A PRELIMINARY STUDY ON THE DEVELOPMENT OF PLANET EARTH ON VARIOUS FACTORS ON BIOCHEMICAL FUNCTIONS OF LIFE BETWEEN ITS RELATIONS WITH NATURE

I have been studying in my conceptions a more extinct way to decipher life about a great and esteemed development of my researches about perhaps a great very favorable work that I put as a starting point every relationship and origin with life and about the great development of the universe to the planet earth in which we can almost distinguish its origin and atomic passage between its great transformations with nature in which I explain in my dynamics that there is above us an immense space in which all the

transformations of the universe on earth and as for terrestrial beings that one can also have a synthesis of their relationship with nature that we could classify on a great dynamic that rests on an atomic alchemy that in everything and from everything could have been born to life and let's talk about a more or less static Chemistry that we rarely don't understand atomically its probabilities that in my thinking everything is about a great concentration of electrons, neutrons, ions, protons and other elements that everything is about a propagation of radio waves to places far from the earth because it contains ions and electrons and radio waves are reflected from the ionosphere which is the upper part of the earth's atmosphere

where the ionization above the stratosphere is carried out, which is the layer of the Earth's atmosphere located approximately 11 kilometers and 50 kilometers in altitude between the troposphere and the ionosphere that makes me think about the layers of the atmosphere in rotation and translation movements that by chemistry nuclear we can see the transformation over troposphere, stratosphere, mesophet,thermosphere and exosphere and they are not distributed equally and their distances vary according to the densities of the chemical elements and it is where tpda chemistry is transformed causing a contradictory effect to the planet on the crust and soil and stones that formalize the construction of the node planet and so we can research the dynamics of alchemy that compress on a great development of the world causing a more atomic effect on life and thus serious our universe that pulsates and repulsion on rotation and translation movements being formed by nuclear chemistry every alchemical manifestation from the atoms that turn from the water to the rocks causing a great fluid of ore and other chemical elements and nature wants to take over life and the dynamics of the universe is about its functions and reactions that a nucleus can create by creating itselfan element and giving life to space and thus the earth and the planets were formed in a relationship with the atomic nature of life and we will be able to prescribe this story more or less about a great creation of life and thus all particles are combined into molecules and turned into an atom in the smallest fraction of an element and we can understand life and I say that the

Chemistry enters into a cyclone with the material planes coming from the electrical side of the spirit and combining on a dense or subtle body that in physics we can unravel where everything may have started between chemical and atomic functions on the translation and rotation movements that the planet rotates. and so we will be about the great development of an atom on great charges of electrons and escape exits that the planets were created and that's why
atomically, we will be able to predict life on its resonances.

I want to talk about the natural elements that appear in the stratosphere, where the air for plants and animals is found and we can classify geophysics as the layer of the earth's atmosphere and assimilated to it the most subtle chemistry as the soul that is subtle and formalizes between a nuclear procedure passing from the state of oxygen that between the organic functions is exercised to air on the relativities of the spirit as the creator of existence to whom he gives life and everything he can and transforms himself into an atom of oxygen between carbon chains and he is an element chemical with atomic number 8 and symbol O can also see the stratosphere is the second closest layer to the earth and in it is the ozone gas responsible for the barriers to protect the ultraviolet rays better known as the ozone layer and also the mesosphere and
characterized by pir to be very cold and once with the part in contact with the stratosphere it is a little hot. Heat exchange point both and the themosphere is the layer

of atmospheric more extensive and air is scarce, so it easily absorbs solar radiation and the exosphere is the longest layer of the most and is composed of helium and hydrogen gas in all relativities we can verify on a triceps aspect that we are showing that the planet itself and its elements consist of a

extraordinary mass of atomic weight in nuclear relation with all terrestrial nature and when its chemical functions are favored by the great nuclear elements that make up the entire existence of life and I want to make it very clear that it is from the natural elements that all atomic weights are obtained and that everything come from a great chemical and nuclear transformation to and establish a consistent nucleus in an atom called earth which is simply our planet and here we can understand all the causes and consistencies of a great electromagnetic and magnetic formation that develop giving priority and lives to the world by the consistency of creation and nature's relationship and I want to talk about the beginning of the world and it was soon how everything started from nothing to a great pulsation and explosion that life is created chemically on the continuous force of the universe thatheated up and exploded giving rise to all relativity of life on great chemical functions that we prescribe its history in physics and so life was created on earth and the world was born for everyone according to the teachings of the bible staying on the scientific part of existence of the universe.

