# Theory of Volcanic Energy (Expanded English Edition)

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*When the internal energy converges with the external energy, the external energy moves abruptly (because it is unstable), and if this displacement is through areas with reactive material, then, it can fulfill the function of activation energy and could be the origin of a volcanic combustion. Consequently, volcanoes are the product of geolocated combustion, whose intensity and type of activity depend on the reaction capacity of the components, while the lifetime of the volcano depends on the amount of reactive material.*

## INTRODUCTION

Volcanoes are geological structures that arouse a lot of interest when they are activated, because of the danger they represent and because they are natural events that are not yet fully understood.

Historically man has found a relationship between seismic movements and volcanic activity, thus, in the year 79 AD, Pliny the Elder described the beginning of volcanic eruptions, notably highlighting that earthquakes precede them (Sigurdsson et al., 1985) –among other authors describing similar episodes– a relationship that was seamlessly identified when analyzing the Theory of Seismic Energy –TES, for its acronym in Spanish– (Valverde, 2020). This is how, with the findings raised in TES, answers to various natural events begin to be found (Valverde, 2022d), including volcanic activity, which led us to establish the Theory of Volcanic Energy –TEV, for its acronym in Spanish– (Valverde, 2021).

Thus, TES establishes that the intensity of natural events such as earthquakes, volcanoes, among others, depend on internal energy, external energy, climate and the type of soil. So, to better understand the role of external energy, it is important to do a brief review of TES.

### Internal Energy or Geomagnetism

The energy mantles move through the earth's crust analogously to how electrons move through the last layer of atoms, these mantles have a constant speed, a habitual path and a specific sense, that is why, there are energy circuits that move along the earth's surface (American Chemical Society, 2005).

*Velocity*

The study has identified that the speed of the displacement of the electron mantle is constant, it only presents a variation in relation to the surface where it moves, that is, by the earth's surface it moves at an approximate speed of 5-10 m/s while by the submarine mountains the displacement is at a speed of 20-30 m/s.

**External Energy or Photons from the Sun's Rays.** It is the solar energy (photons from the sun's rays) accumulated on the earth's surface. This energy is variable in the sense that every day the sun emits solar radiation in a constant amount, but the surface of the Earth reaches depending on various factors, being the climate the most influential. Rain and clouds are the most outstanding, so it is said that clouds fulfill the natural photoprotective function (Valverde, 2022a) and the rain fulfills the energy dissipating function.

**TABLE 1**
**MAIN DIFFERENCES BETWEEN INTERNAL ENERGY AND EXTERNAL ENERGY**

| No | INTERNAL ENERGY | EXTERNAL ENERGY |
|---|---|---|
| 1 | They are stable energy concentrations. | They are unstable energy concentrations. |
| 2 | The energy cluster is constant. | The energy cluster is variable. |
| 3 | It has a specific path. | The conservation and the displacement of seismic waves depends on the type of soil. |
| 4 | It moves at a constant speed and in a specific path. | It is static, it is located in the place where it has accumulated. |
| 5 | Even after having coincided at one point with the external energy, it continues its journey. | After its electrons have been disturbed, they are released in the form of seismic waves. |

**Climate.** Depending on it, a greater or lesser concentration of external energy is observed: a) On sunny days (with clear skies), regardless of the temperature of the environment, the earth's surface directly receives solar energy; thus, the greater the number of sunny days, the greater the risk of the development of a seismic event of greater magnitude. b) Another important factor is rainfall. A rainstorm on external energy concentrations results in the dissipation of solar energy clusters.

**Soil Type.** When referring to the type of soil, we refer to the dominant composition in an area of the earth's crust because they fulfill two important functions: 1) The components of the soil type facilitate the accumulation or dispersion of solar photons. Consequently, the concentration of external energy depends on this element. 2) In the development of a seismic event (product of the convergence of internal energy with external energy) the components of the soil type will facilitate the displacement of the waves of the seismic vibration –wave propagation– (Wright, 2010). Therefore, according to the quality of the soil, the intensity of the vibration varies.

