



*OBSERVER*

*REVIEW*

**SEPTEMBER 2024**

## MEET THE CONTRIBUTORS



### BEN DAVIDSON

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 and Kat Davidson 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 LAURISSA

Bailey has worked with Ben and Kat for five years and has been an Observer since 2012. 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!



### KAT DAVIDSON

Kat has published a series of three children's books (Kira and Lulu Visit the Sun, Planets and Milky Way)! She also has co-hosted the annual conference series, Observing The Frontier, providing a forum for researchers to share their insights, student sessions, and social events. Her sights are now set on fostering the Observer Ranch community.



### ADRIAN D'AMICO

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.

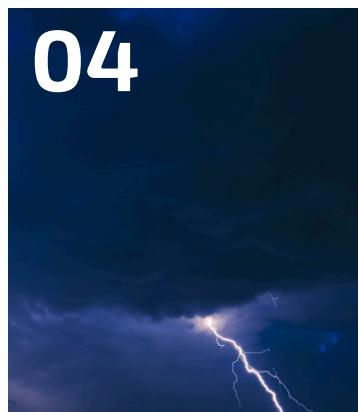
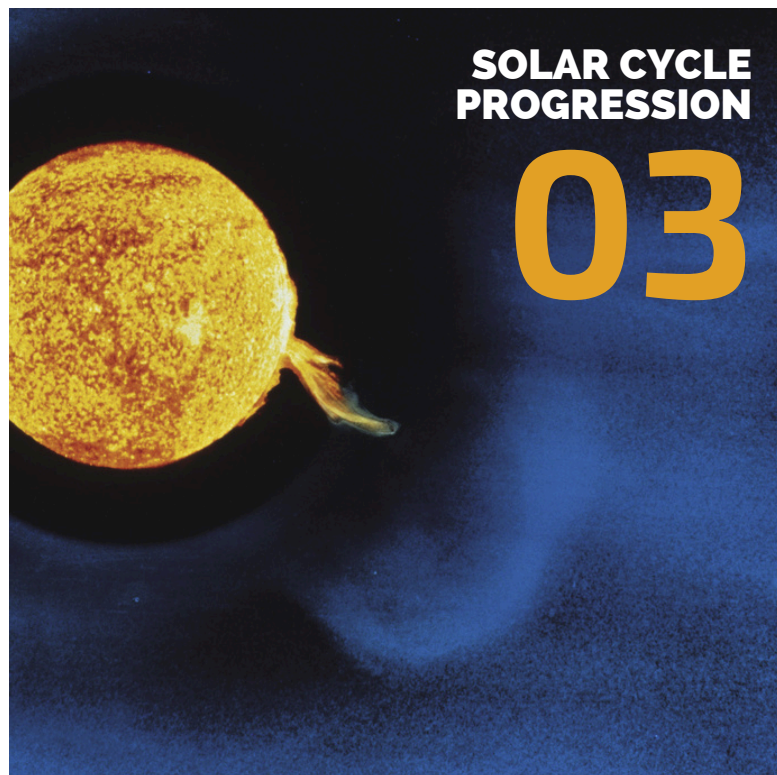
## THE OBSERVER REVIEW

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)



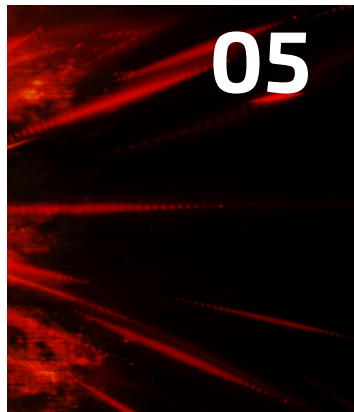
# CONTENTS

## SEPTEMBER



### **SOLAR FORCING OF EXTREME PRECIPITATION**

Solar forcing happens when variations in the Sun's energy output affect Earth's climate. The Sun's energy, called total solar irradiance (TSI), fluctuates in cycles.



### **SOLAR HYDROCLIMATE CONNECTION**

One such study, "Solar Modulation of the Western Tropical Pacific Hydroclimate Over the Last 1200 Years," sheds light on how solar activity influences rainfall patterns in the western tropical Pacific.

## FEATURED ARTICLES

### **07 THE SUN, CORE, CLOUDS AND CLIMATE**

### **09 MAGNETIC SHRIMP**

### **10 PRE-EARTHQUAKE SIGNALS**

We looked at five articles on pre-earthquake signals, analyzing a wide spectrum of approaches and insights, covering physical, atmospheric, ionospheric, magnetic, and machine learning-based earthquake precursors.

### **12 SOLAR OZONE DESTRUCTION**

### **13 DARK OXYGEN**

Dark Oxygen - it sounds like a science fiction movie title. For the first time scientists have discovered a natural Oxygen-production process.

### **14 RECORD ATLANTIC COOLING**

Usually when we get big news that conflicts with the mainstream climate narrative, it ends up not making big news at all.

### **15 GLOBAL AMBIPOLAR ELECTRIC FIELD**

The global electric circuit is one of the most-discussed geophysical phenomena on our channel, in our books, and here in this publication. It is the vehicle for space energy (from the sun and cosmic rays) to permeate and impact the entire atmosphere.

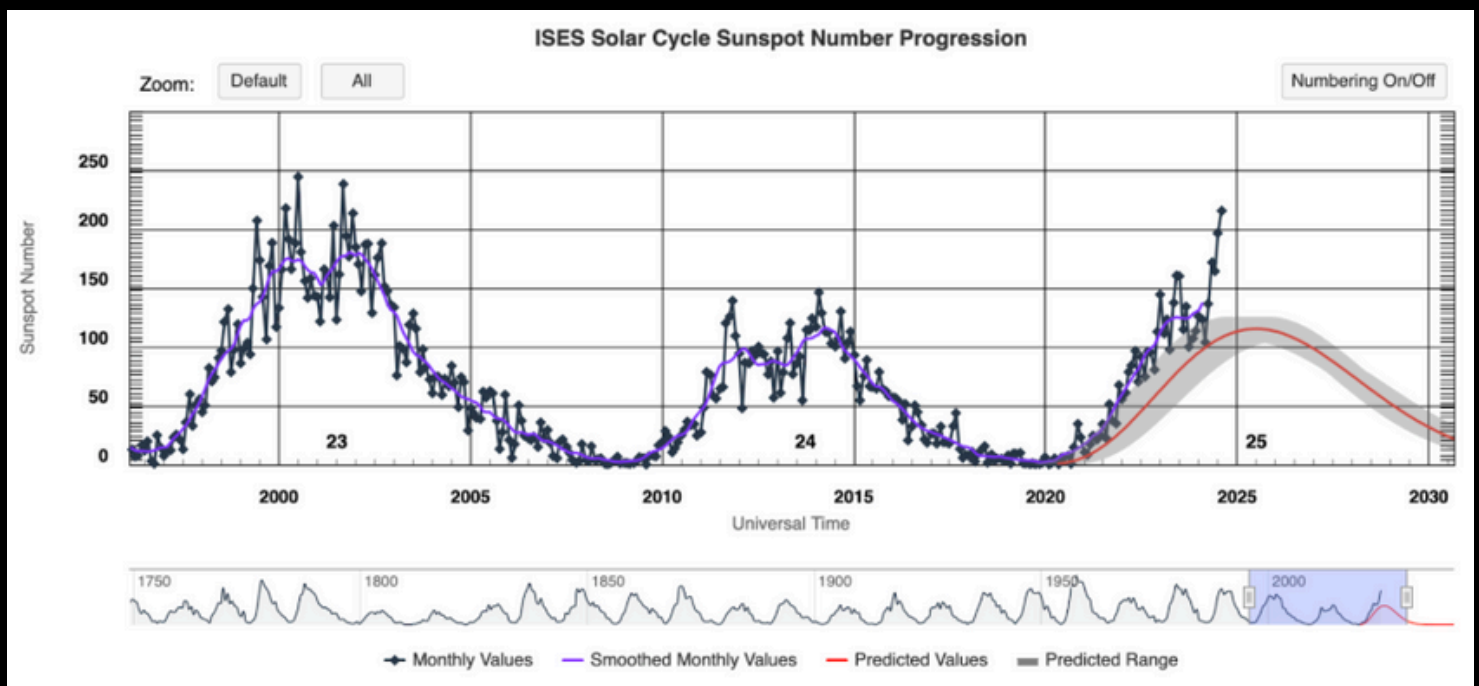
## AND MORE!

