

INTRODUCTION

1. EARTH

Earth is the third planet from the Sun, and the densest and fifth-largest of the eight planets in the Solar System. It is also the largest of the Solar System's four terrestrial planets. Earth was formed approximately 4.54 billion years ago, and life appeared on its surface within one billion years. Scientists have been able to determine the probable age of the Solar System and to calculate an age for the Earth by assuming that the Earth and the rest of the solid bodies in the Solar System formed at the same time and are, therefore, of the same age.

The ages of Earth and Moon rocks and of meteorites are measured by the decay of long-lived radioactive isotopes of elements that occur naturally in rocks and minerals and that decay with half lives of 700 million to more than 100 billion years to stable isotopes of other elements.[1]

Ancient rocks exceeding 3.5 billion years in age are found on all of Earth's continents. The oldest rocks on Earth found so far are the Acasta Gneisses in northwestern Canada near Great Slave Lake (4.03 Ga) and the Isua Supracrustal rocks in West Greenland (3.7 to 3.8 Ga), but well-studied rocks nearly as old are also found in the Minnesota River Valley and northern Michigan (3.5-3.7 billion years), in Swaziland (3.4-3.5 billion years), and in Western Australia (3.4-3.6 billion years). An interesting feature of these ancient rocks is that they are not from any sort of "primordial crust" but are lava flows and sediments deposited in shallow water, an indication that Earth history began well before these rocks were deposited. In Western Australia, single zircon crystals found in younger sedimentary rocks have radiometric ages of as much as 4.3 billion years, making these tiny crystals the oldest materials to be found on Earth so far. The source rocks for these zircon crystals have not yet been found. The ages measured for Earth's oldest rocks and oldest crystals show that the Earth is at least 4.3 billion years in age but do not reveal the exact age of Earth's formation. The best age for the Earth (4.54 Ga) is based on old, presumed single-stage leads coupled with the Pb ratios in troilite from iron meteorites,

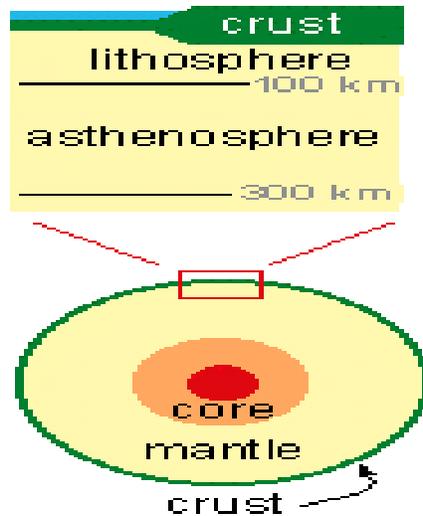
specifically the Canyon Diablo meteorite. In addition, mineral grains (zircon) with U-Pb ages of 4.4 Ga have recently been reported from sedimentary rocks in west-central Australia. [1] [2].

Thousands of meteorites, which are fragments of asteroids that fall to Earth, have been recovered. These primitive objects provide the best ages for the time of formation of the Solar System. There are more than 70 meteorites, of different types, whose ages have been measured using radiometric dating techniques.

The results show that the meteorites, and therefore the Solar System, formed between 4.53 and 4.58 billion years ago. The best age for the Earth comes not from dating individual rocks but by considering the Earth and meteorites as part of the same evolving system in which the isotopic composition of lead, specifically the ratio of lead-207 to lead-206 changes over time owing to the decay of radioactive uranium-235 and uranium-238, respectively. Scientists have used this approach to determine the time required for the isotopes in the Earth's oldest lead ores, of which there are only a few, to evolve from its primordial composition, as measured in uranium-free phases of iron meteorites, to its compositions at the time these lead ores separated from their mantle reservoirs.[1] [2]

The outer surface is divided into several tectonic plates that gradually migrate across the surface over geologic time spans. The interior of the planet remains active, with a thick layer of convecting yet solid Earth mantle and an iron core that generates a magnetic field. The atmospheric conditions have been significantly altered by the presence of life forms, which create an ecological balance that modifies the surface conditions. About 71% of the surface is covered in salt-water oceans, and the remainder consists of continents and islands. [6]

Earth's lithosphere is divided into mobile plates. Plate tectonics describes the distribution and motion of the plates. The theory of plate tectonics grew out of earlier hypotheses and observations collected during exploration of the rocks of the ocean floor. There are three major layers (crust, mantle, and core) within the earth that are identified on the basis of their different compositions (Fig. 1). [8]



(fig.1.) [8]

The outer layer, the **lithosphere**, is composed of the crust and uppermost mantle and forms a rigid outer shell down to a depth of approximately 100 km (63 miles).

The underlying **asthenosphere** is composed of partially melted rocks in the upper mantle that acts in a plastic manner on long time scales. The asthenosphere extends from about 100 to 300 km (63-189miles) depth. The theory of plate tectonics proposes that the lithosphere is divided into a series of plates that fit together like the pieces of a jigsaw puzzle. [8]

Earth's poles are mostly covered with ice. Sea **ice** is frozen seawater. Because ice is less dense than water, sea ice floats (as does fresh water ice: icebergs, lake and river ice, icicles, snow, hail, etc.). Sea ice covers about 7% of the Earth's surface, or about 12% of the world's oceans. [9]

The polar ice cap high-latitude region is covered in ice; it is not a true ice cap, which is less than 50,000 square kilometers (12.4 million acres) and are always over land; more like an ice sheet; also called polar ice sheet.[10]The planet's interior remains active, with a solid iron inner core, a liquid outer core that generates the magnetic field, and a thick layer of relatively solid mantle.

At the heart of our planet lies a solid iron ball, about as hot as the surface of the sun. Researchers call it "the inner core." It's really a world within a world. The inner core is 70% as wide as the moon. It spins at its own rate, as much as 0.2° of longitude per year faster than the Earth above it, and it has its own ocean: a very deep layer of liquid iron known as "the outer core." [25]

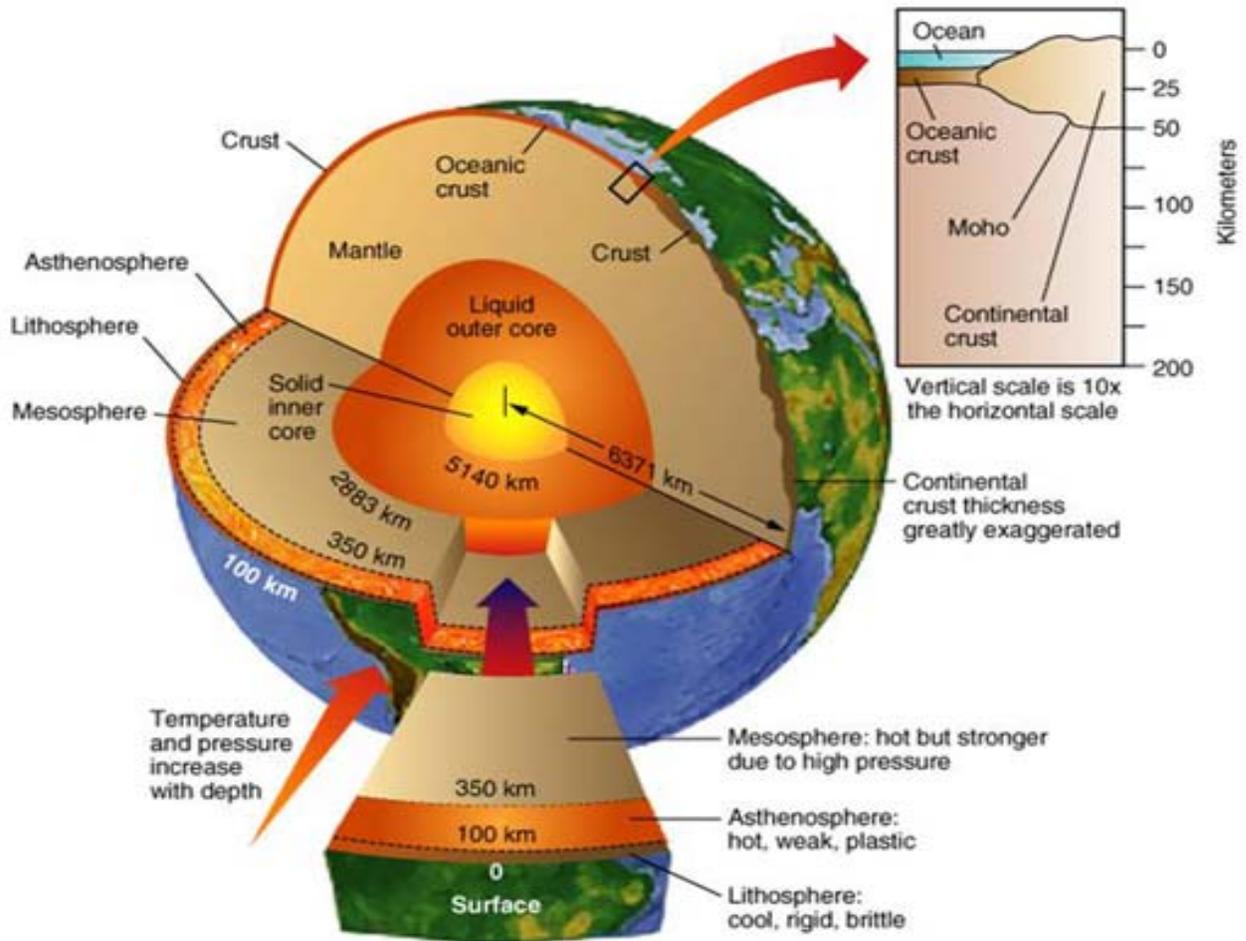


Figure-1

A schematic diagram of Earth's interior. The outer core is the source of the geomagnetic field. [25]

Earth's magnetic field comes from this ocean of iron, which is an electrically conducting fluid in constant motion. Sitting atop the hot inner core, the liquid outer core seethes and roils like water in a pan on a hot stove. The magnetic field waxes and wanes, poles drift and, occasionally, flip. The source of the field, the outer core, is itself seething, swirling, turbulent. They've also learned what happens during a magnetic flip. Reversals take a few thousand years to complete, and during that time--contrary to popular belief--the magnetic field does not vanish. "It just gets more complicated,". Magnetic lines of force near Earth's surface become twisted and tangled, and magnetic poles pop up in unaccustomed places. A south magnetic pole might emerge over Africa, for instance, or a north pole over Tahiti. Weird though, but it's still a planetary magnetic field, and it protects us from space radiation and solar storms. [25]

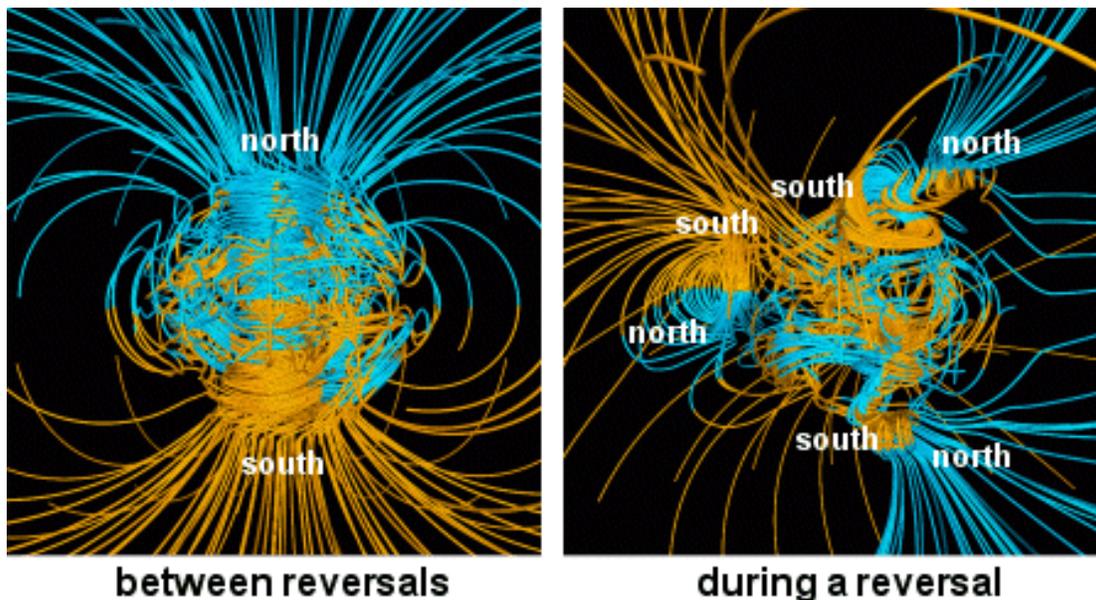


Figure-2

2. How the Magnetic Field of the Earth is formed.

Origin of the Magnetic Field

Magnetic fields are produced by the motion of electrical charges. For example, the magnetic field of a bar magnet results from the motion of negatively charged electrons in the magnet. The origin of the Earth's magnetic field is not completely understood, but is thought to be associated with electrical currents produced by the coupling of convective effects and rotation in the spinning liquid metallic outer core of iron and nickel. This mechanism is termed the *dynamo effect*. [18]

The planet's interior remains active, with a solid iron inner core, a liquid outer core that generates the magnetic field, and a thick layer of relatively solid mantle. The Earth's inner core is a ball of solid iron about 1,500 miles (2,400 kilometers) wide, about the same size as the moon. This ball is surrounded by an outer core made up mostly of liquid iron-nickel alloy, a highly viscous mantle layer and, topping it off, a solid crust that forms the surface of the planet. As the Earth cools from the inside out, the molten outer core is slowly freezing. This is leading the solid inner core to grow at a rate of approximately 1 millimeter per year. As the Earth's interior cools, relatively hot and cold matter churns around inside the planet, a process known as convection. The roiling of material in the core, coupled with the spinning of the Earth, is what generates the planet's magnetic field. Using computer models of convection in the outer core in conjunction with seismology data, the researchers found the flow of heat at the boundary of the core and mantle depended on the overlying mantle. At times, the nature of the mantle is enough to force heat from the mantle back onto the core, leading to melting in places. For instance, when it comes to large regions under Africa and the Pacific where the lowermost mantle is hotter than average; the outer core below those areas can become hot enough to start melting the inner core. On the other hand, beneath seismically active regions around the so-called "Ring of Fire" — a zone encircling the Pacific high in volcanic and earthquake activity — the cold remnants of oceanic plates sucked to the bottom of the mantle are drawing a lot of heat from the core, helping it freeze.[11] [13]

These findings suggest that “the whole dynamics of the Earth's core are in some way linked to plate tectonics, which isn't at all obvious from surface observations,”. [12]

"The origins of Earth's magnetic field remain a mystery to scientists," Mound noted. "If our model is verified, it's a big step towards understanding how the inner core formed, which in turn helps us understand how the core generates the Earth's magnetic field." [12]

Earth interacts with other objects in space, especially the Sun and the Moon. During one orbit around the sun, the Earth rotates about its own axis 365.26 times, creating 365.26 solar days, or one sidereal year. The number of solar days is one less than the number of sidereal days because the orbital motion of the Earth about the Sun causes one additional revolution of the planet about its axis. We measure time by the Sun. Because the rhythm of day and night is central to our lives, it is not surprising that the period of time from one sunrise (or noon, or sunset) to the next, the 24-hour **solar day**, is our basic social time unit. The daily progress of the Sun and the other stars across the sky is known as *diurnal motion*. As we have just seen, it is a consequence of Earth's rotation.