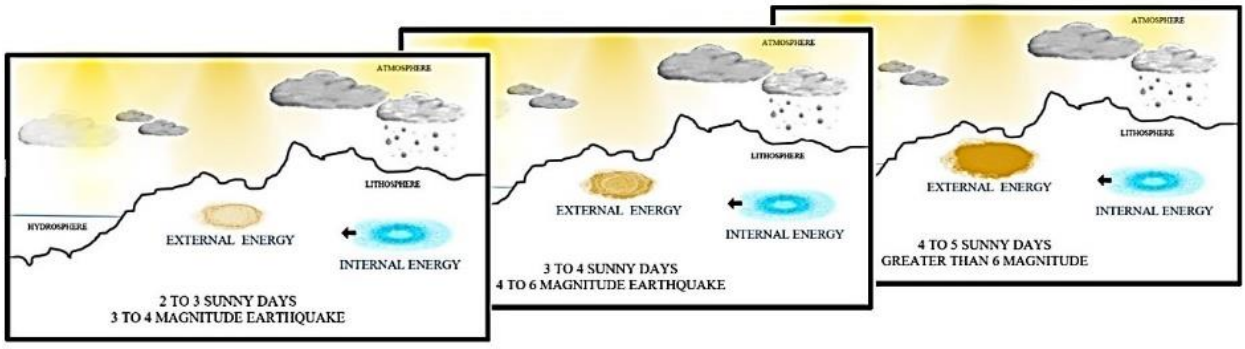
Based on these four elements, the main concepts of the particularities in a seismic event according to the TES are:

- *Earthquake*. It is the vibratory movement that results from the sudden release of accumulated external energy by the passage of internal energy; this is because, the internal and external energy are repelled, and the external energy is unstable –According to Coulomb's law–.
- *Epicenter*. It is an area in the earth's crust in which internal energy has converged with external energy. Therefore, being the area of origin of the waves, it is the place where seismic vibration is perceived with greater intensity.
- *Magnitude*. It is the degree of initial vibration of the external energy, and it is a consequence of the sudden displacement of the accumulation of external energy (because it is unstable) by the effect of repelling with the internal energy (Figure 1). The measurement of the energy released is proportional to the amount of external energy accumulated. a) If the external energy cluster is 2 to 3 sunny days, then the seismic vibration will average 4 degrees of

magnitude on the Richter scale. b) If the external energy cluster is 3 to 4 sunny days, then the seismic vibration will average 5-6 magnitude on the Richter scale. c)If the external energy cluster is 4 to 5 sunny days, then the seismic vibration will be 7 or higher in magnitude on the Richter scale.

It is important to note that, the weather depends on the lunar phases. Therefore, it is rare have the same climate for a week and it is not possible to exceed the week, so, unless there is a significant alteration that influences the weather and favors the presence of more than 7 sunny days, then, a seismic event of an immeasurable scale is not possible.

**FIGURE 1**
**TRANSIT OF INTERNAL ENERGY AND THE ACCUMULATION OF EXTERNAL ENERGY IN RELATION TO THE NUMBER OF SUNNY DAYS**




*Seismic Waves*

By the effect of repelling, external energy is released abruptly generating seismic waves, and its characteristics are attenuating and vibrant. It is called attenuating because they are of greater intensity in areas near the epicenter and as they move away, they decrease in intensity until they become imperceptible.

**FIGURE 2**
**REPRESENTATION OF SEISMIC WAVES**

*Vibratory Seismic Movement*

The external energy, when moving sharply in the form of waves, generates vibration on the surface, which is perceived as vibratory seismic movement. This characteristic is because there is transport of energy in the form of vertical or horizontal vibration without matter moving, that is because the displacement of energy produces movement of a body around its natural positions of balance.

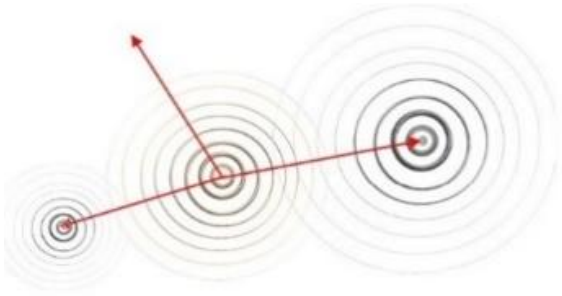
*Alteration of the Surface by an Earthquake*

Consequence of the vibration effect, in the event that the particles lose their balance, then, there will be alteration of the surface (unevenness, cracks, etc.), which will be in proportion to the amount of unstable material and intensity of the vibration. Consequently, these alterations of the earth's surface become a side effect and not a constant in a seismic event.

