


Cults, Practices and Beliefs: the Symbolism of Geodiversity in Christianity

*Arlon Cândido Ferreira*¹ 

*Luiz Renato Vallejo*² 

*Leonardo Cristian Rocha*³ 

*Úrsula Ruchkys de Azevedo*⁴ 

*Luiz Eduardo Panisset Travassos*⁵ 

*Rodrigo Corrêa Teixeira*⁶ 

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Abstract

From the expansion of monotheism, as sacred laws, symbolisms, beliefs and practices began to be produced, thus emerging the sacred books. The biblical text influenced - and still - influences the direction of Western civilization. This work aims to raise and discuss aspects related to Geodiversity, here understood as the allusion of the abiotic characteristics of nature, present in the Holy Bible, as well as its use in cults, practices and beliefs measured by symbolic elements. To carry out this survey, the texts of the King James Version Bible (KJV) were used. After the survey of the elements of Geodiversity, they were divided by typologies to facilitate interpretation, tables were made that include the name of the elements, and their geological / geographical description, their use in the Bible, when applicable. When analyzing the abiotic elements, it was perceived, initially that the elements of Geodiversity, are used as nouns, referring properly to the element, but in several situations, they are used symbolically. Science and religion are generally perceived through dichotomization, but the set of religious manifestations that are open to external analysis is still of scientific interest. In this article, we verify the importance of Geodiversity in the study of the Bible and, consequently, the analysis of the elements of Geodiversity present in the sacred books and their symbology, leads to the reflection that this approach can help in a better understanding and interpretation of biblical facts considering another perspective, giving more consistency and authenticity, whether it deals with the abiotic scenario present in the divine revelations, it is, therefore, a Geoteology.

¹ Universidade Federal Fluminense – UFF, Niterói, RJ, Brazil. arloncf@gmail.com

² Universidade Federal Fluminense – UFF, Niterói, RJ, Brazil. luizrenato@id.uff.br

³ Universidade Federal de São João del-Rei – UFSJ, São João del-Rei, MG, Brazil. rochageo@ufsj.edu.br

⁴ Universidade Federal de Minas Gerais – UFMG, Belo Horizonte, MG, Brazil. tularuchkys@yahoo.com.br

⁵ Pontifícia Universidade Católica de Minas Gerais – PUC-MG, MG, Brazil. luizpanisset@uol.com.br

⁶ Pontifícia Universidade Católica de Minas Gerais – PUC-MG, MG, Brazil. rteixeira@pucminas.br

INTRODUCTION

Throughout history, the relationship between man and the natural environment was an item of fundamental importance in the so-called struggle for survival, from the primitive, nomadic phase, when man had a relationship of total dependence, going through sedentary habit, creating innovations until he arrived to modern, industrial and technological civilization. Although the natural environment is represented, mostly, by biological elements, it can be understood under two aspects that are related: biodiversity and geodiversity. Biodiversity corresponds to the diversity of living nature, geodiversity corresponds to the variety of structures and materials that constitute the natural physical substrate, which supports biodiversity (MACHADO; AZEVEDO, 2015).

The use of elements of geodiversity becomes increasingly important for the development of societies. From the appearance of the first hominids to the present day, mineral resources have always been the object of attention and are essential for improving the quality of life. Velho (2006) lists five historical moments defined by him as geosocial in which people resorted to the geological heritage of millions of years: metal (Age of copper, bronze and iron used as material); gold (as currency); coal (as energy); oil (as energy); radioactive minerals (as energy). The five identified moments are arranged over time in geometric progression, in the same way as the evolution of the consumption of mineral resources and demographic growth. The increasing impact of human beings on natural processes has then been recognized and documented throughout the history of civilization (RUCHKYS et al., 2020).

The relation of elements of geodiversity with subjective processes of symbolic order, when mixed with cognitive objectivity, suggesting to man to build a sacred image of nature. Initially, these natural processes necessary for human survival were understood as grace, as true divine gifts (NAVES; BERNARDES, 2014), then these different elements, environments, landscapes and their respective uses became loaded with symbolism and meanings, being this relationship man/nature the pillar for the foundation of many religious beliefs.

This symbolism is a representative element (visible reality) that is in place of something (invisible reality), which can be an object or idea. Thus, several elements of geodiversity are imbued

with symbolic meaning in different religious traditions, to exemplify we can cite indigenous/shamanic cults, Umbanda, Candomblé (African parent religions in Brazil), Buddhism, Hinduism, Islam, Christianity, among others. Although there are symbols that are recognized internationally, others are only understood within a particular group or religious context.

From the expansion of monotheism, the sacred laws, symbolisms, beliefs and practices started to be registered, being the main way of not losing the teachings of religions, thus emerging the sacred books. Currently, the main religions of the world, monotheists or polytheists, transmit their traditions and teachings through writing, with books considered sacred, covered with great culture, existential wisdom, doctrine, religious and intellectual ecumenism (SILVA, 2004). Many religions have sacred texts, among the best known are the various Christian Bibles, the Islamic Quran, the Jewish Torah, the Buddhist Tripitaka, among others.