The Earth's axis of rotation is tilted 23.4° away from the perpendicular of its orbital plane, producing seasonal variations on the planet's surface with a period of one tropical year (365.24 solar days). Because Earth orbits the Sun, the Sun appears to move relative to the background stars. The apparent motion of the Sun on the sky over the course of a year, relative to the stars, defines a path on the celestial sphere known as the **ecliptic**. The ecliptic forms a great circle on the celestial sphere, inclined at an angle of about 23.5° to the celestial equator. In reality, the plane of the ecliptic is the *plane of Earth's orbit around the Sun*. Its tilt is a consequence of the *inclination* of our planet's rotation axis to its orbital plane. [14]

A magnetic field is generated by a feedback loop: current loops generate magnetic fields (Ampère's circuital law); a changing magnetic field generates an electric field (Faraday's law); and the electric and magnetic fields exert a force on the charges that are flowing in currents (the Lorentz force). These effects can be combined in a partial differential equation for the magnetic field called the *magnetic induction equation*:

$$\frac{\partial \mathbf{B}}{\partial t} - \eta \nabla^2 \mathbf{B} + \nabla \times (\mathbf{u} \times \mathbf{B})$$

Where \mathbf{u} is the velocity of the fluid, \mathbf{B} is the magnetic B-field; and $\eta=1/\sigma\mu$ is the magnetic diffusivity with σ electrical conductivity and μ permeability. The term $\partial\mathbf{B}/\partial t$ is the time derivative of the field; ∇^2 is the Laplace operator and $\nabla\times$ is the curl operator.

The first term on the right hand side of the induction equation is a diffusion term. In a stationary fluid, the magnetic field declines and any concentrations of field spread out. If the Earth's dynamo shut off, the dipole part would disappear in a few tens of thousands of years.^[33]

In a perfect conductor ($\sigma=\infty$), there would be no diffusion. By Lenz's law, any change in the magnetic field would be immediately opposed by currents, so the flux through a given volume of fluid could not change. As the fluid moved, the magnetic field would go with it. The theorem describing this effect is called the *frozen-in-field theorem*. Even in a fluid with a finite conductivity, new field is generated by stretching field lines as the fluid moves in ways that deform it. This process could go on generating new field indefinitely, were it not that as the magnetic field increases in strength, it resists fluid motion.

The motion of the fluid is sustained by convection, motion driven by buoyancy. The temperature increases towards the center of the Earth, and the higher temperature of the fluid lower down makes it buoyant. This buoyancy is enhanced by chemical separation: As the core cools, some of the molten iron solidifies and is plated to the inner core. In the process, lighter elements are left

behind in the fluid, making it lighter. This is called *compositional convection*. A Coriolis effect, caused by the overall planetary rotation, tends to organize the flow into rolls aligned along the north-south polar axis.

The average magnetic field in the Earth's outer core was calculated to be 25 Gauss, 50 times stronger than the field at the surface.

3. Magnetic Field of the Earth

Earth's magnetic field (also known as the *geomagnetic field*) is the magnetic field that extends from the Earth's inner core to where it meets the solar wind, a stream of energetic particles emanating from the Sun and is similar to that of a bar magnet tilted 11 degrees from the spin axis of the Earth.[15]

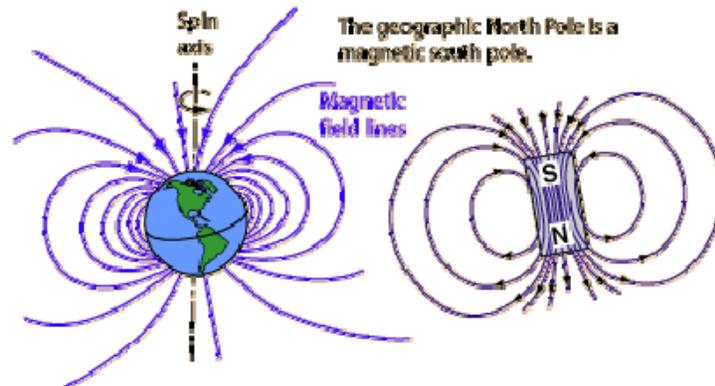


Figure 3

The North Pole of a compass needle is a magnetic North pole. It is attracted to the geographic North pole, which is a magnetic South pole (opposite magnetic poles attract) [15]

Right at the heart of the Earth is a solid inner core, the size of the moon and composed primarily of iron. At a hellish 5,700 degree, this iron is as hot as the sun's surface, but the crushing pressure caused by gravity prevents it from becoming liquid. Surrounding this is the outer a 2000 km thick layer of iron, nickel and small quantities of other metals. Lower pressure than the inner core means here is fluid. Differences in temperature, pressure and composition with the outer core cause convection currents in the molten metal, dense matter sinks whilst, warm, less dense matter rises. The Coriolis force resulting from the Earth's spin, also causes swirling whirlpods. This flow of liquid generates electric currents, which in turn produce magnetic fields. Charged metals passing through these fields go on to create electric currents of their own, and so the cycle continues. The self-sustaining loop is known as the geodynamo. The spiraling caused by the Coriolis force means that separate magnetic fields created are roughly aligned in the same direction, their combined effect adding up to produce vast magnetic field engulfing the planet.[16]

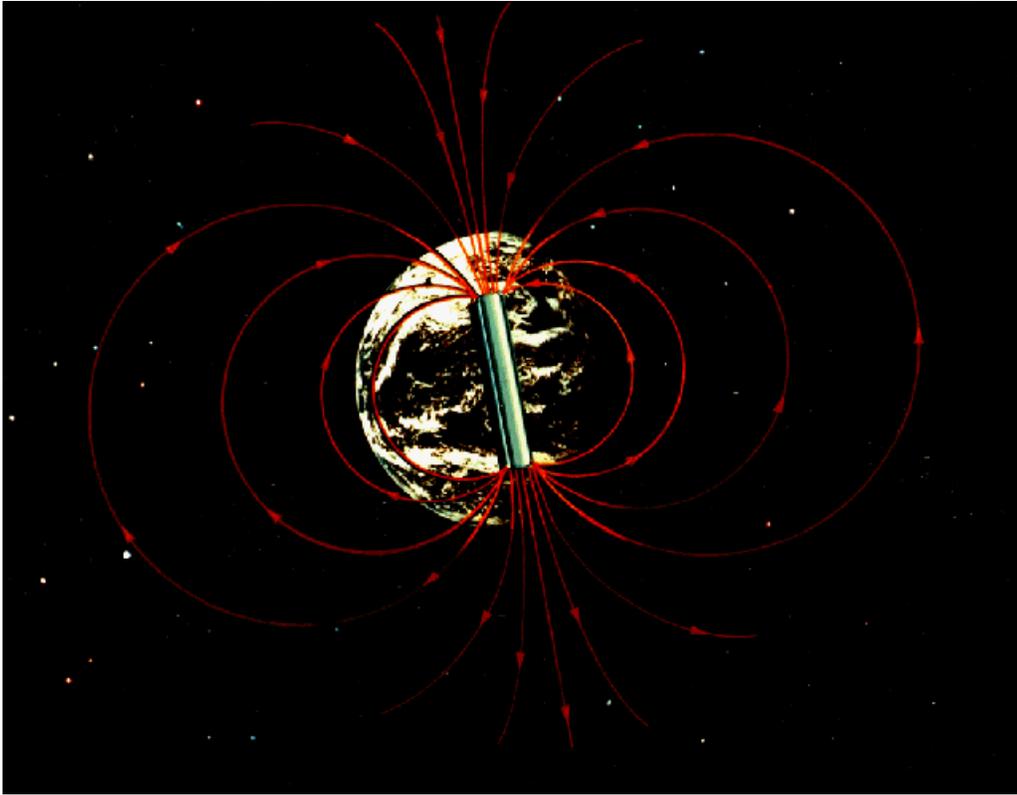


Figure-4 Magnetic field [17]

The Earth's magnetic field is attributed a dynamo effect of circulating electric current, but it is not constant in direction. Rock specimen of different age in similar locations has different direction of permanent magnetization. Although the details of the dynamo effect are not detail, the rotation of the Earth plays a parts a in generating the current which are pressured to the source of the magnetic field.[15]

3.1 Structure of the Field

The Van Allen radiation belt is composed of two torus-shaped layers of energetic charged particles (plasma) around the planet Earth, held in place by its magnetic field. The belt extends from an altitude of about 1,000 to 60,000 kilometres above the surface, in which region radiation levels vary. It is thought that most of the particles that form the belts come from solar wind, and other particles by cosmic rays. It is named after its discoverer, James Van Allen, and is located in the inner region of the Earth's magnetosphere. It is split into two distinct belts, with energetic electrons forming the outer belt and a combination of protons and electrons forming the inner belt. In addition, the radiation belts contain lesser amounts of other nuclei, such as alpha particles. The belts pose a hazard to satellites, which must protect their sensitive components with adequate shielding if their orbit spends significant time in the radiation belts.

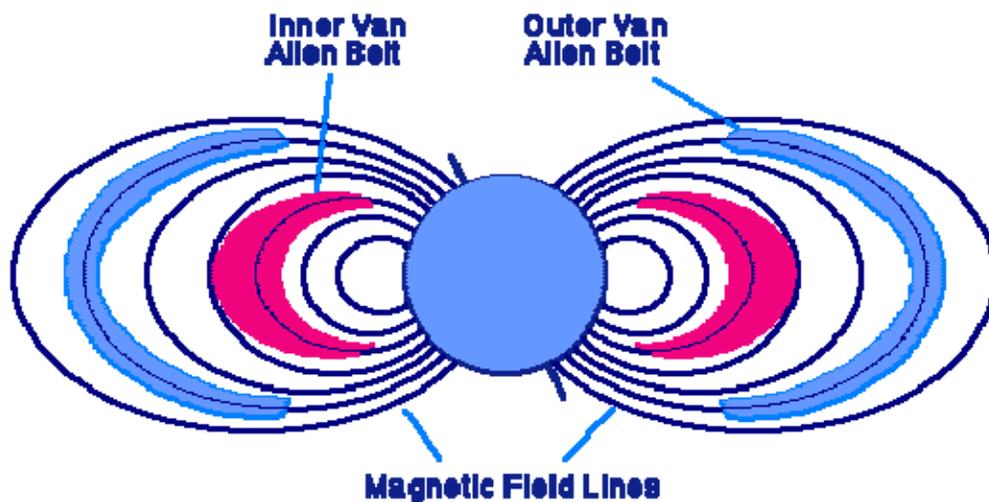


Figure-5

The Earth's magnetic field and Van Allen radiation belts [17]

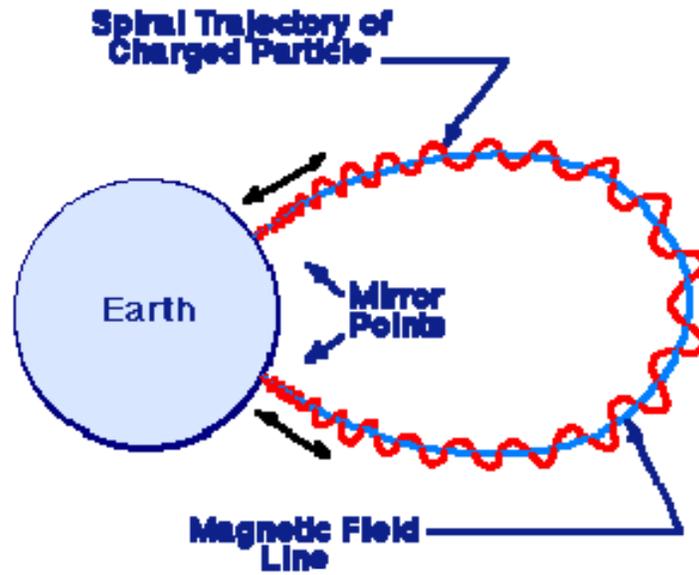


Figure-6

As indicated above image, the charged particles are reflected at "mirror points" where the field lines come close together and the spirals tighten. One of the first fruits of early space exploration was the discovery in the late 1950s that the Earth is surrounded by two regions of particularly high concentration of charged particles called the *Van Allen radiation belts*. [18]