# SOLAR CYCLE PROGRESSION

BY: BEN DAVIDSON

**ANOTHER MONTH, ANOTHER PEAK OF THE SUNSPOT NUMBERS. THIS SUNSPOT MAXIMUM IS SURPRISING EVERYONE IN TERMS OF HOW MANY SUNSPOTS ARE APPEARING. IN THE IMAGE HERE YOU CAN SEE THAT THE CURRENT SOLAR CYCLE (25) IS WELL IN EXCESS OF THE PREDICTED VALUES (RED LINE).**

This past month of August the sunspot number reached ~220, which is the highest mark since 2001/2002, and significantly higher than the last cycle (24).



So far, the high sunspot counts have not produced an extremely high number of flares and geomagnetic storms, but it has been modestly active, and that should be expected to continue. With at least a year (and maybe two years) left in sunspot maximum there is an ongoing risk of solar storms, especially as earth's magnetic pole shift continues to leave our planet exceptionally vulnerable to the sun.

Furthermore, remember that the geomagnetic maximum tends to trail the sunspot maximum by 1-3 years, and we often see the biggest solar eruptions in the declining phase of the cycle. This means that we likely have at least 3 more years of high solar activity remaining until we drop into the lower-activity period of sunspot minimum.

[ARTICLE REFERENCED:](#)  
[SOLAR CYCLE PROGRESSION](#)



# SOLAR FORCING OF EXTREME PRECIPITATION

BY: BAILEY LAURISSA

*ARTICLE REFERENCED:  
A SYNOPTIC SCALE PERSPECTIVE OF SOLAR FORCING ON EXTREME  
PRECIPITATION AND FLOODS OVER EUROPE DURING SUMMER*

## WHAT IS SOLAR FORCING?

SOLAR FORCING HAPPENS WHEN VARIATIONS IN THE SUN'S ENERGY OUTPUT AFFECT EARTH'S CLIMATE. THE SUN'S ENERGY, CALLED TOTAL SOLAR IRRADIANCE (TSI), FLUCTUATES IN CYCLES. WHEN TSI IS LOW, LESS SOLAR ENERGY REACHES EARTH, AND THIS CAN HAVE SIGNIFICANT EFFECTS ON WEATHER PATTERNS, PARTICULARLY DURING THE SUMMER IN EUROPE.

Rossby Wave Packets (RWPs) are large-scale atmospheric waves that play a critical role in shaping the weather. They form and propagate along the mid-latitude regions and are linked to extreme weather events like storms, heatwaves, and intense rainfall. During periods of low solar activity, the frequency of RWPs increases, especially along a belt that stretches from North America to Western Europe.

Research shows that this increase in RWP activity during low TSI periods correlates with a rise in extreme precipitation and flood events in Western Europe. RWPs essentially direct storms toward Europe more frequently during these periods, leading to heavier rains and more frequent flooding.

For example, flood records from Western Europe demonstrate a significant increase in flood events during periods of low solar activity. This link is consistent over both short and long timescales.

# SOLAR HYDROCLIMATE CONNECTION

ARTICLE REFERENCED:

SOLAR MODULATION OF THE WESTERN TROPICAL PACIFIC HYDROCLIMATE OVER THE LAST 1200 YEARS

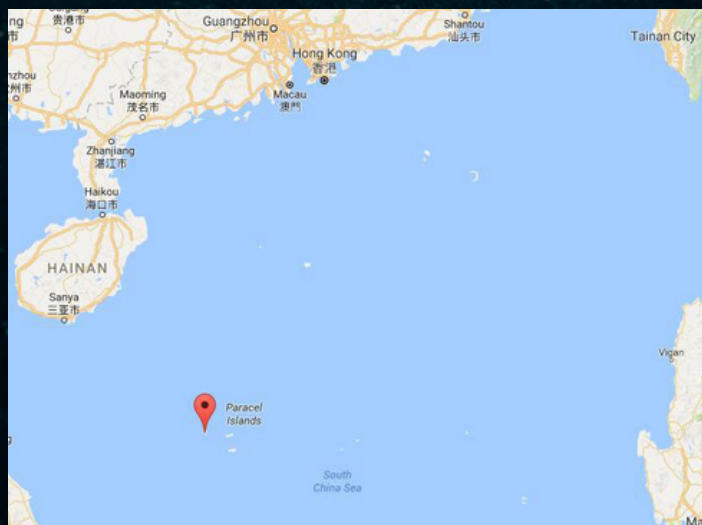
BY: BAILEY LAURISSA

**ONE SUCH STUDY, "SOLAR MODULATION OF THE WESTERN TROPICAL PACIFIC HYDROCLIMATE OVER THE LAST 1200 YEARS," SHEDS LIGHT ON HOW SOLAR ACTIVITY INFLUENCES RAINFALL PATTERNS IN THE WESTERN TROPICAL PACIFIC, PARTICULARLY THROUGH THE EXAMINATION OF BIOMARKERS FROM SEDIMENT CORES IN THE SOUTH CHINA SEA.**

**WHILE VOLCANIC ERUPTIONS AND INTERNAL CLIMATE OSCILLATIONS LIKE EL NIÑO HAVE BEEN COMMONLY CITED AS INFLUENTIAL FORCES, THIS STUDY EMPHASIZES THE ROLE OF SOLAR ACTIVITY IN SHAPING THE REGION'S RAINFALL OVER THE LAST 1200 YEARS.**

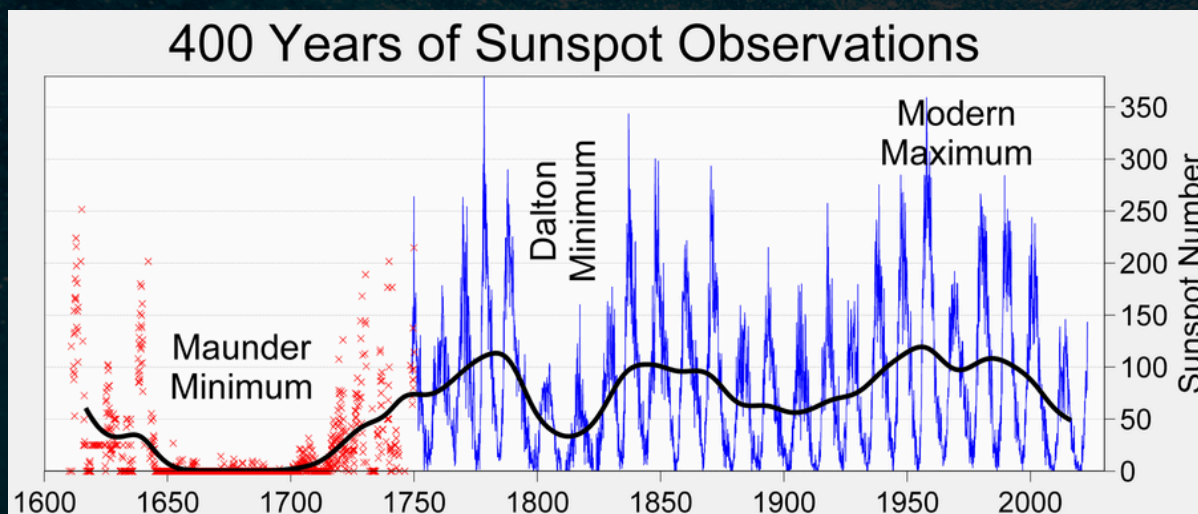
Using sediment samples from Cattle Pond on the Xisha Islands, researchers employed biomarkers, such as glycerol dialkyl glycerol tetraethers (GDGTs) and n-alkanes, to reconstruct a high-resolution record of hydrological changes. Their findings suggest that the depth of the lake, which reflects local rainfall, increased during periods of low solar activity. Specifically, during the Little Ice Age (LIA, 1400–1850 CE), higher lake levels correlated with solar minima, such as the Oort, Spörer, and Dalton events.

