

A GALACTIC SUPERWAVE HAZARD ALERT UPDATE

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Comets and asteroids are not the only space hazard that threatens the Earth. There is another phenomenon that occurs far more frequently but that has only recently been discovered — the arrival of an intense volley of Galactic cosmic rays, or what is termed a *Galactic superwave*.⁽¹⁻⁴⁾ The most recent time that a major superwave affected the Earth, and the entire solar system, was during the period from about 16,000 to 11,000 years ago. Through its ultimate energizing effect on the Sun, it was responsible for bringing an end to the last ice age.

Through these solar effects, the superwave was also responsible for the mass extinction which occurred 12,900 years ago in which 95 percent of the large mammal species on the North American continent were wiped out. Paleontologists agree that this was the worst mass extinction since the demise of the dinosaurs 65 million years ago. But its cause had long been a mystery. Excessive hunting by paleolithic tribes cannot account for the 22 genera of birds that also became extinct at that time, nor can hunting explain the widespread slaughter of large and small mammals, not only to the south of the North American ice sheet, but also in the Arctic (Alaska and Siberia), in Europe, and even in South America. The remains of these animals are everywhere found entombed in deposits left by the passage of catastrophic glacial meltwater floods.

Gazing out at the night sky, it is easy to assume that what we see is the way things have been for millions of years: a star-studded heaven, beautiful moon, and a sun that in the morning will rise in its full glory. Unfortunately, this has not always been the case. Overnight this peaceful scene could be transformed into a grotesque display that could best be described as "all hell breaking loose." The hibernating, dust-shrouded core of our Galaxy, which long has remained hidden from view nestled between the constellations of Sagittarius and Scorpius, will on that fateful day be seen to have awakened, to shine forth a strange brilliant blue-white light. It will appear as a guest star far brighter than the planet Venus at full phase, signaling the arrival of the cosmic ray particle volley that had been relentlessly traveling towards us for 23,000 years as it inconspicuously crossed the void separating us from the Galactic center. The Galactic superwave will have arrived.

These cosmic rays are ultra relativistic, meaning that they are traveling so close to the speed of light that they will give rise to superluminal visual effects. The synchrotron radiation they emit in the course of their 23,000 year trek will appear to unfold towards us in a matter of days, showering us with everything from low frequency radio waves, to visible light, ultraviolet, X-rays, and gamma rays, not to mention the penetrating particle volley itself. What we would be witnessing is what astronomers have called a "galactic core explosion" a phenomenon seen through telescopes to be going on in distant galaxies. Now, with the arrival of the superwave, they and the whole world would be experiencing first hand the same phenomenon happening in our own Galaxy.

A Brief Historical Overview

The core explosion phenomenon first became known to astronomy in the 1960's with the discovery of the Seyfert galaxies with their luminous cores, radio galaxies, and at the more extreme end of the energetic spectrum, objects called quasars and blazars. Observations indicated that during its explosive phase a galactic core can release a total energy equivalent at least that coming from

hundreds of thousands of supernova explosions. In some cases their output can reach up to even billions of supernovae.^(5,6) By the 1970's they had realized that our Galactic core is not immune to this phenomenon.⁽⁷⁾ Although gas motions in the immediate vicinity of our Galaxy's core suggested that it had become active as recently as 15,000 years ago, astronomers were reluctant at that time to consider that this was evidence of a full fledged core explosion. In their minds they pictured the Milky Way as a peaceful place. They assumed that the core has been in its present seemingly inactive state for millions of years and that it would continue to be quiescent for many more millions of years to come. But even if the core were to explode—not to worry—they supposed that no harm would come to us since our solar system is well outside the Galaxy's nuclear bulge on the outer fringes of one of the Galaxy's spiral arms. They imagined that magnetic fields filling the Galaxy's core region would trap the outward flying cosmic rays, bringing the barrage to a slow crawl within just a few hundred light years.⁽⁸⁾

The four years of Ph.D. research I conducted on this subject proved to me that their idyllic assumptions were dead wrong. My 1983 Ph.D. dissertation, "Galactic Core Explosions, Cosmic Dust Invasions, and Climatic Change," presented evidence suggesting that our Galaxy's core explodes ten thousand times more frequently than had been previously thought, about every ten thousand years, rather than every 100 million years as was then commonly thought.⁽¹⁾ Moreover it showed that magnetic fields would not stop this outburst. Instead, just the opposite would happen; the cosmic ray volley would overpower any magnetic fields it encountered in its path and align these with its own radial flight. The result would be an expanding shell of cosmic rays traveling radially outward from the center of our Galaxy at very close to the speed of light and penetrating through the entire extent of the Galaxy. I showed that the superwave scenario also explained many of the features characteristic of distant exploding galaxies.

These findings were subsequently presented at scientific conferences and published in refereed scientific journals.^(2-4,9-10) Numerous predictions made by this Ph.D. study were later verified (see <http://www.etheric.com/LaViolette/Predict.html>). By 1997, I had published a book about this phenomenon entitled *Earth Under Fire* (<http://www.etheric.com/LaVioletteBooks/Book-EUF.html>). Its updated second edition appeared in 2005. It has received excellent reviews and a 5-star rating from readers. In 1999 a documentary video by the same name was produced and televised.

Even so, mainstream media has been slow to cover this important issue. As a result, the average citizen, trusting that he has been well informed by the news media, continues to view the night sky as a serene and secure place as he continues his daily routine in his wakeful dream. The Starburst Foundation has as one of its primary objectives to awaken as many as possible to the new and very different awareness that Galactic superwaves do exist and that they can come upon our world with little warning. The Starburst Foundation is a 501(c)3 nonprofit research institute supported by charitable donations (<http://www.etheric.com/Starburst/Starburst.html>).