3.2 The Earth's Magnetosphere

The Earth's magnetic field shields it from much of the solar wind. When the solar wind encounters Earth's magnetic field it is deflected like water around the bow of a ship, as illustrated in the adjacent image (Source). The corresponding region of spaces sitting behind the bow shock and surrounding the Earth is termed the magnetosphere, it represent a region of space dominated by the Earth's magnetic field in the sense that it largely prevents the solar wind from entering. [18]

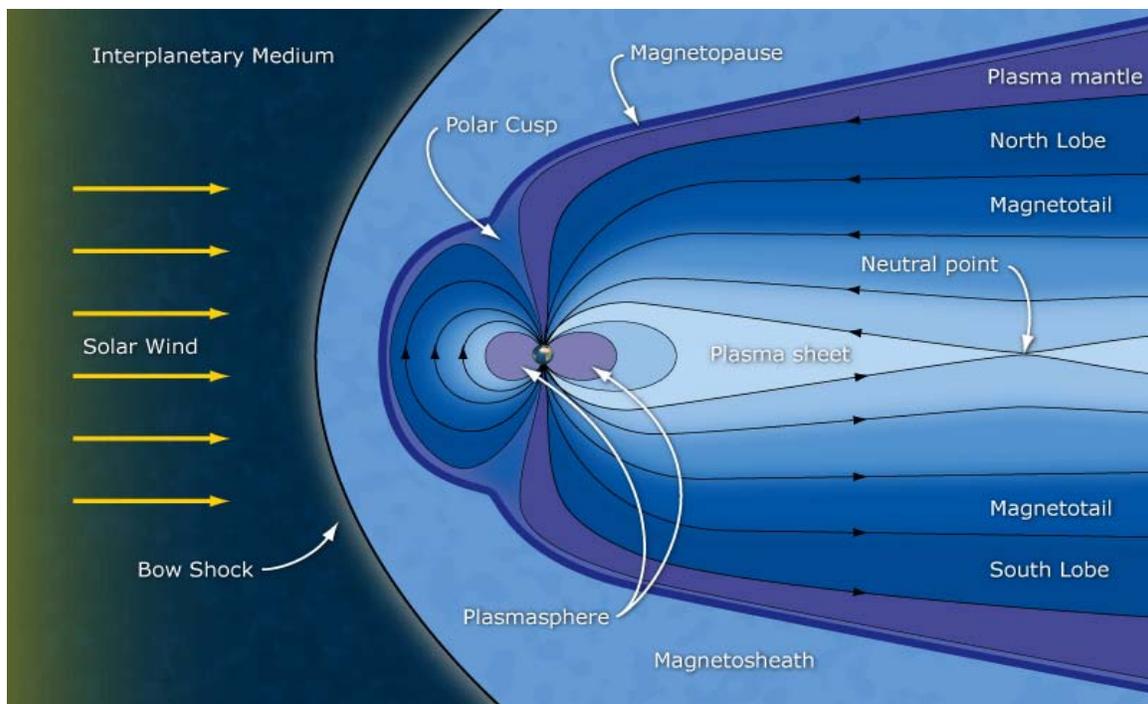


Fig 7 The Earth's Magnetic Field

3.3 The Cause of Auroras

Auroras are caused by high energy particles from the solar wind that is trapped in the Earth's magnetic field. As these particles spiral back and forth along the magnetic field lines, they come down into the atmosphere near the north and south magnetic poles where the magnetic field lines disappear into the body of the Earth. [18]

Northern and Southern Lights

Southern aurora [18]



Figure-8

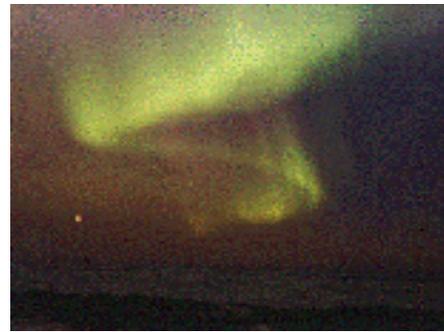


Figure-9

Northern aurora over Lake Superior [18]



Figure10

Northern aurora over Circle, Alaska [18]

The delicate colors are caused by energetic electrons colliding with oxygen and nitrogen molecules in the atmosphere. This excites the molecules, and when they decay from the excited states they emit the light that we see in the aurora. [18]

3.3.1 Auroras at Non-Visible Wavelengths

The collisions of trapped charged particles with atmospheric molecules cause spectacular effects in the visible spectrum, but these excited molecules can also emit radiation in other wavelength bands. The following figures show aurora imaged in the ultraviolet (UV) and X-ray regions of the spectrum. [18]

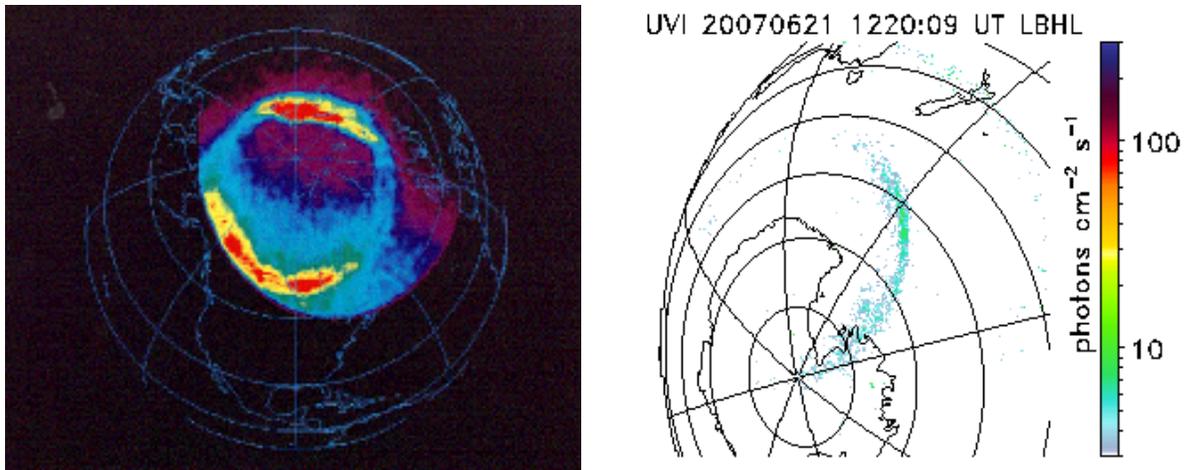


Figure-11

UV emission from northern aurora observed by the Polar satellite [19]

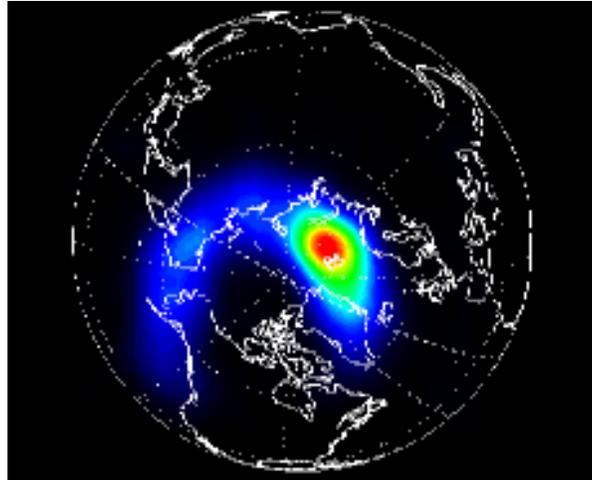


Figure-12

X-ray emission from northern aurora observed by the Polar Satellite [20]

3.4 Dipolar approximation

To measure the Earth's magnetism in any place, we must measure the direction and intensity of the field. The Earth's magnetic field is described by seven parameters.

- declination (D),
- inclination (I),
- horizontal intensity (H),
- The north (X) and east (Y) components of the horizontal intensity.
- vertical intensity (Z), and
- total intensity (F)

The parameters describing the direction of the magnetic field are declination (D) and inclination (I). D and I are measured in **units of degrees, positive east for D and positive down for I**. The intensity of the total field (F) is described by the horizontal component (H), vertical component (Z), and the north (X) and east (Y) components of the horizontal intensity.

The magnetic poles are defined as the area where dip (I) is vertical. You can compute this area using magnetic field models, such as the World Magnetic Model (WMM) and the International Geomagnetic Reference Field (IGRF). You can also survey for the magnetic pole, using instruments that measure the magnetic field strength and direction. In practice, the geomagnetic field is not exactly vertical at these poles, but is vertical on oval-shaped loci traced on a daily basis, with considerable variation from one day to another, and approximately centered on the dip pole positions. Magnetic declination (D) is unreliable near the poles.

Near the surface of the Earth, its magnetic field can be closely approximated by the field of a magnetic dipole positioned at the center of the Earth and tilted at an angle of about 10° with respect to the rotational axis of the Earth. [21]

3.5 Magnetic poles

The positions of the magnetic poles can be defined in at least two ways.

A magnetic dip pole is a point on the Earth's surface where the magnetic field is entirely vertical.

A magnetic dip pole is a point on the Earth's surface where the magnetic field is entirely vertical. Earth's magnetic north pole is where the magnetic field lines are oriented vertically and plunge into the surface of the Earth i.e. where the magnetic inclination is $+90$ degrees. This is called the magnetic dip pole. The pole varies in position on a yearly basis due to secular variation (or drift in Earth's magnetic field). [22]

The inclination of the Earth's field is 90° at the North Magnetic Pole and -90° at the South Magnetic Pole. The two poles wander independently of each other and are not directly opposite each other on the globe. They can migrate rapidly: movements of up to 40 km per year have been observed for the North Magnetic Pole. Over the last 180 years, the North Magnetic Pole has been migrating northwestward, from Cape Adelaide in the Boothia Peninsula in 1831 to 600 km from Resolute Bay in 2001. The *magnetic equator* is the line where the inclination is zero (the magnetic field is horizontal).

If a line is drawn parallel to the moment of the best-fitting magnetic dipole, the two positions where it intersects the Earth's surface are called the North and South geomagnetic poles. If the Earth's magnetic field were perfectly dipolar, the geomagnetic poles and magnetic dip poles would coincide and compasses would point towards them.

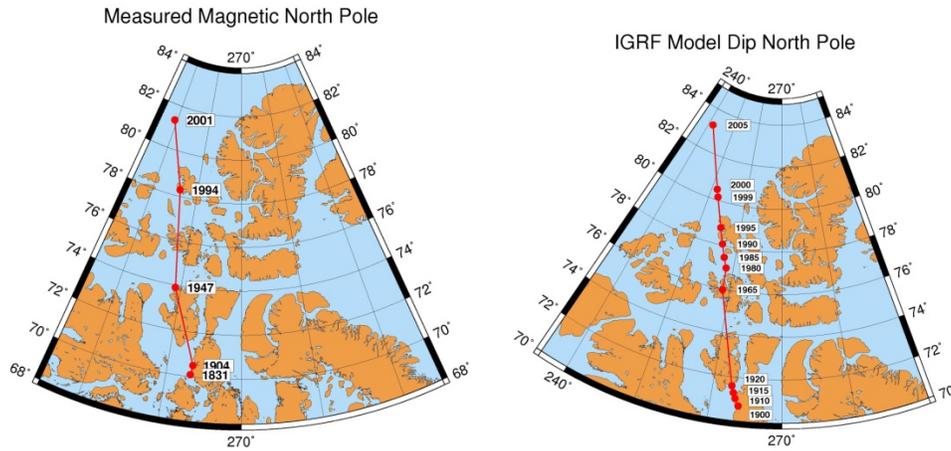


Figure-13

[24] Earth's magnetic north pole

Earth's magnetic field is changing in other ways, too: Compass needles in Africa, for instance, are drifting about 1 degree per decade. And globally the magnetic field has weakened 10% since the 19th century. Sometimes the field completely flips. The north and the south poles swap places. Such reversals, recorded in the magnetism of ancient rocks, are unpredictable. They come at irregular intervals averaging about 300,000 years; the last one was 780,000 years ago. [25]

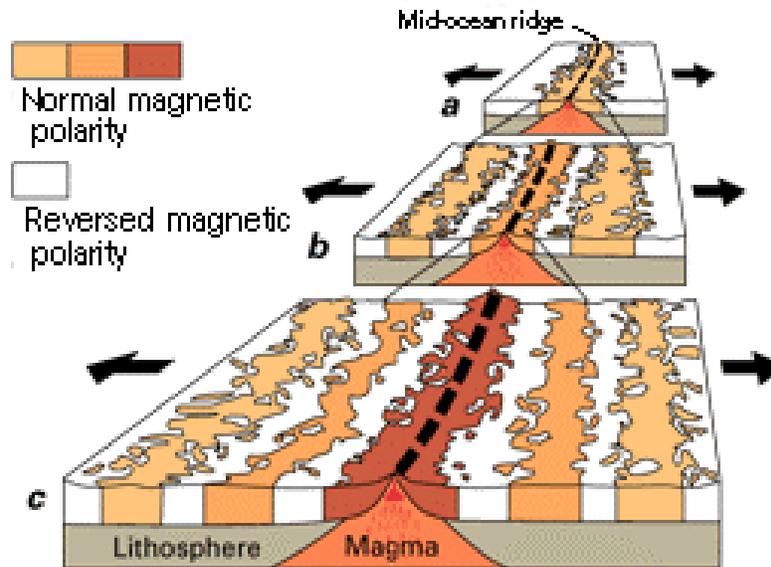


Figure-14

Magnetic stripes around mid-ocean ridges reveal the history of Earth's magnetic field for millions of years. The study of Earth's past magnetism is called paleomagnetism. [25]

4. Geomagnetic Waves and Their Properties:

The term “Geomagnetic Waves” is often used to describe waves that surround the Earth due to the influence of magnetic field around it. It is the magnetic force field that surrounds the Earth. It is attributed to the combined effects of the planetary rotation and the movement of molten iron in the Earth's' core. The Geomagnetic Field is essentially dipolar (i.e., it has two poles, the northern and southern magnetic poles) on the Earth's surface. Away from the surface, the field becomes distorted.