During solar minima, the sun emits less energy, which can lead to shifts in atmospheric circulation patterns. The study's results indicate that during these periods, there was an increase in rainfall across the western tropical Pacific.



This relationship between solar activity and rainfall is particularly evident during the LIA, a time marked by cooler global temperatures and heightened rainfall in some regions. The study's comparison of reconstructed rainfall records with published paleoclimate records nearby shows a clear synchronization between solar irradiance changes and hydrological shifts, further supporting the hypothesis of solar control over the region's hydroclimate.

The hydroclimate patterns observed in the western tropical Pacific are strongly influenced by large-scale atmospheric phenomena such as the Intertropical Convergence Zone (ITCZ) and the Pacific Walker Circulation (PWC). The ITCZ is a belt of converging trade winds that typically brings heavy rainfall to the equatorial region. The PWC, meanwhile, is an atmospheric circulation pattern that impacts sea surface temperatures and rainfall distribution in the Pacific.



**DURING SOLAR MINIMA, IT IS HYPOTHESIZED THAT THE ITCZ SHIFTS SOUTHWARD, ALTERING THE REGION'S RAINFALL PATTERNS. THIS DISPLACEMENT CAN LEAD TO AN INCREASE IN RAINFALL OVER THE WESTERN TROPICAL PACIFIC, A PATTERN THAT IS CONSISTENT WITH THE BIOMARKER EVIDENCE FROM THE CATTLE POND STUDY.**

**THE INTERACTION BETWEEN THE ITCZ AND THE PWC, DRIVEN BY CHANGES IN SOLAR ACTIVITY, LIKELY AMPLIFIES THE OBSERVED HYDROLOGICAL RESPONSES DURING THESE SOLAR MINIMA PERIODS.**

**THE STUDY OF THE LAST 1200 YEARS OF HYDROCLIMATE VARIABILITY IN THE WESTERN TROPICAL PACIFIC HIGHLIGHTS THE SIGNIFICANT INFLUENCE OF SOLAR ACTIVITY ON REGIONAL RAINFALL PATTERNS.**

# THE SUN, CORE, CLOUDS AND CLIMATE

BY: BAILEY LAURISSA

## ARTICLE REFERENCED:

ROLES OF EARTH'S ALBEDO VARIATIONS AND TOP-OF-THE-ATMOSPHERE ENERGY IMBALANCE IN RECENT WARMING: NEW INSIGHTS FROM SATELLITE AND SURFACE OBSERVATIONS

**A RECENT STUDY BY NIKOLOV AND ZELLER EXPLORES HOW CHANGES IN EARTH'S ALBEDO (THE REFLECTIVITY OF THE PLANET'S SURFACE) AND SOLAR ENERGY ABSORPTION IMPACT 'GLOBAL WARMING'. THE STUDY HIGHLIGHTS THAT SINCE THE 1980S, AND PARTICULARLY AFTER 2000, EARTH'S ALBEDO HAS DECREASED, RESULTING IN INCREASED SOLAR ENERGY ABSORPTION.**

## WHY DOES THIS MATTER?

THEIR ANALYSIS, BASED ON NASA'S CLOUDS AND THE EARTH'S RADIANT ENERGY SYSTEM (CERES) DATA, SUGGESTS THAT CHANGES IN CLOUD COVERAGE, NOT GREENHOUSE GASSES, ARE THE DOMINANT DRIVERS OF CLIMATE VARIABILITY. THE STUDY FOUND THAT THE DECREASE IN PLANETARY ALBEDO, COUPLED WITH VARIATIONS IN TOTAL SOLAR IRRADIANCE (TSI), EXPLAINS 100% OF THE GLOBAL WARMING TREND SINCE 2000 AND 83% OF YEAR-TO-YEAR TEMPERATURE VARIABILITY.



## WHAT IS ALBEDO?

ALBEDO REFERS TO THE MEASURE OF HOW MUCH LIGHT OR RADIATION IS REFLECTED BY A SURFACE, TYPICALLY USED IN THE CONTEXT OF PLANETS, MOONS, AND OTHER CELESTIAL BODIES. IT IS EXPRESSED AS A RATIO OR PERCENTAGE OF THE INCOMING SOLAR RADIATION THAT IS REFLECTED BACK INTO SPACE.



## WHAT DOES A DECLINING ALBEDO MEAN?

A declining albedo means more solar energy is being absorbed, contributing to the warming of Earth's surface and oceans. This absorbed energy influences not just surface temperatures, but also climate dynamics such as cloud formation and weather patterns.

## WHAT ABOUT THE IPCC AND THEIR REPORTS?

In contrast to the Intergovernmental Panel on Climate Change (IPCC) reports, which have traditionally focused on the role of greenhouse gasses in trapping heat as we know, Nikolov and Zeller suggest that Earth's energy imbalance—the difference between absorbed solar radiation and outgoing longwave radiation—is driven by changes in solar energy absorption due to variations in albedo. Their analysis indicates that this energy imbalance results from the adiabatic cooling process as air rises and loses energy due to lower atmospheric pressure, rather than from greenhouse gasses "trapping" heat.

**THEIR FINDINGS CALL FOR AN EVEN GREATER SHIFT IN CLIMATE RESEARCH, AS WE HAVE LONG PREDICTED, TOWARD UNDERSTANDING THE FORCES DRIVING CLOUD FORMATION AND ALBEDO CHANGES, AS THESE ARE CLOSELY LINKED TO EARTH'S TEMPERATURE REGULATION.**

**HAVE A QUESTION ABOUT ANYTHING RELATED TO THE CHANGE IN CLIMATE, IPCC REPORTS, AND SPACE SCIENCE?**

**EMAIL [OBSERVERREVIEW@OBSERVERRANCH.COM](mailto:OBSERVERREVIEW@OBSERVERRANCH.COM)**

# MAGNETIC SHRIMP

BY: BAILEY LAURISSA

ARTICLE REFERENCED:  
*MAGNETIC FIELD EFFECTS ON THE BEHAVIOR OF THE SHRIMP*

Magnetoreception, the ability of animals to sense and respond to Earth's magnetic field, is an essential tool for many species, particularly those that rely on navigation, such as birds and marine animals. While magnetoreception is well-documented in species such as fish and migratory birds, new research sheds light on its potential role in shrimp, specifically the economically significant species *Litopenaeus vannamei*. This study aimed to determine how these shrimps respond to artificial magnetic fields, providing new insights into their magneto-sensitivity and its possible applications in aquaculture.



To test the shrimp's magneto-sensitivity, the researchers used a controlled laboratory environment with a pair of Helmholtz coils, which generated artificial magnetic fields of varying intensities (44, 65, 129, and 237  $\mu\text{T}$ ). Four aquariums were set up: three for testing and one as a control, each containing 20 shrimp. The experiment involved observing shrimp behavior before, during, and after exposure to the magnetic fields. Cameras recorded their movements, and the shrimp's location in the tank, activity levels, and behavior changes were carefully monitored.

The results of the study were fascinating. The *L. vannamei* shrimp showed a strong preference for swimming against the direction of the magnetic field lines, behavior previously only observed in magnetotactic bacteria. Additionally, when subjected to magnetic fields of higher intensities (44 to 237  $\mu\text{T}$ ), the shrimp showed varying levels of activity, from aggressive movements to complete immobility at the highest intensity. This study represents the first documented evidence that *L. vannamei* shrimps are sensitive to magnetic fields. Interestingly, the shrimp displayed a consistent preference for swimming toward the southern region of the aquarium during exposure to magnetic fields, indicating a possible relationship between their movement and magnetic field polarity. This type of behavior has been observed in certain microorganisms, such as South-seeking magnetotactic bacteria, which swim against the magnetic field lines in search of optimal environmental conditions.

The researchers also observed a dramatic change in shrimp behavior under stronger magnetic fields. At 44  $\mu\text{T}$ , the shrimp exhibited signs of aggressiveness, including sudden movements and jumping. However, as the field strength increased to 65  $\mu\text{T}$  and beyond, the shrimp's activity diminished, culminating in complete paralysis at 237  $\mu\text{T}$ , with only slight antenna movements indicating any life. These responses suggest that high-intensity magnetic fields may have a stunning or immobilizing effect on shrimp.