Big Bang: understand the theory of the origin of the Universe

Big Bang: understand the theory of the origin of the Universe

September 21, 2020

By PRAVALER

One of the most demanded topics in the National High School Exam (Enem) and in the entrance exams across the country is about the origin of the Universe, essential content in elementary and high school subjects. Because of this, and always thinking about helping you at the time of the test, we decided to develop this article with one of the most valid theories on the subject: Big Bang.

First, it is important to remember that there are only two valid theories about the origin of the Universe: the evolutionary one, also called scientific, and the creationist one, considered religious. As religion is based on different beliefs, the second is not part of the school booklet and, therefore, is outside the tests. With this, we are left with the understanding of the evolutionary theory, charged in the selection processes of faculties.

For science, the Universe began in a process called the “Big Bang” and, from there, it expanded. This Big Bang theory, however, says much more about the idea of evolution than the explosion itself, since the circumstances of the event are unknown. For scientists, this explosion came from a single particle with infinite density (which even surpasses the laws of space and time).

Interested and want to know more about it to do well in the Enem test? Keep reading and stay in the loop with us!

In this article you will find:

What is the Big Bang Theory?

What we can say is that the Big Bang theory is – if not the only one – the most accepted theory in the scientific environment, even today, for the explanation of the origin of the Universe. It supports the idea that, as we saw above, the Universe

arose through the explosion of a single particle, called the primordial atom, and caused the cosmic cataclysm. This occurred about 13.8 billion years ago and even states that the Universe continues to expand.

Therefore, although the term “Big Bang” refers us to the idea of an explosion, this is not what the theory is about, but an expansion originated from a tiny state for what we now call the Universe. In other words, the Big Bang theory is not intended to explain the origin of everything, but to make us understand how this explosion was transformed and remains in constant expansion.

Who created the Big Bang theory?

The Big Bang theory was proposed in 1920 by the Jesuit priest and astronomer Georges-Henri Lemaître (1894-1966) and was originally called the primordial atom hypothesis. Some time later, the hypothesis took shape and was developed by the Russian physicist George Gamov (1904-1968). For the scientist, one of the main ideas was that the formation of atomic nuclei in the Universe left traces of detectable radiation, in the microwave range.

Lemaître, when proposing the theory, took into account the studies on the theory of general relativity, by Albert Einstein (1879-1955), which had already been explored by the Russian mathematician Alexander Friedmann (1888-1925), however, in an interpretation much more mathematics than physics for the expansion of the Universe. Lemaître surpassed the

studies of the mathematician and sought to explain the explosion of the atom in a much more robust way.

Later, the studies of Edwin Hubble (1889-1953) reinforced the idea that galaxies keep moving apart in all directions, further completing the Big Bang theory. This study identified that the further a galaxy is, the faster it moves away from us, a definition called Hubble's Law.

Fundamentals of the Big Bang Model

To better understand the basic principles of the Bing Bang theory, it is important to keep in mind that the model rests on two fundamental pillars. We explain a little about each of them below:

general relativity

The theory of general relativity is essential for studying the evolution of the Universe. In 1905, Albert Einstein proposed such a theory, postulating that light in a vacuum has constant velocity (regardless of the source), that mass is velocity dependent, that time dilates in the course of high-speed motion, that energy and mass are equivalent and that no matter moves faster than light in a vacuum.

Going further, the theory of general relativity presents gravitation as the action of masses over time and space, resulting in changes in bodies and other physical properties. We can therefore say that, in summary, in the theory of

general relativity, Einstein states that the relationship between space and time is altered according to matter.

