
37 The Global Coherence Initiative

Investigating the Dynamic Relationship between People and Earth's Energetic Systems

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INTRODUCTION

The convergence of several independent lines of evidence provides strong support for the existence of a global information field that connects all living systems and contributes to a type of global consciousness. Every cell in our body is bathed in an external and internal environment of fluctuating invisible magnetic forces that can affect virtually every cell and circuit in biological systems. Therefore, it should not be surprising that numerous physiological rhythms in humans and global collective behaviors are not only synchronized with solar and geomagnetic activity, but disruptions in these fields can create adverse effects on human health and behavior. The most likely mechanism for explaining how solar and geomagnetic influences affect human health and behavior are a coupling between the human nervous system and resonating geomagnetic frequencies called Schumann resonances, Alfvén waves, and other very low frequency resonances that occur in the earth-ionosphere resonant cavity. It is well established that these resonant frequencies directly overlap with those of the human brain, and the cardiovascular and autonomic nervous systems. Evidence supporting the hypothesis that all living systems are interconnected via the earth's magnetic field, which can act as a carrier wave of biologically

relevant and patterned information, is presented. In order to conduct this research, a global network of 12–14 ultrasensitive magnetic field detectors, specifically designed to measure the earth's magnetic resonances, are being installed strategically around the planet. An important goal of the project is to motivate as many people as possible to work together in a more coherent and collaborative manner to lift the collective human consciousness. If we are persuaded that not only external fields of solar and cosmic origins, but also human consciousness and emotion can affect the mental and emotional states of others (consciousness), it broadens our view of what interconnectedness means and how it can be intentionally utilized to shape the future of the world we live in. It implies that our attitudes, emotions, and intentions matter and that coherent, cooperative intent can have an important impact on global events and the quality of life on Earth.

THE GLOBAL COHERENCE INITIATIVE

The Global Coherence Initiative (GCI) was launched by the Institute of HeartMath, a nonprofit research and education organization, in 2008. It is a science-based, co-creative initiative that has the goal to unite millions of people globally in heart focused care and intention. Many people perceive

that humanity has reached a critical juncture in the twenty-first century.¹ Worldwide, people are experiencing mounting concerns about climate change, natural disasters, extreme weather, terrorism, energy and water shortages, food and product safety, and economic instability. Also, there has been an increase in social unrest, revolutions, insurrections, and uprisings. The most prominent example of current times is the Arab Spring that started in December 2010. By December 2013, rulers have been forced from power in Tunisia, Egypt, Libya, and Yemen. Civil uprisings have erupted in Bahrain and Syria. In addition, Algeria, Iraq, Jordan, Kuwait, Morocco and Sudan have experienced major protests.² The path of transition to more stability globally is not certain, and, yet, there seems to be urgency for the old structures that do not serve humanity, all living beings and the environment to change. Hence, we are on the threshold of a new stage of social, spiritual, and cultural evolution.³ We have the chance to evolve into a more interconnected, information-based social, economic, and cultural system that spans the entire planet.¹

GCI employs several strategies to help increase personal, social, and global coherence. An internet-based network connects people globally, who want to participate in creating a shift in global consciousness. Currently, participants of 154 countries and over 100,000 people are involved in the initiative (www.glcoherence.org). Members of GCI receive regular updates that inform the participants where to direct their energetic contributions of heart-focused care and intention. GCI also helps to educate the global community by providing tools and technologies for increasing individual, social and global coherence. Furthermore, scientific data is gathered that allows monitoring of earth's electromagnetic fields with six state of the art magnetometers that are placed globally in suitable locations (www.glcoherence.org/gci-sensor-site-map.html). A total of 12–14 magnetometers is planned to complete the global network. Additionally, to further investigate the interactions between solar activity and the earth's geomagnetic field environment and human health and behaviors, scientific studies such as the Interconnectedness Study⁴ and studies on heart rate variability (HRV) are being conducted.⁵

GCI HYPOTHESES

The following GCI Hypotheses guide the ongoing collaborative research:

1. Human and animal health, cognitive functions, emotions, and behavior are affected by planetary magnetic and energetic fields.
2. The earth's magnetic fields are carriers of biologically relevant information that connect all living systems.
3. Thus, we each affect the global information field.
4. Large numbers of people creating heart-centered states of care, love, and compassion will generate a more coherent field environment that can benefit others and help offset the current planetary wide discord and incoherence.

Embedded within the above hypotheses is a related hypothesis that human emotions and consciousness interact with and encode information in the geomagnetic field. Thereby, information is communicated nonlocally between people at a subconscious level, which in effect, links all living systems and influences collective consciousness. Thus, a feedback loop exists between all human beings and the earth's energetic systems. It is further proposed that when coherently aligned individuals are intentionally creating physiologically coherent waves, they more effectively resonate with and encode information in the planetary magnetic fields. These magnetic fields act as a carrier wave, thereby positively impacting all living systems contained within the field environment and the collective consciousness.¹

COHERENCE

Coherence is a term that can be used in many different contexts and we will focus on the definitions relevant for this chapter. The Institute of HeartMath (IHM) has identified a psychophysiological state that is the underpinning of optimal function, termed heart coherence.^{3,6–8} Practical techniques, tools, and technologies were developed by IHM that help the practitioner learn to get into and maintain a state of heart coherence. These tools and technologies help empower people to better manage stress, increase performance, and connect with a deeper self-awareness and intuitive intelligence.^{6,9,10} Also, improvements in cognitive performance, focus and effectiveness, self-responsibility, and social cohesion were demonstrated.^{3,6,11–14} At the individual level, a person's level of heart coherence can be assessed by monitoring the rhythmic patterns that are reflected in their HRV, the beat-to-beat changes in heart rate. Positive emotions, such as love, appreciation, and compassion, generate a heart rhythm pattern that is more ordered and coherent, whereas negative emotions, such as anxiety, anger, and fear, generate a disordered, incoherent heart rhythm pattern.⁶ Ongoing feelings of impatience, frustration, irritation, worry or blame throw our inner rhythms out of sync and have a negative carryover effect on our hormonal and nervous systems.

Studies have found that the combination of emotional self-regulation techniques with heart rhythm coherence monitoring technology (emWave or Inner Balance) has proven to be highly successful for reducing stress, anxiety, anger, chronic pain, fatigue, and burnout, as well as many other stress-related conditions.^{3,6,11–14} While there are many ways one can achieve a state of heart coherence, for example, deeper and slower rhythmic breathing and heart-focused meditation, studies have shown that emotional self-regulation and generating positive emotions, such as compassion, love, and appreciation, is an effective approach for a broad range of people.⁷

GLOBAL COHERENCE MONITORING SYSTEM

GCI uses the Global Coherence Monitoring System to measure and explore fluctuations and resonances in the earth's magnetic field and in the earth-ionosphere resonant cavity

in order to conduct research on the mechanisms of how the earth's fields affect human mental and emotional processes, health, and collective behavior. In addition, we hope to investigate if changes in the earth's magnetic fields occur prior to natural catastrophes such as earthquakes, volcanic eruptions and human events, such as social unrest and terrorist attacks (see Figure 37.1).

This system is the first global network of GPS time stamped detectors designed to continuously measure magnetic signals that occur in the same range as human physiological frequencies, such as the brain and cardiovascular systems. Each site includes ultrasensitive magnetic field detectors specifically designed to measure the magnetic resonances in the earth-ionosphere cavity, resonances that are generated by the vibrations of the earth's geomagnetic field lines and ultra-low frequencies that occur in the earth's magnetic field, all of which have been shown to impact human health, mental and emotional processes and behaviors. Each monitoring site detects the local alternating magnetic field strengths in three dimensions over a relatively wide frequency range (0.01–300 Hz), while maintaining a flat frequency response. There are several networks of ground based fluxgate magnetometers around the world, which measure the strength of the earth's magnetic field and geomagnetic disturbances (Kp), as well as several space weather satellites. The GCI monitoring system adds a missing component required to better understand how people and animals are affected by the rhythms and resonant frequencies in earth's magnetic fields as well as enabling us and other researchers to better understand the interconnections between solar and other external forces on the planetary magnetic field environment. Figure 37.2 show a photo of the monitoring site located in Boulder Creek, CA, USA. At of the

beginning of 2014, five sites—one at the HeartMath Research Center in northern California, USA, one in the eastern province of Saudi Arabia, one in southern England, one in Canada, and one in New Zealand—are operational.