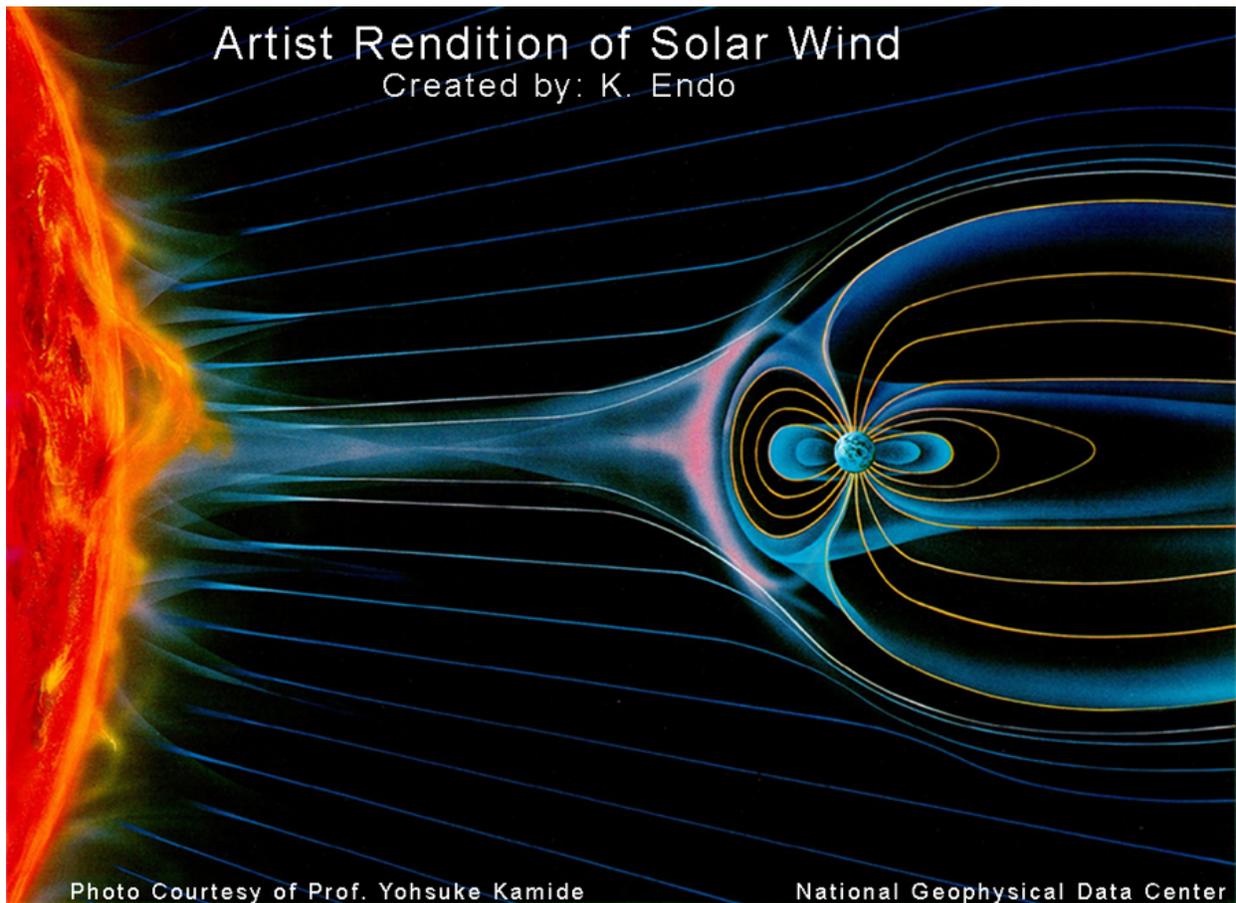


Figure-15

It extends from the Earth's inner core to where it meets the solar wind, a stream of energetic particles emanating from the Sun. Its magnitude at the Earth's surface ranges from 25 to 65 microteslas (0.25 to 0.65 gauss).

It is approximately the field of a magnetic dipole tilted at an angle of 11 degrees with respect to the rotational axis—as if there were a bar magnet placed at that angle at the center of the Earth. However, unlike the field of a bar magnet, Earth's field changes over time because it is generated by the motion of molten iron alloys in the Earth's outer core (the geodynamo).

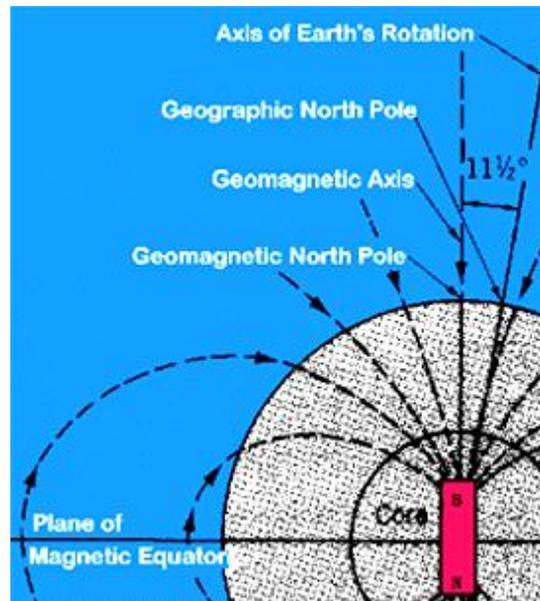


Figure-16

A typical procedure for measuring its direction is to use a compass to determine the direction of magnetic North. Its angle relative to true North is the *declination* (D) or *variation*. Facing magnetic North, the angle the field makes with the horizontal is the *inclination* (I) or *dip*. The *intensity* (F) of the field is proportional to the force it exerts on a magnet.

4.1 Crustal magnetic anomalies

Magnetometers detect minute deviations in the Earth's magnetic field caused by iron artifacts, kilns, some types of stone structures, and even ditches and middens in archaeological geophysics.

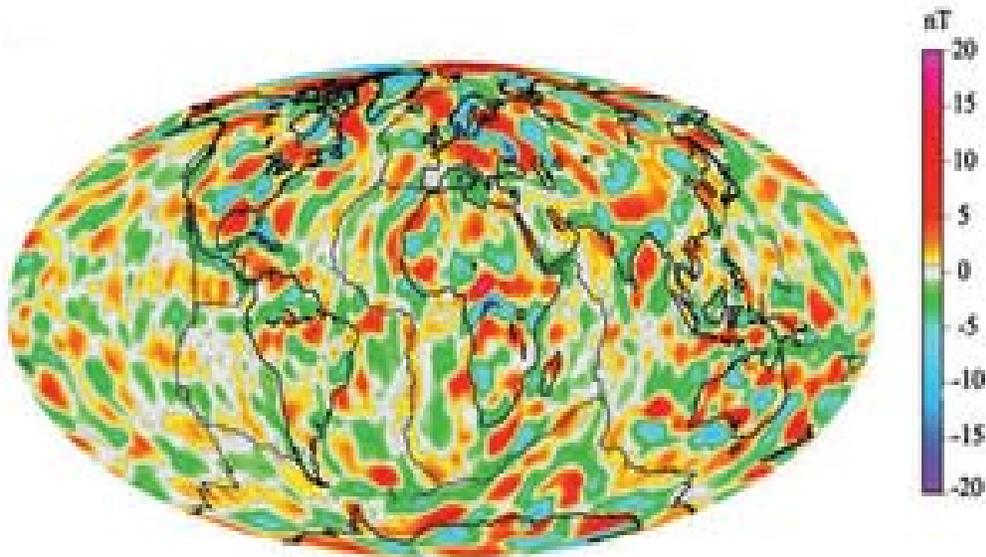


Figure-17

A model of short-wavelength features of Earth's magnetic field, attributed to lithospheric anomalies.

Using magnetic instruments adapted from airborne magnetic anomaly detectors developed during World War II to detect submarines, the magnetic variations across the ocean floor have been mapped. Basalt — the iron-rich, volcanic rock making up the ocean floor — contains a strongly magnetic mineral (magnetite) and can locally distort compass readings. The distortion was recognized by Icelandic mariners as early as the late 18th century. More important, because the presence of magnetite gives the basalt measurable magnetic properties, these magnetic variations have provided another means to study the deep ocean floor. When newly formed rock cools, such magnetic materials record the Earth's magnetic field.

5. The effects of Proportionate Geomagnetic Fields on Human

The body does not exist outside a magnetic environment, and it never has – even from the embryo stage of a human’s development. All biology on planet Earth is completely, entirely dependent on the Earth’s natural magnetic fields. The Earth is our natal mother in more ways than we know. We are forever dependent upon our “Magnetic Mother.” Only astronauts leave the Earth’s magnetic field—temporarily of course.

5.1 How are we dependent?

From the very beginning of life – intrauterine and planetary – our cells grew in a complex planetary magnetic field system. We can’t leave home without it. The Earth’s magnetic fields comprise:

- Earth’s overall DC field – with field lines existing north to south, emanating from the magnetic north and south poles.
- Rocks under our feet – as you walk about on the surface of the planet, there are continuing changes in field strength entering the body from under your feet.
- Schumann resonances – caused by lightning storms and much more complex than a single resonance of 8.3Hz, ranging from about 1Hz to 50Hz or more.
- Geomagnetic storms/solar flares/coronal discharges coming in through the Polar Regions into the planetary ecosphere.
- Fields created by the rotation of the planet and variations in the ground level fields caused by tectonic plate movements and the magma in the Earth’s core– animals sense changes in these just before an earthquake.
- Telluric currents on the surface of the planet.
- Cosmic radiation moving into and through the planet’s environment.
- In recent history, the man-made EMFs surrounding us daily, especially in cities.

Due to the non-constant magnetic field of the Earth, currents are induced in a human body in motion. Up to 4 microamperes per square meter occur with exercises such as bending or rotation of the arm and up to 15 microamperes per square meter when travelling at 100 km/hr (about 62mph). These induced currents change at a rate between 0Hz and 10Hz. These induced currents are extremely important to life and human functioning. We routinely see that when people stop moving around, they lose muscle mass, vitality, and function. This gives new meaning to the phrase, “If you don’t use it, you lose it.”

Space program managers and astronauts now understand that being out in space causes more issues with body functioning than just the loss of gravity. Research where the earth’s magnetic fields are suppressed is showing that big changes happen without the background field in which we have developed. Should there ever be a pole reversal, there would be a significant effect on biology – it would not be pleasant, but not irreversible either. There have been pole reversals in the Earth’s past. Examination of the polarization of rocks and sediments in the Earth’s sea floor has shown these events.

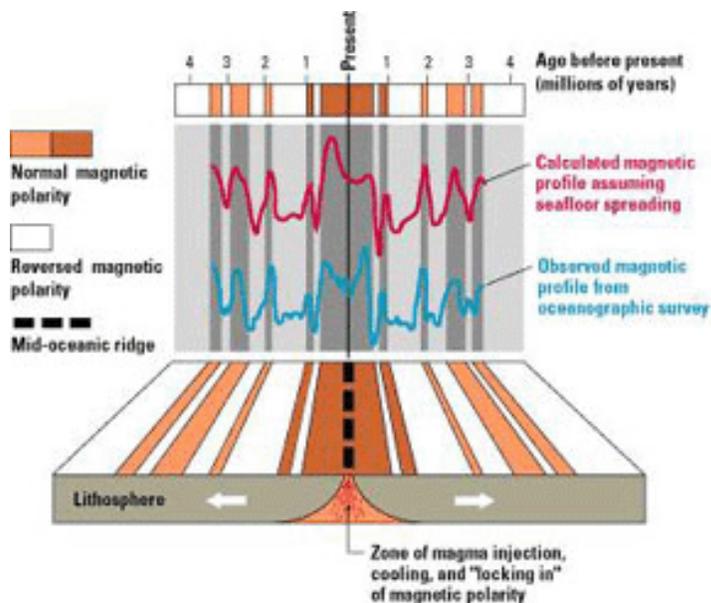


Figure-18

Based on measurements of the Earth's magnetic field taken since about 1850, some paleomagnetists estimate that the field will decay in about 1,300 years. However, the field is actually higher than it has been for most of the last 50,000 years and the current decline could reverse at any time. Even if Earth's magnetic field is beginning a reversal, it would still take several thousand years to complete. They are inevitable in the geologic future, too. When the next one will happen is unknown. Nevertheless, when it happens, the effects on humanity and biology will be significant, although probably temporary as our physiology adjusts.

5.2 Earth's Basic DC field

The Earth's basic magnetic field is oriented longitudinally, north to south, as would be expected of any bar magnet. The Earth's magnetic field is weakest generally at the equatorial region, and strongest in the Polar Regions. How the Earth's magnetic field is produced is still subject to speculation.



Figure-19

One of the major uses by life on the planet of this natural, totally-enveloping field is for navigation. Animals and humans innately and subconsciously use this field and its “field lines” for navigation and spatial orientation. The primary senses are most dominant but humans have a magnetic sense as well, which has been found to affect dowsing abilities and directional orientation in the dark. Humans and animals have been found to have natural magnetite (iron crystals) in the brain and other tissues that sense magnetic field changes.