# PRE-EARTHQUAKE SIGNALS

BY: BAILEY LAURISSA

**ARTICLE REFERENCED:**

[HTTPS://WWW.MDPI.COM/2076-3263/14/8/209](https://www.mdpi.com/2076-3263/14/8/209)

[HTTPS://WWW.MDPI.COM/2072-4292/16/16/2985](https://www.mdpi.com/2072-4292/16/16/2985)

[HTTPS://WWW.MDPI.COM/2073-4433/15/8/1015](https://www.mdpi.com/2073-4433/15/8/1015)

[HTTPS://WWW.RESEARCHSQURE.COM/ARTICLE/RS-4822511/V1](https://www.researchsquare.com/article/rs-4822511/v1)

[HTTPS://WWW.GI.ALASKA.EDU/NEWS/UAF-SCIENTISTS-METHOD-COULD-GIVE-MONTHS-WARNING-MAJOR-EARTHQUAKES](https://www.gi.alaska.edu/news/uaf-scientists-method-could-give-months-warning-major-earthquakes)

**WE LOOKED AT FIVE ARTICLES ON PRE-EARTHQUAKE SIGNALS, ANALYZING A WIDE SPECTRUM OF APPROACHES AND INSIGHTS, COVERING PHYSICAL, ATMOSPHERIC, IONOSPHERIC, MAGNETIC, AND MACHINE LEARNING-BASED EARTHQUAKE PRECURSORS.**

## **EARTHQUAKE PRECURSORS: THE PHYSICS, IDENTIFICATION, AND APPLICATION**

The first article, Earthquake Precursors: The Physics, Identification, and Application, focuses on the identification of earthquake precursors based on lithosphere–atmosphere–ionosphere–magnetosphere (LAIC) coupling. The article discusses a range of phenomena such as ionospheric plasma disturbances, radon emissions, and atmospheric thermodynamic instabilities, which serve as short-term earthquake indicators. This paper stresses a physical model-based approach, suggesting a probabilistic method for forecasting, similar to weather prediction. However, the physical processes generating these signals are complex and the reliability of these precursors is hindered by environmental noise (e.g., geomagnetic storms).

## **SUCCESSFUL TESTS ON DETECTING PRE-EARTHQUAKE MAGNETIC FIELD SIGNALS**

The second article, Successful Tests on Detecting Pre-Earthquake Magnetic Field Signals, delves into satellite-based magnetic field anomalies, particularly focusing on the Swarm satellite's ability to capture electromagnetic anomalies in the ionosphere. The key finding is that magnetic anomalies are correlated with earthquake magnitude and can serve as reliable precursors. A strong correlation between anomaly duration and earthquake magnitude is observed, which is seen as a significant leap toward the development of an Operational Earthquake Prediction System (OEPS).

## **INTEGRATED ANALYSIS OF MULTI-PARAMETER PRECURSORS,**

The third article, Integrated Analysis of Multi-Parameter Precursors, emphasizes the importance of coordinating multiple layers of earthquake precursors, such as ground-based ULF electromagnetic radiation, atmospheric and ionospheric anomalies, and sub-ionospheric VLF propagation disturbances. It proposes that earthquake precursors often manifest in two types of LAIC channels: fast (simultaneous surface-ionosphere disturbances) and slow (gradual propagation of lithospheric effects). This integrated approach is more complex but offers a comprehensive framework for detecting multiple layers of earthquake preparation processes.

## SPATIO-TEMPORAL ANALYSIS OF PRE-EARTHQUAKE DISTURBANCES

In contrast, the fourth article, Spatio-Temporal Analysis of Pre-Earthquake Disturbances, narrows its focus to ionospheric disturbances in Total Electron Content (TEC) as a precursor, revealing anomalies 1–5 days before significant earthquakes. These ionospheric disturbances are often spatially clustered around 500 km from the epicenter. This study emphasizes the spatial proximity of ionospheric disturbances, aligning with the localized observations in the first paper but simplifying the approach by focusing on TEC data analysis.

## UAF SCIENTIST'S METHOD FOR PREDICTING EARTHQUAKES

The fifth article, UAF Scientist's Method for Predicting Earthquakes, presents a new method based on machine learning algorithms to predict major earthquakes months in advance by analyzing low-magnitude seismicity patterns. The study's focus on low-magnitude seismic activity as an early warning signal distinguishes it from the other articles that emphasize atmospheric or ionospheric anomalies. It suggests that pore fluid pressure increases in faults can lead to precursory seismicity, which can be detected using machine learning algorithms.

## CONCLUSION

**THIS IS A SIGNIFICANT SHIFT TOWARD PREDICTIVE ANALYTICS, MOVING BEYOND PHYSICAL OR ELECTROMAGNETIC PHENOMENA TO PREDICTIVE MODELS THAT ANALYZE HISTORICAL SEISMICITY DATA.**

Compared to the second article's use of satellite magnetic data, this study utilizes machine learning on seismic datasets, showcasing a modern, data-driven approach. While satellite observations provide direct physical indicators, the machine learning method offers a broader temporal range, predicting earthquakes months in advance, which the satellite methods don't address. However, the machine learning approach faces challenges in deployment across different geographic regions without significant prior training.

**EACH STUDY VARIES IN ITS PROPOSED LEAD TIME FOR EARTHQUAKE PREDICTION. THE FIRST ARTICLE DISCUSSES SHORT-TERM FORECASTING, SUGGESTING ANOMALIES APPEAR DAYS TO WEEKS BEFORE AN EARTHQUAKE. THE SECOND PAPER ALSO SUGGESTS A SHORT LEAD TIME, FOCUSING ON 10 DAYS BEFORE THE SEISMIC EVENT. THE THIRD ARTICLE INTEGRATES VARIOUS PARAMETERS OVER A FEW WEEKS, BUT THE FIFTH ARTICLE WITH MACHINE LEARNING OFFERS THE LONGEST FORECAST LEAD TIME, PREDICTING EARTHQUAKES MONTHS IN ADVANCE.**

In contrast, the fourth paper identifies anomalies occurring 1–5 days before an earthquake, which aligns with the general short-term focus of most studies. However, the use of machine learning in the fifth paper provides a more extended window, highlighting the potential for significantly earlier predictions than the other methods discussed.