Religions apart, it cannot be denied that the biblical text influenced - and still influences - the direction of Western civilization, especially in terms of values (MUSA; OLIVEIRA; VIEIRA, 2006; PÁDUA, 2010). The gospel has many symbols, which are in the ordinances of the priesthood, in the life of the prophets, in the parables of the Lord, in the allegories that his servants pronounce, as well as in the myths and other explanations with strong religious expression associated with aspects of geodiversity (GRAY, 2004).

Considering the exposed context, this work aims to raise and discuss aspects related to geodiversity present in the Christian Bible, as well as its use in cults, practices and beliefs mediated by symbolic elements. Since the bible is not only important for those who believe in its content, but it has secular relevance in several areas of knowledge.

GEODIVERSITY, SACRED BOOKS AND SYMBOLISM: EXEMPLIFYING GEOTEOLGY

Geodiversity studies have been developed around the world for about 30 years, collaborating with the dissemination of scientific, technological, methodological and sociocultural aspects of Earth sciences. In these three decades, the concepts of geodiversity (GRAY, 2004), geoheritage (BORBA,

2011), geotourism (HOSE, 1995), geo-education (MOURA-FÉ, 2014) and geoethics (RUCHKYS; AMORIM; MIRANDA, 2019), as well as initiatives and related strategies, have occupied space in Brazilian and international literature.

One of the main approaches to the application of the concepts of geodiversity is the conservation of the abiotic characteristics of nature, in order to promote the consumption and sustainable use of natural resources (NASCIMENTO; ROCHA; NOLASCO, 2013). Since environmental protection actions are linked to the definition of values that rank the places in greatest need of protection, the places where geodiversity is present also need to have values defined by the people who work or use it in that way. (SILVA; NASCIMENTO, 2019).

In order to characterize and report the importance of conserving the abiotic elements present on Planet Earth, based on its religious symbolic use, this reference comes to work on the theoretical basis for the concept of Geoteology, which consists of the critical/historical study of sacred books and its symbolic relationship between man and geodiversity, even so, a greater approach on the part of the academic community is necessary to popularize this knowledge.

Geodiversity

The term Geodiversity was first described in the literature in the 1940s in texts by the Argentine geographer Frederico Alberto Daus (MEDEIROS; OLIVEIRA, 2011), where the term was used as a synonym for geographic diversity, translating geodiversity as socio-cultural representations and set of natural aspects that make up the landscape, different from the main current theoretical

current. In the last decades, the use of the term has undergone changes, being applied to designate the variety of the diversity of the abiotic environment of a given location (BRILHA, 2005), disassociating the geodiversity from the initial geographical aspects.

Gray (2004) describes in his book *Geodiversity: valuing and conserving abiotic nature* (first book dedicated exclusively to the theme) that it is difficult to specify when this term was first used in the conception of diversity in the abiotic environment, but it probably must have been on the island from Tasmania, Australia. Brilha (2005) declares that the term geodiversity came up during the Malven Conference on Geological and Landscape Conservation, held in 1993, in the United Kingdom. However, it is difficult to specify the first use of the term, probably several scientists coined the term independently as a parallel to the term biodiversity (GRAY, 2004). Thus, we made a table (Table 01), with the main authors and conceptualization of the term geodiversity.

Regarding its concept and merging its various definitions, geodiversity can be summarized as the variety, or natural diversity of rocks, minerals, fossils, landforms, sediments and soils, together with the natural processes that form them, and can be interpreted from the microscopic scale, like minerals, to the large scale, like mountains, rock formations, geomorphological features and active processes (SILVA; GUERRA, 2016). Rodrigues and Bento (2018) consider that the concept of geodiversity is still being constructed, due to the philosophical currents adopted by different researchers.

Table 01 - Some concepts of Geodiversity obtained based on bibliographic research.

Authorship	Concept
Sharples (1993)	Diversity of features and systems of abiotic character on planet Earth.
Gray (2004)	Natural variety of geological (minerals, rocks and fossils), geomorphological (landforms, processes) and soil aspects. It includes its correlations, relationships, properties, interpretations and systems.
Brilha (2005)	Geodiversity consists of the variety of geological environments, phenomena and active processes that generate landscape, rocks, minerals, fossils, soils and other surface deposits that form the basis for life on Earth.
CPRM (2006)	Study of abiotic nature (physical environment) consisting of a variety of environments, composition, phenomena and geological processes that give rise to landscapes, rocks, minerals, waters, fossils, soils, climate and other surface deposits that provide the development of life on Earth, having intrinsic values of culture, aesthetics, economics, science, education and tourism.
Serrano; Ruiz Flaño (2007)	The variety of abiotic nature, including the lithological, tectonic, geomorphological, edaphic, hydrogeological, topographic elements and the physical processes on the terrestrial surface, of the seas and oceans, together with systems generated by endogenous, exogenous and anthropic natural processes, which comprise the diversity of particles, elements and places.
Azevedo (2007)	It treats geodiversity as being the lithological variation of the rocks, the geological processes, the diversity of the soils and how the outcrops are arranged on the Earth's surface.
Nascimento, Azevedo e Mantesso-Neto (2008)	Set of abiotic elements of the Earth, including the associated physical-chemical processes, geoforms, rocks, minerals, fossils and soils, formed from the interaction between the external and internal processes of the Earth and which are endowed with intrinsic, scientific, touristic values and use / management.
Pereira (2010)	The set of abiotic elements of the planet earth, including the associated physical-chemical processes, materialized in the form of reliefs (sets of geoforms), rocks, minerals, fossils and soils, formed from the interactions between the processes of the internal and external dynamics of the planet and that have an intrinsic, scientific, touristic and use / management value.
Gray (2013)	Natural variety (diversity) of geological (rocks, minerals, fossils), geomorphological (geoforms, relief, physical processes), pedological and hydrological features.