The data acquisition infrastructure captures, stamps with time and global positioning data, and transmits the data to a common server. In addition, each site has a random number generator (RNG) that is part of the Global Consciousness Project (GCP) network (described below). The monitoring system tracks changes in geomagnetic activity due to solar storms, changes in solar wind speed, disruption of Schumann resonances (SR) and, potentially, the signatures of major global events that have a strong emotional component. A growing body of data also suggests that changes occur in ionospheric activity prior to earthquake activity.^{15,16} We make our data freely available to other research groups who may wish to explore how it may be utilized to predict earthquakes and other events. Thus, the network will provide a significant research tool to further understand how solar and geomagnetic disturbances and rhythms affect human health, emotions, behaviors and consciousness, and vice versa.

EARTH'S ENERGETIC SYSTEMS AND HUMAN HEALTH AND BEHAVIOR

HEALTH EFFECTS

Every cell in our bodies is bathed in an external and internal environment of fluctuating invisible magnetic forces.¹⁷ Because fluctuations in magnetic fields can affect virtually every circuit in biological systems,^{6,17,18} human physiological rhythms and global behaviors are not only synchronized with



FIGURE 37.1 Proposed locations for the global network of monitoring sites. These sites are specifically designed to measure the magnetic resonances in the earth-ionosphere cavity, resonances that are generated by the vibrations of the earth's geomagnetic field lines, and ultra-low frequencies that occur in the earth's magnetic field.



FIGURE 37.2 The monitoring site at the HeartMath Research Center, located in Boulder Creek, CA, USA.

solar and geomagnetic activity, but disruptions in these fields can create adverse effects on human health and behavior.^{19–21} The human body is designed to adapt to daily and seasonal climatic and geomagnetic variations. Environmental factors alter the hormone balance of the body, specifically the melatonin/serotonin balance, which affect many physiological functions, for example, blood pressure, breathing, immune system, reproductive, cardiac, and neurological processes.^{22–28} Research by Burch et al.²⁴ and Rapoport et al.²⁹ provides evidence that the melatonin levels are reduced during increased solar and geomagnetic activity. Diseases such as cancer, neurological disease, acute heart disease and heart attacks are all related to melatonin levels that are too low, as is accelerated aging. In the daily cycle, the blood pressure, heart rate, neurological, cardiopulmonary, and reproductive functions are affected.^{19,22,23,25,27,30–35} In addition, clinical measurements have identified significant changes in blood pressure, blood flow, aggregation and coagulation, cardiac arrhythmia, and heart rate variability during increased geomagnetic activity events, all of which are influenced by melatonin levels.^{19,36} Electroencephalography (EEG) patterns, heart rate, blood pressure, and reaction times were measured in a group of people by Doronin et al.¹⁹ The authors noted that the oscillations in the Kp index had identical periods in the monitored EEG alpha rhythm. This confirms that whole body changes occur in conjunction with geomagnetic activity by changing heart and brain patterns. Another study by Pobachenko et al.³⁷ monitored the Schumann resonances (SR) of the environment and the EEG in a frequency range between 6 and 16 Hz simultaneously. During a daily cycle, individuals studied showed variations in the EEG similar to changes in the SR. Hence, the biological EEG rhythm is characteristic of the daily rhythm of the SR.³⁷ The lowest frequency SR is approximately 7.83 hertz (Hz), with a daily

variation of about ± 0.5 Hz. The other frequencies are ~14, 20, 26, 33, 39, and 45 Hz. Figure 37.3 shows the frequencies of the SR, which are closely overlapping with alpha (8–12 Hz), beta (12–30 Hz), and gamma (30–100 Hz) brain waves. Because the brain is a very sensitive electromagnetic organ, changes in geomagnetic activity and SR intensities appear to alter brain wave and neuro-hormone responses. Geomagnetic storms are also related to human health effects and death.^{38,39} Altered EEG rhythms have been observed by Belov et al.,³⁰ while low frequency magnetic oscillations (around 3 Hz) had a sedative effect, stronger oscillations, around 10 Hz, stressed and stimulated people.³⁰

Increased solar activity can disturb the biological rhythm of humans and exacerbate existing diseases. However, deviations are observed for some individuals, which can be due to the individual's adaptive ability. Increased solar activity and geomagnetic activity is also correlated to a significant increase in heart attacks and incidence of death, myocardial infarction incidence,⁴⁰ a 30–80% increase in hospital admissions for cardiovascular disease, cardiovascular death, depression, mental disorders, psychiatric admission and suicide, homicides, and traffic accidents.^{20,34,35,41–43} Birth rates were observed to drop and mortality to increase during increased solar and geomagnetic activity (GMA), and migraine attacks can be triggered.⁴⁴ Persinger and Halberg have independently shown that war and crimes were correlated to GMA.⁴⁵

Scientific research has also reported that an increase in magnetic Pc frequencies (pulsations continuous) can affect the human cardiovascular system because Pc-1 frequencies are in a comparable range with those of the human cardiovascular system and rhythms.⁴⁶ A study carried out in India on animals and humans demonstrated that humans and animals can be affected by Pc frequencies.⁴⁷ The experiments showed changes in the electrophysiological, neurochemical,

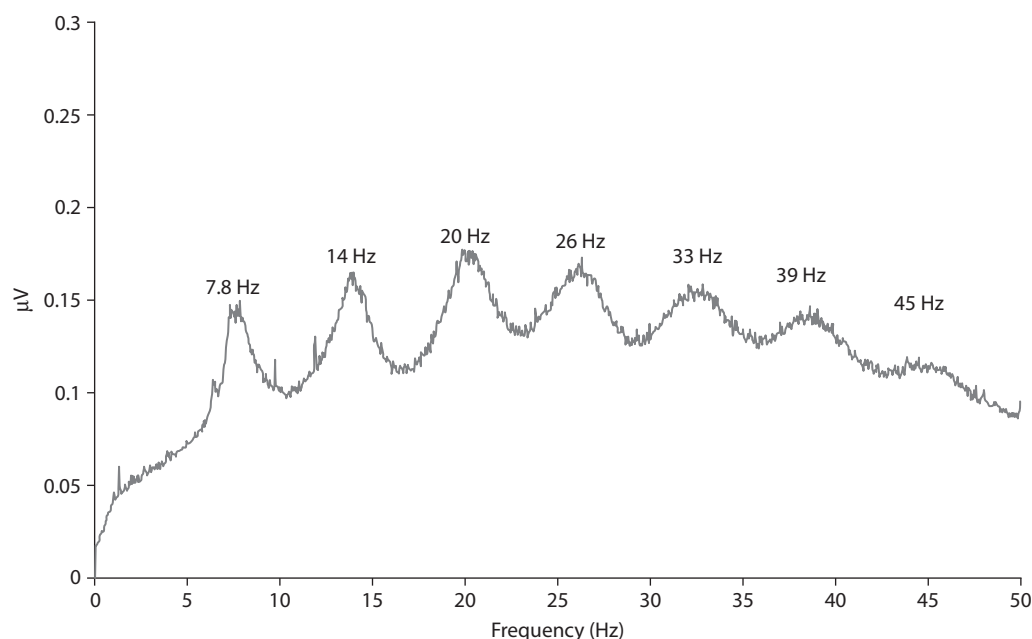


FIGURE 37.3 Schuman resonance data recorded from the GCI sensor site in Boulder Creek, CA, USA.