*Seismic Whirlpool*

After the generation of the seismic waves' product of the disturbance of the external energy by the transit of the internal energy. In case there are nearby *clusters* of external energy, it is disturbed by the seismic waves, which will trigger another seismic event(s). The one that will develop in different direction(s) in reference to the original epicenter and even in areas outside the circuit of the seismic energy. The new epicenters can be of greater, similar, or lower intensity in reference to the magnitude of the mother epicenter.

**FIGURE 3**
**REPRESENTATION OF SEISMIC WHIRPOOL**



As proposed by TES, the geological components of an area can contribute to the build-up of external energy, making the area prone to seismic risk; additionally, in the presence of highly sensitive components, the area is not only susceptible to seismic events, but it may also be susceptible to oxidation¸ and in case rapid oxidation prevails, volcanic activity in the area is likely to start; simple but universally applicable analysis (Valverde, 2022c). Consequently, TEV describes the formation and development of volcanoes based on what was proposed by TES, in addition to analyzing volcanoes in their real dimension (in reference to the Earth), finding that volcanoes are geolocated and superficial combustions, with a limited lifetime.

## COMBUSTION IN THE DEVELOPMENT OF A VOLCANO ACCORDING TO TEV

As we know, combustion is a set of oxidation reactions that occur when three factors coexist: fuel, an oxidizing agent, and activation energy. The activation energy is the catalyst for the combustion reaction (Barnard and Bradley, 1985). In this case, there are areas of the Earth's crust that contain reactive geological material which functions as fuel. The external energy, when moving abruptly through these areas, functions as activation energy. Moreover, it is common for there to be channels of groundwater within the Earth's crust, which also transport oxygen, completing the triad for volcanic combustion: an oxidizing agent, fuel, and activation energy.

Initially, when the external energy and the internal energy converge, the external energy moves abruptly in the form of seismic waves, and if these waves paslife datas through an area with reactive material, then it stirs up its components to the point of starting fast oxidation, therefore functioning as activation energy. Thus, given an area with a considerable amount of reactive material, where seismic waves (activation energy) suddenly move, rapid oxidation (initiation of combustion) occurs. The continuation of this process depends on the number of reactive components and their ability to react. Hence, because of rapid oxidation, there is an increase in heat, causing a progressive increase in pressure that will produce a greater rise in

temperature, followed by more increased pressure, yielding an even greater increase in temperature, to then reach the smelting of a greater variety of geological components, so the process follows a feedback loop, called a chain reaction.

As a result of the chain physicochemical reactions described above, a cavity begins to form where the molten material is collected. This cavity will gradually evolve (volcanic chamber). When it reaches its maximum containment capacity, a fistula is formed to release the volcanic content known as chimney (the vent), to finally give way to the volcanic crater through which the volcanic content hatches, erupting active material onto the surface, such as: volcanic lava, gases, ashes, and other components derived from volcanic combustion.

In the case of active volcanoes, the sudden displacement of seismic waves on the active material stirs up its components, either maintaining or increasing their dynamism, hence, seismic waves in areas with volcanic combustion are energy supplies that stimulate the ignition and help sustain the chain reaction of combustion.

The development of a volcano is very long, therefore, volcanic formations take thousands of years to form, so we are not able to perceive all the processes of volcanic dynamism, however, the data of the life of a volcano is related to the lifetime of the body on which it develops (planet Earth). In relation to time, the Popocatépetl volcano has an average age of 730,000 years, the current cone has been built during the last 23,000 years (Macías, 2005) and, during the last 20,000 years, four major explosive activities have occurred: 14,000, 5,000, 2,150 and 1,100 years ago (Siebe and Macías, 2006), again, understanding that their dimensions and data are in relation to the body on which they develop (Earth). Specifically, to understand the real dimension of a volcano in relation to planet Earth, we take as reference an average-sized volcano, such as Popocatépetl (Mexico), which has a crater that measures approximately 340 meters in diameter without the presence of a dome. (Macías, 2005), if we compare the area occupied by the volcano in relation to the 510,072,000 km2 of the earth's surface, we find that the volcanic cones are cavities with dimensions that are barely comparable to the pores in the skin of the human body.