The EMP shock front

Should a superwave arrive, our most immediate worry would be the electromagnetic pulse (EMP) that it would carry at its forefront. This high intensity electromagnetic shock front would send high voltages coursing along any electrically conductive object.⁽¹⁾ Upon arrival, it would:

- create high-voltage surges on the power line grid, shorting out power line transformers and tripping line circuit breakers, resulting in global power blackouts.
- fry satellites and destroy all nonhardened electronic equipment connected to the electric power grid, resulting in loss of electronic communications (TV, telephone, GPS system, etc.) -- airplane crashes would be inevitable;

- accidentally electrocute people who happened to be touching a large metal surface.
- ionize the Earth's atmosphere and consequently destroy the ozone layer, thereby increasing the Earth's exposure to harmful UV rays and ionizing radiation. The atmospheric electron shower produced by the superwave cosmic rays and the consequent increased penetration of solar UV would have the effect of raising the incidence of skin cancer and the rate of genetic mutation.

In 1989, the Starburst Foundation undertook an extensive campaign to warn the U.S. government and ambassadors to the U.N about the dangers of an unexpected superwave arrival, describing consequences such as those listed above. Just in January of this year, 20 years after the Starburst effort, the U.S. National Academy of Sciences and National Research Council issued a report entitled *Severe space weather events: Understanding societal and economic impacts*.⁽¹¹⁾ See article in *New Scientist* at: <http://www.newscientist.com/article/mg20127001.300-space-storm-alert-90-seconds-from-catastrophe.html?full=true>. The report enumerates catastrophes very similar to these occurring as a result of the sudden arrival of a very large solar coronal mass ejection, or what scientists call a "Carrington Event." This is named after the super-sized solar storm studied in 1859 by British astronomer Richard Carrington. Fortunately, because society was then still in the age of the horse and buggy, there was minimal social impact. But they say that there is a high likelihood that a Carrington Event could occur again in that not too distant future, maybe even in 2012 at the height of the next solar cycle.

But if a solar storm of this magnitude were to occur today, during our present age of electric utility dependence, the results would be catastrophic. It would result in a complete frying of all step-up and step-down transformers used to convert power to and from the high-voltage transport grid. The result would be that industrialized societies worldwide would be brought to a grinding halt. Electric utilities do not keep many spare transformers in stock and without electric power the manufacture of new transformers would be seriously hampered. In short, they say that it could take as much as a year to remanufacture the needed replacement units, provided that the manufacturing plants could be made to function. Meanwhile customers would be left to fend for themselves, surviving with candles and wood burning stoves. Even gas pumps require electricity. So if gas stations have not taken precautionary measures to have standby portable generators, perhaps horse and buggies will end up coming back in fashion. The report estimates that a complete recovery from such a hazard could take *4 to 10 years*. The same horrors described for the occurrence of a Carrington Event would occur for the arrival of even a very minor "Magnitude 1" superwave event, and as we will discover below, we are substantially overdue for one such event.

On August 27, 1998, when a strong gamma ray burst unexpectedly arrived after journeying 20,000 light years from the a distant point in the constellation of Aquila, scientists awoke to the rude reality that a cosmic ray event could upset life on our planet. The event, which lasted 5 minutes, was strong enough to ionize the upper atmosphere and seriously disrupt satellites. It triggered a defensive instrument shutdown on at least two spacecraft. Fifteen years earlier in 1983, a much briefer gamma ray burst, lasting just four-seconds, had a measurable effect on radio transmissions used for global navigation and communication.⁽¹²⁾

There is the strong possibility that the superwave EMP would also be accompanied by a gravity wave. The tidal force exerted on the Earth as it passed could trigger earthquakes and volcanic eruptions. A cosmic ray outburst whose gamma ray burst blasted our solar system on December 27, 2004 may have been a warning of what could happen. The outburst was produced by a stellar explosion that occurred about 26,000 light years away near the center of our Galaxy. It was the first such gamma ray burst to be observed to originate from within our galaxy and the brightest to be recorded in the entire history of the U.S.-European GRB observation program. But just 44.6 hours before it arrived the Earth was rocked by a 9.3 Richter earthquake, ten times stronger than any that occurred in the previous 25 years. This produced the infamous Malasian tsunami which

left 240,000 people either dead or missing.

It does not take a genius to realize that the two events were connected. While both the gamma ray burst and its associated gravity wave pulse would travel towards us at close to the speed of light, the gamma ray pulse would lag slightly since it would have undergone some scattering along the way. Over the course of its 26,000 light year journey, it would have traveled an average of 0.2 millionths slower than its associated gravity wave (see www.etheric.com/GalacticCenter/GRB.html for more details). But this event was far smaller than even the smallest of superwave events.

Abrupt Climatic Change

In the event of a substantially large-sized superwave, a "Magnitude 4" superwave, the worst would be yet to come. The superwave cosmic ray wind would vaporize frozen cometary debris that currently surrounds our solar system and would blow this dust and gas inward; see Figure 1. Analysis of Greenland ice has shown that, in fact, the solar system was filled with large concentrations of cosmic dust during the last ice age.⁽¹⁰⁾ As this nebular material entered the inner solar system, it would scatter sunlight so that a portion of our radiation would come from a uniform glow filling both the daytime and night time sky. If you have had the experience of looking at the tail of a comet through a pair of binoculars, then just imagine that same diffuse glow filling the entire sky and blotting out the stars. The dust would also redden the solar radiation spectrum. Since our atmosphere is opaque to infrared, a greater fraction of the Sun's radiation would become trapped in the upper atmosphere, warming the upper atmosphere and leaving the ground considerably cooler. This would produce inversion conditions that would induce severe storm activity and rapid precipitation of sleet and ice. Moreover as this nebular material crashed onto the Sun's surface, it would energize the Sun, increasing its luminosity and its cosmic ray output.