The cosmological principle

The cosmological principle assumes that the Universe is homogeneous and isotropic, in which the first means that, on a large scale, the average density of the Universe is equal throughout the Universe, and the second refers to the appearance of the Universe, claiming to be the same in either direction. Together, homogeneity and isotropy imply uniform. That is, in the Universe, there is no direction or special place.

Big Bang Theory Cosmological Principle

Main aspects of the Big Bang theory

After Lemaître's theory, other astronomical observations began to appear. An example is the observation published by Edwin Hubble (1889-1953) on the movement of galaxies. According to the scientist, galaxies are moving away from each other in all directions of space and at high speed. Going further, this theory was evidenced by a discovery by physicists Arno Penzias and Robert Wilson regarding cosmic radiation, which further reinforced the primordial atom hypothesis.

With so many discoveries, it was possible to conclude that the separation of galaxies is a consequence of an expanding Universe, as proposed in previous hypotheses, and that the background radiation refers to a starting point, a unified dense particle, confirming all theories.

previous. Thus, all atomic nuclei were created from the process called nucleosynthesis. All these steps ultimately culminate in the Big Bang theory!

Phew, did you follow this far? Then check out our review and take note of the stages in the formation of the Universe to do well in college entrance exams!

The beginning of everything

As we have seen, despite the name suggesting an explosion, Big Bang refers to the expansion process (since the reasons for the particle to have exploded are still unknown, despite much research on top) from a single point in space, singular, with density and temperature extremely high.

inflationary period

Yes, the Universe is old! And when it was about 10-35 seconds long, called the inflationary period, its size increased exponentially – about 90 times! With this, the Universe became colder and less dense, which gave rise to the fundamental forces of space and time, among others known in science.

Big Bang Theory Inflationary Period

opaque universe

And since we are talking about the age of the Universe, it is worth noting that some light elements of the periodic table, including helium and hydrogen, appeared in the first minutes of life. This happened through the combination of protons, originating atomic nuclei.

With that, a trail of energy coming from all directions of the Universe was left, what is called in the scientific world of cosmic microwave background. Another important point is in relation to the density of the Universe: between 300-400 thousand years old, it was so dense that no light could propagate.

transparent universe

As the expansion took place, there was also a decrease in temperature, allowing the union of free electrons with atomic nuclei, originating the first neutral atoms – a phase known as recombination. Thus, light began to propagate more easily through space, making the Universe increasingly transparent.

gravitational collapse

Another remarkable step took place when the Universe reached about 200 million years, when gravitational forces began to gather in large amounts of gas. At this stage, the Universe was composed of 75% hydrogen and 25% helium gas. With the agglutination of these atoms in small volumes and in the face of high temperatures and pressures, another process began: the nuclear fusion of hydrogen particles, giving rise to stars. Amazing, huh?

formation of galaxies

When the Universe reached its 500 million years, there was the union of the gravitational force, so that the stars began to cluster, giving rise to the galaxies.

As we can see so far, the Big Bang theory is not important for science just for bringing us an explanation of the origin of the Universe, it goes beyond that. The astronomical observations resulting from this theory are equally important for the understanding of space, especially in relation to the discovery of the four forces of nature: electromagnetism, gravitational force, weak nuclear force and strong nuclear force.

Can the Big Bang Theory Be Extinct?

Although scientific research is always delving into the subject, it is very unlikely that the Big Bang theory will be extinguished, since it concerns the transformation of the Universe and not its beginning itself. As this expansion still reflects what we have in space today, astronomical observations can add to the theory, but without claiming to nullify what has been proven.

What we do have, however, are some variations of the Big Bang theory, among them the one that proposes that the Universe is cyclic, that is, that it is composed of endless cycles of explosions and implosions, called bangs and big crunches consequently – what is already scientifically named the theory of cosmological cycles.

Big Bang summary for college entrance exams

So, did you follow the reasoning? As we know that it is not always easy to keep all the points of a subject, we are going to list the main phases of the Big Bang theory so that you can take notes and do well in the entrance exam! Come on?

