is being compared (health outcomes, earthquakes, weather events, etc.) are ringing the bell because of something else electromagnetic impacting them both.

That is NOT the case in this new study. Here, instead of monitoring the resonance and tying it to earth events, they created perfect Schumann Resonance and imperfect resonance environments. So whatever was happening was only from exposure to the energy of the resonance and not something external.

**NORMAL CELLS: NO EFFECT.**

**CANCER CELLS: APOPTOSIS AND CELL DEATH.**

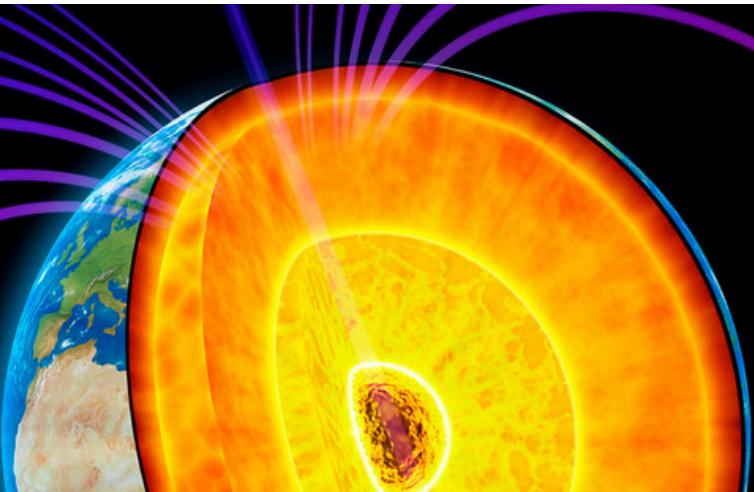
What does this mean? Two things come quickly to mind. First, all the human-made EMF that isn't on the earth's existing spectrum is bad for us. Second, as earth's magnetic field changes, those natural frequencies are changing too - is that a bad sign for the next 20 to 40 years?

# A "NEW" VISCOSITY LAYER

BY: BEN DAVIDSON

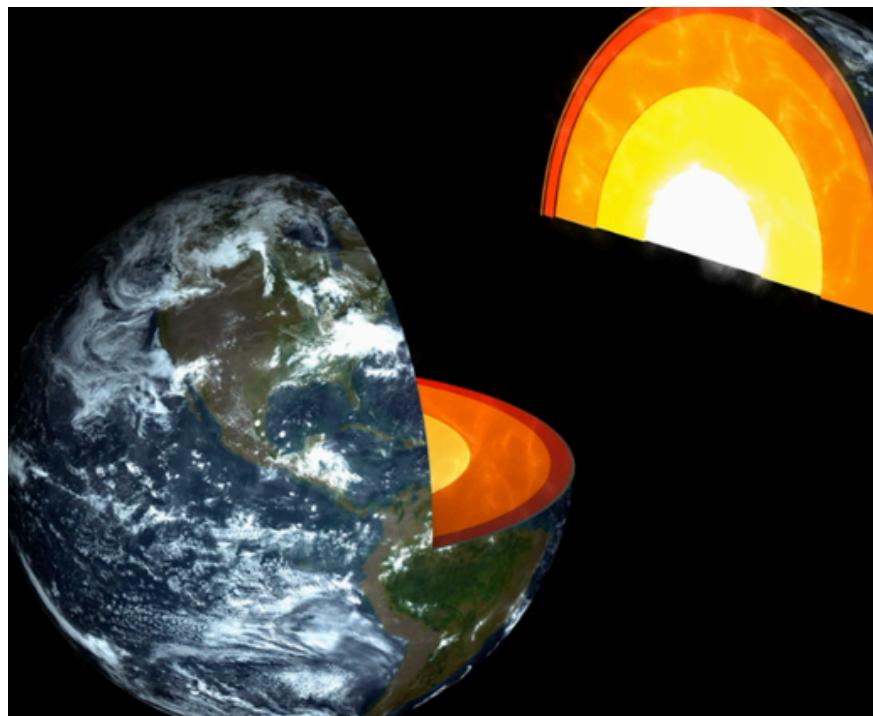
ARTICLE REFERENCED:

SCIENTISTS MAY HAVE FOUND ANOTHER VISCOSITY SHIFT IN THE MANTLE



## IS THERE A NEW LAYER OF THE EARTH?

There is another newly discovered layer boundary within the earth. Almost everyone knows about the crust, mantle and core layers, but there are others that many people don't know about. Rather than being about solid or liquid rock, these other layers are about viscosity, or the movement of the fluid against itself.



