A GALACTIC SUPERWAVE HAZARD ALERT

by Paul A. LaViolette, Ph.D.

E-mail: Gravitics1@aol.com
Website: www.etheric.com/
Nexus magazine **8**(2) February - March 2001, pp.

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 superwave affected the Earth, and the entire solar system, during the period from about 16,000 to 11,000 years ago and, through its ultimate energizing effect on the Sun, was responsible for bringing an abrupt end to the last ice age.

Through these solar effects, the superwave was also responsible for the mass extinction which occurred 12,750 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 why high atmospheric radiocarbon coincidentally rose to unprecedented levels and why moon rocks register solar flare activity over 50 times higher than present levels. Nor can it 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, their remains everywhere being 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 they have seen 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). In 1997, I published a book on this subject entitled *Earth Under Fire* (http://www.etheric.com/LaVioletteBooks/Book-EUF.html). It received rave reviews and a 5-star rating from readers. Also in 1999 a documentary video about this Galactic phenomenon was produced and subsequently shown on a nationally syndicated cable network.

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.

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.(11)

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.

Abrupt Climatic Change

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 binoculors, 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

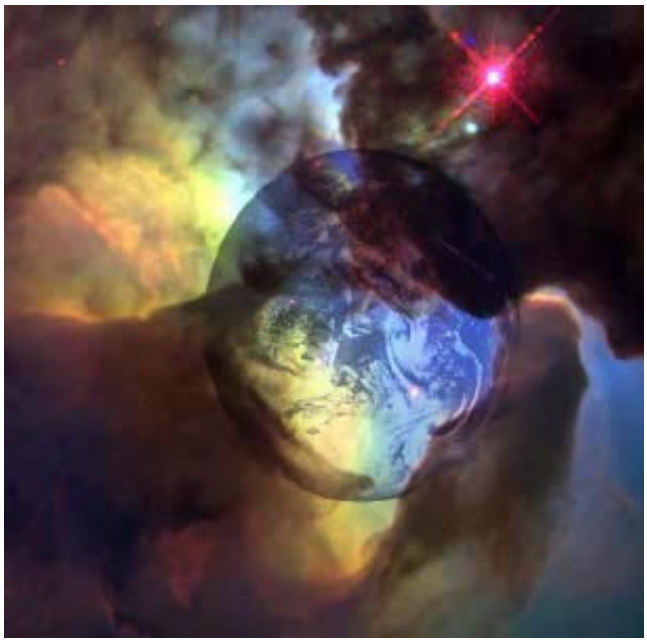


Figure 1. Artist's conception of a superwave-induced cosmic dust incursion (© 1998 P. LaViolette).

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 warm climate that we have been enjoying during the current 11,600 year-long interglacial has been accompanied by an equally long respite between 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.

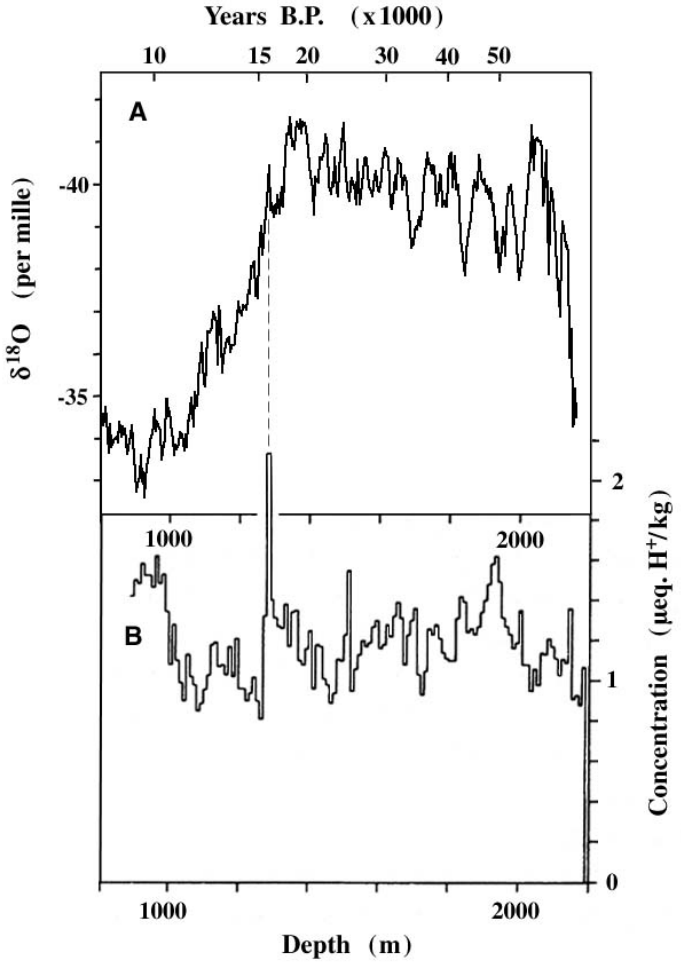


Figure 2. Global climate and ice acidity plotted versus depth (or time) for the Byrd Station, Antarctica deep ice core. Profile (A) shows the oxygen-18 isotope ratio plotted in 2 meter averages (after Johnsen, et al., 1972). More negative isotope ratios (upward) indicate cooler climate and ice age glacial 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).