The beginning of it all: despite the name suggesting an explosion, the Big Bang is about the expansion process;

Inflationary phase: origin of the fundamental forces of space and time (when the Universe increased its size by 90 times, it became colder and less dense);

Opaque Universe: phase of the first minutes of life, when helium and hydrogen gas originated (in this stage, everything was so dense that light did not propagate);

Transparent universe: phase of decreasing temperature and union of free electrons with atomic nuclei (here, light started to propagate more easily);

Gravitational collapse: phase in which atoms agglutinate in small volumes, giving rise to stars;

Formation of galaxies: with 500 million years, the union of the gravitational force caused the stars to cluster and give rise to galaxies.

Now it's easier, right? Our tip is always to make a summary like the one above so that the topics are more easily memorized.

Planet Earth

To study the planet Earth, it is necessary to make references to the galaxy in which we are inserted: the Milky Way. This reference is necessary to understand the arrangement of the planets, their orbits, similarities, differences and other matters that help us to understand what happens inside and outside the Earth.

Our planet is one of eight in the Solar System orbiting a central star: the Sun. This orbit allows the development of life due to the temperature that reaches us, which we call solar radiation.

Also read: Cartographic projections – representations of the Earth on a flat surface

Formation and characteristics of planet Earth

It is estimated that our planet was formed about 4.6 billion years ago. Since then, the Earth has gone through constant changes, some clear, others very long and that human beings do not notice. Such changes can occur from internal factors such as the energy of the core, or external factors such as rainfall, erosive processes, human action.

The formation of the Solar System was the result of a collapse between large stars, which generated a large pool of energy. This energy later formed the components of the system, such as the Sun and other planets.

The Earth, 4.6 billion years ago, was a mass of magmatic matter that, over millions of years, cooled. This cooling gave rise to a rocky layer, the lithospheric layer. This period is called the Precambrian Era.

Over these billions of years, several mutations have taken place on the planet, many violent, such as earthquakes and tidal waves, also known as earthquakes.

seismic. These quakes occur from the inside out, in the inner layers of the Earth, significantly altering the Earth's surface.

Other less violent changes were gradual, such as the formation of the layer of gases that surround the planet, the atmosphere. This layer protects us from the strong solar radiation that reaches the Earth, allowing life to exist. However, at the beginning of time, billions of years ago, the Earth was an uninhabitable place, with constant volcanic eruptions, with high temperatures and quite dangerous.

The planet's motions, such as rotation (around itself) and translation (around the Sun), made possible a spherical shape of the Earth, which is flattened at the poles. This shape is called a geoid. Its interior is something inhospitable and, until recently, unknown.

Model of the Earth's geoid shape.

Model of the Earth's geoid shape.

With the development of technology, the measurement of earthquakes made it possible to know the interior of the planet. The seismic waves caused by these quakes cross large regions and can be tracked and provide valuable information about the Earth's internal structure. Its interior still has the magmatic layer of billions of years ago. For every 33 m of depth, it is estimated that the temperature rises by 1 °C.

On the earth's surface, the layer in which we live, we can find several minerals used in everyday life. THE

crust, as the surface is known, covers the entire planet, whether on the continents (continental crust) or in the oceans (oceanic crust). At the bottom of the seas and oceans there is the ocean floor, where silicon and magnesium compounds (sima) can often be found. On the continents, silicon and aluminum (sial) give consistency to almost the entire surface.

Inner layers of planet Earth

Inside, our planet has a layered structure, each with several specific characteristics. From the studies carried out to date, we can classify them, in a general way, into three main ones: crust (oceanic and continental), mantle (upper and lower) and core (internal and external). We can compare this structure to that of an avocado: the skin of the fruit being the crust, the hooves being the mantle, and the pit being the core.

The crust, the outer shell of the planet, is the surface layer and can be called the lithosphere. It is in this layer that we are, that are located reliefs, oceans, seas, rivers, biosphere, and others. For human beings, it is the layer in which life develops. To give you an idea, the thickness of the crust can vary from 5 km to 70 km. Even with that size, it is just the “shell” of the planet, which reveals its immensity.

The oceanic crust, as the name implies, is the part that is below the sea, being 5 km to 15 km thick. It is thinner than continental crust. she can have a

thickness of 30 km to 70 km, being the part of the planet that forms the continents.