All of these effects together would dramatically affect the Earth's climate.^(1-4, 9-10) On some occasions the invading cosmic dust could produce a prolonged cold spell or even initiate an ice age if one was not already in progress; at other times it could produce a period of excessive warmth which could terminate an existing ice age or produce a brief interstadial. The geologic record reveals that our planet has been plagued by ice ages for most of the past several million years. The



Figure 1. Artist's conception of a superwave-induced cosmic dust incursion (© 1998 P. LaViolette).

Concerned about the potential climatic hazards associated with Galactic superwaves, the United States Senate Committee on Commerce, Science, and Transportation voiced their interest in a proposal to carry out a thorough investigation into the climatic implications of the Galactic superwave phenomenon. In September 1984, the committee chairman wrote the following letter to the director of the National Science Foundation:

"Dr. LaViolette has presented to the Committee extremely interesting research results and scientific papers written on experiments conducted at Portland State. His research addresses the abrupt changes that have occurred over geological time. He hypothesizes that such changes are the result of sudden incursions of cosmic dust into our solar system, causing dramatic temperature changes.

I am interested to know if research in major climatic shifts is presently being funded by NSF and if so are the investigators aware of Dr. LaViolette's hypothesis. Needless to say, the phenomenon of sudden climatic shifts has enormous import to all of us and all reasonable hypotheses should be carefully examined."

warm climate that we have been enjoying during the current 11,600 year-long interglacial has been accompanied by an equally long respite from the occurrence of major superwaves. However, interglacials, and respites between major superwave onslaughts, have rarely been as prolonged as the one we are fortunate enough to be experiencing. The next superwave, which appears to be overdue, could throw us headlong into a new ice age.

The Earth's polar ice record contains evidence that the Sun was, in fact, very active at the end of the last ice age. Glaciologists, for example, have studied the acidity record at Byrd Station, Antarctica going back 50,000 years and found one section, dating from near the end of the last ice age, in which ice acidity levels rose far higher than in any other part of the ice record; see Figure 2.^(13, 14) These levels exceed by 20 fold the amount of acid fallout deposited by the largest known volcanic eruption. This discovery confounded scientists, not only because of its magnitude, but because it lasted an entire century with the acidity fallout waxing and waning in regular cycles. No volcanic eruption has been known to do this. Nevertheless, they realized that this event must have had a substantial climatic impact; for it occurred *at the beginning of the major global warming trend that ultimately ended the ice age.*

However, upon examining these acidity findings, I noticed something that had apparently been overlooked. When the ice record is properly dated, it shows that these acidity peaks recur on the average every eleven years, matching the period of the sunspot cycle. This indicates that these high acidity concentrations were most likely of extraterrestrial origin, and not from repeated volcanic eruptions.⁽¹⁵⁾ It was evidence that large quantities of nebular material were entering the solar system, their concentration and rate of entry being modulated by the solar wind whose intensity varies according to the phase of the sunspot cycle. The solar system's protective magnetic field sheath is more turbulent at solar maximum, allowing invading cosmic dust to more easily penetrate. By cross referencing the Byrd ice core glacial record with the accurately dated Summit, Greenland ice core record, I was able to determine that this event spanned a period of 95 years stretching from about 13,880 B.C. to 13,785 B.C.

This evidence that cosmic dust had invaded the solar system in large quantities at that time confirmed a scenario that I had proposed back in 1983. Namely, I had suggested that an intense volley of cosmic rays originating from the core of our Galaxy had begun to reach us around 14,200 years ago and had continued to pummel the solar system for about two to three thousand years, vaporizing nearby cometary material and injecting the resulting cosmic dust and gas into the inner planetary environs. My original estimate was apparently off by a few thousand years with the arrival date being closer to 16,000 years ago.

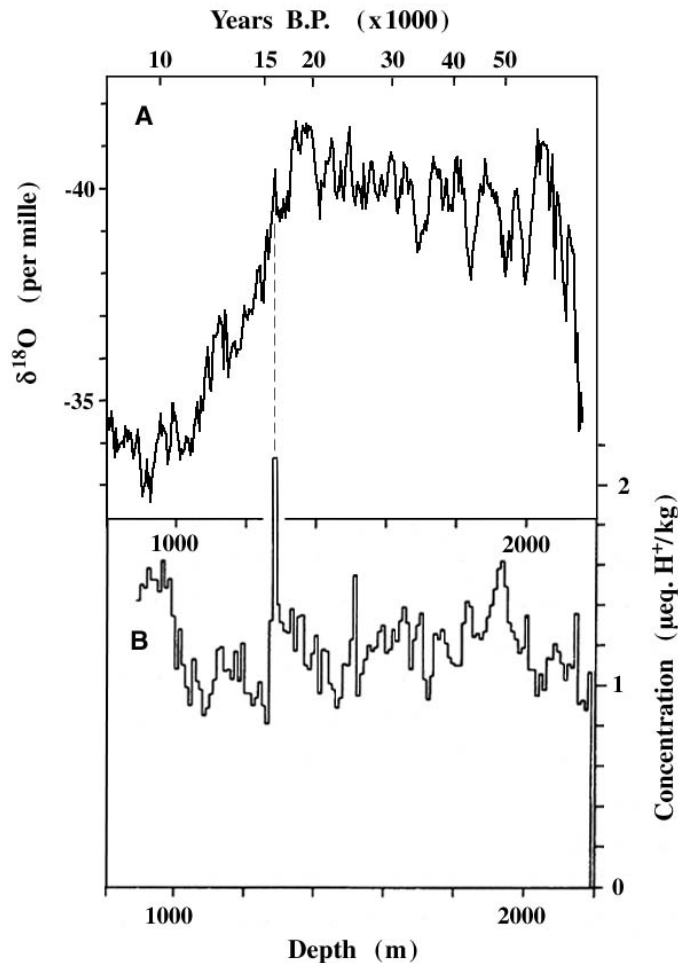


Figure 2. Global climate and ice acidity plotted versus depth (or time) for the Byrd Station, Antarctica deep ice core. Profile (A) shows the oxygen-18 isotope ratio plotted in 2 meter averages (after Johnsen, et al., 1972). More negative isotope ratios (upward) indicate cooler climate and ice age glacial coverage. Profile (B) shows ice acidity levels plotted for a consecutive series of ice core increments each spanning 10 meters of core depth (after Hammer et al., 1997).