These "viscosity layers", denoting significant shifts in chemistry and pressure/temperature reactions, are found at the top of the mantle, 410 kilometers down, 660 kilometers down, and again deep within the core.

This new study has discovered a clear signature of a layer at about 1000 kilometers deep as well. This is both amazing and disturbing. Looking at the data, there is no doubt it's there. But the type of analysis that would reveal it has been done literally 10s of 1000s of times. The seismic wave science that is the basis for all we know about the earth's interior is the same type of science showing this layer.

## MAJOR POSSIBILITY

The Earth is changing within. My implication is that this layer is not just newly discovered... It's literally new. Like the Mars mantle that mysteriously is active after we believed it was dead forever. This probably isn't an example of "we were wrong before", but rather an example of "things are different now."

# ANTS NAVIGATE MAGNETICALLY

BY: BAILEY LAURISSA



**ARTICLE REFERENCED:**  
DESERT ANTS USE THE POLARITY OF THE GEOMAGNETIC FIELD FOR NAVIGATION

"Desert ants can return to their nest from great distances in a straight line, even though they cannot see the entrance, which is only a hole in the ground. During so called learning walks, the insects use the North-South direction of the magnetic field to determine the direction of the entrance."

Ants are remarkable navigators, and this article has shed light on their ability to use the Earth's magnetic field as a compass.

A study led by Dr. Pauline Fleischmann from the University of Oldenburg, published in *Current Biology*, has revealed that desert ants of the species *Cataglyphis nodus* utilize the Earth's magnetic field for spatial orientation. However, their mechanism is distinct from that of other insects such as monarch butterflies, which rely on the angle inclination of the magnetic field lines relative to Earth's surface. Instead, these ants respond to the polarity of the magnetic field in the north/south direction. This distinction showcases that desert ants rely on magnetic particles, like iron oxide magnetite, embedded in their sensory or nerve cells. This particle-based magnetic sense functions similarly to a compass needle, pointing toward magnetic north. This is an alternate form of magnetoreception that contrasts with the light-dependent quantum radical-pair mechanism observed in other species like songbirds.

So, how did they discover this? The researchers conducted experiments using colonies of desert ants from Greece. Ants were exposed to manipulated magnetic fields created by Helmholtz coils, simulating various inclinations and polarities of the geomagnetic field. During their learning walks, which were initial exploratory trips from their nest, ants memorized the nest's location by aligning their gaze with the magnetic field. When researchers reversed the polarity, the ants misjudged the nest's location, confirming their reliance on this magnetic component for orientation. Something also to note, these changes to the inclination of the magnetic field had no observable effect on their behavior. Understanding these mechanisms is crucial because they reveal how species interact with the Earth's magnetic field, an invisible but critical navigational aid as we know.

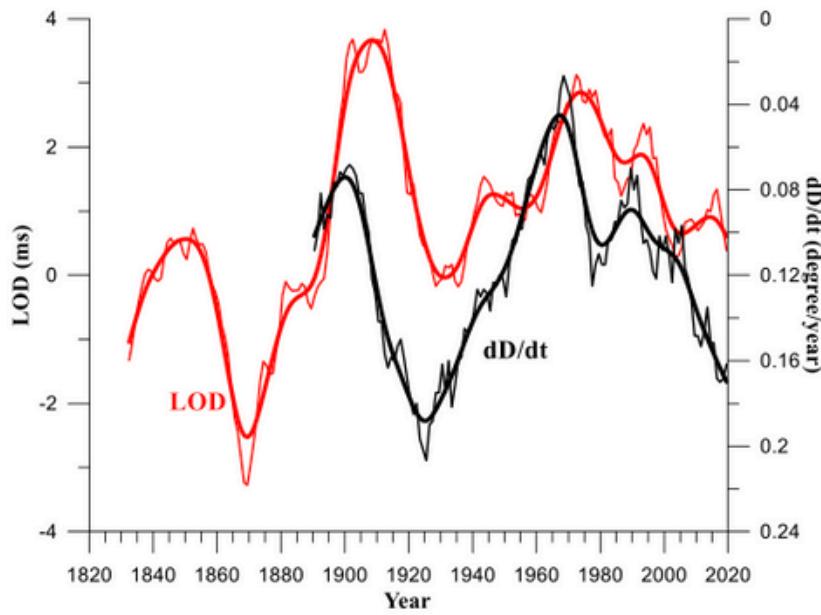
So, as the pole shift continues to speed up, how will this affect the animal kingdom? The pole shift would cause widespread disorientation for the ants. For other species, changes in the angle of magnetic field lines during a pole shift could similarly disrupt navigation for birds and insects that use the radical-pair mechanism. Such shifts will disrupt migration patterns, feeding behaviors, and habitats for these animals, ultimately adding to the list of things humans will need to adjust to.