As an effect of volcanic combustion, a steady growth of the mountains (a few centimeters per year) occurs before one erupts. This variation in size is the result of the ongoing activity within the volcanic cavity. In contrast, inactive volcanoes are lower in height compared to when they were active. Volcanic structures take thousands of years to form (Luhr and Prestegaard, 1988), as is the case of the Fuego volcano, one of the most active and youngest stratovolcanoes, estimated to be no less than 8,500 years old. (Ferrés and Escobar, 2018). This shows that the formation of a volcano occurs over a very long period of time, much longer than a human lifespan.

On the other hand, it is worth mentioning that not all volcanic cones hatch (not all release volcanic content), because volcanic activity depends on the amount of reactive material in the area. So, as a result of chain combustion, the volcanic chamber begins to collect material from the combustion. If the chamber's capacity is exceeded, then the content is released (pressure is relieved). Otherwise, if until the combustion of the reactive material is complete, the containment capacity of the volcanic chamber has not been exceeded, then the volcanic combustion ceases (volcano extinction) without having eliminated the contents of the volcanic combustion, remaining perpetuated as mountains, among other geological formations, whose common characteristic is the gradual decline.

A volcano's lifespan is determined by the amount of reactive material in the area, whereas the type of volcanic activity is determined by the reaction capacity of the materials present in the area plus the influence of water steam. Consequently, a volcano may experience a decrease or increase in activity, or have intermittent activity, depending on the amount of reactive material involved in the combustion process and its reaction capacity. When the reactive material is depleted or loses its ability to react, the volcanic activity in the area ceases, a process known as volcanic extinction, being the cone a trace of volcanic footprint. An example of this is the Ural Mountains, where studies have shown no evidence of subsequent reactivation, low seismic activity, and a gradual decrease in mountain height, all of which are characteristics of extinct volcanos.

Regarding the cessation of volcanic activity, a reaction similar to lighting a match can be observed, reaching a temperature of 2000°C at the moment of ignition (Vincent, Zaragoza, and Álvarez, 2006). This

temperature allows the combustion of the support material, which is made of a non-reactive, flammable substance. However, once the reactive component and the flammable material are used up, there are only charred residues left and no ability for further combustion. In addition, volcanic residues are poor conductors of energy, making the area less suitable for the movement of photons or in this case solar photons.

In line with the above, it is known that volcanic reactions differ from each other, revealing themselves in the different formations of volcanic cones, varying in the type of eruption, in the emission of diverse types of volcanic lava, among others. The singularities between one volcano and another are given by the fact that each geographical area has specific mineral components and in different proportions, therefore, when volcanoes begin combustion, they react differently. Even the components of gases, volcanic lava, ash, etc., can differ between one eruption and another in the same volcano (Rodríguez, 2005), as mentioned also by Paniagua and Soto (1986), matching the information recorded by Barrantes et al. (2015), who in turn have also been mentioned in the field study by González et al. (2015).

Therefore, in a similar comparison, we can see that a volcanic eruption is a superficial and localized reaction, similar to the development of an abscess in a living body. The abscess gradually increases in size and eventually ruptures, releasing its contents through the thinnest surface (central part). In this case, if we establish a volcano-Earth size ratio, we find equivalence when analyzing the dimensions of the skin pores in relation to that of the human body, considering that the largest volcano can be barely comparable with the dimension of a pimple, as a result of which it is not possible to expect that the released substance can be compatible with the elements contained in the substances of the internal organs of the human body. This is an analogy that allows us to reassure that a volcano is geolocated and superficial.

**Characteristics of Volcanic Activity Based on TEV**

What follows is a description of the qualities of volcanic activity, based on TEV analysis.

*Ash Fall*

Ash fall is the most common occurrence during explosive volcanic eruptions (Barrantes et al., 2015). Due to the pressure inside the volcano during its activity, the combustion residues are violently ejected, including lightweight elements (very fine, tiny particles). These will be ejected within a radius which will depend on the pressure retained within the volcano.

*Ballistic Projection*

It occurs in a violent eruption, when materials are ejected from the crater at speeds ranging from tens to hundreds of meters per second with a ballistic projection (Scott, 1993). Again, due to the pressure contained inside the volcano, the combustion residues are violently eliminated, due to the force of the pressure released, these bodies are fractured into smaller parts, therefore these pieces will have different sizes and compositions.