Ice core data published in the 1990's indicated that, in fact, the Earth was exposed to a high cosmic ray flux at that time. When cosmic rays strike nitrogen molecules in our atmosphere they produce the isotope beryllium-10. A record of the past rate of beryllium-10 production is recorded in the polar ice caps, and as seen in Figure 3 (arrow marker), atmospheric beryllium-10 production rate rose sharply around 16,000 years ago, finally subsiding about 11,000 years ago. Gas expulsions from the center of our Galaxy,^(16, 17) as well as other astronomical evidence,^(1, 3) indicate that the cosmic ray barrage ending the last ice age indeed originated from a major explosion at our Galaxy's core.

The incoming cosmic dust would have significantly energized the Sun, increasing its radiation output, and reddening its spectrum. The resulting increase in solar radiation, and the addition of a greater percentage of infrared radiation along with radiation scattered from the surrounding zodiacal dust would have altered caused a global warming and could explain why the ice age came to an end at this time. Herbert Zook and his team of NASA scientists had independently come to the

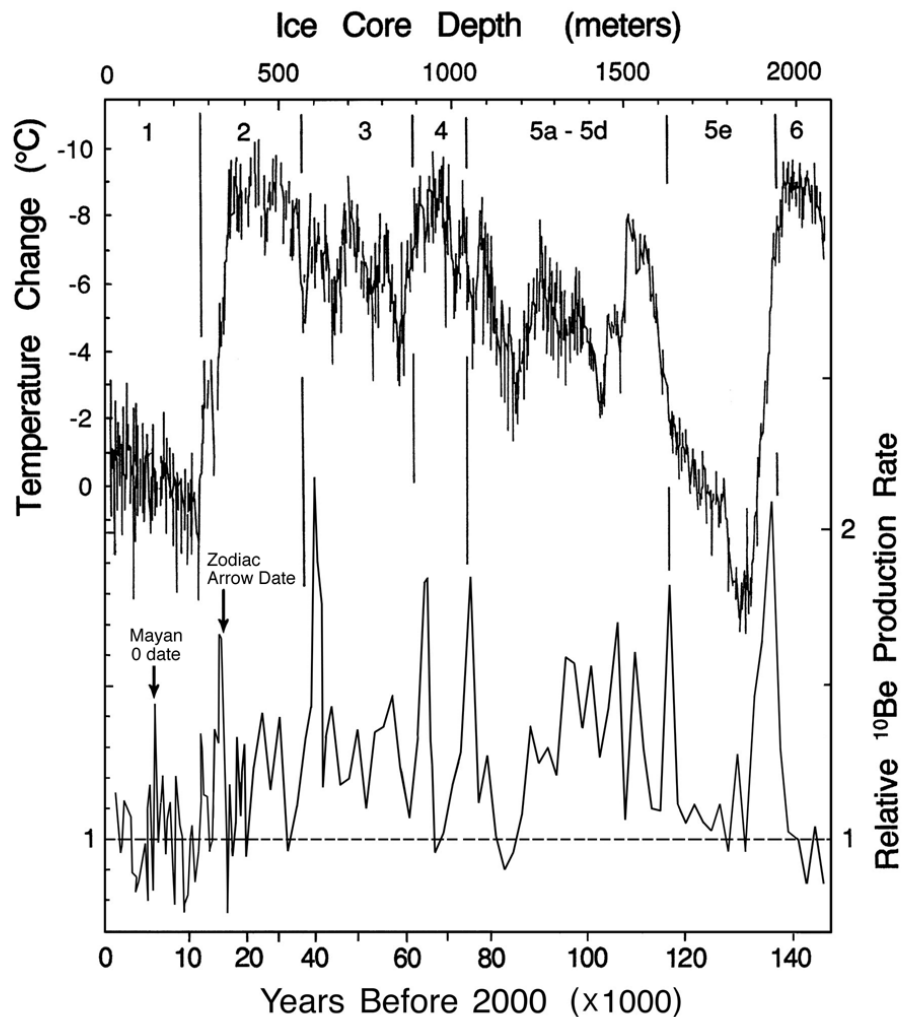


Figure 3. The lower graph plots cosmic ray intensity variations at the Earth's surface during the past 145,000 years; see *Earth Under Fire*.⁽⁴⁾ These values were derived from beryllium-10 isotope concentrations found in the Vostok (East Antarctica) ice core⁽¹⁹⁻²⁰⁾ that were adjusted to correct for variations in ice accumulation rate. The upper graph plots global climate. The numbered climatic zones include: the present interglacial (1), the last ice age (2, 3, & 4), a semiglaciaded interval (5a-d), the last interglacial (5e), and the previous glaciation (6).

conclusion that the Sun was very active during this ice age termination period.⁽¹⁸⁾ Based on the record of solar flare tracks etched in the surface of Moon rocks, they concluded that 16,000 years ago solar flare activity was up to 50 fold higher and that it rapidly declined in the following millennia.