and biochemical parameters. The subjects experienced uneasiness, confusion, and restlessness and a lack of sense of wellbeing when subjected to the pulsating fields. Some complained of headaches.⁴⁷

It is important to note that, of all the bodily systems studied thus far, changes in geomagnetic conditions appear to most strongly affect the rhythms of the heart and the brain.^{17,28,35,37,38,48–52}

Historically, many cultures believed that their collective behavior could be influenced by the sun and other external cycles and influences. This belief has proven to be true. On a larger societal scale, increased violence, crime rate, social unrest, revolutions, and frequency of terrorist attacks have been linked to the solar cycle and the resulting disturbances in the geomagnetic field.^{21,45,53–56} The first scientific evidence of this belief was provided by Alexander Tchijevsky, a Russian scientist who noticed that more severe battles during World War I occurred during peak sunspot periods.⁵⁶ He then conducted a thorough study of global human history dating back to 1749, which he then compared to the solar cycles over the same time period until 1926. Figure 37.4, reconstructed from Tchijevsky's original data, plots the number of significant human events compared to the solar cycle from 1749 to 1926.⁵⁶

ENERGETIC INFLUXES AND HUMAN FLOURISHING

Solar activity has not only been associated with social unrest, it has also been related to the periods of greatest human flourishing with clear spurts in architecture, arts and science, and positive social change.⁵⁷ We can learn from past mistakes and consciously choose new ways of navigating energy influxes to create periods of human flourishing and humanitarian advances. When outdated structures that do not serve humanity collapse, an opportunity opens for

them to be replaced with more suitable and sustainable models. Such positive change can affect the political, economic, medical, and educational systems, as well as relationships of individuals at work and home and in communities. At times of such pertinent energy influx, we have the greatest opportunity to instate positive change in our world. We can learn from past mistakes and consciously choose new ways of navigating energy influxes to create periods of human flourishing and advances.

It is well established that the earth and ionosphere generate a symphony of resonant frequencies that directly overlap with those of the human brain and cardiovascular system. The central hypothesis is that changes in these resonances can in turn influence the function of the human autonomic nervous system brain, and cardiovascular system. So, the question is, can we influence how those changes in solar and geomagnetic activity affect us positively or negatively? Until recently, it has not been possible to test this central hypothesis scientifically due to reliable, continuous measures of ionospheric and field line resonances being unavailable, in combination with the ability to monitor peoples' HRV as a measure of nervous system activity along with health and social indicators.

INTERCONNECTEDNESS STUDY

Previously, data and results from the Global Coherence Initiative Interconnectedness Study were presented in McCraty et al.¹ In 2010, 1643 GCI members from 51 countries completed a biweekly survey at random times 6 days each week over a 6-month period. The survey contained six valid scales: positive affect, wellbeing, anxiety, confusion, fatigue, and physical symptoms. The survey data were subjected to correlation analysis with a number of planetary and solar activity variables such as solar wind speed, magnetic

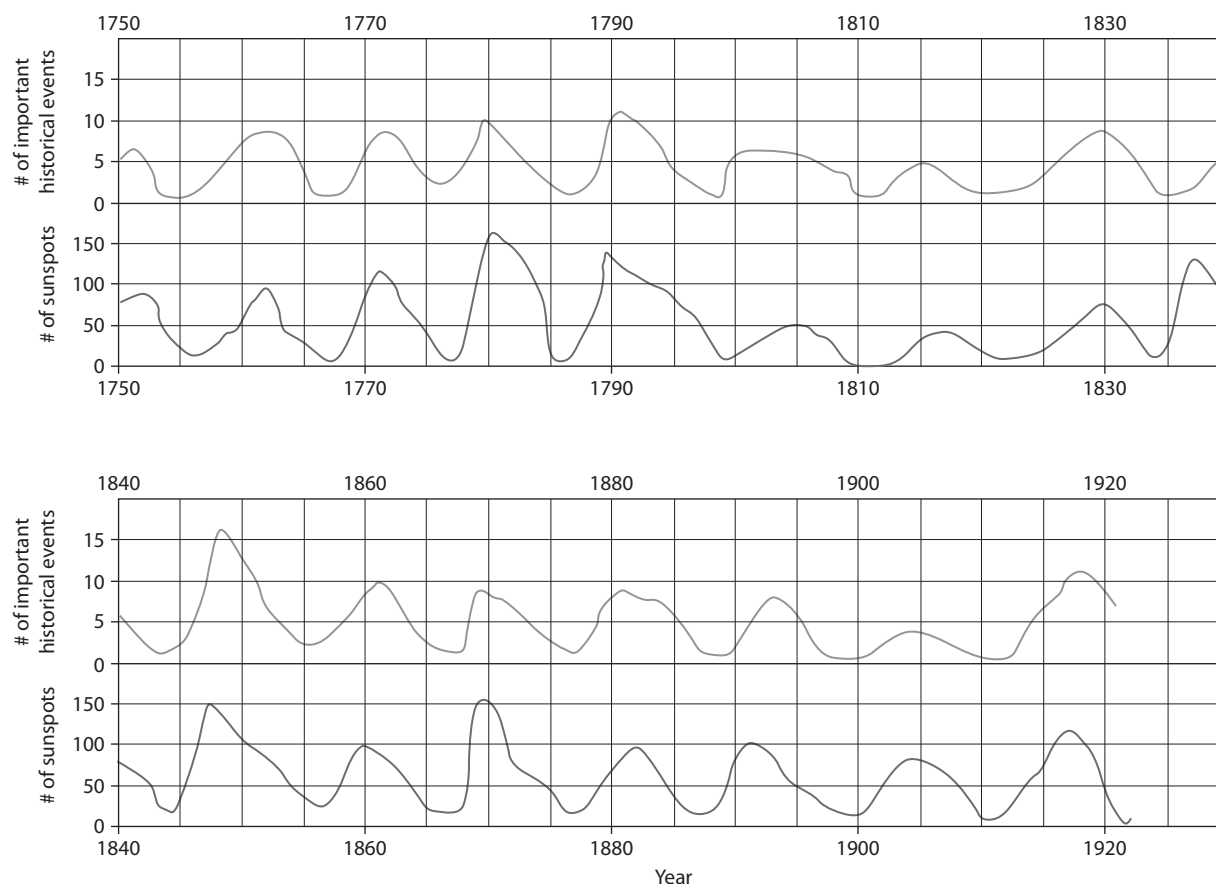


FIGURE 37.4 Tchijevsky's original data. The top line plots the yearly number of important political and social events, such as the start of a war, social revolutions, etc., while the bottom line plots the solar activity as indicated by the number of sunspots from 1749 to 1922. The histories of 72 countries were compiled, and it was found that 80% of the most significant events occurred during the solar maximum, which correlates with highest periods of geomagnetic activity.

field and plasma data, measures of energetic protons, solar flux, and geomagnetic activity indices. When solar wind speed, Kp, Ap (Kp and Ap magnetic indices were designed to describe variations in the geomagnetic field), and polar cap activity increased, positive affect among the participants decreased. Wellbeing scores were negatively correlated with solar wind speed, Kp-index, Ap-index, and polar cap magnetic activity. Thus, when solar wind speed increased and the geomagnetic field was disturbed, the levels of fatigue, anxiety, and mental confusion increased. The study also uncovered some unexpected findings. For example, the solar radio flux index was positively correlated with reduced fatigue and improved positive affect, indicating that there are mechanisms that improve human wellbeing that are not yet fully understood. Clearly additional research needs to be conducted in order to understand the effects of the various variables and the time sequence of their effects.¹

EXAMPLES OF MAGNETOMETER DATA

Data collected by our magnetometers in different locations is providing some new insights in to globally correlated activity and significant local differences. Figure 37.5 shows an

example of Pc-3 activity simultaneously recorded at the monitoring sites in Boulder Creek, CA, USA, Alberta, Canada, and New Zealand. The data from the North American sites closely overlaps, while the data from New Zealand has a different rhythm.