*Lava Flows*

The viscosity of lava is determined by the characteristics of its components, the presence of crystals and gas, as well as the temperature of the lava (Peterson and Tilling, 1999). As a result of the chain reaction, there is a considerable increase in temperature, causing the geological components of different resistances to melt and accumulate in the volcanic chamber, which is why, in a volcanic eruption, they overflow with such distinctive viscosity. Consequently, based on the TES analysis, lava is made of spills of rocks that have melted in volcanic combustion, where their composition, temperature and other characteristics depend on the molten minerals.

*Acidification*

It occurs when an active volcano releases acid gases at high temperatures from the active crater (Delmelle and Stix, 2000). The most abundant volcanic gases are: water vapor, carbon dioxide, sulfur dioxide, hydrogen, hydrogen sulfide and carbon monoxide (Williams and Rymer, 2000). As previously

mentioned, the water channels participate in the volcanic combustion not only supplying oxygen, but also through its evaporation when in contact with bodies at high temperatures. Thus, when this hot water vapor is eliminated, it transports the gaseous components of the elements that engage in volcanic combustion, so they vary in temperature and composition.

*Waves or Pyroclastic Flows*

They are hot, dry clouds of pyroclastic debris and gases that move rapidly at or near the surface. A flow is normally composed of two parts: 1) a dense and low-lying baseflow, which is the pyroclastic flow itself; and 2) a turbulent cloud-like wave of ash that precedes or travels with it (Scott, 1993). As a result of the ejection of the elements in combustion, there is a diversity of reactions, which depend on the components that engage in the combustion, thus, when some components that present greater density become volatile, they manifest as waves.

**Effect of Rain on Volcanic Activity**

Through the study we analyze that the rain in a volcanic area influences its intensity, but it is important to note that, when referring to the decrease in the intensity of volcanic combustion by rainwater, we should not think that it is the equivalent to spray water on a fire, which could even cause the extinction of the combustion, in this case, we must understand that the magnitude of the precipitation in relation to the dimension of the volcano as a whole is minimal (in any case it would be the equivalent to a small splash of water that could unexpectedly fuel the fire, as discussed later).

Consequently, we analyze that rainfall in volcanic areas can have two main effects, the same ones that are opposite:

1. Intense rainfall in volcanic areas humidifies the area (rainwater is a poor conductor of energy), turning the soil into a temporary photoprotective barrier, since external energy does not move suddenly (the sudden movement of external energy in an active volcano serves to fuel volcanic combustion). In the case of pluvial floods, the action as a photoprotective barrier increases, the water can even reach the subsoil, making it difficult for the accumulation of external energy to form, in addition to blocking the movement of seismic waves from nearby epicenters. The protection time is proportional to the registered rain intensity.
2. According to what TEV proposes, volcanic activity is the product of a chain combustion, where the liquid element fuels the combustion, this because the heat evaporates the water, consequently, there is an increase in pressure followed by an increase in temperature. Therefore, in case the rainwater increases the current of the water channel that participates in the volcanic combustion, then there will be greater evaporation, which will result in the increase in pressure, followed by chain reactions that will intensify the volcanic activity.

In the latter case, due to volcanic dynamism seismic movements can develop (Shelly, 2018), although these manifest in a different way (Hotovec-Ellis, 2018) because these seismic waves are more superficial and their radius of expansion is shorter (in a specific area), this because the vibration is due to the release of energy from volcanic combustion or displacement of some body's product of volcanic dynamism. In addition, there is a greater probability that some specific alteration will be manifested, such as cracks, or the increase in volume or depression of an area.

Thus, let us analyze the case of the Kilauea volcano, the youngest of the five sub-aerial volcanoes that make up the island of Hawaii, which was continuously active from 1983 to 2018 (Neal, 2020). In this area, in 2018 there were consecutive days with unusual rain, a period in which more than 2.25 meters of rain fell (the average of the last 19 years was 0.9 meters). Faced with this climatic alteration, Farquharson and Amelung (Farquharson, 2020) demonstrated that the filtration of rain in the subsoil of the Kilauea volcano increased the pressure from 0.1 to 1 kilopascals (at a depth of 1 to 3 km), reporting as the highest pressure in almost 50 years.