The rapid climatic warming would have formed meltwater lakes perched at high altitudes on the ice sheet surface. Inevitable dam breaks would have released enormous glacial meltwater avalanches called "glacier waves" that would have swept across the ice sheet surface and ultimately scoured bordering continental regions. Stories of a global deluge appear to refer to this event with certain North American Indian legends noting that these mountainous floods originated from the ice sheet to the north. Evidence of continental debris transported thousands of kilometers into the ocean may be records of these glacier waves. Glaciologists refer to these debris transporting episodes as

"Heinrich Events" named after Helmut Heinrich their discoverer. However, contrary to the initial suggestion that they occur at times of climatic cooling, they in fact occur during times of rapid climatic warming and glacial melting. One of the most recent such episodes, known as Heinrich Event 1, peaks around 15,720 years ago at the time of the Pre-Bölling climatic warming that was instigated by the arrival of the galactic superwave and its associated cometary dust incursion; see Figure 4. A more minor episode, Heinrich Event 0, peaked during a warm interval that occurred in the middle of the Younger Dryas cold period.

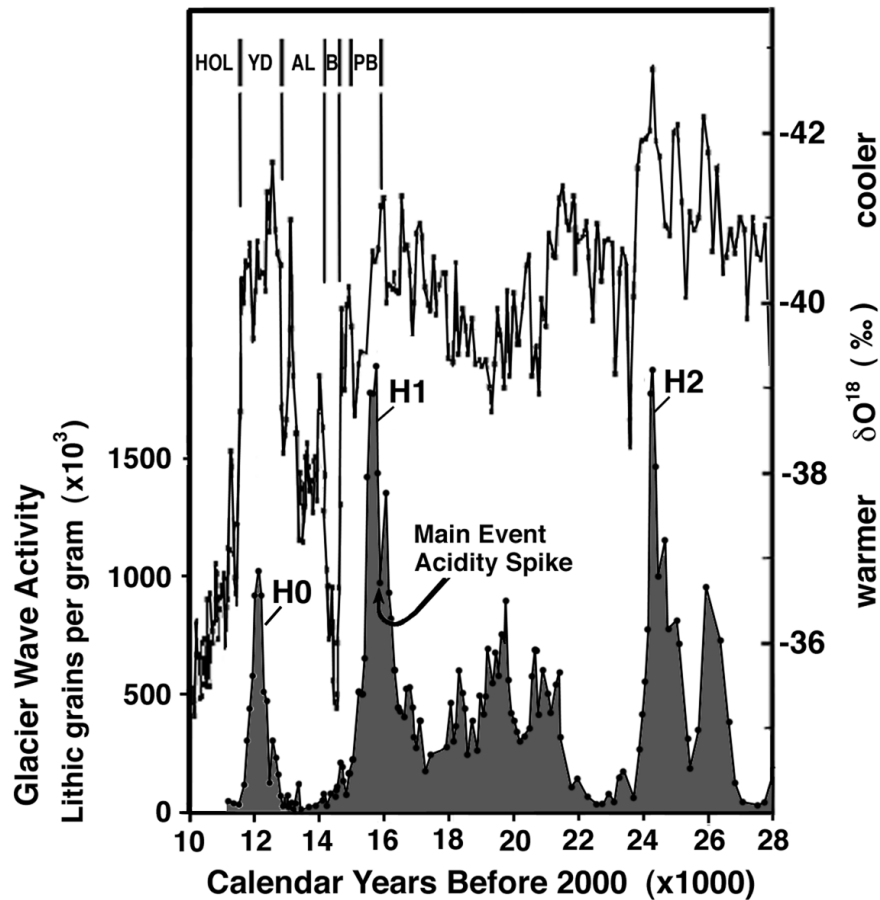


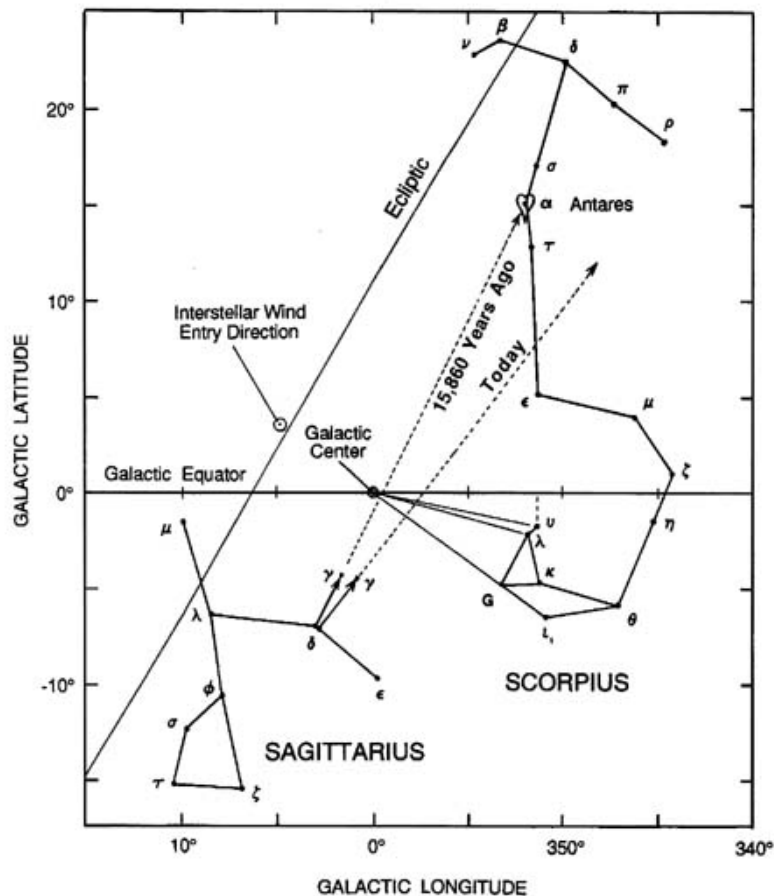
Figure 4. Dating of Heinrich layers compared with major climatic transitions.⁽²¹⁾ Upper profile: oxygen isotope climatic profile from the GISP2 Summit, Greenland ice core (lower values indicate warmer climate). Lower profile: Lithic grain abundance in sediments from North Atlantic core V23-81 (54.5°N, 17.5°W); data courtesy of G. Bond. A timescale for this core was developed as described in the 2009 update to reference (1). Peaks designated as H0, H1, and H2 indicate Heinrich layers. Abbreviations designate the following climatic boundaries at the end of the ice age: Pre-Bölling Interstadial (PB), Bölling (B), Alleröd (AL), Younger Dryas (YD), and Holocene (Hol).