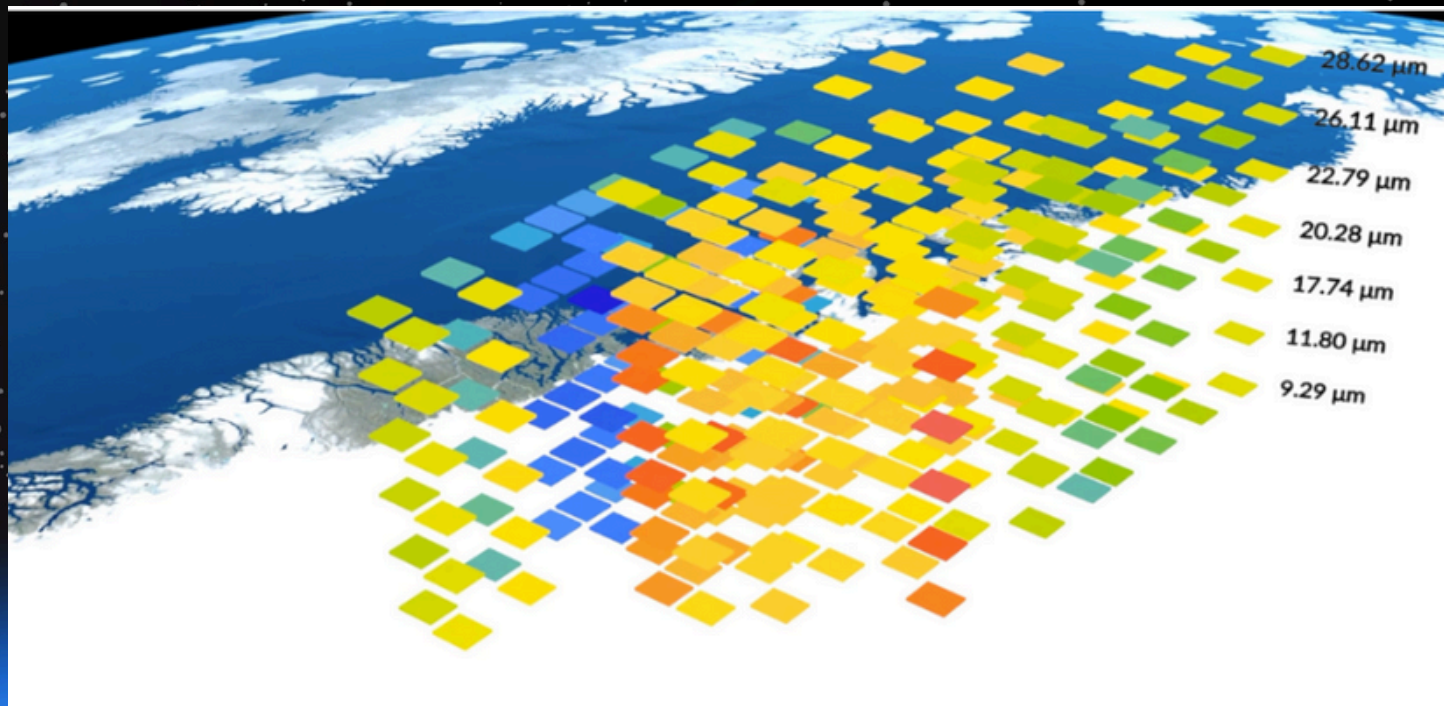
# SOLAR OZONE DESTRUCTION

ARTICLE REFERENCED:

MESOSPHERIC OZONE DEPLETION DURING 2004–2024 AS A FUNCTION OF SOLAR PROTON EVENTS INTENSITY

BY: BEN DAVIDSON

One of the key aspects of solar forcing is the particle impact to the ozone layer. Solar UV light creates ozone through photoionization and photochemical processes, and particles in the solar wind and high-energy proton flux tend to destroy it. These processes are largely in balance over long timescales, but have seasonal scale solar-cycle scale variability.



Given the importance of the ozone for surface heat and atmospheric circulation, the ebb and flow of this ozone-sun relationship is important for understanding the full spectrum of solar forcing of earth's atmosphere, weather, and long-term climate.

A new study is confirming and quantifying these effects during major solar storms. Moderate solar proton events can deplete the ozone between 33 and 47%. Major solar proton events can deplete the ozone by 73 to 85%.

This is a significant forcing pathway for the sun and it is completely left-out of climate modeling. This has not-only contributed to the lack of appropriate credit given to the sun for trends in weather and climate, but it is becoming an increasingly-important vector of analysis as earth's magnetic field weakens.

Previous pole shifts have included up to a 60% decrease in ozone levels on decadal to centennial scales, which is 10x to 20x greater of a change than is expected over annual and 11-year sunspot cycle timelines. This study serves as an excellent reminder that the sun-ozone relationship is critical to climate, and especially to the analysis of environmental changes in the ongoing magnetic pole shift.

# DARK OXYGEN

ARTICLE REFERENCED:  
DWELLERS IN THE DEEP: BIOLOGICAL CONSEQUENCES OF DARK OXYGEN

BY: BEN DAVIDSON

## WHAT IS DARK OXYGEN?

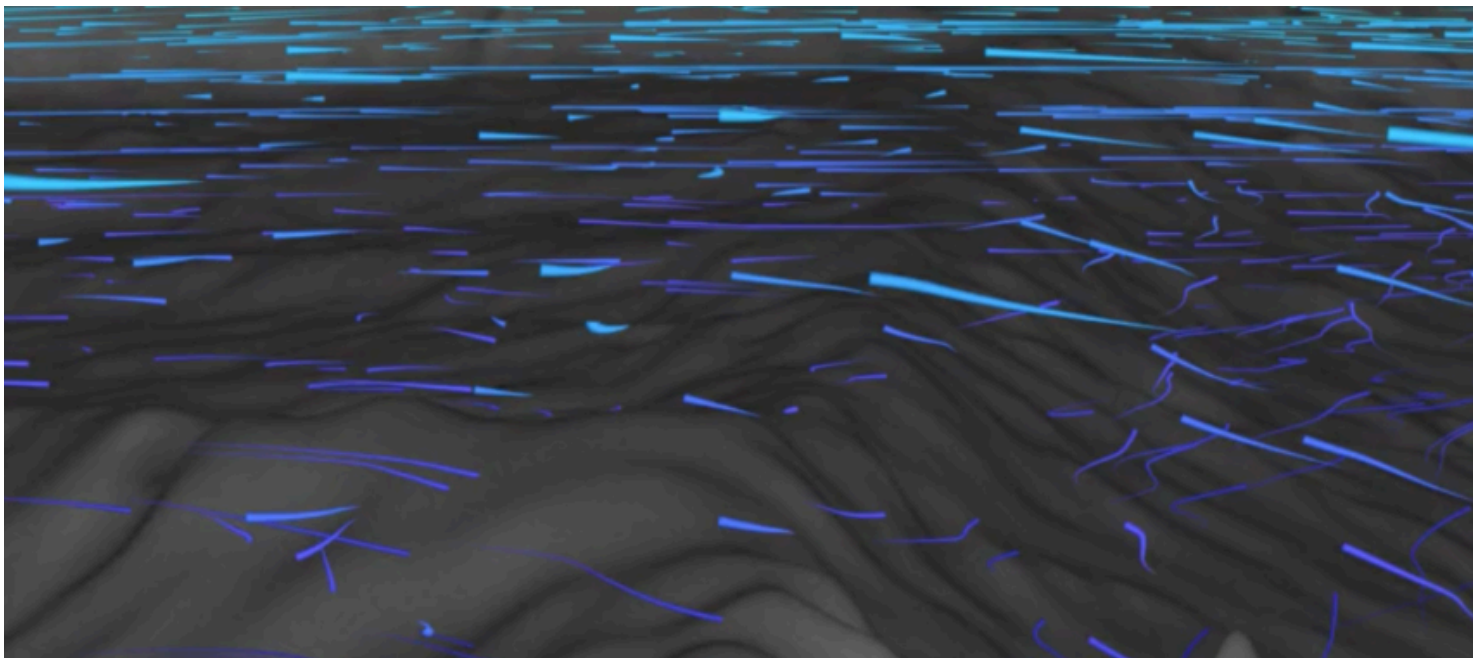
**DARK OXYGEN - IT SOUNDS LIKE A SCIENCE FICTION MOVIE TITLE. FOR THE FIRST TIME SCIENTISTS HAVE DISCOVERED A NATURAL OXYGEN-PRODUCTION PROCESS THAT DOESN'T INVOLVE PHOTOSYNTHESIS, AND IT TAKES PLACE AT THE OCEAN FLOOR.**

Electric currents surge through the ocean floor, similar to other natural currents that flow through the atmospheric electric circuit, or the solar-induced crustal currents. This current electrically liberates Oxygen from the rocks on the ocean floor, and provides a previously-undiscovered source of marine Oxygen for complex life.

The first interesting aspect of this is astrobiological - if these currents are ubiquitous on planets and moons in stellar systems, then there is a way for complex life to exist on the ocean floors of places like Enceladus, Europa, and likely many exoplanets.

The other interesting part of this is a hypothetical scenario where the sun has its cyclical super flare or micronova event. These events would be expected to amplify crustal currents by 100x to 1000x. This could produce interesting and unexpected effects on the ocean environment during those extreme events, most importantly, for the life that exists at those depths.

This electrochemical modulation is also a part of the electroquake paradigm, which is heavily affected by the sun, and may offer an opportunity to better-understand those seismic processes.