The Earth’s “static” or DC background field is important in considering magnetic therapy with static magnets. Since the overall background field averages 0.5 G, and penetrates completely throughout our bodies, any magnet with field strength below this will not be expected to be active. The magnetic field strength of a static magnet decreases with distance from its surface and once the field drops to or below the ambient background field strength of earth, it will be no more effective in the tissues than the background field from that point and farther out.

5.3 Schumann Resonances

The Earth's ionosphere is a very complex electrical system. The polar aurora is active all the time and is regularly measured by Earth-bound magnetometers. It is impossible to know exactly how much of ionospheric currents contribute to human exposure versus ground magnetic fields, since they are an interaction and combination of contributions from the horizontal ionospheric currents, field-aligned currents, distant currents in the magnetosphere outside the ionosphere and currents induced in the Earth's surface.



Figure-20

Because it is very difficult to isolate humans from all the other fields they interact with on the planet, it is not clear what impact the Schumann fields themselves have on humans. It is worth noting that the Schumann frequencies resonate mostly on the same frequency bands that the human brain does. At the least then, they can resonate with (scientifically known as “coupling”) the body’s energies and strongly affect brain wave function. Most of us have experienced heightened sensitivity during lightning storms and even had other physiologic reactions, including aches and pains, or a static charge causing our hair to stand up.

5.3.1 Rocks

Naturally magnetized rocks in the ground may also produce some added stimulation to our bodies as we come into their fields. Smaller ones are called lodestones. Motion through these fields will add some component of “time-varied field” stimulation to the body.

5.3.2 Solar

Besides the geomagnetic fields discussed above, electrical solar energy is continually bombarding us as time-varied fields.



Figure-21

5.3.3 Environmental

In addition to all the above DC and time-varied influence on us, the Earth is now also bathed in artificial fields created by man, especially within the past 50 years. These include televisions, electric trains, microwave ovens, electrical appliances, wiring of our homes, wireless equipment, radio and television waves, radar, submarine communications networks, computers, medical equipment, our cars and cell phones.



Figure-22

Occupational magnetic field exposures, which can be magnitudes higher than the natural background fields, are present in addition to the previously mentioned sources. The health consequences of these more extreme sources are being studied more frequently now than ever.

As you can imagine, cities have the most EMFs. The Europeans are calling all this EMF activity “electro-smog.” There is increasing interest in finding ways of shielding us individually from this exploding level of “electro-smog.”

There are very few “natural” EMF-free “quiet zone” areas in the USA. One such place in the northeast US is in the Shenandoah Valley area.

6. Physical Effects of Solar Activities on Humans

The disturbance of the Sun (by solar flares) on the geomagnetic field on Earth would in a similar manner have an effect on the geomagnetic field surrounding humans or animals.

There is a growing body of evidence that changes in the geogeomagnetic field do affect biological systems. Studies indicate that fluctuation, in the geomagnetic field cause a negative response on physically stressed human biological systems.

Dr. Lim, TAO Grand Master of the Qi-Mag Institute, said “Solar flares through their extreme magnetic effects affect the central nervous system, brain activity and equilibrium (balance), our thought patterns, human behaviours, mental-emotional-physical response. Therefore solar flares can cause humans and all living beings to be nervous, anxious, worrisome, jittery, dizzy, shaky for those who are super sensitive, irritable, lethargic, exhausted, short memory lost, heart palpitation for those with weak heart, regular pressure on the head and headaches.”

The Institute of North Industrial Ecology Problems in Russia found that where there were geomagnetic peaks, there were increased incidences of **anxiety, depression, bipolar disorder, and suicide** in the city of Kirovsk.

The most plausible explanation to this is the correlation of solar storms and the desynchronization of our circadian rhythm (biological clock). The pineal gland in our brain is affected by the electromagnetic activity, which in effect produces an excess of melatonin, which in turn causes the gland to produce excess melatonin.

There are studies indicating evidence of increasing cases of illnesses like cancer and major mental illness caused by severe solar flares (in the region between the equator and the poles).

It is difficult to say that these studies provide direct evidence of the effects of solar flares/storms on illnesses and the biological system. There is, however, an increase in the interest on this subject and research studies. What are very true are prophecies/predictions of the Maya – that we are in an era of a changing paradigm. They predicted that we are in a time of “change and conflict” and that this change is coming from the both the “outside” and “inside.” Whether this “outside” influence is in the form of weather, natural phenomena or celestial disturbance (solar flares), it does not matter. In the end, it is all interrelated.

7. GEOPATHIC STRESS

7.1 Definition:

Geopathic comes from two words namely “geo” and “pathos” which mean “earth” and “disease/suffering” respectively. This is a term often used to describe a means of suffering in the form of illness owing to the stress caused by electromagnetic radiations that emanate from the earth. The existence of this phenomenon has been known for a few thousand years or maybe even since the early roots of mankind. Over the years, a number of researches and experiments have been carried out to decipher the effects of this prodigy on the health of mankind.

7.2 Origin of Geopathic Stress:

Geopathic springs from electromagnetic waves radiated by earth cavities, subterranean running water and certain underground concentrations and are held responsible for the causes of unwanted illnesses, stress and irregularities in lifestyle of inhabitants.

As the earth rotates on its axis, it functions as an electromagnet thereby generating electrical currents in the molten metals found within its core and an electromagnetic field on the surface which oscillates at an average frequency of 7.83Hz, which is almost identical to the range of alpha human brainwaves. In 1952, the physicist W.O Schumann identified this frequency and it has become known as ‘brain waves’ or Schumann Waves.

The space agency NASA has had to build Schumann Resonators into their space shuttles in order to artificially generate this frequency, which is known to safeguard the health of astronauts when they are beyond the influence of the earth’s vital frequency.

Therefore, geopathic stress represents a significant distortion of this natural frequency by weak electromagnetic fields created by streams of water flowing underground, geological fault lines, underground caverns, and certain mineral deposits (notably coal, oil, and iron). For example, where the earth's vibration of 7.83Hz crosses a water vein 200-500ft below the ground, stress lines vibrating at up to 250Hz can be generated. So, any distortion of this 7.83Hz level creates a stress with the potential to weaken the immune system of any mammal living above the distortion, leading to greater susceptibility to viruses, bacteria, parasites, environmental pollution, degenerative diseases, and a wide range of health problems.

7.3 Types of Geopathic Stress:

These are due to the fact that the magnetic field of the earth is non-uniform. In other words, it is stronger in some places than it is in others. If the strength of the earth's magnetic field is measured on the ground using instruments such as magnetometers, it is found that it forms lines of force. These lines of force form a rectangular grid. This looks very similar to the lines of latitude and longitude on a map. This grid of lines of magnetic force is called the Hartmann Net.

If one is living in a house situated where the lines of force of the Hartmann Net cross each other, this may give rise to Geopathic Stress.

Measurements of the Earth's magnetic field show also that there is also a second grid system laid over the top of the Hartmann Net. This is known as the Curry Grid. Here the lines of force meet at an angle giving rise to a diamond shaped pattern looking rather like the pattern of an old-fashioned leaded window.

The Curry grid seems to give rise to more geopathic stress than does the Hartmann Net. Both can interact with each other and with stress coming from underground water and fault lines.

Of all the types of Geopathic Stress, that caused by underground water and fault lines is the most important. [28]

7.4 Case Study:

7.4.1 Flow of Underground Water

Water, the most influential substance on this earth, is the common factor we share with all forms of life on this earth, even though the quantity of water involved may vary enormously from one living energy form to another.

It is the movement of water, and the vibration resonance of that water that is the most critical influence on living matter on this earth and that influence is such that it even extends and reaches to the greater cosmos in certain case, which does not ignore the influence of the energy that reaches us from the sun, moon or planets. However, such is the influential character of water, especially moving water, that it may amplify beneficially or detrimentally the character of solar or cosmic energy reaching us on earth. It is the resonance of flowing water, particularly underground streams that has a definite influence on all forms of energy found on the earth.

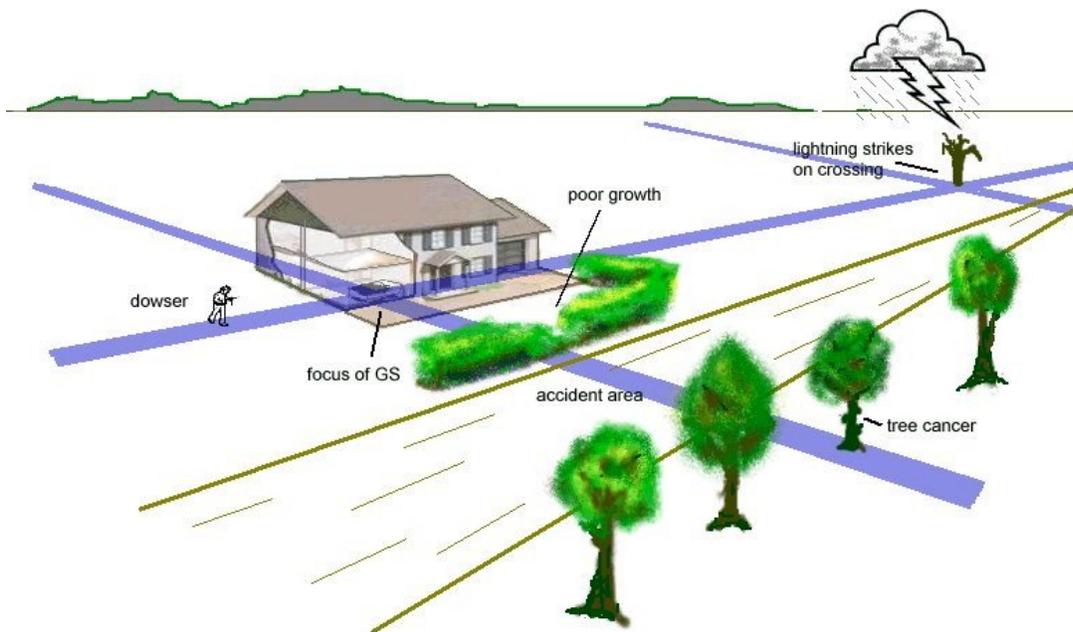


Figure- 23

[27]

When water moves or flows in a pipe or underground cavern its motion creates an e.m.f., a measurable form of energy detectable with modern instrumentation. Such instruments only measure one aspect of that movement in terms of electro-magnetic character. However, if we measure the movement of underground water with a centripetal instrument, the sensitivity and character of the moving water takes on a new image.

As the water moves through the underground cavern, the friction of the water against the walls of the cavern creates sound, as well as altering the magnetic status of the rock in which it is in contact with. Sound whether audible to the human ear or not, forms an integral part of the electromagnetic spectrum, just like radio waves.

When it moves through various mediums, for example rock, water, soil, gas, sand etc., the value of the original vibration will be deflected, distorted or intensified. Any number of things may influence its course, purpose and direction. What may originally set out as a harmonic sound, or vibration, may soon fall out of tune, and become an annoying sound that drains the energy from living matter within its audible range.

What is especially interesting when we set out to measure the movement of these streams / underground rivers, we tend to find where two streams cross over or meet each other, there is a unique energy vortex formed, a spiraling current of energy rising to the surface. It is unique in every sense, because it has an influential role on all life forms on the surface of the earth immediately above them. They may attract beneficial energy to their zone of influence or they may attract detrimental energy to the same zone if the original vibration was un-harmonic.

Bad vibrations from underground water causes geopathic stress and noxious gases, attacking various parts of the human body that are exposed to its influence for long periods of time, ill health will normally follow.

When investigated, Geopathic Stress has been found to be a common factor which has contributed significantly to the manifestation of most serious and long term illnesses, especially those that relate to the depletion of the human and animal immune system.

Homes that are situated in geopathic stress zones are unhealthy places to live in. The atmosphere in office buildings that are geopathically stressed, are now referred to as, "Sick Buildings". This is where an extremely high rate of illness is recorded among the work force compared to the national average. In terms of private dwellings, the atmosphere in the house may lead to a breakdown of the health of the occupants, or it may even lead to a breakdown in communications, a buildup of friction in relationships, and in some cases to separation of couples. [25]

8. An Introduction to Dowsing:

‘Dowsing’ to most people, is all about marching across a field with some form of a forked twig in search for underground water. It entails quite a lot more than just finding water. It can also be used to discover some underground features such as gas mains, cables and other utilities (and breaks in them), or even archeological features like walls and cavities.

Dowsing can also help one to improve his/her health by making attempts to identify food intolerances, and allergies, and can suggest which dietary supplements or homeopathic remedies that might be helpful.