These various discoveries, of the acidity spike of 13,880 B.C., the accompanying rise in galactic cosmic ray flux, the occurrence of Heinrich Event 1, and the dramatic increase in solar flare activity together indicate that something dramatic was happening to our planet around this time. They validate the significance of the 13,860 years B.C. date encoded in prehistoric constellation lore; see text box.

Message in the Sky

The path that led to my discovery of the superwave phenomenon began in 1976 after I stumbled upon an ancient time capsule message referring to a prehistoric terrestrial cataclysm. I had discovered that ancient astrological folklore associated with the zodiac constellations was conveying a warning that the core of our Galaxy had entered an active Seyfert state and that its cosmic rays began reaching us about 16,000 years ago.⁽⁴⁾ I had found that the zodiac was metaphorically conveying the rather sophisticated scientific notion of explosive matter-energy creation and later I discovered that it used pointer stars in the constellations of Scorpius and Sagittarius to indicate the origin of this outburst.⁽²²⁾ The arrow in Sagittarius' bow and Scorpio's upward pointing tail suggested trajectories that converged in the general area of our Galaxy's core.

Furthermore I came across an ancient Greek myth that specifies that Sagittarius is shooting at the Heart of the Scorpion, the Heart being represented by the star Antares (Alpha Scorpius). But viewing these constellation stars as we see them today, we find that the arrow shaft is not properly aimed at Antares, but rather is directed 5° southward. This off target aim is readily explained by the fact that the stars outlining the arrow shaft have moved considerably over the millennia as a result of the solar system's gradual movement relative to the stars. Astronomers call this phenomenon stellar *proper motion*. By specifying this sighting trajectory, the Sagittarius myth was challenging us future scientists to determine the important past date when this arrow pointer



was correctly aimed. This turned out to be about 13,860 B.C. Since this same arrow indicator was pointing out the location of the center of our Galaxy to within 0.3 degrees of arc (less than one lunar diameter) and was also a key part of an encoded message referring to an explosive outburst, I naturally concluded that the astrological zodiac was attempting to tell us that a Galactic core explosion had begun to bombard our solar system around the time of that past date.

The insight which this ancient zodiac cipher provided me in 1979 allowed me to conceive of the existence of superwaves and to begin to investigate the phenomenon as the subject of my Portland State University Ph.D. thesis. The idea that a Galactic core explosion may have affected our planet in such geologically recent times was the furthest thing from the minds of astronomers or geologists at that time. So, were it not for the hint that this zodiac message provided, neither I nor anyone else would have had no clue that a core outburst had affected the Earth in such geologically recent times. I had some measure of uncertainty as to whether I was properly interpreting this ancient stellar cipher. Consequently, part of the reason that I was carrying out my Ph.D. research was to see if there was any truth to the Galactic explosion message that the zodiac cipher seemed to so clearly portray. The other reason for my investigation was to find out as much as I could about the past events brought about by this incident. For, if the message was valid and evidence showed that our planet had indeed recently experienced a superwave and that these bombardments recur relatively frequently, then this discovery would be exceedingly important for human survival. It would be one of the most important scientific discoveries of modern times.

I do not stand alone in my interpretation of the zodiac cipher. Many have checked my conclusions. Also, some have themselves tried their hand at deciphering the zodiac cryptogram and have succeeded. The first part of the cipher is presented at the Sphinx Stargate website (<http://www.etheric.com>) in the form of a puzzle which has become a popular challenge for web surfers to decode. It helps to have a familiarity with general systems theory concepts.

Any doubt that the zodiac signs present a sophisticated astronomical warning message is quickly dispelled when one examines the superwave theory's impressive track record, having made as many as 14 a priori predictions that were later verified. Considering also that the theory has successfully accounted for observations in over seven scientific disciplines, the suggestion that I may have hit upon this theory just by luck seems a bit far fetched. Moreover while a skeptic might argue about specific interpretations of the zodiac's symbolism, the date indicated by the Sagittarius arrow trajectory is quite unequivocal, being based on simple astrometry. Certainly, it is not just luck that 21 years later major terrestrial events would be found, such as the 13,880 B.C. acidity spike and Heinrich Event 1, whose dates happen to coincide with this arrow indicator date.

As a Thief in the Night

In 1983 when I first published the idea that cosmic ray volleys are able to propagate to the Earth at close to the speed of light, my suggestion mostly fell on deaf ears. But, it was not long before evidence would come forward to support my hypothesis. In 1985, astronomers discovered that Cygnus X-3, a strong cosmic ray source lying about as far away as the Galactic Center (25,000 - 30,000 light years), was showering the Earth with high-energy particles. They found that despite the Galaxy's magnetic fields, these particles were able to reach the Earth at the speed of light following arrow-straight paths.⁽²³⁾ Several years later, scientists found that the Earth was also being showered by particles from another high-energy source, the X-ray pulsar Hercules X-1.^(24, 25) The particles were found to come in bursts spaced by 1.2357 seconds, closely matching the pulsar's intrinsic period. Even though this source lay 12,000 light years away, the intervening interstellar medium had such a minor effect on the bursts that their pulsation period was constant to within 300 microseconds.