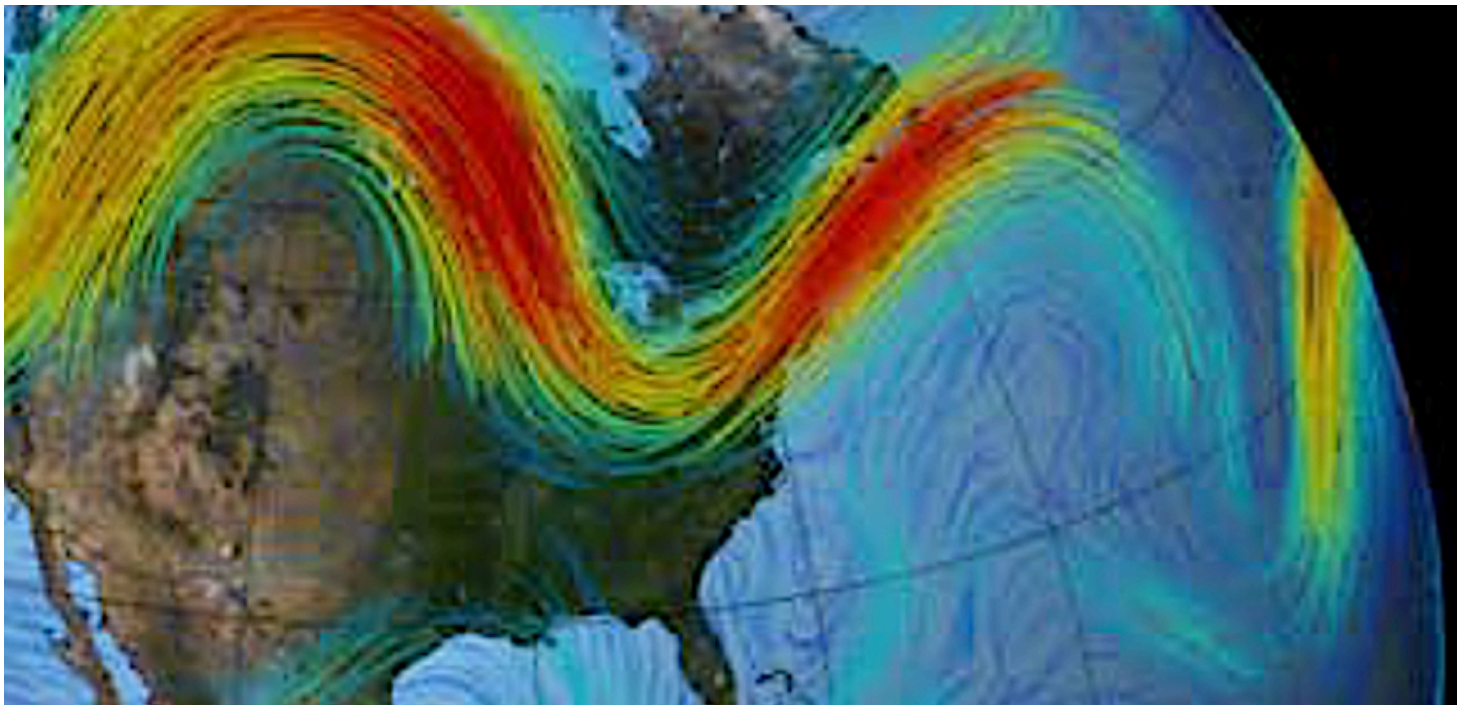
# RECORD ATLANTIC COOLING

ARTICLE REFERENCED:  
RECORD ATLANTIC COOLING

BY: BEN DAVIDSON

Usually when we get big news that conflicts with the mainstream climate narrative, it ends up not making big news at all. This month that trend broke - part of the Atlantic ocean is cooling off at record pace, and most scientists say they are baffled, and have no idea why it is happening.

If only there was some prediction of this happening... and why it was expected to happen...



**OF COURSE, WE'VE BEEN DISCUSSING THIS FOR QUITE SOME TIME. FOR SEVERAL YEARS WE HAVE BEEN DISCUSSING THE SLOW-DOWN OF THE ATLANTIC MERIDIONAL OVERTURNING CIRCULATION (AMOC), WHICH DRIVES EQUATORIAL HEAT TO HIGHER LATITUDES, AND THE RELEASE OF THE COLD FRESHWATER FROM THE BEAUFORT GYRE, WHICH HAS BEEN WIDELY EXPECTED TO CHILL THE OCEANS.**

In 2023 we learned that the gyre was ready to release, and for the last two years we have heard about a dozen analyses suggesting the AMOC was in the process of shutting down. This record cooling in the Atlantic is almost certainly related to one or both of these processes.

**THIS EVENT IS AN INITIAL PRECURSOR OF THE MAJOR OCEANIC SHIFT/HEAT SHUTDOWN THAT WILL EVENTUALLY BEGIN DRASTICALLY COOLING THE EARTH. KEEP AN EYE OPEN FOR MORE STORIES LIKE THIS ONE.**

# GLOBAL AMBIPOLAR ELECTRIC FIELD

ARTICLE REFERENCED:

NASA DISCOVERS A LONG-SOUGHT GLOBAL ELECTRIC FIELD ON EARTH

BY: BEN DAVIDSON

The global electric circuit is one of the most-discussed geophysical phenomena on our channel, in our books, and here in this publication. It is the vehicle for space energy (from the sun and cosmic rays) to permeate and impact the entire atmosphere.

NASA has recently discovered the “hat” to this circuit, the global ambipolar electric field. As you can see in the image, it is the light blue glow around the earth, and this is where the top of the global electric circuit in the ionosphere slowly bleeds up into the magnetic field zone in the exosphere in near-earth space.



While there were already known mechanisms for this energy exchange, and plenty of evidence for those exchanges, this upper-level electric field, like an even-more-massive ionospheric layer on top of the known ionosphere, makes the solar and cosmic energy impacts to earth easily integrated into the electrodynamic system of the atmosphere.

Simply put- this global electric field makes every single study on the space-energy impact to the atmospheric fields more-easily understandable, fortifying the veracity of solar-weather forcing mechanics. It also means that the various predictions we've made about how much more extreme the weather will be during the magnetic pole shift are exactly what are to be expected from a physics perspective. This truly is an electromagnetic planet, and the electromagnetic changes currently ongoing are going to be a very big deal.



# UNUSUAL SOLAR STORM EFFECTS

BY: BEN DAVIDSON

UNUSUAL FORBUSH DECREASES AND GEOMAGNETIC STORMS ON 24 MARCH, 2024 AND 11 MAY, 2024

## BRIEF UPDATE ON EARTH'S INCREASING VULNERABILITY:

**SINCE EARLY 2023, WE HAVE BEEN DOCUMENTING THE INCREASING VULNERABILITY OF EARTH TO SOLAR ACTIVITY, DUE TO THE ONGOING MAGNETIC POLE SHIFT, BY NOTING THE SOLAR STORM EFFECTS IN EXCESS OF EXPECTATIONS.**

**IN APRIL 2024, WE SAW THE KEY STUDY THAT NOTED A MAJOR MAGNETIC ANOMALY THAT OCCURRED IN MARCH 2023, WHICH EXPLAINS THE SOLAR STORM EFFECTS, AND CONFIRMS THAT THE CAUSE IS THE ONGOING MAGNETIC POLE SHIFT.**

**A NEW STUDY (LINKED HERE) SHOWS THAT THIS PROCESS HAS CONTINUED WITH THE SOLAR STORMS THAT OCCURRED IN MARCH AND MAY 2024.**

**WE HAD PREVIOUSLY NOTED THE EXTREMITY OF THE MAY 2024 SOLAR STORM IN TERMS OF AURORAL DISPLAYS AND IONOSPHERIC DYNAMICS, BUT HERE THE NEW STUDY NOTES UNUSUAL FORBUSH DECREASE ACTIVITY DURING THOSE STORMS.**

**THIS NEW INFORMATION MEANS THAT THE EVIDENCE WE HAVE COVERED IS CONTINUING TO PRESENT ITSELF, AND IT IS BLEEDING OVER INTO NEW VECTORS OF GEOPHYSICS.**



# OXIDATIVE STRESS FROM LOW MAGNETIC FIELDS: **LOOKING AHEAD TO THE POLE SHIFT**

BY: BAILEY LAURISSA

ARTICLE REFERENCED:

THE ROLE OF OXIDATIVE STRESS IN HYPOMAGNETIC FIELD EFFECTS

The weakening of the Geomagnetic Field — particularly during a geomagnetic reversal, when the Earth's magnetic poles switch positions — poses significant risks as we discuss at length. These reversals are not instantaneous events; they can span thousands of years, during which the GMF may decrease by up to 90%. In this weakened state, known as a hypomagnetic field (HMF), life on Earth is exposed to increased radiation. This exposure is not only a concern for astronauts in deep space exploration but also for all terrestrial life during the pole shift, raising new questions about how this weakened magnetic shield impacts biological processes.