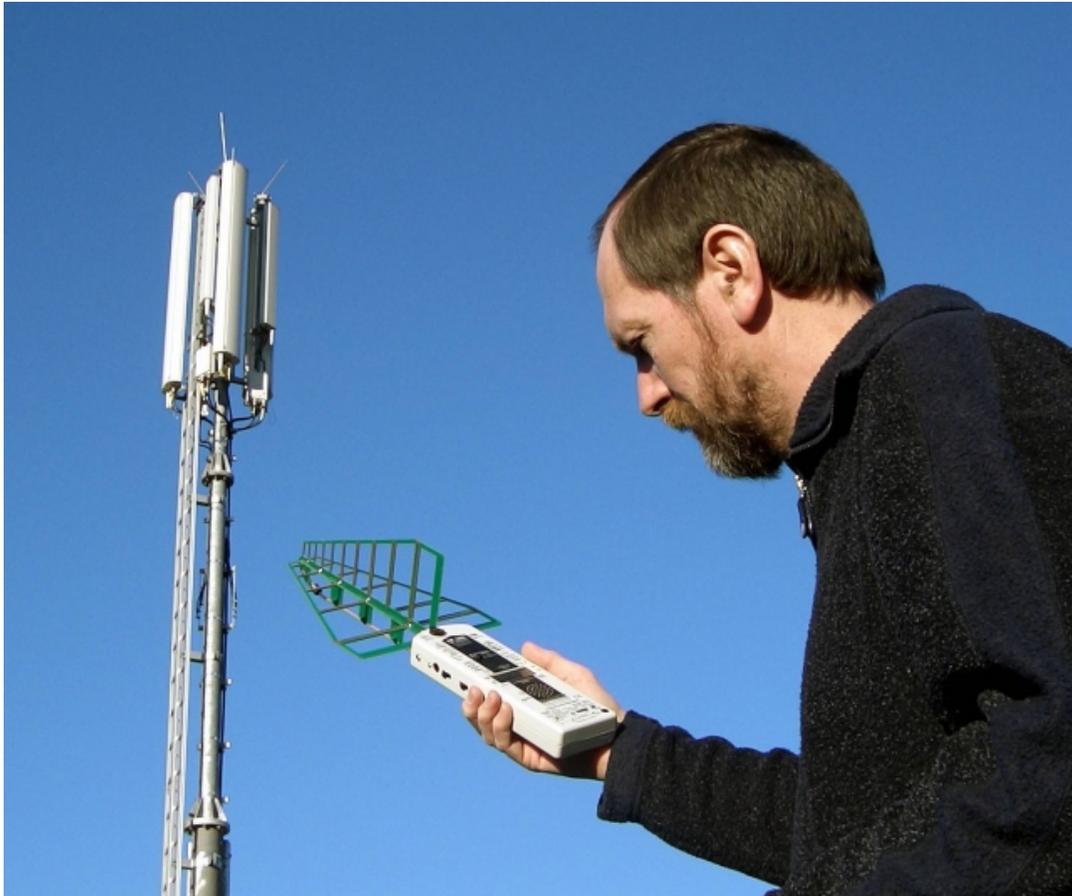


Figure-24

One can also dowse earth energies and other energy fields like the human aura or the electromagnetic fields from phone masts or power lines.

8.1 Principle of Dowsing:

Whatever may be the case, dowsing usually a dualistic character and the main uses of dowsing can be divided into two aspects; location and divination. In better terms, it is used to find things.

The flow of underground water in geological faults and fissures in rock gives off a vibration influence that resonates to the surface which can be detected by the use of some instruments such as scintillometers and electroscopes. This radiation rises vertically from the water until it reaches the surface. So when this dowsing is carried out, the dowser device detects this radiation and possibly scales it to give information on its intensity.

9. Medical Implications of Geopathic Stress:

Over exposure to geomagnetic field radiation may lead to the following:

9.1 Physiological Symptoms;

- Changes in the electrical polarity of the cell membrane with impeded ionization across the cell wall.
- Altered spin oscillation and proton resonance of protein molecules.
- Faulty hydrogen bonding.
- Disturbed mesenchyme base regulation, hormone balance and pH values.

Geopathic stress apparently does NOT cause any form of illness, but lowers the body's immunity, thereby exerting a weak and continuous stress on the DNA.

Most frequently found symptoms occurring at an early stage of exposure to GS are sleep disturbances. The siting of one's bed seems to be an important factor in this situation.

9.2 Pathological Symptoms include:

- Diminished pineal electrical activity after initial exposure to 50 μ T, it was possible to depress activity again with a low stimulus of 0.10 μ T. The pineal gland is the adrenal gland responsible for the synthesis of the hormone melatonin which is a well-established free-radical scavenger. It also plays an important part in establishing and controlling the 'body-clock' or circadian rhythm.
- resistance to medical treatment
- a feeling of being exhausted
- aggression and depression
- nervousness
- loss of appetite
- allergy to food
- fatigue and lethargy
- hallucinations

- seizures
- heart attack
- unexplained mood changes
- asthma and respiratory difficulties at night
- Restless feet and legs in bed
- Children might sleep-walk at night and also

Certain domestic pets like cats tend to prefer sleeping over hot spots especially area that have a concentration of GS, whereas, dogs and most other mammals try to avoid these areas as much as possible.

CANCER is the most NOTORIOUS of and tumors are known to develop almost at exactly the spot where two or more GS lines cross a person's body as they lie asleep in their beds.

Women have been known to be more likely at risk from this geopathic stress because their hormonal systems are susceptible to breakdown.

Leukemia & Lymphomas are particularly associated with a strong electro-pollution component within the GS lines.

Multiple sclerosis, motor neuron disease, parkinson's disease, and many other central nervous system wasting and paralyzing diseases of the flesh, muscles and nerves e.g necrotizing fasciitis, myasthenia gravis, all diagnosed as 'Earth element disorders' in Traditional Chinese Medicine.

Infertility (storks will not visit, let alone nest on geopathically stressed locations!), difficult pregnancies, miscarriages, premature birth, unhealthy new-born babies, including down's syndrome and other genetic abnormalities.

9.3 Sudden Infant Death Syndrome (S.I.D.S., 'COT DEATH')

Has well-established connections with exposure to geopathic and electromagnetic stress, microwave communication transmissions, proximity to nuclear power plants and research establishments, and baby dribble reacting with fire-retardant chemicals in cot mattresses (as well as a compromised breathing control mechanism in the brain-stem caused by an impacted occiput at birth, and treatable with cranial osteopathy).

Women are considered more likely to be at risk from geopathic stress because their hormonal systems are more susceptible. Foresight, the British pre-conception care organization, now suggests that all couples trying for a baby should get their homes checked for geopathic stress and electromagnetic stress.

N.B. a baby girl is born with approximately 25,000 eggs, which will all be affected by GS if the maternal bed during pregnancy is compromised, thus potentiating genetic weakness in future generations.

Below are images of some situations and reports observed by some scientists over the years;

9.4 Babies Continuously Crying

This can often be relieved simply by moving the cot a few feet away from the geopathogenic zone. Babies repeatedly found sleeping in one corner or edge of the cot, (or children and adults repeatedly falling out of bed), is probably an instinctual attempt to escape from the worst of the GS. The diagrams below, from respected British dowser Rolf Gordon, are cases where babies have been trying to avoid GS in their sleep. All the babies slept peacefully after their cots were moved to a Geopathic Stress free place.

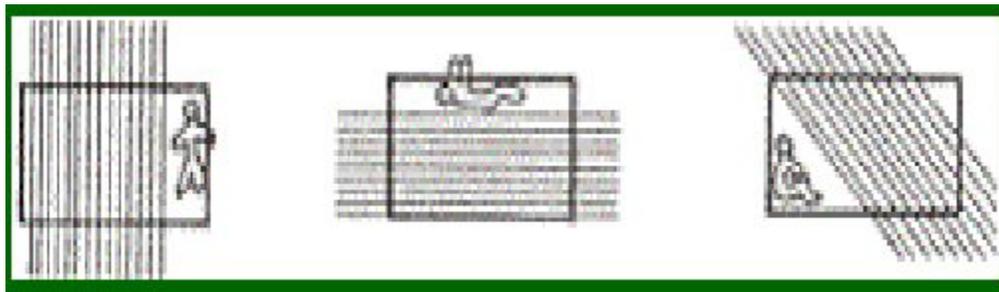


Figure-25

Children bed wetting, allergies, eczema and asthma, failure to thrive, attention deficit disorder, hyperactivity, learning difficulties, difficult to control.

Exposure to GS during childhood can make a person particularly sensitive to GS for the rest of their life, as well as prone to choose to inhabit places with a similar and familiar level of geopathic stress.

9.5 Post-Viral Fatigue, Myalgic Encephalomyelitis (M.E.)

The symptoms of M.E. include:

Fatigue, severe muscle pain, exhaustion after the smallest physical or mental exertion, headaches, dizziness, inability to concentrate, hypersensitivity to temperature changes, hypersensitivity to light, pallor, irritability, lack of patience and feeling of wretchedness. M.E. is usually triggered by the contraction of a virus such as glandular fever, an emotional shock or a physical accident, and displays symptoms of a compromised immune system, particularly of the spleen and thymus. It is almost invariably a disease with a strong GS component.

Any of the above symptoms and many other chronologically depleted energy states and impaired immune and lymphatic system conditions could result.

CHRONIC CANDIDIASIS:

Chronic candida overgrowth, while linked directly to antibiotic use, almost invariably has a strong GS component.

INSOMNIA AND RESTLESS SLEEP:

The person may have difficulty sleeping as the body is on continuous alert.

BAD DREAMS & SLEEP-WALKING:

You may be sharing aspects of the same nightmare as others asleep on the same disturbed water line.

AWAKEN FEELING UNREFRESHED in the morning, or with fatigue, muzzy head, headache, backache, cramps, feeling cold, tingling in arms and legs, restlessness.

ENDOCRINE DYSFUNCTIONS:

Of all types,

Including

Pituitary	–	gigantism,	dwarfism,
Thyroid	–	hyper or	hypo
Adrenal	–	hyper or	hypo etc...

Sex hormone – infertility, disturbed menses, fibroids, PMS.

KIDNEY STONES e.g. ditto in a street in Newick, Sussex.

Onset of A.I.D.S, meningitis, E'coli food poisoning, BSE, legionnaires disease, S.A.R.S, migraines, asthma, eczema, arthritis & rheumatic disorders (sore joints will often coincide exactly with the crossing point of negative earth energy lines on the bed).

Loss of Balance, Short term memory loss, schizophrenia and a host of mental disorders including obsessions (the focus of the obsession may be explicable in terms of the causal trauma to the local earth meridians).

Addictions, depression, anxiety, panic attacks, emotional over-sensitivity, psycho-sexual disorders, suicides, anorexia, bulimia, allergies to drink, food, or environmental triggers.

9.6 Resistance to Treatment (HOLISTIC OR ORTHODOX)

Long-term physical & mental illnesses where present treatment does not seem to work. Many hospital nurses talk of some beds having a reputation where occupying patients seem to have more difficulty in recovering or where the death rate is higher.

Baron von Pohl came to the conclusion towards the end of his career that every single disease of humanity could be linked to disturbed underground streams with the single exception of gout (I have encountered one case of gout that was directly attributable to GS, which no doubt shows that we each have our blind spots!).

In the acupuncture tradition a point on the hand just distal to the fourth and fifth metacarpal junction (Triple Heater 3-1/3rd) is a prime Geopathic Stress test point, for both diagnosis and treatment. Kinesiology (muscle testing), electro-dermal screening devices such as the MORA and VEGA machines, and Blood Crystalline Analysis may also be employed to diagnose GS as significant for a patient.

COLON CANCER:

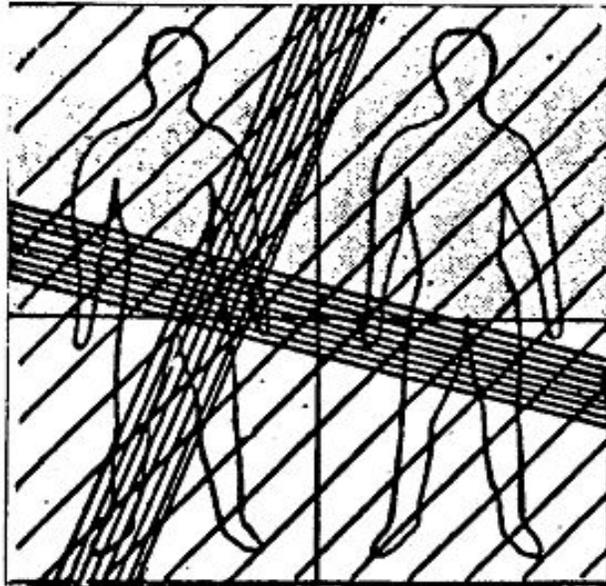


Figure-26

The crossing of the grid line identifies the area exactly. In fact Mr. L., who slept 6 years in this bed, had been operated on for cancer of the colon and had radiation treatment and looked accordingly.