Furthermore, by performing a statistical analysis of the occurrence of historical eruptions, they suggest that rainfall patterns contribute substantially to the timing and frequency of eruptions from Kīlauea.

When reviewing what is proposed in TES, TEV, it is analyzed that the increase in the volcanic intensity of Kilauea is due to the fact that one or the underground water channels that participate in the volcanic combustion of Kilauea increases its flow with the filtration of the waters consequently, there is a greater supply of water that is added to the combustion, which will produce greater evaporation with the consequent increase in volcanic pressure, followed by an increase in temperature, a chain reaction that becomes visible with the increase in activity volcanic in the seasons of intense rain. Consequently, it is possible to establish that if the underground water channel is superficial, then its flow will increase with the infiltration of medium-intensity rainwater, while deeper channels will require more intense rainfall.

**Analysis of Volcan Activity in the Ocean**

According to TES, the activity seismic and volcanic depend on the accumulation of external energy (photons from the sun's rays). Since the oceans are masses of water that cover the earth's surface over large areas, it is therefore important to analyze the conductivity of ocean water.

In this regard, electrolytes are those substances that when dissolved in water allow the passage of energy. Since the salinity in the oceans is approximately 3.5% of the mass of the water, it is understood why the oceanic mass is a good conductor of energy, causing photons to travel through the body of ocean water until they reach the earth's crust, where, depending on the type of soil, accumulations of external energy are formed, making it possible for the four elements (internal energy, external energy, climate and type of soil) to be present in certain areas and to produce seismic epicenters in the ocean, underwater volcanoes in activity, as well as, other natural events that depend on the accumulation of external energy (Valverde, 2022b).

On the other hand, the average depth of the ocean is 3.8 kilometers, which represents only 0.06% approximately of depth in relation to the radius of the Earth (the Mariana Trench, its depth is almost 11 kilometers in a sector known as the Challenger Abyss, it represents only 0.17 % depth of the Earth's radius). Understanding that the oceanic mass is very superficial in relation to the terrestrial body and that the existence of marine reliefs, among which the submarine mountains stand out, indicate that the peaks of these elevations are even more superficial. This facilitates the accumulation of the external energy in case there is a favorable climate and type of soil, therefore, seismic events and volcanic activity are expected events in these underwater areas (Valverde, 2022b).

It is important to mention that the conductivity in salt water not only influences the accumulation of external energy, but also the displacement of seismic waves. Thus, in epicenters in the ocean, seismic waves travel through two bodies: the ocean floor and the salty ocean water.

Consequently, the conductivity of ocean water makes possible the development of volcanoes in the ocean, whose geolocation will be directly related to the location of the conglomerate of reactive material.

## FORMATION OF GEYSERS AND HOT SPRINGS ACCORDING TO TEV

While volcanic activity occurs primarily by rapid oxidation (combustion), geysers and hot springs are the result of the contact of water paths with slowly oxidizing components and/or contact with areas bordering components in the process of rapid oxidation and with very particular characteristics as described.

**Geysers**

Geysers are characterized by the high temperature of their water, which often exceeds the boiling point, and the explosive manner in which they emerge on the surface. Along the path of the water, there is a presence of reactive material, particularly at the end of the journey. This source of heat when in contact with the water allows the transport of heat by conduction, letting the water continue its journey with an increase in temperature and in some cases with added mineral components.

In the formation of geysers, hydrogeology plays a significant role, not only because the oxidation of its components will increase the temperature of the channel waters but also because the geological material is worn away by the high-temperature water fluidity creating a smooth, resistant surface that can withstand the pressure and explosive activity of the geyser. Also, if the outlet of the channel is vertical, the water can

be expelled in an explosive manner, similar to water heated in a smooth container in a microwave. This is due to the fact that smooth surfaces allow bubbles to form, which subjected to a certain pressure will suddenly burst much like an explosive boil.

Such explosive boil occurs because the transformation of one gram of water into steam can release as much energy as the detonation of one gram of explosives because the volume of water in the form of steam occupies 1500 times the volume of its liquid aspect (Ledesma, 2002). On the other hand, groundwater without heat transport emerges to the surface as a spring or water hole, which are common, unimpressive sources of water compared to geysers.