One of the most critical consequences of HMF exposure is the rise in oxidative stress, a condition where an imbalance between reactive oxygen species (ROS) and antioxidants leads to cellular damage. Understanding the connection between oxidative stress and HMF is essential as we anticipate future pole shifts, which may subject life on Earth to prolonged periods of weakened magnetic protection.

Oxidative stress occurs when the production of ROS, highly reactive molecules such as superoxide ( $O_2^{\cdot-}$ ), hydrogen peroxide ( $H_2O_2$ ), and hydroxyl radicals ( $\cdot OH$ ), outpaces the body's antioxidant defenses. These ROS are natural byproducts of cellular respiration and play dual roles: at low concentrations, they are essential for cell signaling and defense mechanisms, but at high levels, they become harmful, causing damage to DNA, proteins, and lipids.

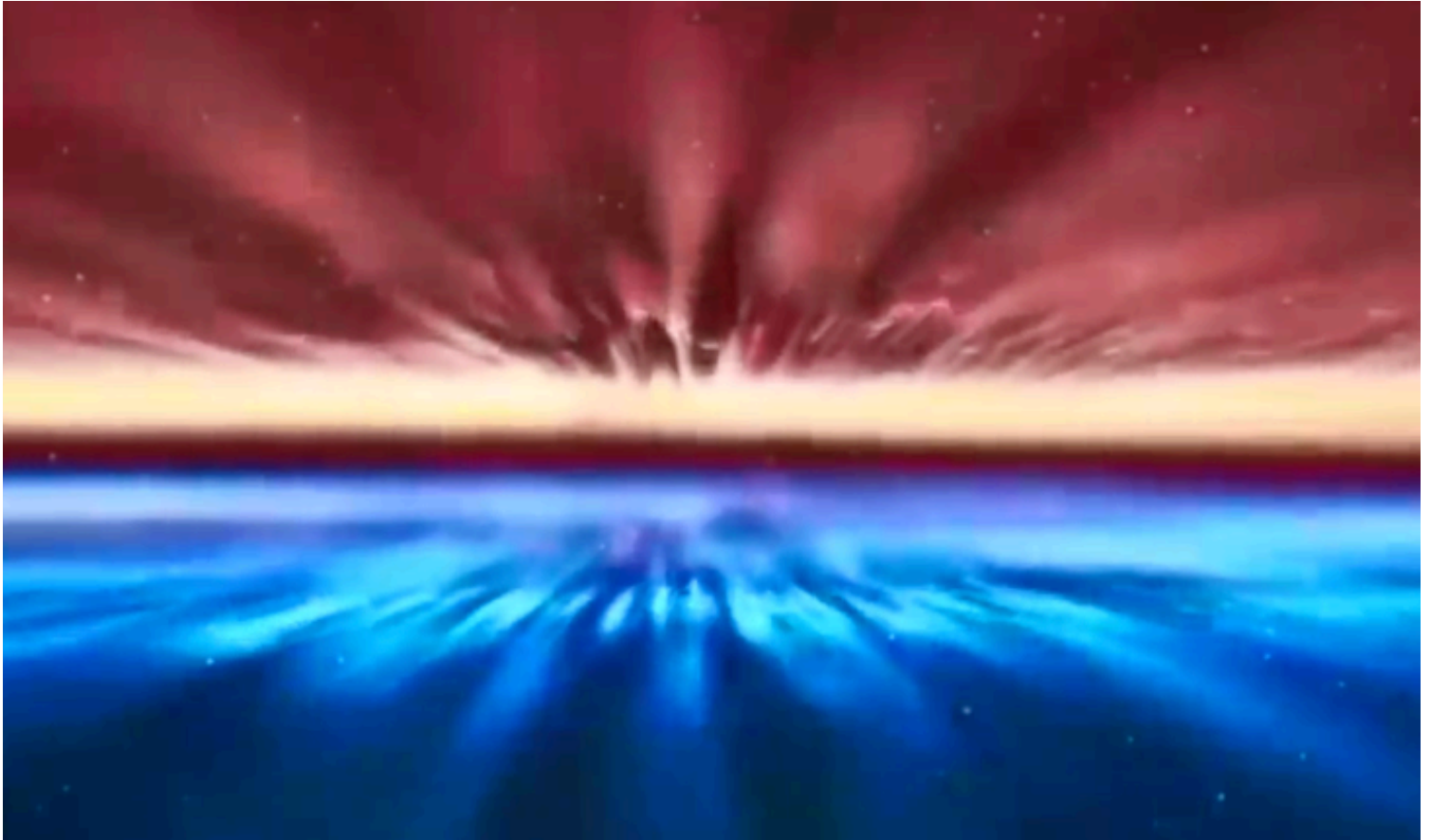
The link between HMF exposure and oxidative stress is further emphasized by the role of key signaling pathways that regulate ROS levels, including the NF- $\kappa$ B, PI3K/Akt, and MAPK pathways. These pathways are involved in various cellular functions such as inflammation, cell survival, and apoptosis. Under normal conditions, ROS act as signaling molecules within these pathways. However, in an HMF environment, the overproduction of ROS disrupts these signaling processes, leading to cellular damage and disease.

The mitochondria, the cell's powerhouse, are particularly sensitive to ROS production. Under normal conditions, ROS are produced in controlled amounts during cellular respiration. However, when exposed to an HMF, the balance of ROS production is disrupted. Studies have shown that cells in an HMF environment exhibit increased ROS levels, leading to oxidative damage, mitochondrial dysfunction, and a host of physiological abnormalities, including cognitive impairment, anxiety, gut dysbiosis, and bone loss. The decline in the GMF's protective capabilities would expose all life forms to higher levels of cosmic radiation, which, in turn, could exacerbate oxidative stress at the cellular level.

# IONOSPHERE COLLAPSE

BY: BEN DAVIDSON

ARTICLE REFERENCED:  
LONG-TERM TRENDS IN THE HEIGHT OF THE IONOSPHERIC F2 LAYER PEAK



A new study has reminded us of one of the first upper atmospheric effects of the ongoing magnetic pole shift, and described an expansion of scope and severity. In 2012, we discussed the increasingly erratic and extreme critical frequency of the ionospheric layers; now, we not only know why it is happening, but can quantify other physical changes to it.

This new analysis demonstrates that the F2 layer of the ionosphere is collapsing. In the early 2000s, it was noted to have been decreasing slightly, by about 0.2 kilometers/year. Now, the study states that from 1996 to 2023, that rate increased to 0.5 to 1.0 kilometers/year.

The study also definitively stated that the rate is increasing, with larger changes in more recent years, which means that we are now nearer to that 1.0 km/year rate, if not more, five times as rapid a collapse is was noted just a few decades ago, mirroring the acceleration of the magnetic pole shift.

As the ionosphere collapses, the impact of solar storms and cosmic rays on the atmosphere will increase, creating stronger storms, more extreme rainfall, hotter heat waves, and colder blizzards. The extreme earth scenario is on our doorstep.

# AURORAL OVAL IS REACTING TO THE POLE SHIFT

BY: BEN DAVIDSON

ARTICLE REFERENCED:  
EVOLUTION OF THE NORTHERN AURORAL OVAL IN LIGHT OF  
MODERN CHANGES IN EARTH'S MAGNETIC FIELD

Perhaps the most expected change in the magnetic pole shift sure has waited a long time to officially be declared, but the wait is over.

The auroral displays - the northern and southern lights - are moving. In a study that looked at data from 1957 up to the present, they found that the auroral oval is moving, both in time and direction with the motion of the north magnetic pole.