Additional supporting evidence for the superwave theory came to light during the January 2000 meeting of the American Astronomical Society. It had been known for some time that the massive core of our Galaxy was emitting cosmic ray electrons and that these cosmic rays were producing synchrotron radio emission as they interacted with magnetic fields along their flight path. A group of radio astronomers presented findings indicating that the synchrotron radio emission coming from the Galactic center is circularly polarized.⁽²⁶⁾ The speaker said he found this result to be "mysterious" since all other Galactic cosmic ray sources emit synchrotron radiation that is instead linearly polarized. During the question period following their lecture, I pointed out that their findings of circular polarization could be easily explained if the cosmic rays producing this radiation were streaming radially towards us over a long flight path. Linearly polarized radiation observed from most Galactic sources is instead produced by cosmic rays that are magnetically captured into relatively stationary spiral orbits. Other astronomers present at the meeting agreed with this radial trajectory interpretation.

These findings are reason to be gravely concerned about the effects of a Galactic core explosion. They imply that the generated cosmic rays can impact our planet, virtually without warning, preceded only by the wave-flash from the initial explosion.^(1, 3) Because they travel at the speed of light, superwave cosmic rays remain cloaked and hidden from our view until the very moment they strike.⁽¹⁻⁴⁾ Their long journey towards us, as they cross the 23,000 light-year distance that separates us from the Galactic center would go entirely undetected. In effect, we live on the edge of a "galactic volcano," knowing neither the time, the magnitude, nor the severity of the next eruption, or what impact it will have on our environment. We stand unprepared to deal with such an event, much less anticipate its arrival. Whether a superwave may strike several hundred years from now, some time in the coming decade, or during this year, there is really no way to tell.

The Probability of Future Arrivals

The beryllium-10 data presented in Figure 3 shows that glacial periods correlate with intervals of high cosmic ray activity. Also cosmic ray peaks are seen to preferentially coincide with either the onset or termination of ice age periods, suggesting that there must be a causal connection between superwaves and climate. We can get an idea of the frequency of these events by investigating the time lapse between successive beryllium-10 deposition rate peaks. In 1983, I had ventured that superwaves recur about every ten **thousand** years.⁽¹⁾ The beryllium-10 data that subsequently became available indicates that this estimate was not far off. In June 2009 the Starburst Foundation conducted a spectral analysis of this ice core data, with the volunteered help of an expert statistician, and this investigation detected the following dominant recurrence periods for past superwave cosmic ray events: $28,500 \pm 2,200$ years, $11,500 \pm 550$ years, and $5,750 \pm 100$ years. Since the polar ice record shows that the last major superwave climaxed between 14,500 and 11,500 years ago, the 11,500 year cycle implies that we are currently overdue for another major event.

Many are concerned about the nearing Mayan calendar end date of December 2012 on which the Maya predicted the present fourth world age would end and the fifth world age would begin. Their sacred text, the *Popul Vuh*, speaks of previous world catastrophes having transpired at past world age terminations. It says that a thick resin falls from the sky and bringing darkness to the world, that the world also experiences at these times a vast conflagration, a great flood, and earthquakes. It states that past global destructions occurred because former races had forgotten their Creator, the Heart of Heaven. Since their cosmology makes particular reference to the sky location near the Galactic center where the ecliptic crosses the Galactic equator, this leaves us to wonder whether the Heart of Heaven could be a reference to the Galactic core, the creation center of the Milky Way. The Maya designed a calendar based on the transits of Venus as a way of keeping track of the passage of time and the advent of future world age transitions. Interestingly, the zero date for the current fourth world calendric cycle began in 3114 B.C., a date that immediately followed the

occurrence of a minor beryllium-10 spike dated at around 3300 ± 200 B.C.; see Figure 3. This cosmic ray spike likely registers the arrival of a Magnitude 1 superwave. The event was also associated with a brief climatic cold spell, as indicated by the findings of glaciologist Lonnie Thompson. So the fact that the Maya chose this date for the beginning of their current world cycle may not be a coincidence. Interestingly, this 3300 ± 200 B.C. superwave date falls at the close of the Neolithic period and precedes the rise of civilization with Old Kingdom Egypt and its lower Nile Delta civilization beginning a precipitous rise circa 3100 B.C.; see Figure 5.⁽²⁷⁾

The Maya may have designed their calendar not only to mark the date of arrival of this past superwave, but also to predict when the next one might come. The 5,124 year cycle of their calendar approximates the $5,750 \pm 100$ year cycle evident in the ^{10}Be polar ice record. A shorter 5,400 year-long cycle is also marginally present in the data, but its existence is far less certain. Based on the Mayan calendar cycle we are presently overdue for the arrival of the next superwave. Based on the 5,750 year cycle evident in polar ice data, we should expect a superwave within the next four centuries.

The Galactic center may also flare up frequently between major superwave events. Astronomical observation indicates that during the past 5,300 years, the Galactic center has expelled 14 clouds of ionized gas.⁽²⁸⁾ The dates estimated for these expulsions are shown on the timeline in Figure 6. Such minor superwaves were not intense enough to generate beryllium-10 peaks visible above background levels. However, the electromagnetic pulse associated with these events could have been sufficiently strong that, had one such event occurred today, it could have had a catastrophic effect on modern electronics and communication systems unlike anything we have witnessed thus far. In other words, it might produce effects similar to a Carrington Event solar flare of the sort described in the U.S. National Academy of Sciences report. About 80% of these Galactic center gas emissions took place within 500 years of one another (Figure 7). Yet, it has been 700 years since the last event. So, again we come to the conclusion that we are currently overdue for the recurrence of such an event.