The mantle is located at a depth that can vary from 70 km to 2900 km. In this large area, magma is located, a viscous layer that surrounds the core and is responsible for the movement of tectonic plates, located in the lithosphere.

The upper mantle is below the lithosphere, at a depth of up to approximately 670 km. In it we find the asthenosphere, an area of viscous characteristic that allows the movement of the crust over thousands of years, modifying the terrestrial relief.

In the lower mantle, located at a depth of 670 km to 2900 km, we find the mesosphere, a solid part of this structure that comes close to the core. It is solid due to the pressure exerted by the Earth's weight.

Schematic representing the Earth's inner layers: crust, upper and lower mantle, and core.

The core is the deepest layer of the planet, reaching 6700 km. The inner core is solid, with several mineral compounds, including nickel and iron. This layer is responsible for the magnetic field that exists around the planet. The outer core is liquid, having a thickness of approximately 1600 km. The temperature in this region can reach 6500 °C.

See also: Why do volcanoes erupt?

External structure of planet Earth

The Earth's surface is the outer layer of the planet. It contains three layers: the hydrosphere (the set of waters), the biosphere (life, biomes) and the lithosphere (rocks and minerals).

In addition, there is the atmosphere on the earth's surface, the set of gases that allows breathing and protects the planet from the sun's rays, so that they do not arrive with such intensity. It is basically made up of oxygen, nitrogen and water, but contains other chemical elements.

The hydrosphere is where humans derive resources for their survival, such as water, food (fish and crustaceans), marine mineral resources (oil), in addition to using the oceans, seas and rivers to transport people and/or cargo.

The biosphere and the terrestrial surface are concepts that are similar at times, as they refer to the existence of life on Earth. However, the Earth's surface encompasses more elements, such as the hydrosphere. In the biosphere, we have the organic and inorganic elements and the living beings, which help in the prosperity of life on the planet.

In the lithosphere, we have the formation of continents and islands, the emerged lands. It is one of the few areas in the world known directly to humans.

terrestrial movements

In Earth's orbit, our planet performs two crucial movements for the development of life: translation and rotation.

Rotation is the movement carried out by the planet around its own axis, being a revolution around itself. This movement, carried out in a counterclockwise direction, that is, from west to east, has as a direct consequence the existence of days and nights. Furthermore, the Sun is seen first in the eastern part of the world, hence Japan is known as “the land of the rising sun”. This movement lasts, on average, 23 h 56 min or 24 h (the solar day).

Translation is the movement around the Sun. A complete translation means a year for society, as this movement lasts for 365 days and 6 h. Because of this, every four years, an extra day is added to the month of February, resulting in the leap year, with 366 days.

The two movements are done simultaneously, at the same time. Due to the force of gravity and the immense weight of the planet, they are not noticed. However, the days and nights (rotation) and the existence of seasons (translation) show us how alive the Earth is. If you want to know more about these movements, visit: Earth Movements.

Facts about planet Earth

When we compare the Earth with other planets, numerous curiosities can arise. Let's look at some.

Of the eight planets, seven are named after Roman gods.

Of the eight planets, seven are named after Roman gods.

Earth is the only planet in the Solar System not named after a god. The other planets—Mercury, Venus, Mars, Jupiter, Saturn, Uranus, and Neptune—are named after Roman gods.

Earth is the only planet in the Solar System where water can be found in three states: solid, liquid and gas.

Earthquakes occur every two minutes on the planet.

140 million years from now, the day will be 25 hours long. That's because the Earth's rotation will be slower, which will increase the number of hours in a day.

Our planet is called Earth, but 70% of its surface is covered in water: the oceans.

After the Industrial Revolution, studies show that the earth's temperature increased by 0.8°C.

There is a strong magnetic field around the Earth, which made it possible to make compasses, which help in the terrestrial location.

During some times in history, such as the Middle Ages, the Earth was believed to be the center of the Universe.

Galileo Galilei proved, in 1613, that the Earth was not the center of the Universe, but he was forced by the Catholic Church to deny his theory. In 1992, Pope John Paul II apologized to Galileo for the religious misunderstanding and formally acknowledged his theory.

The deepest hole on Earth is in Russia, measuring 12.2 km deep.