Another example is shown in Figure 37.6 where Pc-1 activity detected at the California and Canada sites is displayed. While the Pc-1 data in Canada displays a greater amplitude, and while most of the rhythm is synchronized, there are periods where it is $\sim 180^\circ$ out of phase. Further data processing is currently underway which is examining other parameters in more depth, such as longitudinal, latitudinal parameters, time of the day, and other solar and geomagnetic parameters and their implications on human health indicators.

HRV STUDIES

Among physical environmental variables affecting biological processes and human health, the natural variation in the geomagnetic field in and around the earth has been reportedly involved in relation to several human cardiovascular variables. These include blood pressure,⁵⁸ heart rate (HR), and HRV.^{59,60} Although there is mounting evidence for such

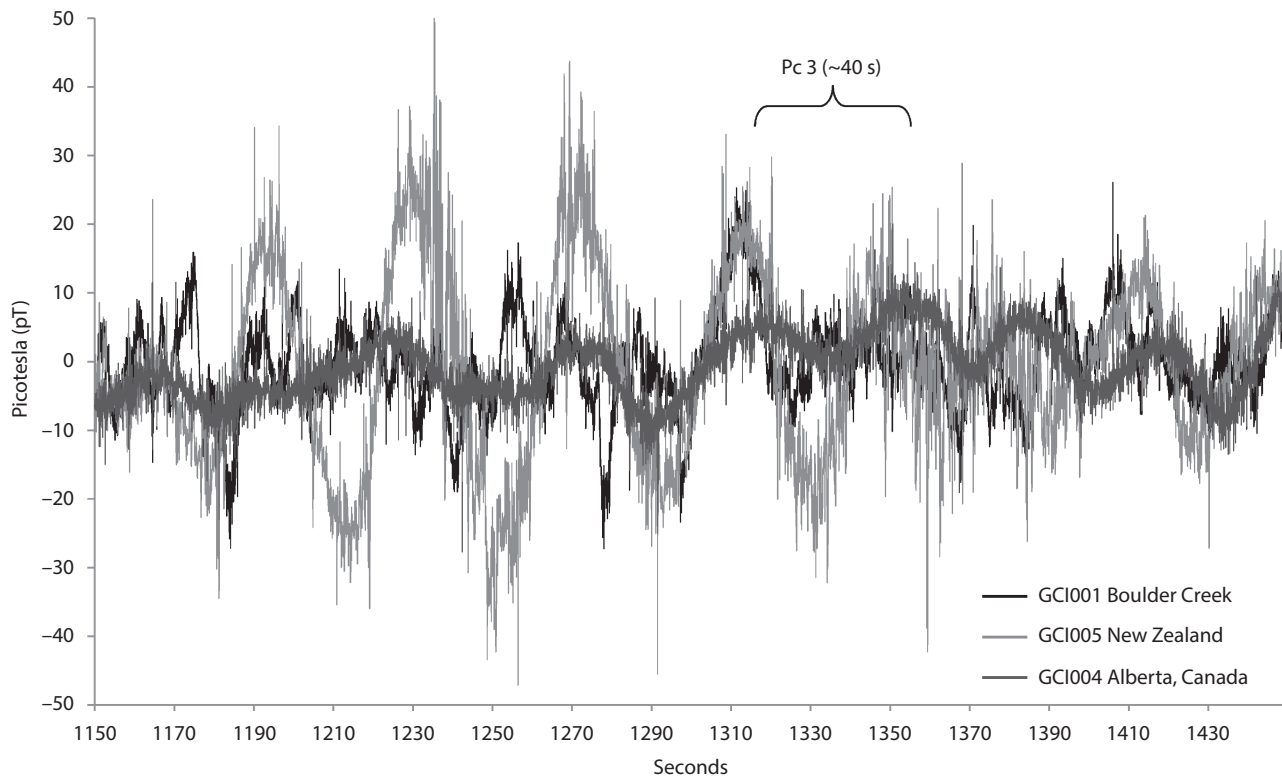


FIGURE 37.5 Simultaneously recorded data from Boulder Creek, CA, USA, Alberta, Canada, and New Zealand sites. This figure shows an example of the time varying magnetic field in the Pc3 frequency (~40 s rhythm) range that is in the same range of the very low frequency band of heart rate variability. The lower amplitude data (black) is the site in Canada, and the high amplitude data (gray) is from the New Zealand site. The data from the California site (dark gray) is harder to see, as it is mostly the same frequency and amplitude as the data from the Canadian site. While the data from the North America sites closely overlaps, the data from New Zealand has a much higher amplitude and moves in and out of phase with data from the other locations.

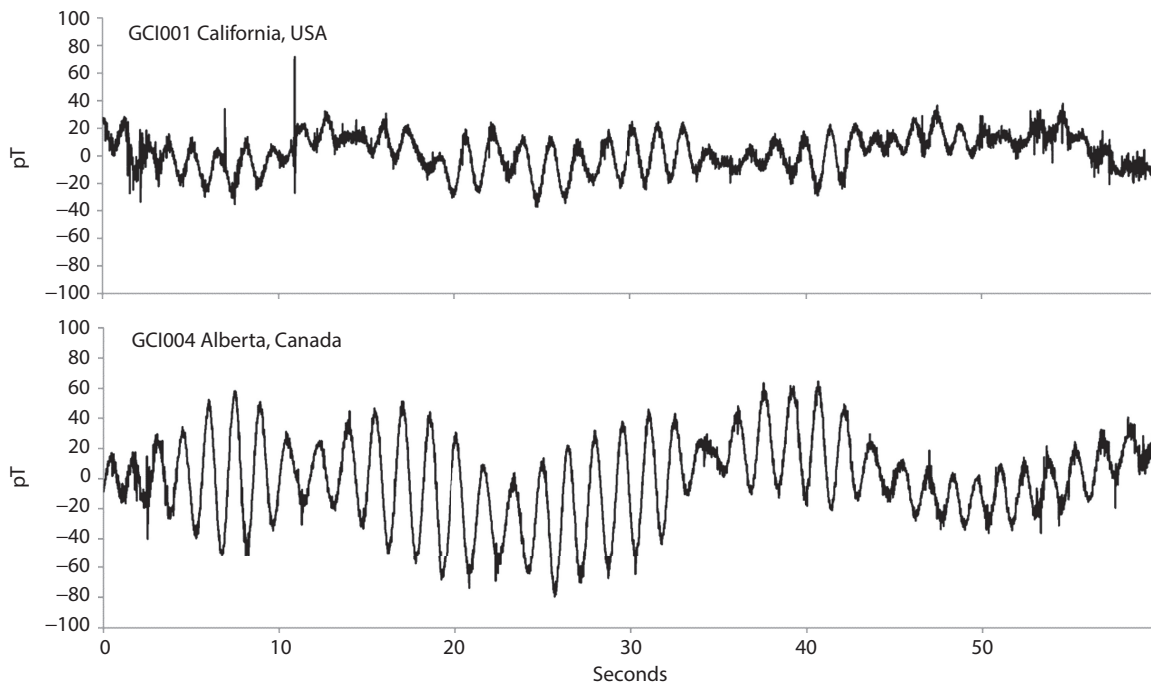


FIGURE 37.6 Example of Pc-1 data recorded from the Californian and Canadian sites. The Pc-1 activity (~1.25 s rhythm) recorded at the site in Canada has a greater amplitude, and, while most of the data is synchronized, there are periods where it is ~180° out of phase.