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 exaple, 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.[12, 13] 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 most probably originate from the Sun, rather than from volcanic eruptions.[14] However, to make such a pronounced and singular solar cycle imprint in the ice record, the Sun would have had to be far more active than it is at present. The solar wind outflow at that time would have had to be at least an order of magnitude more intense than it has been in historic times, with solar flare activity comparably elevated and the Sun somewhat more luminous than the Sun of the current interglacial. This evidence of an active Sun heralding the deglacial warming trend confirmed a scenario that I had proposed back in 1983, namely that our Sun had become significantly energized by incoming cosmic dust and as a result had caused a global warming that ended the last ice age. 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. The finding also underlines the importance of the 13,860 years B.C. date encoded in ancient constellation lore; see text box.

Message in the Sky

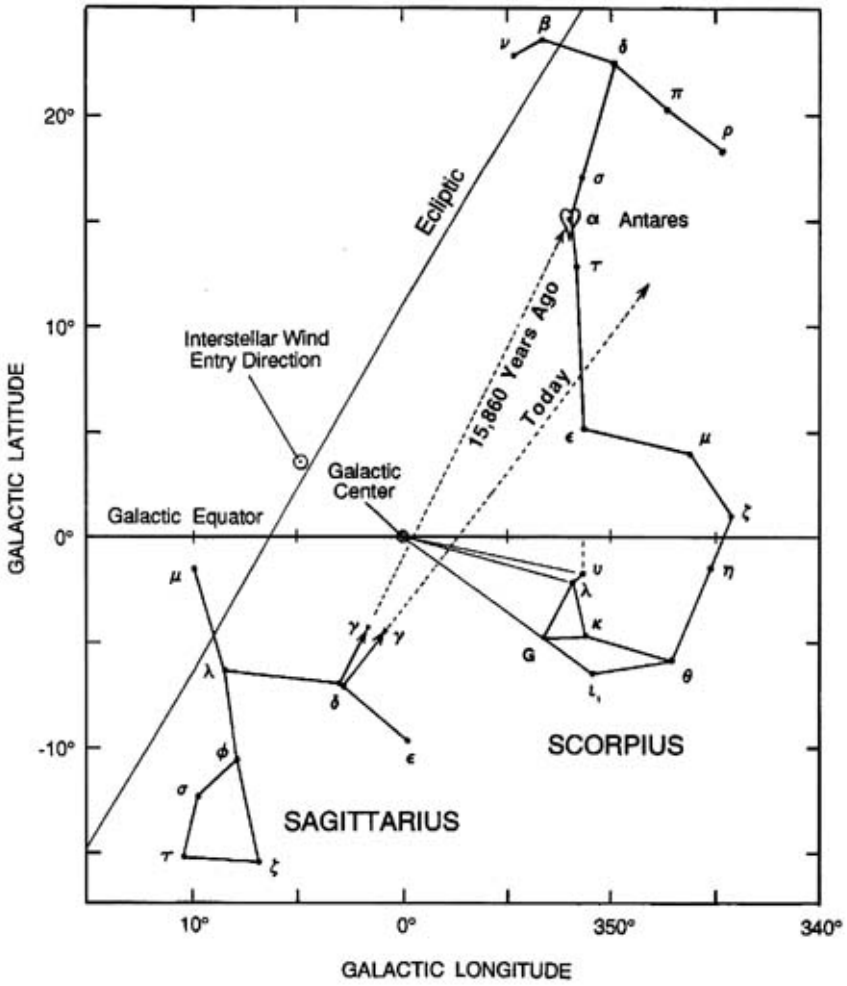
The discovery of this 13,880 B.C. century-long solar event validates the significance of a date encoded in prehistoric constellation lore. In 1976, I had discovered that zodiac constellation lore used cryptographic techniques to metaphorically convey the notion of explosive matter-energy creation.[16] Later, in 1979, I discovered that the constellations of Scorpius and Sagittarius used pointers, Sagittarius' arrow and Scorpio's stinger, to designate the center of our Galaxy, indicating it as the site of this explosive outburst. In particular, the Sagittarius arrow pointer encoded a prehistoric date.[4] Ancient myth specifies that Sagittarius is shooting at the Heart of the Scorpion, represented by the star Antares (Alpha Scorpius). But the arrow shaft presently is not properly directed at Antares since the stars outlining the shaft have moved considerably over the millennia. By specifying this sighting trajectory, the Sagittarius myth would be challenging future scientists who are knowledgeable of the slow movements of the stars (so called stellar *proper motion*) to determine the important past date when this arrow pointer was correctly aimed. This date 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) and was also a key part of an encoded message referring to an explosive outburst, I naturally concluded at that time 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.