# GEOMAGNETIC EARTH ROTATION

ARTICLE REFERENCED:  
 THE GEOMAGNETIC FIELD AND THE EARTH'S ROTATION CONNECTION AT SUB-CENTENNIAL AND INTER-DECADAL TIMESCALES

BY: BEN DAVIDSON

One of the best papers of the last month aimed squarely at something in our books but which we rarely discuss on YouTube - the relationship between rotation of the earth, and the earth's magnetic field.



"Comparison of LOD data (red) to geomagnetic data (black), in terms of annual means (thin lines) and trends (thick lines)."

We have seen various studies in the past showing that space weather and geo-dynamic parameters impact earth's rotation speed. These include solar flares, geomagnetic storms, and geomagnetic excursions/reversals.

This new study is important because it confirms the hypothesis that the current earth rotation speed, which is breaking fast marks and speeding up, is doing so because we are seeing the geomagnetic excursion unfolding.

Earth has always been between 24 hours and "24 hours and a couple milliseconds" in terms of rotation speed, which is why we need to add leap seconds every few years. However, in 2020, for the first time, earth averaged faster than 24 hours (a few milliseconds less) and broke the "fastest single rotation day" 28 times. Earth broke that record again in 2022 and 2024, with each year since 2020 being slightly faster than 24 hours.

Whether you look to the Bible or the ancient stories from India, changes in the length of day (rotation speed of Earth) are a major part of the great disaster events on earth. Our magnetic field is tied to earth's rotation, our magnetic field is changing - this is not rocket science.

# PLASMA PENETRATION GETTING WORSE

ARTICLE REFERENCED:

[EFFECTS OF NORTH MAGNETIC POLE DRIFT ON PENETRATION](#)  
[ALTITUDE OF CHARGED PARTICLES](#)

BY: BEN DAVIDSON

In 2022 we saw the first major study attempting to track the penetrating particles from the sun, to see if they were making it deeper into earth's atmosphere, past earth's magnetic field. They found that it was - that earth's magnetic pole shift was starting to change the earth radiation environment.

## KEY FINDINGS

A new study has made two interesting findings. First, it found the general increase in plasma penetration, confirming what had been predicted for many years, and observed two years earlier. The particles are the forcing mechanism for the sun's impact on the ozone layer, jet streams, the global electric circuit and large-scale oscillations and circulations.

The second thing they discovered was that a few select areas are actually seeing particle penetration drop down. These are the areas where the magnetic poles have moved, but where the magnetic poles were not found before.

**THE STRONGEST MAGNETIC PROTECTION FOR A PLANET WILL ALWAYS BE THE MAGNETIC POLES, WITH THE EXCEPTION OF SPECIAL PROTON EVENTS FROM THE SUN, SO THE AREAS WHERE THE SHIFTING MAGNETIC POLES ARE FOUND NOW ARE ACTUALLY ENJOYING A TINY BIT MORE PROTECTION THAN THEY HAD BEFORE.**

Pole shift confirmed, plasma penetration exacerbation confirmed.

## BY THE NUMBERS

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#### LAST MONTH:

**786,664 SUBSCRIBERS**  
**264,058,566 LIFETIME VIEWS**

#### THIS MONTH

**788, 735 SUBSCRIBERS**  
**266,135,605 LIFETIME VIEWS**

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ABOUT SPACE AND OUR GREATER COSMOS.**

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