effects, they are far from being fully understood. Several studies have found significant associations between magnetic storms and decreased HRV, indicating a possible mechanism linking geomagnetic activity with increased incidents of coronary disease and myocardial infarction.^{34,39,40} One study that analyzed week long recordings found a 25% reduction in the very low frequency (VLF) rhythm during magnetically disturbed days as compared to quiet days. The low frequency (LF) rhythm was also significantly reduced but the high frequency (HF) rhythms were not.^{61,62}

In order to further investigate the potential correlations between solar and magnetic factors and HRV, we undertook a collaborative study with Dr. Abdullah Alabdulgader, director of Prince Sultan Cardiac Center in Al Ahsa, Saudi Arabia, spanning a 5-month period. A total of 960 24 h HRV recordings were obtained from a group of 16 women (mean age 31, 24–49). HRV data was collected for 24 h a day, 3 consecutive days each week over a 5-month period with Bodyguard HRV recorders between March and August of 2012. The HRV measures assessed were the inter-beat-interval (IBI), SDNN, RMSSD, total power, VLF, LF, and HF power, and the LF/HF ratio. The solar activity and magnetic variables were solar wind speed, Kp and Ap index, PC(N), sunspot number, solar radio flux (f10.7), cosmic rays, Schumann resonance integral (area under the curve around 7.8 Hz), and the mean and standard deviation (SD) of the time varying magnetic field data collected at the GCI sites located in Boulder Creek, CA, USA (GCI 1) and Saudi Arabia (GCI 2). The mean and SD were computed hourly. The mean field variation reflects ultra-low frequency changes and SD which is highly correlated with total spectral power, reflects overall variance in the field. Figure 37.7 shows an example of the mean and SD of the magnetic field variation. Note the large increase in the SD that occurred on July 14 that resulted from a coronal mass

ejection that hit the earth's magnetic field at approximately 1800 UT that day.

Circadian effects were removed from both environmental and HRV variables. For each of the 16 study participants, a correlation matrix was calculated between each environmental and HRV variable. Figure 37.8 shows the results of the correlation analysis. Overall, the study strongly confirms that autonomic nervous system activity, as reflected by HRV measures, is affected by solar and geomagnetic influences. All of the HRV measures, with the exception of IBIs, were negatively correlated with solar wind speed, and the LF and HF power was also negatively correlated with the magnetic field mean data from the local site in Saudi Arabia, but not the site in California, suggesting that local measurements are important. Surprisingly, there were a number of positive correlations. The f10.7 was correlated with increased HRV in all measures with the exception of the SD of the HRV and IBIs. The SD of the magnetic field variation from both the Saudi Arabian and Californian sites was positively correlated with RMSSD and HF power, both of which reflect parasympathetic activity, and Schumann resonance power was positively correlated with the IBIs.

Although there were a number of global correlations, at the individual level, the HRV responses varied and in some cases different individuals showed different responses to the same environmental variable.

When looking at the data from both the Interconnectedness Study and the HRV data, it is clear that when the earth's magnetic field was calmer or the solar radio flux was increased that the study participants felt better, were more mentally and emotionally stable and had higher levels of HRV. Conversely, when the magnetic field was disturbed, HRV was lower and participants' emotional well-being and mental clarity were adversely affected.

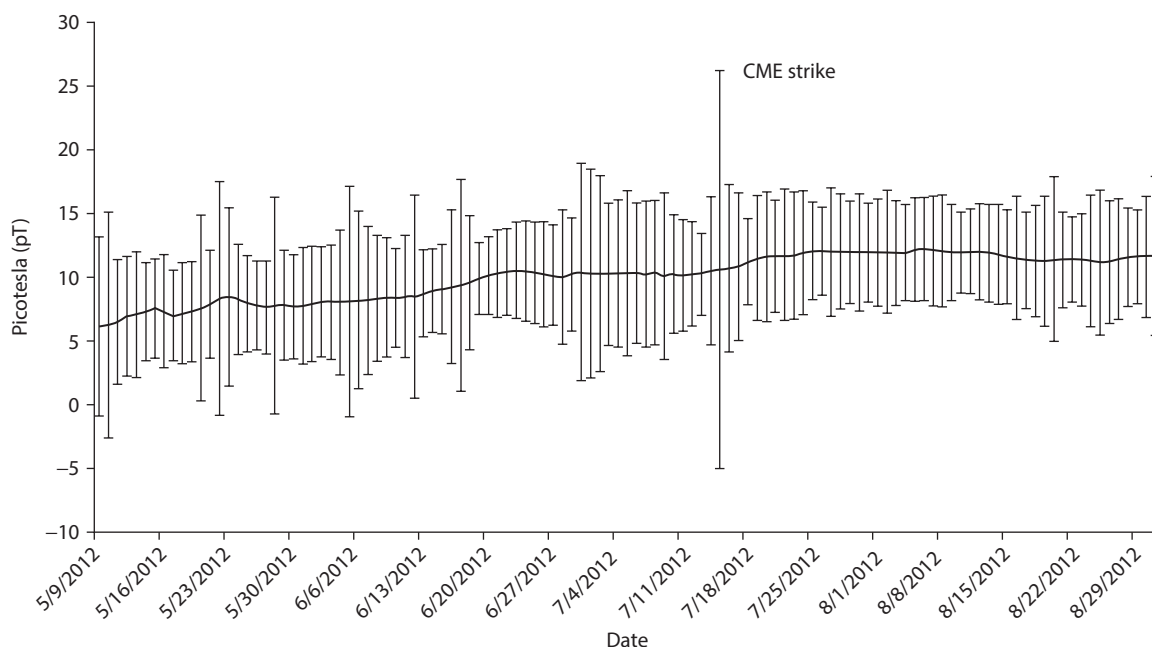
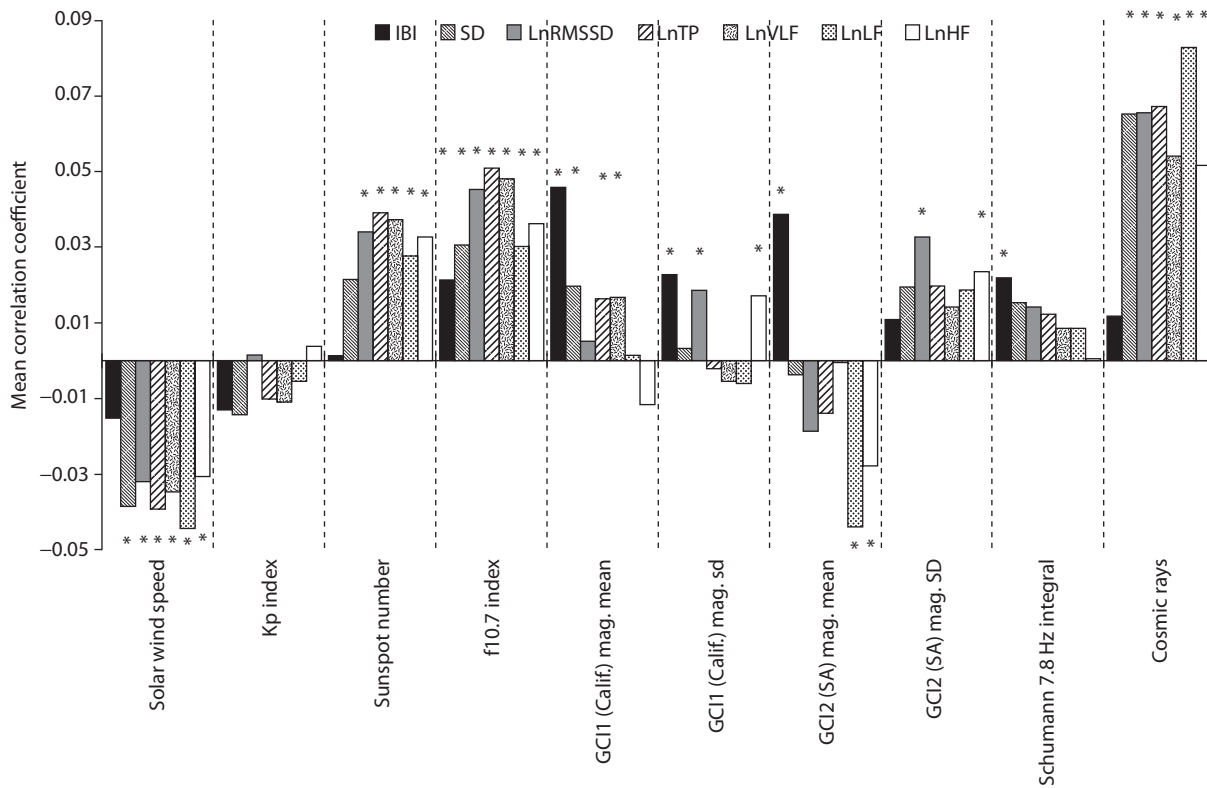


FIGURE 37.7 An example of the mean and standard deviation of the magnetic field data recorded from the monitoring site in Saudi Arabia.