This ancient zodiac cipher provided me with the initial impetus to investigate the superwave phenomenon as the subject for my Ph.D. thesis. Understand, that in 1979, 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. So, were it not for this zodiac message, I would have had no clue that this phenomenon might have occurred. Because of this uncertainty, I was carrying out my Ph.D. research partly 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, that if the message was valid and evidence showed that our planet had indeed

recently experienced a superwave and that these bombardments occurred relatively frequently, then this discovery would be exceedingly important for human survival. For sure it would be one of the most important discoveries of modern science.

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.

Of course there will always be skeptics who will be unable to see that the zodiac signs do in fact present a sophisticated astronomical warning message. But, the superwave theory has made many a priori predictions which later were validated by myself and others. Considering also that the theory has been successful at accounting for observations in over seven scientific disciplines, the idea that I hit upon this theory just by luck seems a bit far fetched. Moreover while a skeptic might argue about the interpretation 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 we discovered that this arrow indicator date coincides with the time of a major astronomical event—an immense solar expulsion unprecedented in the past 50,000 years and that heralded the beginning of the global warming that eventually ended the last ice age.



This discovery that the Sun was highly energized at the end of the last ice age confirms an earlier discovery made by NASA scientist Herbert Zook and his team.[15] 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. I have suggested that solar activity had reached a peak around 12,200 B.C. when global warming was at a maximum and also briefly around 10,700 B.C. at the time of the late Pleistocene mass extinction, an event that appears to have been solar induced.[4] The several thousand year period between the time of the solar wind event and these dates would have been a time when solar activity was building up to its climax.

Concerned about the potential climatic hazards associated with Galactic superwaves, the chairman of the United States Senate Committee on Commerce, Science, and Transportation voiced their interest in my proposal to carry out a thorough investigation into the climatic implications of the Galactic superwave phenomenon. In September 1984, he 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."

NSF, and other government science institutions, however, have failed to fund research into this important phenomenon. Academia, with its uniformitarian bias, also has done nothing to pick up the ball.

As a Thief in the Night

In 1983 when I first proposed 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.[17] 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.[18, 19] 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 my superwave theory came in January 2000 at the 195th meeting of the American Astronomical Society held in Atlanta, Georgia. A group of radio astronomers presented findings indicating that the synchrotron radio emission coming from the Galactic center is circularly polarized.[20] The speaker said he found this result to be "mysterious" since all other Galactic cosmic ray sources emit sychrotron 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.

We can get an idea of the frequency of these events by investigating the Earth's polar ice core record which registers the arrival of previous superwaves through elevations in the concentration of the the isotope beryllium-10 found in the ice; see Figure 3. Several years before this data had