Posted by Attila Matias

brain icon

Test your knowledge on these articles.

Related articles

Evidence such as images from space prove that the shape of the Earth is spherical

The earth is flat?

Is the Earth flat or spherical? Click here and learn about some evidence that proves the real shape of our planet.

Satellite image released by NASA with the apparent profile of Earth

After all, is the Earth really round?

Check out a simplified explanation for a still current controversy: after all, is the Earth really round?

Planet Earth is surrounded by a gaseous layer known as the Earth's atmosphere.

Earth's atmosphere

Understand a little more about the atmosphere, the gaseous layer that surrounds the Earth. It is made up of different gases, such as oxygen and nitrogen, which are held together by gravity. The content of the following text will talk about the main

functions of the atmosphere, the characteristics of its layers and its composition.

Illustration of a black hole

Black Hole

Find out what are the main features of black holes. See details of the formation and properties of these large spatial structures.

Earth's center

Get to know the center of the Earth and understand its composition, characteristics and other dynamics.

Earth's crust

Information about the characteristics, dynamics and compositions of the Earth's crust.

Soil cultivation and conservation

Get to know the agricultural techniques of cultivation and find out which one works best for soil conservation.

Saara's desert

The characteristics of the biggest hot desert on the planet.

geological time scale

Did you know that geological time is different from historical time? Click here and understand how the temporality of planet Earth is structured!

Seasons represent four subdivisions of the year periods: summer, autumn, winter and spring. Each

one presents a climatic pattern and specific characteristics of each region, occurring in a heterogeneous way in the Southern and Northern Hemispheres. Read this text and learn about the particularities of each season of the year.

Moon phases

See what are the four main phases of the Moon. Understand how their formation and the lunar cycle occur. Read more about the occurrence of lunar eclipses.

Moon

Learn about the physical characteristics of the Moon. See which is the most accepted theory regarding its formation. Understand the influence of this natural satellite on planet Earth.

rotation movement

Understand how the earth's rotation works and understand the importance and causes of this movement.

translational movement

Learn more about Earth's translational motion. Discover the main characteristics of this movement and its relationship with the seasons.

Planet Neptune

Click here and learn about the main physical characteristics of the planet Neptune. Read about its moons and about its rings. Find out how your exploration is done.

planet saturn

Meet the planet Saturn and see some of the main features of one of the most curious planets in the solar system!

planet Uranus

Know the main characteristics of Uranus. See some curiosities about this gaseous planet and learn more about its rings and natural satellites.

Gas Planets in the Solar System

Click here and learn more about the gaseous planets of the Solar System, that is, the main characteristics of Jupiter, Saturn, Uranus and Neptune.

Rocky Planets in the Solar System

Click here and learn more about the rocky planets of the Solar System, ie Mercury, Venus, Earth and Mars.

Submarine Relief

Click here and learn how the division of the submarine relief occurs!

Solar system

Click here, learn about the main characteristics that make up the Solar System, and learn about each of the eight planets that make it up.

monsoon winds

Monsoon Winds, What is Monsoon Winds, Where do Monsoon Winds arise, When do Monsoon Winds arise

monsoons, What are the characteristics of monsoon winds, What are the consequences of monsoon winds.

Milky Way

Click and learn more about the Milky Way, the galaxy that houses our Solar System.

PHILOSOPHY

Jean Bodin

Philosopher, political theorist and jurist, Jean Bodin was an advocate of absolutist monarchy and founded a political theory that summarizes his position: the theory of the divine right of kings. Watch our class to learn about Jean Bodin's thinking.

Let's talk a little about Geophysics here.

Geophysics is the study of the structure, composition, physical properties and dynamic processes of the Earth. Unlike Geology, whose study of the Earth is done via direct observations of rocks, Geophysics investigates the underground through indirect measurements. It is subdivided into global (pure) and prospecting (exploitation or applied).

In global or pure geophysics we can study the physical phenomena that happen on the planet such as earthquakes, tsunamis, volcanoes, among others. On the other hand, prospecting or exploration geophysics, we use surveys/methods such as seismic, electrical, electromagnetic, potential (magnetic and gravimetric), radiometric, geothermal, etc.