TYPICAL MULTIPLE SCLEROSIS

TYPICAL CANCER SITE

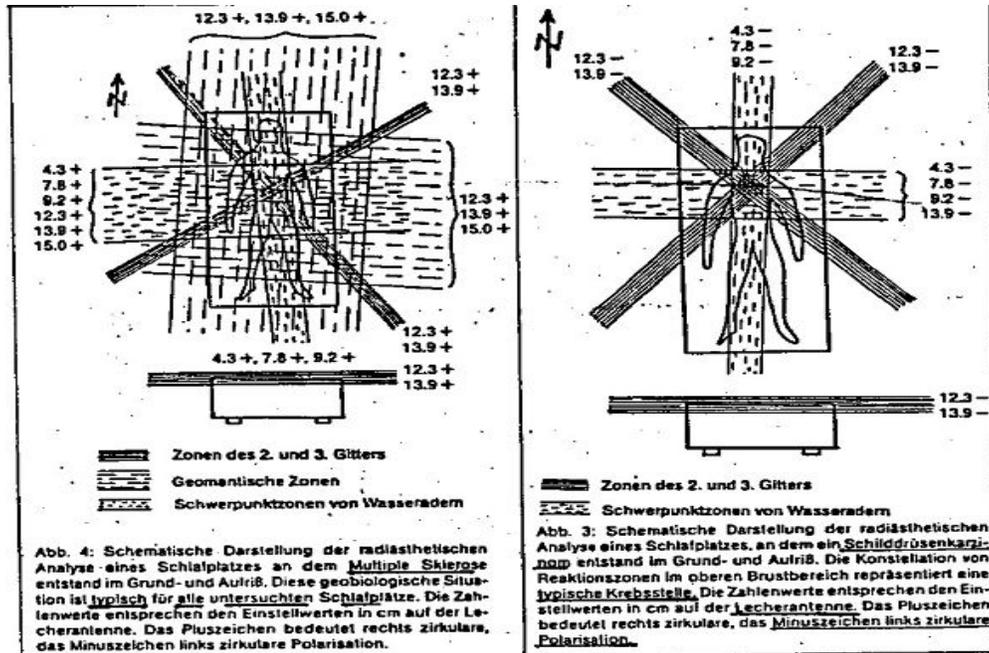


Figure-27

BRAIN TUMOR CASES

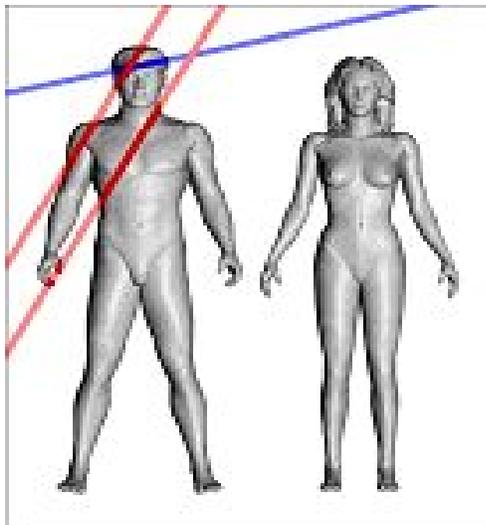


Figure-28



Figure-29

BREAST CANCER

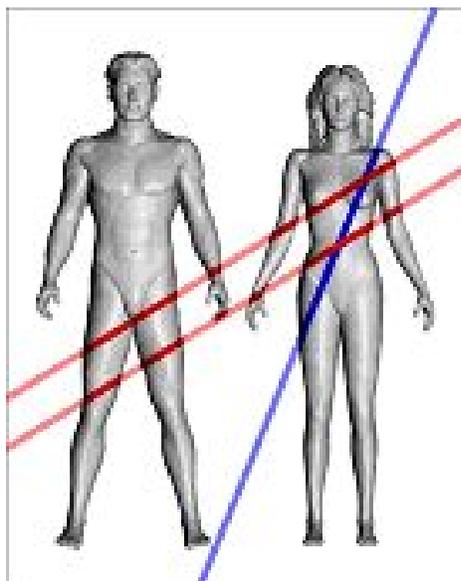


Figure-30

THROAT CANCER

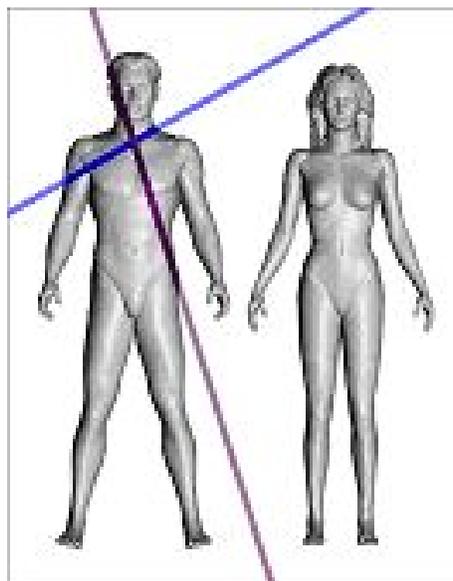


Figure-31

CHRONIC FATIGUE SYNDROME

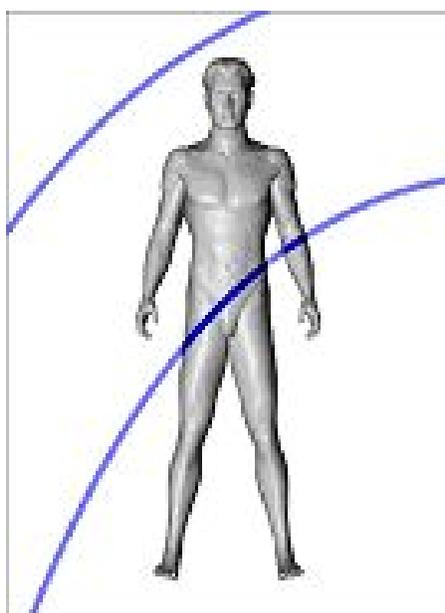


Figure-32

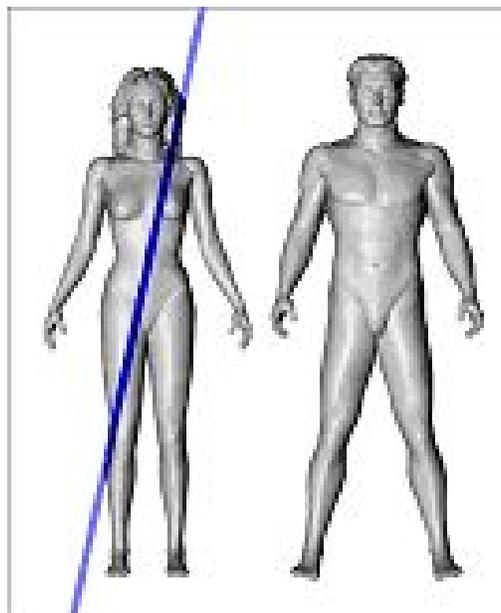


Figure-33

10. Research into Geopathic Stress:

10.1. George Lakhovsky's Research (1930)

George Lakhovsky coined the term 'Geopathy, and first suggested in the 1930s that geopathic stress causes the human body to vibrate at much higher frequencies than normal, and can affect the immune system, making people sleeping or working in geopathically stressed locations more susceptible to viruses, bacteria, parasites, and environmental pollution.

10.1.2 Baron von Pohl (1929)

The German dowser, Baron von Pohl, was asked to dowse the small town of Vilsbiburg in 1929, having then the highest per capita cancer death rate in Bavaria. He discovered a 100 per cent correlation between the beds of cancer victims and the paths of Sha streams passing through the town. He repeated the procedure in Grafenau in 1930, with the lowest cancer incidence in the province, and again found a 100 per cent correlation. He developed a scale to rate Geopathic stress of 1 to 16, where a combined tally of 9 or above from streams crossing gives rise to cancer.

10.1.3 Baron Gustav Freiherr von Pohl's map of Vilsbiburg.

He repeated the exercise in the City of Stetten, with the result that Dr. Harger, chairman of the city's medical scientific association, declared that the 'deadly earth currents' ran beneath the beds of all the 5,348 people who had died from cancer during the last 21 years.

This inspired some scientists and medical engineers to probe into the matter more deeply, and the term Geobiology was adopted by some German dowsers to represent the study of the relationship between life and the Earth's physical and chemical environment. 'Geobiologists' specialise in surveying houses for both geopathic and electromagnetic stress using both dowsing and scientific instruments.

10.1.4 Pierre Cody's Research (1930s):

In the 1930s the French engineer Pierre Cody of Le Havre knew of local 'cancer houses' in the port where many people had died from cancer over the years. He decided to investigate the matter using a gold leaf electroscope. After checking large numbers of these dwellings, Cody concluded that the air in these 'Cancer Houses' was ionized to an unusual degree. From various other tests Cody concluded that the ionization radiation consisted of positively charged Alpha Particles. The only known source of alpha particle emission in dwellings was from the radioactive gas Radon. (The National Radiological Protection Board (NRPB) estimates that out of 50,000 lung cancer deaths a year in Great Britain, Radon gas is responsible for about 2,500 cases.) Cody's early research seemed to backup Baron Von Pohl's findings that noxious vapours/energy from underground water-bearing fissures were responsible for many of the cases of cancer.

10.1.5 Dr. Joseph Würst and Jakob Stängle's Research (1950s):

In the 1950's the idea was again explored by the German scientist Dr. Joseph Würst, and the German engineer and dowser Jakob Stängle. Dr Würst conducted experiments in the rooms of cancer patients in several German towns, and found unusual amounts of gamma radiation in the houses he surveyed using a Geiger-counter. Stängle, who had a very good reputation for locating water bearing fissures in crystalline rock with his dowsing rod, developed a scintillation counter more sensitive and accurate than a Geiger counter and carried out a scientific survey in the French town of Moulins where a local physician, Dr, J Prichard claimed that cancer victims in the town dwelt above geological faults. Whilst Würst and Stängle thought that gamma radiation from fissures could be a significant cause of cancer, more recent studies suggest that this is unlikely as gamma radiation tends to pass straight through the body rather than causing direct hits on DNA. The culprit is thought to be the more pernicious alpha radiation from Radon, which is found with high levels of gamma radiation. Research in this field continues with an increasing number of sophisticated environmental measuring instruments coming on the market to aid the geobiologist in identifying causative factors to illness and disease.

10.1.6 Dr. Hartmann's Research.

After 30 years of investigation Dr. Hartmann M.D. produced a six hundred-page report entitled "Krankheit Als Standort-problem" (Heidelberg: K.F.Haug-Verlag) which stated that disease was first and foremost a problem of location. According to his findings people living in a Geopathically Stressed zone suffered primarily from a disability of the immune system, which laid them open to assault from any manner of illness. Furthermore, in 30 years of practice he had not come across a patient diagnosed with cancer or any other serious affliction (excluding diseases caused by bacteria or viral infections) who had not slept or stayed for long periods in Geopathically Stressed areas.

In 1989 a group of Austrian researchers took up Dr. Hartmann's reigns, carrying out a two year study on the short-term consequences resulting from human habitation of pathogenic zones. 6,943 tests in total were carried out on 985 volunteers, ending in a 158 page report. Made up of professors, doctors, engineers and dowzers this formidable research team discovered that the greatest Geopathic disturbances came from underground water sources, Hartmann/Curry Lines and geological fault lines. Both "Disturbed Zones" and "Neutral Zones" were tested in a series of experiments. Firstly they tested the effects of a 15 minute stay on a Neutral Zone, then 15 minutes on a Disturbed Zone, then a further 15 minutes on the Neutral Zone. The volunteers used were between 20 and 35 years of age, and were previously screened to insure they possessed no underlying health difficulties.

The test results were lined up by Biometric Significance and were valued with Serotonin Alteration, Blood Corpuscle Decline Speed and Immunoglobulin deficiencies in lead position. Serotonin decreased by a factor of 6 on the 'Disturbed Zone' whilst increasing its metabolism to advance Tryptophan in compensation. This reaction was highly significant. The three Immunoglobulins that were examined; IgA, IgG, and IgM showed clear reactions on the Geopathic zones. Immunoglobulin IgA showed the highest significant drop. These values later normalised when latter blood samples were analysed when the subjects were tested on the "Neutral zone". Blood Sedimentation Speed: Blood corpuscle decline speed slowed down whilst on the "Disturbed Zone."

In conclusion, they proved beyond all reasonable doubt the “Location Load Effect” (in other words The Geopathic Stress Effect) of the “Disturbed Zone” on the regulatory systems of the human organism. While there was no evidence relating the “Disturbed Zones” to a specific illness, it was declared that these zones were instead a risk factor which could reinforce the effect of different pathogenic factors. Thus Geopathic Stress, obtained from spending time in a “Disturbed Zone,” is added to a host of similar risk factors, including Environmental Chemicals, Poisons and Pollutants, Malnutrition, and Genetic Weaknesses. [8]

10.1.7 Dr. Otto Bergsmann’s Research (1989):

In 1989 Dr Hartmann’s theory was tested by a group of researches in Austria who completed a two-year study on the short-term consequences of human association with pathogenic sites. Some 985 people were tested and many measurements were recorded from 6,943 individual tests. Dr. Otto Bergsmann, internal medicine professor at the University of Vienna headed the working party. This study produced a 158 page report giving details of changes in the serum values of Serotonin, Zinc and Calcium after being exposed to these noxious fields for a period of ten minutes. There were also many other altered states to biological functions noted as a result of short term exposure to these forces.

The research was conducted by a team of distinguished professors, doctors, engineers, scientists and dowsers. To test this hypothesis the research team used the services of three dowsers known for their expertise in locating earth energies. They were enlisted to independently dowse eight different locations and submit reports and diagrams of the strongest ‘Disturbed Zones’ (Geopathic Zones) found, together with a ‘Neutral Zone’ at the same location to enable them to carryout double blind experiments with volunteers at each selected location. The dowsers found that the greatest pathogenic influences came from the movement of underground streams, Hartmann/ Curry global grid lines and geological fault lines. In order to rule out possible influences of man-made electromagnetic or microwave disturbances at each location an independent report from an electromechanical engineer was requested for each chosen site.

The medical-biological Investigations at both the 'Disturbed Zones' and the 'Neutral Zones' were standardised:

1. Investigations after 15 minutes stay on Neutral Zone.
2. Investigations after 15 minutes stay on the 'Disturbed Zone'.
3. Investigations again after a further 15 minute stay on a Neutral Zone.

At present, these 'Disturbed Zones' can only be indicated by dowzers, with its presence being then verified with scientific instrumentation. Technology does not yet exist to do this the other way round; the dowser does not yet appear to be replaceable with scientific instrumentation.

Volunteers were sought to participate in these experiments. As a rule clinically healthy subjects between the ages of 20-35 years were screened. A number of these were rejected when illnesses (circulation interferences and infections) were discovered. Other participants were also used from the Outpatient's Department for Physical Therapy in the Rehabilitation Centre, Grobming and from the Surgery of Dr. Korinek. The research programme was carried out between September 1987 and December 1988. None of the volunteers used were given information about the relative 'Disturbed Zones' and 'Neutral Zones'

10.1.8 Research Results

The project involved the testing of 24 different biological parameters involving 985 trial volunteers in 6,943 investigations using 462, 421 individual measurements. The test results were lined up by Biometric Significance and are valued with Serotonin alteration, Blood Corpuscle Decline Speed and Immunoglobulin deficiencies in lead position.