*p < 0.05 (corrected for multiple comparisons)

FIGURE 37.8 The correlations between the heart rate variability data [inter-beat-interval, standard deviation (SD) very low frequency, low frequency, and high frequency power] and environmental data (solar wind speed, Kp index, sunspot numbers, f10.7 index, magnetometer means and SD) from the monitoring sites in California (GCI 1) and Saudi Arabia (GCI 2), Schumann resonance power at 7.8 Hz, and cosmic rays).

Figure 37.9 shows an example of healthy participants’ HRV-HF power plotted along with the total magnetic power spectrum from the magnetometer site in Boulder Creek, CA, USA, over a 30-day period. This data is from a study of ten participants located in northern California whose HRV was continuously monitored over a 30-day period. The magnetic field data in the plot, which is inversely correlated, has been inverted in the plot to help illustrate the visual correlation, which can be clearly seen in the graph.

INTERCONNECTIVITY OF ALL LIVING SYSTEMS THROUGH THE EARTH’S MAGNETIC FIELD

MAGNETIC FIELDS CARRY BIOLOGICALLY RELEVANT INFORMATION

The evidence that human health and behavior are globally influenced by solar and geomagnetic activity is relatively strong and convincing. We have also shown in our laboratory that the heart’s electromagnetic field can be detected by nearby animals or the nervous systems of other people⁶³ (see also Energetic Heart chapter in this book).

One of the GCI hypotheses is that the earth’s magnetic fields are carriers of biologically relevant information that

connects all living systems. Thus, we each affect the global information field.

There is experimental evidence that human bioemotional energy can have a subtle but significant (scientifically measurable) nonlocal effect on people, events, and organic matter.¹ It is becoming clear that a bioelectromagnetic field such as the ones radiated by each human heart and brain can affect other individuals and the “global information field environment.” For example, research conducted in our laboratory has confirmed the hypothesis that when an individual is in a state of heart coherence, the heart radiates a more coherent electromagnetic signal into the environment and that, when one is in a coherent state, that we are more sensitive to detecting the information in the fields radiated by others.⁶³ Of all the organs, the heart generates the largest rhythmic electromagnetic field, one that is approximately 100 times stronger than that produced by the brain. This field can be detected several feet from the body with sensitive magnetometers.⁶⁴ This magnetic field provides a plausible mechanism for how we can “feel” or sense another person’s presence and emotional state independent of body language or other factors. We have also found that there is a direct relationship between the heart rhythm patterns and the spectral information encoded in the frequency spectra of the magnetic field radiated by the

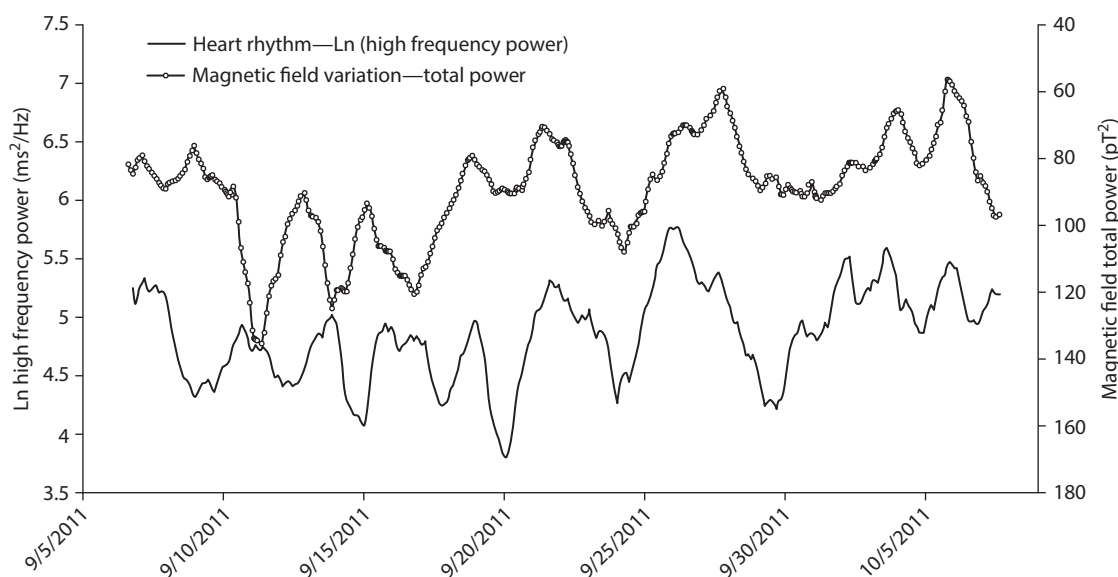


FIGURE 37.9 Example of one participant's high frequency power derived from their heart rate variability and the total power of the time varying magnetic field at the site California over a 30-day period.

heart. Thus, information about a person's emotional state is encoded in the heart's magnetic field, which is communicated throughout the body and into the external environment.¹

In a study on interpersonal effects of nonverbal compassionate communication, measuring psychophysiologic effects, Kemper and Shaltout found significant changes in the receiver's autonomic nervous system.⁶⁵ A growing body of evidence suggests that an energetic field is formed among individuals in groups through which communication among all the group members occurs simultaneously. In other words, there is a literal "group field" that connects all the members.³

Morris⁶⁶ studied the effect of heart coherence in a group setting where people trained in maintaining states of heart coherence for several minutes could facilitate coherence in untrained participants. The results showed that the coherence of untrained participants was indeed facilitated by other participants who were in a coherent state. Support for the hypothesis that magnetic fields are carriers of biologically relevant information has been provided by a recent study conducted by Montagnier et al.⁶⁷ They discovered that epigenetic information related to DNA could be detected as electromagnetic signals in a highly diluted solution and that this information can be transferred to and imprinted in pure water that has never been exposed to DNA. Furthermore, this information can instruct the recreation of DNA when the appropriate basic constituents of DNA are present and extremely low electromagnetic frequency fields of 7.8 Hz are present. They also showed that the presence of the magnetic field was needed for the information transfer to occur.⁶⁷ The authors also state that such a very low electromagnetic frequency field that stimulates DNA information transfer could come from natural sources, such as Schuman resonances, which start at 7.83 Hz.⁶⁷ Also, Michael Persinger, a well-known neuroscientist, has conducted numerous studies examining the effects of magnetic fields with the same

magnitude as the geomagnetic field on brain functions and information transfer.^{38,50} Not only has he shown that applying external fields similar to the SRs can induce altered states of consciousness, he has also suggested in a detailed theory that the space occupied by the geomagnetic field can store information related to brain activity and that this information can be accessed by the human brain.⁶⁸ Persinger also suggests that the earth's magnetic field can act as a carrier of information between individuals and that information, rather than the signal intensity, is important for interaction with neural networks.⁶⁹ The above findings clearly support part of our hypothesis that the earth's magnetic fields are carriers of biologically relevant information.