The geophysical investigation of the Earth's interior consists of taking measurements at or near the surface. These measurements are influenced by the internal distribution of physical properties (parameters). Analysis of measurements can reveal how the physical properties of the Earth's interior vary vertically and laterally. Much of the terrestrial knowledge, below the depths that can be reached through holes, comes from geophysical observations.

Surveys can be land, air and marine.

It has application in groundwater, fossil fuels, geothermal, geotechnics, environmental contamination and investigation of other minerals in general such as gold, iron, etc.

methods

Rocks differ in one or more of their properties, causing variations in the physical fields and in the propagation of waves that act on them. Consequently, these variations, when detected, can provide information on the materials that caused them.

This is the basis of Prospective Geophysics, the investigation of subsurface features of relatively small dimensions, from the observation of their effects on physical fields and wave propagation.

Gravimetric

All masses are under the effect of mutual attraction, governed by the law of universal gravitation. Lateral changes in

density of the Earth produce local variations in the value of the Earth's gravitational field which, although very small, can often be detected, allowing deductions about the subsurface.

Gravimetry is focused on the study of these small local perturbations of the terrestrial gravitational field, generated by the distribution of masses in the subsoil, that is, by the presence of rocks of different densities. Denser materials contribute more strongly to the gravitational field than less dense materials, when considering the same volume and depth for both; if the materials have the same density, the greater contribution is from those closest to the surface, if they occupy the same volume, or, if the materials occur at the same depth, from those that make up the greater volume.

Magnetic

Each rock is magnetized according to its magnetic susceptibility, which depends on the amount and distribution of the magnetic minerals present. The concentration of magnetic minerals produces local distortions in the Earth's magnetic field, which can be detected and provide information about the subsurface.

Magnetometry is based on the study of local variations in the Earth's magnetic field, derived from the existence, in the subsurface, of rocks containing minerals with strong magnetic susceptibility, such as magnetite, ilmenite and pyrrhotite.

In both Gravimetry and Magnetometry, physical fields are present; therefore, it is not necessary for subsurface rocks to be excited to obtain a physical field measurement. These methods obey the Potential Theory and keep several similarities between them. They are referred to as Potential Methods.

electrical

They deal with purely galvanic phenomena and, therefore, use direct or alternating current, but with a very low frequency (< 10 Hz), such that the induction phenomenon can be neglected. Current can be introduced into the ground through electrodes while the potential difference is measured through other electrodes, bringing the information about the subsurface. Among these electrical methods, the following stand out: Spontaneous Potential Method (SP – uses natural currents that may appear, for example, in the vicinity of concentrations of conductive minerals); Electroresistivity Method (currents are generated artificially); Induced Polarization Method (IP - currents also generated artificially, but the potential difference is measured after the current ceases or by varying its frequency,

electromagnetic

The investigation is based on the phenomenon of induction. A current, always of low frequency (< few tens of thousands of Hz), that can circulate in a coil, starts the process of excitation of the subsurface through the phenomenon of induction; electrical conductors, perhaps present underground, cause distortions in the electromagnetic field, detectable through another coil, which provides information about the conductors that caused them.

radiometric

Some isotopes of various elements spontaneously disintegrate emitting particles and electromagnetic radiation that can be detected and allow the location of the material that produced them. This phenomenon, whose occurrence is probabilistic, is known as radioactivity and originates in the nucleus of unstable atoms. For this reason, radioactivity is not considered a physical property, but a property of the atomic nucleus.

The study of the distribution of radioactive material in terrestrial materials is carried out in Radiometry, taking into account, in particular, the electromagnetic radiation emitted during its disintegration.

seismic

Rocks with different elasticities allow the propagation of waves with different speeds. These waves, when encountering media with different elastic properties, have their energy partly reflected and partly refracted.

Knowing the travel time of the waves at different points as well as the distance between these points, it is possible to deduce the propagation speeds of the waves and the position of the interfaces that separate the media with different elasticity values. By associating the different types of rocks to these media, it is possible to know the distribution of rocks in the subsurface.