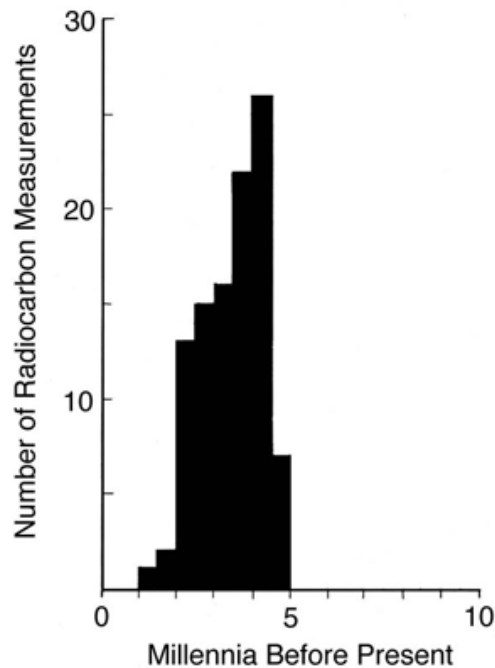


Figure 5. Histogram showing the number of published radiocarbon dates from the lower Nile valley for each of a series of calendar year increments.⁽²⁶⁾

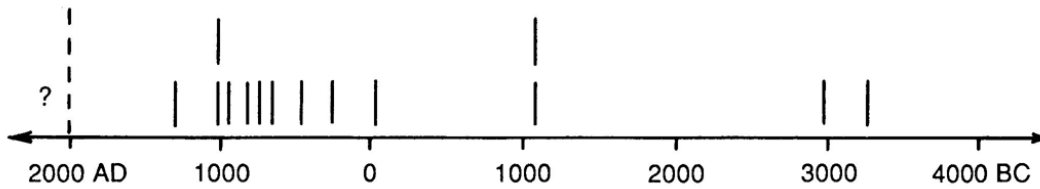


Figure 6. History of minor Galactic Center explosions during the past 6000 years; dates approximate times when radiation pulses arrived from the Galactic Center. (These age estimates taken from Lacy et al.,⁽²⁷⁾ have been decreased by, ~70% to correct for the smaller value of 23,000 light years adopted here for the distance to the center of the Galaxy.⁽⁴⁾) © 1989 P. LaViolette

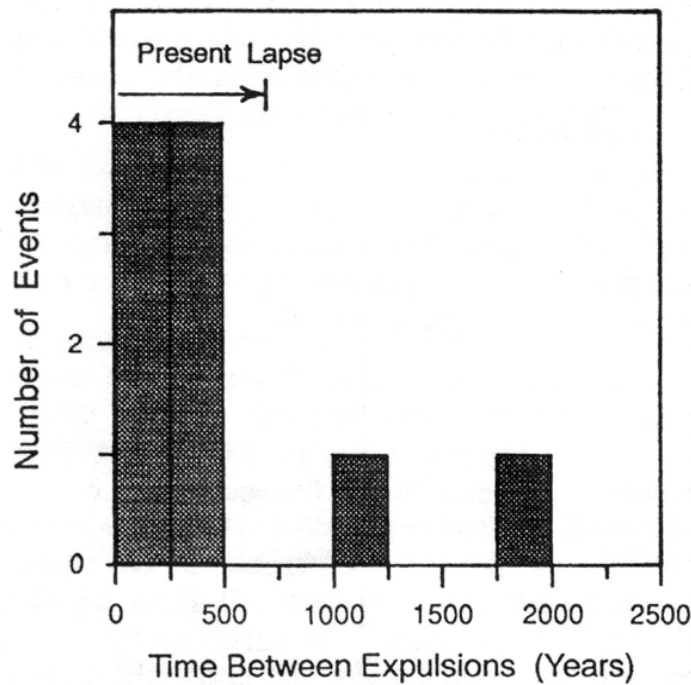


Figure 7. Amount of time between successive gas expulsions from the Galactic center, plotted as a frequency histogram. © 1989 P. LaViolette

Taking Action

To be properly prepared for the next event we must accelerate the development and deployment of alternative energy technologies so that citizens are energy self-sufficient and able to disconnect from the utility grid. Also governments need to become aware to expect cosmic ray hazards not only from the Sun, but from the Galactic center as well. Governments need to work out emergency plans to deal with such hazards, much the same way that they have worked out emergency rescue plans to deal with earthquakes and tsunamis.

Also we must seek ways to anticipate the arrival of the next superwave. One way to do this would be to establish contact with friendly extraterrestrial civilizations. Since superwaves are a hazard that affects the entire Galaxy, they should be known to all advanced galactic civilizations, and possibly

also their future arrival dates as well. A careful multi-year study of pulsar data has concluded that radio pulsars are most likely of artificial origin, neutron stars that have been artificially engineered to emit pulsed radio communication beams.^(29, 30) Through their sky positions and encoded pulse period relations, they appear to be marking the precise location of the Galactic center and sending a symbolic warning about the superwave phenomenon. More specifically, they seem to be referring to the superwave that passed us at the end of the last ice age. Efforts need to be made to study these signals with the aim of learning more about their message. The astrophysical community needs to free themselves of their social taboos and wake up to the possibility that these objects are of ETI origin. The time is rapidly approaching when we may need to recruit the assistance of these galactic civilizations. The ongoing crop circle phenomenon also needs close study. Investigations have shown that a large majority are produced by an exotic microwave force field beam technology and not by hoaxer farm boys tramping grass with boards.⁽³⁰⁾ A study of their patterns indicates that their creators have a very deep understanding of mathematics and geometry, and there is a growing consensus that they are being formed by ETs. Hence crop fields may be another place to look for signs of any relevant communications.

Although technology exists to create force field shields capable of deflecting the trajectories of approaching cosmic rays, implementing such defense measures on a scale sufficient to protect the entire solar system from a superwave onslaught would be a near impossible task. The best defense may be ourselves. We should not overlook the power of mass prayer. This may be the only hope. Plans are underway to conduct synchronized meditations and prayers around the world in hope of protecting the Earth and its inhabitants from a possible hazard arriving as early as December 13, 2012.⁽³¹⁾ Regardless of whether such an imminent superwave arrival date is valid, we should be prepared because the geologic record indicates that a superwave is definitely on its way and due to arrive in these upcoming decades or centuries.

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