Serotonin decreased by a factor of 6 on the 'Disturbed Zone' whilst increasing its metabolism to advance Tryptophan in compensation. This reaction was highly significant.

The three Immunoglobulins that were examined; IgA, IgG, and IgM showed clear reactions on the geopathic zones. Immunoglobulin IgA showing the highest significant drop. These values later normalised when latter blood samples were analysed when the subjects were tested on the 'neutral zone'.

Blood Sedimentation Speed: Blood corpuscle decline speed slowed down whilst on the 'Disturbed Zone'

10.1.9 Conclusion of Vienna Report :

The 'Location Load Effect' of the 'Disturbed Zone' on regulatory systems of the human organism is proved without doubt and raises the question of which substratum, subsystem or system the location dependant powers primarily attack. The research team concluded that there was no evidence to relate 'Disturbed Zones' to a specific illness but should be rather determined as a risk factor that can reinforce the effect of different pathogenic factors. 'Geopathic Stress' as a result of spending time above a 'Disturbed Zone' belongs to other similar risk factors such as Environmental Chemicals, Poisons & Pollutants, Malnutrition/Diet, Recreational Drugs, Alcohol, Psycho-social Stresses, Genetic Weaknesses, Electromagnetic Pollution. The term 'Location Load' is synonymous to 'Geopathic Stress' which more generally describes the phenomenon in both Great Britain and the United States. This group has now linked with two universities in Austria studying the effects of disturbed zones on the immune system. Indications thus far support the findings of Dr. Ernst Hartmann who claimed that the protective role of the immune system was undermined when immersed in emissions of detrimental earth radiation.

10.1.10 Dr. Veronika Carstens' Research (1985):

In 1985 Dr. Veronika Carstens, wife of former German Federal President Karl Carstens, published a study stating that there were 700 cases documented worldwide where terminal cancer patients had regained their health without any conventional treatment after their sleeping area had been moved from a geopathic stress zone to one in which there was no detectable geopathic stress.

10.1.11 Barbara Tombarkiewicz's Research:

A doctoral thesis written by Barbara Tombarkiewicz under the supervision of Prof. Tomasz M Janowski concerning zones of geomagnetic field disturbances (magnetic anomalies) in Poland and the health of 309 cows kept in cow stalls in a building measuring 91 x 24 meters in area. Cows kept in three of these stalls suffered ill health problems over and above a ratio that might be normally expected. The problem was initially resolved by moving these unhealthy cows to other cow stalls in the complex where they recovered. However the healthy cows that were placed in these three cow stalls soon succumbed to ill health problems. It was decided to take measurements of the Earth's geomagnetic fields in these cow stalls to see if the three pathogenic sites were caused by anomalies in the local geomagnetic field strength. The three cow stalls that were connect to ill health problems had magnetic anomalies exceeded 34.000nT (nano Tesla).

Hair and Blood Analysis showed that animals that stayed in the geopathogenic stalls showed lower counts of trace elements such as Aluminium, Zinc, Copper and low Iron counts.

One of the many factors behind incorrect iron balance is Cadmium. It accumulates in the body and combines permanently with tissues, and inhibits activity of some enzymes. It is teratogenic, carcinogenic, and is amongst the most toxic of metals. The report concluded that the microelement disorders in the animals staying in the geopathic stalls was the primary cause of the many diseases and even death of the organism. Blood tests especially leukocyte count and the amount of toxic metal found in hair analysis were also indications that the animals were suffering from the detrimental affects of long term exposure to these geopathogenic sites.

A disturbed geomagnetic field alters, among other things, the evolution-shaped permeability of cell membranes and the magnetic orientation of microelements. This can affect the whole plant or animal organism and thus the physiological status of the organism, the central nervous system and neuro-psychical phenomena. The influence of a disturbed geomagnetic field on the living organism is slow and cumulative in time and can cause dysfunction of the organism, but after it stops the dysfunction can regress. After several months the healthy cows were moved in to the geopathogenic stalls and were observed to undergo a reverse process as their hair turned gray, matted, and became poorly rooted in the skin.

10.1.12 Dr Hans Nieper:

Dr Hans Nieper, a widely respected cancer specialist, says in his book, “Revolution in Technology Medicine and Society”: “According to studies I have initiated, at least 92% of all the cancer patients I have examined have remained for long periods of time, especially in respect of their sleeping place, in geopathically stressed zones.” Cancer as a disease of location has now become widely accepted amongst cancer specialists in Germany and other European countries. On the advice of geobiologists patients regularly move their beds to safer positions where necessary. These investigations have also spread to other serious illnesses that have also been associated with these geopathic zones and many doctors and cancer specialists use the services of geobiologists to survey the houses of their patients.

10.1.13 Dr. Paul G. Seeger:

Dr. Paul G. Seeger, Former Chief of Cancer Research, Charite` Hospital, Berlin, Germany said “No serious-minded criticism, be it ever so prejudiced, can afford to ignore proofs of the existence of pathogenic telluric influences. Hundreds of cancer institutes all over the world have spent billions without having found any convincing proof of cancer’s cause. Why has it not been possible to spend a few million of that huge sum for a thorough investigation of telluric radiation as a prime cause of cancer in human beings. Why has this newly discovered continent of knowledge not been applied to cancer prevention?” [32]

11. Relationship between Sunspots and Cancer

The sun is as essential to life as water and oxygen. It keeps us warm, gives us energy by driving the food chain from which we get our food, and helps to maintain the habitats we live in. It also has a psychological effect; sunlight makes us feel good.

But there's a downside. The ultraviolet light in sunlight damages the DNA in skin, causing skin cells to mutate and grow into cancers. Over millions of years, humans have evolved a mechanism for filtering out ultraviolet (UV) light through variations in skin color (melanin). But the mass migration of peoples in the 19th and 20th centuries has wreaked havoc with the delicate melanin balance that has evolved over time. When lighter-skinned people migrate and live in hotter climates such as Australia, rates of skin cancer go up. This is why Australians have the highest incidence of skin cancer in the world, and why skin cancer is the most common form of cancer in Australia. One in two Australians will develop a skin cancer at some time in their lives. Most damage occurs in the first 15-16 years of life; however, prevention past this time period can help minimize the extent of the cancer.

Schumann resonance signals and S-GMA vary significantly with sunspot activity, and S-GMA is highly correlated with reduced melatonin. Melatonin is a highly potent antioxidant and therefore reduced melatonin causes enhanced DNA damage that can initiate, promote and progress towards cancer. Childhood cancer develops very quickly. Most adult cancer has long latencies. Hence a sunspot cycle related cancer could cluster increased childhood cancer and cancer initiation around sunspot maximum. Solar cycles could plausibly influence long-term cancer cycles. In a similar manner to acute air pollution events in relation to cardiovascular death, sunspot maximum, a period of years with reduced melatonin, could cluster and "harvest" those with terminal cancer, accelerating their death.

There are three types of commonly encountered skin cancer, named after the type of skin cell from which they are derived.

➤ Basal cell carcinoma (BCC)

Basal cell carcinomas are the most common type, accounting for about 80 per cent of all skin cancers. BCCs are found most commonly on the ears, nose, and other exposed parts of the body – especially the face and neck. They generally do not spread beyond the skin, but when neglected, they can penetrate quite deeply, producing a destructive ulcer. For this reason, they are usually removed. This is usually done as a minor surgical procedure under local anesthetic by a GP, a dermatologist or a surgeon. Some types of BCCs, after assessment by a dermatologist, can alternatively be removed by curettage and cautery (sharp scraping and burning), cryotherapy (freezing with liquid nitrogen).

➤ Squamous cell carcinoma (SCC)

Squamous cell carcinomas arise from the outer layers of the skin. They are less common than basal cell carcinomas, but are more dangerous because they can spread to other parts of the body. They appear in areas most commonly exposed to the sun – the head, neck and upper back and extremities. As they grow, SCCs can spread to lymph nodes (under the armpits, in the groin or in the neck, for example) or via the bloodstream to other organs. For this reason they must be surgically removed.

SCCs commonly arise from sun spots (actinic keratoses), which in itself is not yet cancerous. A sun spot can be recognized by its scaly and pinkish appearance on sun-exposed skin. Sun spots are extremely common in fair-skinned individuals living in Australia. When sun spots develop, it is an indication that the skin has been sufficiently damaged by the sun and there is an increased risk of skin cancers developing. If left untreated, sun spots may progress to SCCs, which are cancerous. For this reason, sun spots are usually treated with cryotherapy (freezing) as soon as they are detected.

➤ Melanoma

Melanoma (cancerous mole) it is the fifth most common cancer in Australia (after non-melanocytic skin cancers, colorectal, prostate and breast cancer), and it is the most common cancer in men and women aged 15 to 44 years. It is also the deadliest form of skin cancer and in one third of cases may arise from a pre-existing mole. Since it is known to run in families, genes are thought to play a role with some people inheriting a genetic predisposition to the disease.

A melanoma can arise anywhere in the body, not just on sites exposed to the sun. Sometimes it can arise on the sole of the foot, the palm of the hand or under the nails. It is usually dark and can grow quickly and spread to nearby lymph nodes, or via the bloodstream to distant organs like the bones, liver, lungs or brain.

On occasions, melanoma may be flesh-coloured, making early detection difficult. The outlook for a melanoma is good if it is found early. To enable early detection of melanoma, anyone with a family history of melanoma and anyone who has multiple moles should be examined regularly by an appropriately trained and experienced doctor (such as a dermatologist).

11.1 Cancer Incidence with Sunspot Cycles:

SR signals and S-GMA vary significantly with sunspot activity, and S-GMA is highly correlated with reduced melatonin. Melatonin is a highly potent antioxidant and therefore reduced melatonin causes enhanced DNA damage that can initiate, promote and progress towards cancer. Childhood cancer develops very quickly. Most adult cancer has long latencies. Hence a sunspot cycle related cancer could cluster increased childhood cancer and cancer initiation around sunspot maximum. Solar cycles could plausibly influence long-term cancer cycles. In a similar manner to acute air pollution events in relation to cardiovascular death, sunspot maximum, a period of years with reduced melatonin, could cluster and "harvest" those with terminal cancer, accelerating their death. [35]

12. Cyprus Copper Mines and the Incidence of Cancer.

The regional development of CMC firstly, contribute to the residents negatively. A thousands of villagers invade to the Lefke in order to work at the pit. The number of workers in the pit, called CMC is approximately close to the 6000.

For instance the people, who deal with the vine growing in Bağlıköy, were started to be a mine worker. The villagers who live in Bağlıköy paid for being mine workers with suffering a cancer disease.

So, the infrastructure of the town completely collapse. Therefore the epidemic spreads all over the town. In order to overcome the epidemic, a hospital and a quarter have established.

12.1 Cancer cases seen in Cyprus are twice more than as seen in Turkey.

120 of every 100 thousand people in Turkey were suffered from the cancer disease. TRNC has twice rate of this amount. Thus, both countries' Ministry of Health have paid an attention to this issue. In order to investigate the reason of the cancer incidence improvement, "Kanserle Savaş Merkezi" was established. According to the Ministry of Health in TRNC, the high rates of cancer incidences derive from the mines which has carcinogenic effect.

Lung cancer, breast cancer, leukemia, brain tumor cancer, colon cancer, uterus cancer are frequently seen in TRNC which informed by Prof. Dr. Murat Tuncer, Kanserle Savaş Merkezi Deputy Manager. As Tuncer informed, "Occurring 300 new cancer diseases every year is a serious problem in our country with 120 thousand population".

CONCLUSION

The Earth has a natural magnetic field; it acts as though it has a large magnet at its centre. The rotation of the earth creates electrical currents in the molten metals found within its core, thereby producing a magnetic field. Human beings have evolved with this background magnetic field; they are accustomed to living within its presence. Geopathic stress occurs when the Earth's magnetic field is disturbed, either naturally or artificially, and the background field we normally experience is changed. This can happen when the natural radiations which rise up through the earth are distorted by weak electromagnetic fields created by subterranean running water, sewers, drains, certain mineral concentrations, fault lines and underground cavities. Natural radiation disturbed in this way can become harmful to humans. Mining can cause man-made disturbances to the earth's magnetic field, foundations for tall buildings, quarrying, underground transport systems, and public utilities (sewage, water and so on).

Geopathic stress is not only electromagnetic in origin. Geopathic stress can be caused by energies emanating from the earth vibrating at a level beyond the electromagnetic spectrum currently recognised and detected by conventional science and technology. These energies are often referred to as earth energies and can be bad, good or neutral. Earth energies have many different features but most problems are caused by underground water streams and Straight energy lines. Any feature which affects the earth's natural magnetic field will most likely also affect the Earth energies as these are linked in some way.

In order to minimize exposure to man-made geomagnetic waves, we could possibly

- Call in an electrician to check the wiring, if the home has not been rewired for more than 20 years.
- Be aware where you position TVs, hi-fis, computers and battery chargers, as their EMFs can penetrate through walls.
- Avoid installing a satellite dish on the wall immediately behind the bed area, or make sure the television is earthed.
- Use battery alarm clocks, instead of electric ones, or keep them at least four feet away from the bed.
- Do not trail or coil wires under beds and turn off and unplug any equipment immediately behind them (apart from side lights).
- Avoid placing a bed above fluorescent lights in the kitchen, as these emit radiation which can cause bed springs to be passive resonators of EMFs.
- Do not have the meter and fuse box in the bedroom, or directly above or below the bed areas. This is particularly important in children's rooms.
- If you insist on keeping your microwave, unplug it when not in use and do not put it under the central heating boiler as the microwave radiation may affect the water in your system. Microwaves will also travel into nearby refrigerators and food cupboards, affecting the quality of food.

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