Seismic is based on the measurement, at various points, of the travel time of artificially induced elastic waves, generally in the vicinity of the ground surface. There are two distinct techniques: one that makes use of reflected waves, the Reflection Seismic, and the other, of refracted waves, the Refractive Seismic.

Geothermal

The propagation of heat on Earth, be it of internal origin, due to radioactive disintegration or chemical and physical processes of lesser expression, or of external origin, due to the radiant energy of the Sun, depends on the thermal conductivity of the rocks.

The Thermal Method investigates, through temperature measurement, differences in heat propagation, whose origin goes back to the existence, in the subsurface, of rocks with different values of thermal conductivity or anomalous heat sources, which allows the identification and delimitation of both.

Well geophysical profiling

Drilling is the last stage of prospecting a tubular well, whether for oil or water or any other use. Although current advanced geophysical and geological methods may suggest the most promising of locations, it is only the drilling of the well that will reveal whether or not the predictions will be confirmed.

Rocks can be identified based on their electrical properties (electrical conductivity, induced polarization, dielectric constant or electrochemical potential).

natural), acoustic (propagation velocity or transit time of compressional or shear elastic waves), radioactive (natural or induced radioactivity), mechanical, thermal, etc. Such properties can be obtained with the continuous displacement of one or more sensors of logging (probe) inside a well and were generically called, in the past, electrical profiles,

regardless of the physical measurement process used. The ideal is to say electrical, acoustic, radioactive, mechanical, thermal geophysical profiles, etc., depending on the property used for recording. The graphic representation between depths and petrophysical properties is called Geophysical Profile. For this, the cable of the logging units, through which the most varied types of sensors are lowered into the wells.

Atmosphere layers

The existence of the atmosphere is extremely important for life on Earth. For didactic purposes, it has been divided into a few layers. The layers of the atmosphere together make up an extension of approximately 1000 km. These are: troposphere, stratosphere, mesosphere, thermosphere and exosphere. They are not evenly distributed and their distance varies according to the density of the chemical elements that compose them, so that, as they move away from the Earth's surface, they become rarer.

The terrestrial atmosphere has a total of five layers, whose compositions vary according to the height of each one.

Troposphere: It is the layer closest to the Earth's crust. It contains the air used in the breathing of plants and animals. It is basically composed of the same elements found throughout the atmosphere, Nitrogen, Oxygen and Carbon dioxide. Almost all the vapor found in the atmosphere is located in the troposphere, which occupies 75% of the atmospheric mass. It reaches about 17 km in the tropics and just over 7 km in the polar regions.

Stratosphere: It is the second closest layer to Earth. It contains the ozone gas, responsible for the protection barrier from ultraviolet rays, better known as the Ozone Layer. Being able to reach up to 50 km in height, the stratosphere is characterized by having little air flow and being very stable. As it has a small amount of oxygen, the stratosphere is not conducive to the presence of man. However, on the 14th of October 2012, the Austrian Felix Baumgartner jumped from a height of 39 km, impressing the whole world (however, for that, he needed a special suit that would guarantee his breath).

Mesosphere: with heights of up to 80km, the mesosphere is characterized by being very cold, with temperatures that oscillate around -100ºC. Its temperature, however, is not uniform throughout its length, since the part in contact with the stratosphere is a little hotter, the point of heat exchange between the two.

Thermosphere: it is the most extensive atmospheric layer, reaching 500 km in height. The air is scarce and, therefore, it easily absorbs solar radiation, reaching temperatures close to 1000ºC and thus becoming the warmest layer of the atmosphere.

Exosphere: it is the furthest layer from Earth, reaching 800 km in height. It is basically composed of helium and hydrogen gas. It contains data satellites and space telescopes.

Posted by Rodolfo F. Alves Pena

I want to thank all pir this extraordinary work of mine that I researched in the field of sciences that chemistry originated all creation of life and that the universe is still expanding and I speak simply about its functions and constructions that I show how life was preserved and man it depends in the same way on an atom in electrical construction that in everything and cpm everything is formalized on the existence of cafa element on each atom giving way to transformations of life and thank you very much to all of you!

By: Roberto Barros