The north magnetic pole has moved about twice as far as the south, and is moving much faster, but it is likely that a similar study on the southern aurorae would provide similar results. What this tells us is that while we have been covering the major changes in the ionosphere and atmosphere, the magnetic field-driven particle precipitation amounts and location of the displays were happening as well.

We didn't really need any more confirmation, but it's nice to have - by confirming that the auroras are reacting to the magnetic pole shift, this study confirms that the extreme (in excess of expectations) auroral displays we have been seeing recently are tied to the magnetic pole shift.



# THE EEE VIRUS: ANOTHER GOVERNMENT SCARE TACTIC?

BY: ADRIAN

In the wake of the COVID-19 pandemic, it's hard not to view any new public health scare with a healthy dose of skepticism. The Eastern Equine Encephalitis (EEE) virus, a rare mosquito-borne illness, has recently captured headlines and, in some circles, sparked fears reminiscent of the early days of the pandemic. But for those of us who have witnessed how the COVID-19 narrative was manipulated—how it was used to exert control, crush small businesses, and inflate the power of big corporations—the sudden alarm over EEE raises some serious red flags.

## WHAT IS EEE?

Eastern Equine Encephalitis virus is a rare, yet potentially severe, disease transmitted through mosquito bites. The virus is mostly found in swampy, wooded areas and is known to circulate among birds and mosquitoes. On occasion, humans and horses can become infected, leading to a range of symptoms from mild fever to severe neurological damage. EEE is extremely rare, with only a handful of cases reported annually in the United States, but its severity has led to a heightened level of concern.

On the surface, EEE might seem like a legitimate public health concern. After all, who wouldn't be alarmed by a virus that causes encephalitis, or brain inflammation, and carries a high mortality rate in those who develop the most severe symptoms? However, when we peel back the layers of how this disease is being portrayed and the actions being proposed to "combat" it, a more troubling picture begins to emerge.

## THE COVID-19 PLAYBOOK: IS EEE THE NEXT CHAPTER?

If there's one thing the COVID-19 pandemic taught us, it's that fear is a powerful tool. During the pandemic, we witnessed governments worldwide implement lockdowns, enforce social distancing, and promote a narrative that seemed more about control than actual public health. Small businesses were decimated, while big corporations like Amazon, Walmart, and pharmaceutical giants reaped the benefits. It's no wonder that many people are now questioning whether the EEE scare is another chapter in the same playbook.

Consider the timing: Just as the world is emerging from the COVID-19 crisis, just as people are starting to question the lockdowns and the overreach of governmental powers, we're suddenly being told to fear a new virus. But this time, it's not a respiratory illness that's spreading from person to person—it's a virus that's transmitted by mosquitoes in specific regions of the country. The chances of widespread human infection are slim to none, yet the media and certain government officials seem intent on stoking the flames of fear.

## THE SCIENCE OF EEE: A REASONABLE THREAT OR AN OVERBLOWN SCARE?

Let's take a closer look at the science behind EEE. According to the Centers for Disease Control and Prevention (CDC), there are typically fewer than 20 cases of EEE reported in the United States each year. The virus is most commonly found in the Atlantic and Gulf Coast states, as well as in the Great Lakes region. The CDC also notes that not all people bitten by an infected mosquito will develop symptoms; in fact, most people infected with the virus will remain asymptomatic.

Of those who do develop symptoms, the majority will experience only mild, flu-like illness. It is true that a small percentage of those infected will develop severe neurological symptoms, and that the mortality rate among this group is high—about 30%. However, these severe cases are exceedingly rare. When compared to other health threats, such as the flu or even motor vehicle accidents, the risk posed by EEE is minuscule.

Yet, despite the rarity of the disease, there have been calls for increased mosquito control measures, public health advisories, and even the possibility of local lockdowns or restrictions in areas where EEE cases are reported. This raises the question: Is the response to EEE proportionate to the actual threat, or is it another example of government overreach?

## CONTROL UNDER THE GUISE OF PROTECTION

It's hard to ignore the parallels between the response to EEE and the tactics used during the COVID-19 pandemic. During COVID, we were told that lockdowns, mask mandates, and social distancing were necessary to "flatten the curve" and protect public health. But as the pandemic dragged on, it became increasingly clear that these measures were doing more harm than good—especially to small businesses.

In the same way, the response to EEE seems to be less about protecting the public and more about exerting control. Consider the potential impact of widespread mosquito control measures: spraying pesticides, closing down outdoor events, and restricting movement in affected areas. Who benefits from these actions? Certainly not the small businesses that rely on outdoor events or the local communities that could be economically devastated by such measures.

Instead, the beneficiaries of this kind of response are the same big corporations that thrived during the COVID-19 lockdowns. The companies that provide mosquito control services, the pharmaceutical companies that might develop vaccines or treatments, and the big-box retailers that are unaffected by local lockdowns—all stand to gain, while regular citizens and small business owners bear the brunt of the impact.

## HISTORICAL PARALLELS: THE GREAT DEPRESSION PLAYBOOK

History has a way of repeating itself, and the response to EEE bears a striking resemblance to the tactics used during the Great Depression. During that time, small businesses were crushed under the weight of economic policies that favored big corporations and banks. The government's response to the economic crisis was to centralize power, tighten control, and implement measures that ultimately benefited the wealthy elite while ordinary citizens suffered.

Today, we're seeing a similar pattern. Just as during the Great Depression, the government is using fear—whether it's the fear of a virus or the fear of economic collapse—to justify measures that increase its control over the population. And just as during the Great Depression, these measures seem to disproportionately affect small businesses and regular citizens, while big corporations continue to thrive.

### THE EEE VIRUS: REPEATING THE COVID-19 TACTICS

Adding to the suspicion surrounding the EEE scare is the fact that several townships in Massachusetts have already begun implementing voluntary lock-ins with curfews, reminiscent of the COVID-19 lockdowns. Residents in these areas are being advised to stay indoors during peak mosquito activity times, and local governments are considering further restrictions. These measures are eerily similar to the COVID-19 lockdowns that crippled small businesses while allowing big corporations to flourish. The question is, why? Why are these extreme measures being pushed again, especially when the actual threat of EEE is so minimal?

This is not just a public health issue—it's a repeat of the same tactics used during the COVID-19 pandemic. By encouraging or enforcing these voluntary lock-ins and curfews, the government is once again exerting control under the guise of protecting the public. And just like during the COVID-19 pandemic, these measures seem designed to benefit big corporations while squeezing out small businesses and restricting the freedoms of regular citizens.

### CONCLUSION: RESIST THE BRAINWASHING AND REFUSE TO COMPLY

It's time to recognize these scare tactics for what they are: a continuation of the same playbook used during the COVID-19 pandemic, designed to control the population and consolidate power in the hands of the elite. The fear of EEE, like the fear of COVID-19, is being used to justify measures that have little to do with actual protection and everything to do with control.

We must resist the brainwashing. We must refuse to comply with unnecessary and overreaching government measures that do more harm than good. The EEE virus is just the latest example of how fear is being weaponized against us, and it's up to us to stand up against these efforts. Protect your rights, support small businesses, and question the narrative. Don't let history repeat itself—resist the control and stay vigilant in the face of these manufactured crises.

The new studies investigate two critical aspects of the current sheet - the spiral magnetic field, and the corrugated (wavy/rippling) shape of the sheet. The spiral field is a critical aspect of the galactic magnetic field, as it is in small models and the sun's current sheet. With reversals of magnetism present not only north and south, but within the wave as it ripples up and down.

The corrugated shape is also critical, and although we have seen more than several studies suggesting this character of the sheet, more is always better. The large scale galactic magnetic system is exactly as we have described in our videos and previous issues of this publication - making for the only way to explain every observable change in the solar system explainable with just one forcing factor.

# BY THE NUMBERS

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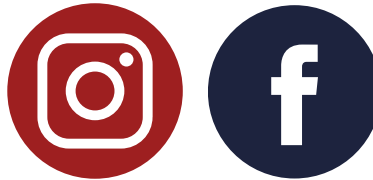
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