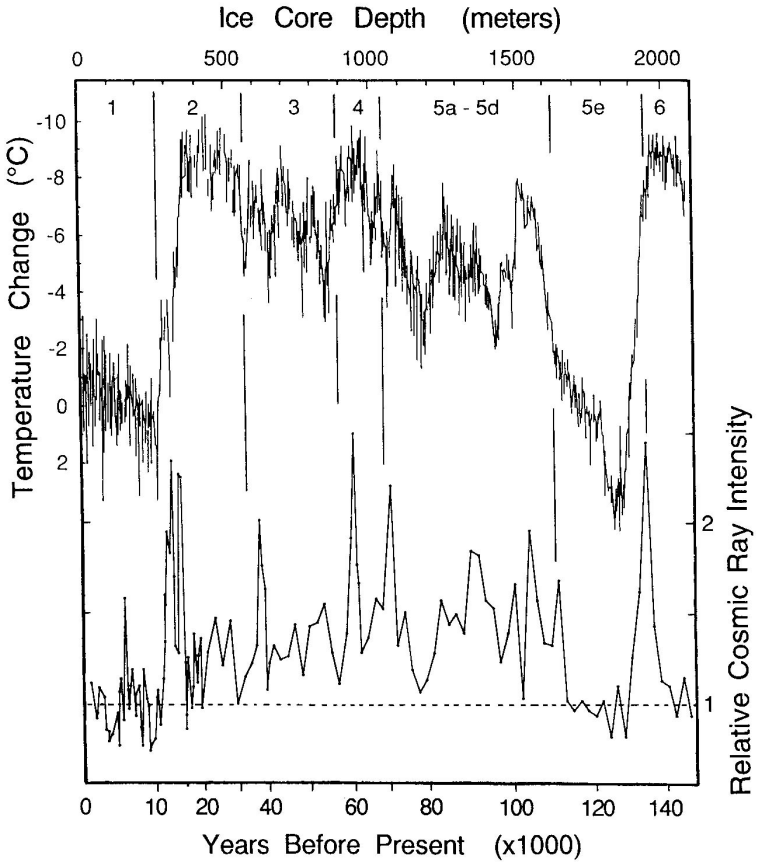


Figure 3. The lower graph plots cosmic ray intensity variations at the Earth s surface during the past 145,000 years; see *The Talk of the Galaxy*.[21] These values were derived from beryllium-10 isotope concentrations found in the Vostok (East Antarctica) ice core[22–23] that were adjusted to correct for variations in ice accumulation rate and solar activity. The upper graph plots global climate. The numbered climatic zones include: the present interglacial (1), the last ice age (2, 3, & 4), a semiglaciated interval (5a-d), the last interglacial (5e), and the previous glaciation (6).

become available, my 1983 dissertation had ventured that superwaves recur about every ten years, and that a major event had passed the solar system beginning about 14,200 years ago and lasting about 2000 to 3000 years. The beryllium-10 data indicate that this estimate was not far off. The record indicates that major superwave events arrive on the average every 26,000 ± 3000 years, but sometimes can recur after as little as 10,000 to 13,000 years.[4] Also it shows that the last major superwave climaxed between 14,500 and 11,500 years ago. Gas motions at the center of our Galaxy,[24, 25] 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. Given that superwaves have recurred after lapses of as little as 10,000 years, it is prudent to conclude that we are currently due for the arrival of another event.

The polar ice record data presented in Figure 3 also show that glacial periods correlate with intervals of high cosmic ray activity, with cosmic ray peaks preferentially coinciding with climatic boundaries. This establishes that there must be a causal connection between superwaves and climate and suggests that superwaves are active in both initiating and terminating ice ages. Also, if the solitary elevated beryllium-10 data point can be trusted, there may be evidence that a very brief low intensity superwave passed us around 3300 B.C. Interestingly, this falls at the close of the Neolithic period and precedes the rise of civilization with Old Kingdom Egypt beginning c. 3100 B.C. As seen in Figure 4, lower Nile Delta civilization began its precipitous rise around 5000 years ago.

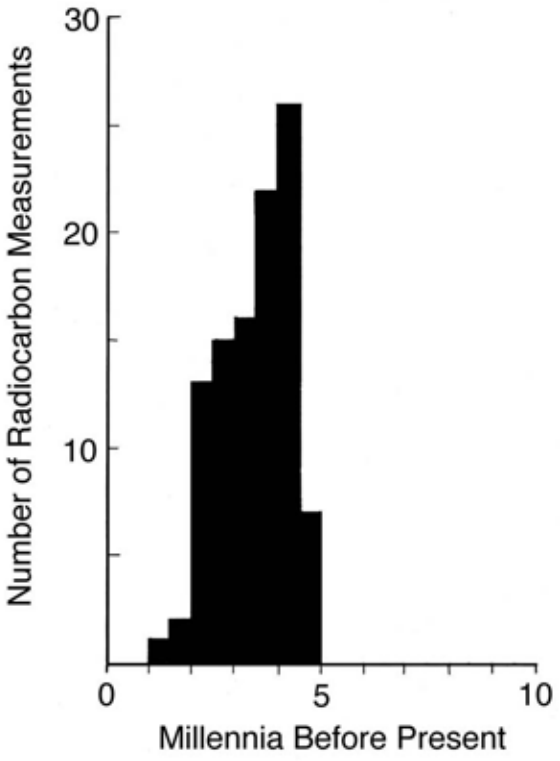


Figure 4. Histogram showing the number of published radiocarbon dates from the lower Nile valley for each of a series of calendar year increments.[26]

Lesser Galactic Superwaves

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.[27] The dates estimated for these expulsions are shown on the timeline in Figure 5. Such minor superwaves would be not be sufficiently strong to generate beryllium-10 peaks visible above background levels. Their associated EMP, however, could have been strong enough that had one such event occurred today, it could have posed a hazard to modern electronics and communications unlike anything we have witnessed thus far. About 80% of these emissions took place within 500 years of one another (Figure 6). Yet, it has been 700 years since the last event. So, there is a high probability of another one occurring in the near future.