We are further suggesting that as humans have brain and heart frequencies overlapping the earth's magnetic field resonances, they are not only receivers of biologically relevant information, but they can also couple with the earth's magnetic fields and thus feed information into the global field environment.

INTERCONNECTION BETWEEN THE HUMAN ENERGY FIELD, COLLECTIVE HUMAN EMOTIONS AND THE PLANETARY ENERGY FIELD

Our fourth hypothesis states:

Large numbers of people creating heart-centered states of care, love, and compassion will generate a more coherent field environment that can benefit others and help offset the current planetary-wide discord and incoherence.

There is also a substantial body of evidence indicating interactions between human emotions and a global field when large numbers of people have similar emotional responses to events or organized global peace meditations.⁷⁰⁻⁷² For

example, quantum physicist John Hagelin has conducted research on the “Power of the Collective” and concluded that “since meditation provides an effective, scientifically proven way to dissolve individual stress and if society is composed of individuals, then it seems like common sense to use meditation to similarly diffuse societal stress.”⁷¹ A study conducted in 1993 in Washington, DC, USA showed a 25% drop in crime rate with 2500 meditators mediated over specific periods of time,⁷² which means that a relatively small group of a few thousand was able to influence a much larger group—a million and a half. The question was then posed that if crime rates could be decreased, could a group of meditators also influence social conflicts and wars? A similar experiment was done during the peak of the Israel–Lebanon war in the 1980s. Drs. Charles Alexander and John Davies at Harvard University organized groups of experienced meditators in Jerusalem, Yugoslavia, and the United States to meditate and focus attention on the area at various intervals over a 27-month period. After controlling statistically for weather changes, Lebanese, Muslim, Christian, and Jewish holidays, police activity, fluctuation in group sizes and other variant influences during the course of the study, the levels of violence in Lebanon decreased between 40% and 80% each time a meditating group was in place, with the largest reductions occurring when the numbers of meditators were largest. During these periods, the average number of people killed during the war per day dropped from 12 to three, a decrease of more than 70%. War-related injuries fell by 68% and the intensity level of conflict decreased by 48%.^{70,73}

INTERCONNECTION BETWEEN COLLECTIVE HUMAN EMOTIONS, RANDOM NUMBER GENERATORS AND THE GEOMAGNETIC FIELD

Further evidence that there is an interconnection between collective human emotionality and global events has been provided by Professor Roger Nelson and chief scientist of the GCP. GCP maintains a worldwide network of random number generators (RNGs) and results suggest that human emotionality affects the randomness of these electronic devices in a globally correlated manner. Nelson, states:

The GCP is a long-term experiment that asks fundamental questions about human consciousness. It provides evidence for effects of synchronized collective attention—operationally defined global consciousness—on a world-spanning network of physical devices. There are multiple indicators of anomalous data structure which are correlated specifically with moments of importance to humans. The findings suggest that some aspect of consciousness may directly create effects in the material world. This is a provocative notion, but it is the most viable of several alternative explanations.⁷⁴

Nelson also found clear evidence that larger events defined by the number of people engaged and their level of “importance” produces larger effects on the global network. An interesting finding is a significant correlation between global events that elicit a high level of emotionality from a large part

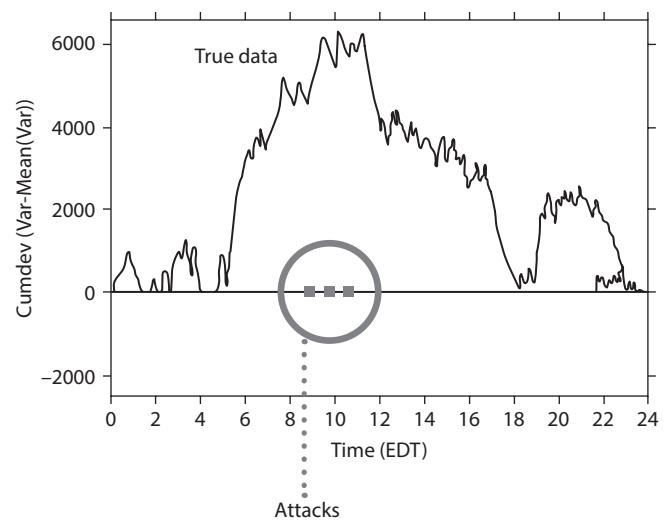


FIGURE 37.10 Evidence of collective intuition: correlated random number generator data from the Global Consciousness Project network before, during and after the September 11, 2001, terrorist attacks on the World Trade Center.

of the world’s population and periods of nonrandom order generated by the RNGs.⁷⁵ For example, multiple independent analyses of the network during the terrorist attacks that took place in the United States on the morning of September 11, 2001 (Figure 37.10), correlate with a large and significant shift in the output of the global network of RNGs.⁷⁶

Another potential indicator of human emotional energy interacting with earth’s magnetic field was provided from measures of the earth’s geomagnetic field during the September 11, 2001, terrorist attacks.

Figure 37.11 shows data recorded from two separate space weather satellites in geosynchronous orbit in the days before and after the attacks. The data from the magnetometers on these two satellites, which are positioned over the east and west coasts of the United States, reveal that a large shift occurred in the earth’s geomagnetic field at the same time as the attacks. Note the difference in the fields in the days before and after the attacks. The incoherence and discord in the fields during the days after the attacks may reflect the mass emotional turmoil that occurred as news of the attacks spread around the globe. The same patterns were also observed in ground based magnetometers. Although the data shown in Figure 37.11 does not prove that human emotion modulated the earth’s geomagnetic field, combined with the GCP and other data, they support the overarching hypothesis that the earth’s energetic systems are coupled with and exchange information in a bidirectional manor with the collective emotional energy of humanity.

Although the mechanisms for how human emotions create more coherence in the randomness of this global network are not yet understood, the data, however, clearly show that they do have such affects and data now have an odds against chance ratio of over a billion to one.⁷⁶

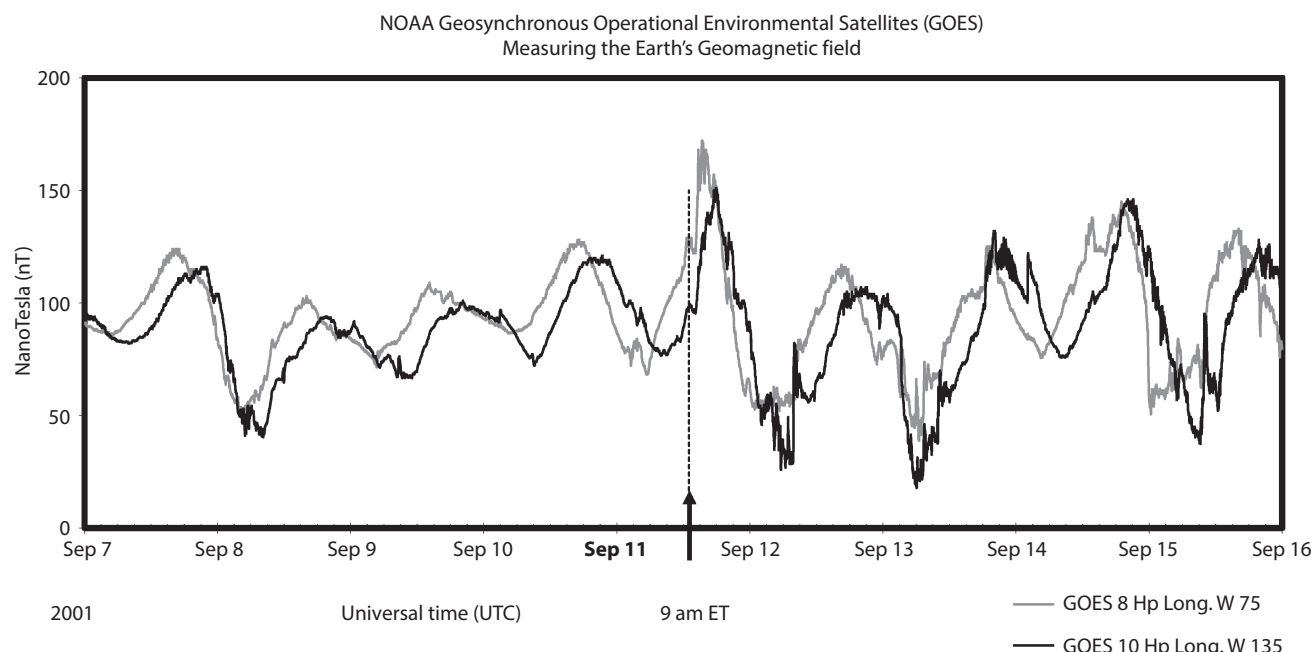


FIGURE 37.11 The data recorded from the Geostationary Operational Environmental Satellites 8 and 10, which are in geosynchronous orbit over the east and west coasts of the United States in the days before, during, and after the September 11, 2001, terrorist attacks.