Geysers are rare because certain conditions must be met for the explosive emission of water to occur. If these conditions are not present, the water in the channel still emerge at the surface, in a regular manner with increased temperature and possibly some added minerals. Additionally, a water channel that behaves like a geyser may change and begin to flow regularly due to various factors such as changes in the water temperature, modification of the smooth surface of the channel, or alteration of the angle of the outlet duct. So, it can be said that geysers are delicate natural formations.

Additionally, it is worth noting that the presence of geysers is not directly tied to the presence of volcanoes, as geysers require the availability of geological materials able to undergo rapid or slow oxidation in smaller quantities, while volcanoes require large amounts of reactive material. Therefore, in an area with an active volcano it is possible for geysers to exist, but the presence of a geyser does not necessarily mean that a volcano will develop in the area.

**Geothermal Springs**

Hot springs are formed mainly by the slow oxidation of geological components existing in its underground path, particularly in the final stretch of its underground journey before it emerges to the surface. When these components with slow oxidation capacity come into contact with the water, they oxidize, causing an increase in temperature and the transport of minerals through the water. As a result, the hot springs continue their journey with increased temperature and added mineral components, which depend on the area's geological composition, that is why the mineral components of one geothermal source and another, differ.

The flow of water with added minerals creates a coating on the walls of the channel, which prevents the formation of bubbles. Since bubbles do not form, they are not retained on the walls of the channel enough time to build the necessary pressure to produce explosive ejections. Thus, thermal waters will not reach the surface in the same way as geysers. In sum, despite having high temperatures and vertical outlets, thermal waters do not rise to the surface explosively.

Like geysers, hot springs are not directly related to the presence of volcanoes. Hot springs require the existence of geological materials able to undergo rapid oxidation in smaller quantities, while volcanoes require large amounts of reactive material. Therefore, the presence of an active volcano may indicate the presence of hot springs in the area, but the presence of hot springs alone does not necessarily mean that a volcano will develop in the area.

## CONCLUSION

Basically, the main problems in research arises when trying to understand natural events based on our experience, that is, we take our dimension and sensory capacity as a reference, for this reason we dare to consider a volcano as a geological formation of dantesque proportions, enough to lead us to the depths of the Earth. In the same way, we expect the occurrence of volcanic activities in reference to our life data, having to consider that the development of the planet is far from our existence, since its development is in millions of years. Consequently, if we analyze the dimension of volcanoes in proportion to the body on which they develop (planet Earth), we find that volcanoes are minuscule formations, not representative, recognizing that despite great scientific efforts, very little is known about the planetary body on which we inhabit.

Volcanic activity is the result of a combustion process. When the external energy moving abruptly through areas with reactive material fulfills the function of activation energy, giving rise to volcanic combustion. Consequently, based on TEV, it is understood that volcanic activity is the result of the combustion of reactive materials located in a specific area, therefore, when the most important clusters or agglomerations are consumed, then the volcanoes begin their extinction process, leaving the volcanic cone on the earth's surface (as a scar) as a sign of the volcanic activity that once existed.

At this point, it is necessary to remember that combustion modifies the components, therefore, we find remains of extinct volcanoes and with no possibility of a new restart of volcanic activity. That is, the type of volcanic activity, the duration of the volcanic activity and the lifetime of the volcano depend mainly on the reaction capacity of the geological components in the area and the existing quantity, therefore, an inactive volcano is a consequence of the consummation of the accumulation of reactive or flammable material.

Due to the way in which volcanoes develop and in relation to various studies of volcanic remains, it is concluded that planet Earth is in a stage of relative volcanic calm, that is, in the remote past volcanic activity on Earth has been with greater intensity and, therefore, in the still very distant future, when the most representative clusters of reactive material have been consumed, the volcanic activities will cease.

When analyzing the existence of volcanoes based on this theory, it is concluded that planet Earth is in a stage of relative volcanic calm, that is, in the remote past (greater existence of reactive material) volcanic activity on Earth it has been with greater intensity and frequency, therefore, in the still very distant future, when the most representative clusters of reactive material have been consumed, volcanic activities will cease.

Finally, volcanoes are the result of geolocalized combustion and with an exhaustible lifetime, therefore, the origin of the first volcano is as imprecise as the origin of the seismic energy circuit, both being possibly as old as the earth.

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