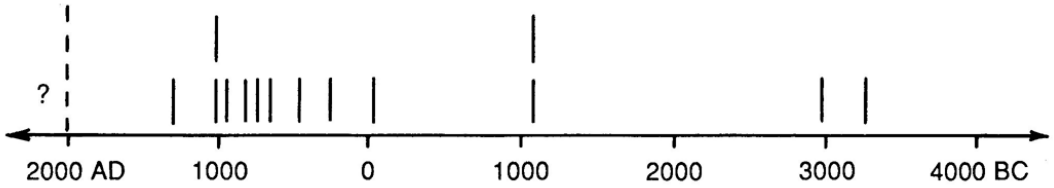


Figure 5. History of minor Galactic Center explosions during the past 6000 years; dates approximate times when radiation pulses arrived from the Galactic Center. (These age estimates taken from Lacy et al.,[27] have been decreased by, ~70% to correct for the smaller value of 23.000 light years adopted here for the distance to the center of the Galaxy.[4]) © 1989 P. LaViolette

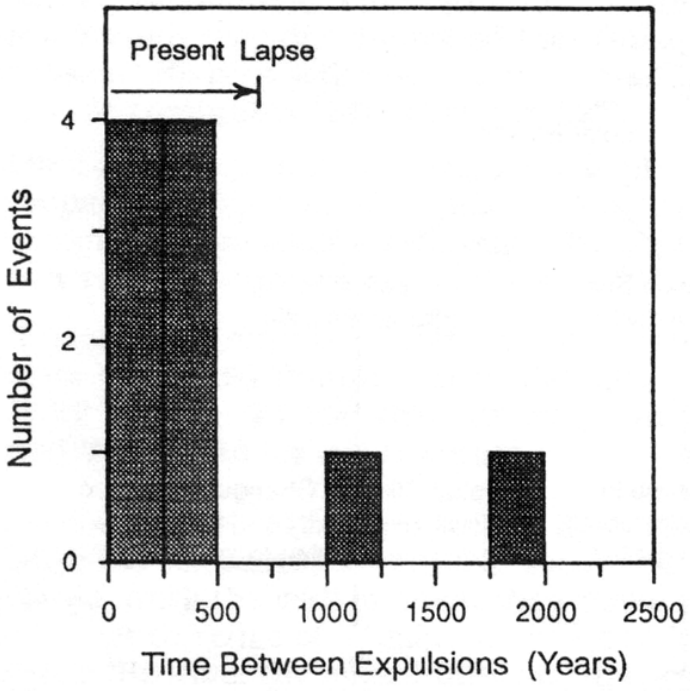


Figure 6. Amount of time between successive gas expulsions from the Galactic center, plotted as a frequency histogram. © 1989 P. LaViolette

Taking Action

We must seek ways to anticipate the arrival of the next superwave. Also we must begin developing technologies for creating a force field shield in space capable of deflecting the trajectories of approaching cosmic rays. The technology of phase conjugate microwave beam interferometry, which today is being pursued by black budget defense projects for missile defense applications, might one day be used to create such shields.[21] Meanwhile, perhaps we should be doing all that we can to recruit the assistance of other civilizations in our Galaxy. Galactic superwaves should be a hazard known to them as well. As I demonstrate in my book *The Talk of the Galaxy*, ETI signals are, in fact, being beamed towards us, but astronomers have mistaken these pulsating beacons as natural objects.[21, 28] What is the topic they have picked to discuss? The answer should not surprise us. Through their symbolic sky positions and encoded pulse period relations, they appear to be warning us about the superwave phenomenon, more specifically, about the event that passed us at the end of the last ice age. But, this is a whole other story.

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Galactic superwaves are a recent discovery. Until recently, astronomers believed galactic cores erupted very infrequently, every 10 to 100 million years.(1) They also believed that interstellar magnetic fields in the Galactic nucleus would trap the emitted particles in spiral orbits causing them to reach the Earth very slowly.(4) For these reasons, most astronomers did not believe that core explosions in the Milky Way posed any immediate threat.Â These would have been large enough to have posed an extreme hazard for life on Earth.Â When cosmic rays from Galactic superwaves impact the Earthâ€™s atmosphere, they produce â€œelectron cascades.â€ Each primary cosmic ray generates millions of secondary high energy electrons.