When an event is characterized by deep and widespread compassion, the GCP effects are stronger,⁷⁴ which could be explained because compassion is related to interconnection and positive emotional engagement. When we experience true feelings of compassion, we tend to shift into a more coherent physiological state⁶ and are thus radiating more coherent magnetic waves into the environment.⁶³ Compassion is an emotional state that brings us together and makes us coherent; we invest a small part of our individual being to connect with others and, as the GCP data indicate, with the global field environment. A study that examined GCP data between 1998 and 2008, matched satellite-based interplanetary magnetic field (IMF) polarity with GCP defined world events such as meditations, celebrations, natural catastrophes, or violence. Results suggested that RNG deviations may depend on a positive IMF polarity coinciding with emotionally significant conditions and/or entropy changes.⁷⁷

The GCP group has investigated a number of theoretical models that could potentially explain the global effect they are detecting with the network. As summary, an excerpt of their analysis:

Finally, a non-linear dynamic field model proposes that individual minds are mutually interactive, and that the interactions are responsible for an emergent field which depends on individual consciousness but is not reducible to it. The model implies that the dynamic and interactive qualities of consciousness also involve subtle interactions with the physical world and that these are responsible for certain anomalous phenomena such as are found in the GCP experiment.⁷⁴ (p. 12)

One of our goals is to test the hypothesis that large numbers of people in a heart-coherent state and holding a shared

intention can encode information on the earth's energetic and geomagnetic fields that act as carrier waves of this physiologically patterned and relevant information. If living systems are indeed interconnected and communicate with each other via such biological and electromagnetic fields, it stands to reason that humans can work together in a cocreative relationship to consciously increase the coherence in the global field environment which in turn distributes this information to all living systems within the field. Of course, the idea is not new that shared intentions can influence others at a distance. Such ideas have been the subject of numerous studies that have looked at the effects of prayer, meditations, and groups sending intentions in various experimental contexts.^{78–80} How can we have such an influence on each other at a distance? There are no clear answers yet, however, we hypothesize that there is a unified field that interacts with and affects consciousness. We also suggest that individually generated coherent waves are more likely to be coupled to the larger collective field environment than when in states of incoherence. The GCI theory of change states that as enough individuals increase their personal coherence, it can lead to increased social coherence (family, teams, organizations), and as increasing numbers of social units (families, schools, communities, etc.) become more coherently aligned, it can in turn lead to increased global coherence, all of which is facilitated through self-reinforcing feedback loops between humanity and the global field environment (Figure 37.12).

As more and more people increase their personal coherence, it strengthens and stabilizes the standing waves and coherent information transferred to the planetary magnetic field. Once a coherent standing wave is established, reinforced, and amplified through collective coherent intention,

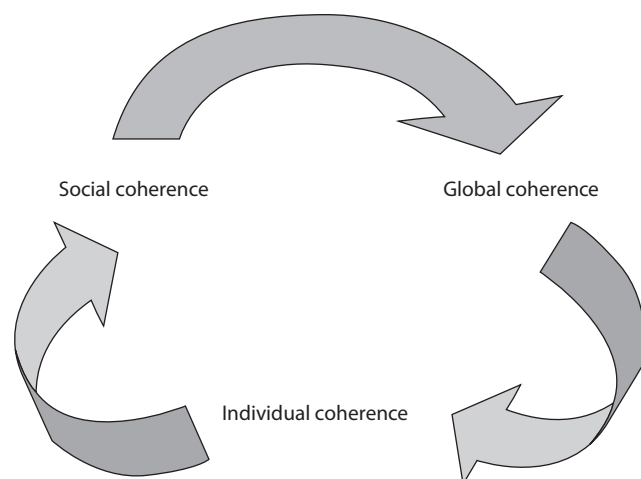


FIGURE 37.12 Global Coherence Initiative theory of change.

it in turn facilitates the amplification of the collective heart, mind and consciousness, making it easier for more and more people to increase their coherence and lift their consciousness. Every individual contributes to the global field environment and each person's attitudes, intentions and emotional experiences count. This is empowering for many individuals who often feel overwhelmed by the current negative predictions and conflicts on the planet. They come to realize that their actions can make a difference and that by increasing their own coherence, they can become "Coherence Builders" and make a contribution that can help facilitate the shift that many now perceive to be occurring. The personal benefits of better emotional self-regulation, enhanced wellbeing, more self-responsibility, better health, and improved relationships people experience are powerful motivators that reinforce the process for the individual. As more and more individuals become increasingly self-regulated and grow in conscious awareness, the increased individual coherence in turn increases social coherence, which is reflected in increased cooperation and effective cocreative initiatives for the benefit of society and the planet. It is our perspective that a shift in consciousness is necessary in order for a significant shift to occur that enables new levels of cooperation and collaboration in innovative problem solving and intuitive discernment for addressing our social, environmental and economic problems. In time, global coherence will be indicated by more communities, states, and countries adopting a more coherent planetary view.¹

CONCLUSIONS

An ongoing goal of GCI is to further the study of interconnectedness between humanity and the earth's energetic systems. In order to conduct research on the mechanisms of how the earth's fields affect human mental and emotional processes, health outcomes, and collective human behavior and explore how collective human emotions and intentions may be reflected in the earth's electromagnetic and energetic fields, a global network of ultrasensitive magnetic

field detectors, specifically designed to measure the magnetic resonances in the earth/ionosphere cavity and resonances and earth's geomagnetic field lines resonances, are being installed at strategic locations around the earth. We are hopeful that our efforts will facilitate a deeper understanding of the mechanisms by which human health and behaviors are modulated by the earth's geomagnetic fields and further clarify what aspects of the field environment mediate the varied and specific effects.

Data from the Interconnectedness Study and the HRV studies are yielding promising results and add to the body of evidence that humans are affected by planetary energetic fields. GCI hypothesizes that human emotions and consciousness interact with and encode information in planetary energetic fields, including the geomagnetic field, thereby communicating information nonlocally between people at a subconscious level, which, in effect, links all living systems and gives rise to a form of collective consciousness. Thus, a feedback loop exists among all human beings and the earth's energetic systems. Our basic hypothesis is that when enough individuals and social groups increase their coherence and utilize that increased coherence to intentionally create a more coherent standing reference wave in the global field, it will help lift the global consciousness. This can be achieved when an increasing ratio of people move towards more balanced and self-regulated emotions and responses. This, in turn, can help facilitate cooperation and collaboration in innovative problem solving and intuitive discernment for addressing society's significant social, environmental, and economic problems. In time, as more individuals stabilize the global field and families, workplaces, and communities move to increased social coherence, it will lead to increased global coherence. This will be indicated by countries adopting a more coherent planetary view so that social and economic oppression, warfare, cultural intolerance, crime, and disregard for the environment can be addressed meaningfully and successfully.

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