Source: The authors (2022).

Values of Geodiversity

The act of assigning a certain value to something does not refer only to the monetary question, exchange value or estimate. The need for nature conservation is a concrete fact, where the attribution of values justifies the act of protecting, whether biodiversity or geodiversity, with this encompassing all the abiotic elements of the planet (rocks, minerals, landforms, soils, among others) (MOCHIUTTI et al., 2011).

The process of valuing geodiversity was proposed by Gray (2004, 2005, 2008) who determined 6 values and 32 sub-values: intrinsic or existence value; aesthetic (leisure opportunity, contemplation, inspiration for art); economic (mineral and energy resources); functional (mainly as a substrate for ecosystems); scientific and didactic. Added to these are the cultural value that is related to the influence of geodiversity on folklore, architecture, history, traditional

knowledge and practices, beliefs and religion (BRAGA; MACHADO; RUCHKYS, 2014).

Pioneering studies in Brazil involving the analysis of the relationship between religion and geodiversity are due to Santos (2009), Travassos (2010; 2011), Travassos et al. (2008; 2011), Guimarães; Liccardo; Piekarz (2013) and Braga et al. (2014).

The elements of geodiversity available in a region have their own characteristics and values that contribute to the formation of the cultural identity of the communities. The authors highlight, as an example, communities of African origin who share a religious tradition that professes their respect for geodiversity, and many of its elements are used in ritualistic practices (BRAGA et al., 2014).

In the Holy Bible, the cultural value of geodiversity is easily perceived in the interdependence between social, religious development and the surrounding environment. The use of elements as symbols is much more than

a simple sign or sign, it is loaded with affectivity, recognition, analogies, dynamism, among others.

Holy Books

Most of the religions of mankind base their teachings on sacred books. They are texts recognized as the word of God, but always written with human words. They are considered inspiring and constitute a privileged manifestation of the divine will (SILVA, 2011). Sacred books are compared to the backbone of religious traditions, they are presented in the form of orality and writing, it is from them that all knowledge of religious tradition, doctrine, codes of ethics and morals, rules of rituals, beliefs, orientations, symbolisms, among others (JUNQUEIRA, 2012).

The structure of the sacred text depends on the religious tradition. The Jewish religion has a set of sacred texts based on its doctrine, the Torah. The sacred text of the Islamic religion is called the Koran or Quran. The Buddhist religion has a vast body of sacred books, known by the name of a triple basket of flowers, the first being called vinaya-pitaka (set of disciplinary rules); the second basket is called sutta-iitaka (groups the Buddha's own teachings) and the third basket is called Abhidharma-Pitaka (systematizes and orders the Buddha's doctrines) (JUNQUEIRA, 2012).

The sacred literature that underlies the Spiritist doctrine comes from five books. The spiritist book (basic work of religion); the mediums' book (addresses communication with spirits); the gospel according to spiritism (analysis of the teachings of Jesus Christ); Heaven and Hell (divine justice) and Genesis: miracles and predictions according to spiritism (principles of the doctrine about gifts in all religious traditions) (ARAÚJO, 2010).

For making this reference and the work, the book used was the Christian Bible. Initially, it was transmitted orally, and it was only after Solomon's reign that it began to have a written version. It was divided into two major parts, the first being the Old Testament (the first 5 books of the Old Testament are the same as those in the Jewish Torah: Genesis, Exodus, Leviticus, Numbers and Deuteronomy), which chronicles the covenant that God made with humanity and the entire process of organizing the people and the second called the New Testament and presents the covenant made through Jesus Christ in which the promises of God made to humanity are fulfilled (JUNQUEIRA, 2012).

The Old Testament was written many centuries before the birth of Christ, scribes, priests, prophets, kings and poets the people of Israel kept their history and relationship with God documented, recording the messages and revelations they received. These records had great significance and importance in the life of that people, and, therefore, they were copied and passed on from generation to generation. Over time, these reports have been brought together and organized, being subdivided into:

- Books of the Law: also called Pentateuch, that is, the “first five” of Moses, and speak of the creation of God and the formation of his people;
- Historical Books: these are the books that describe Israel's wars, as well as the history of her kingdoms;
- Didactic Books: or wisdom books, present the wisdom and poetry of the Hebrews;
- Prophetic Books: written by prophets who preached repentance and prepared the people for the coming of the Savior Messiah.

Among theologians, there is no consensus on the final formation of the Old Testament, which led to the formation of two groups, called the Hebrew canon and the Alexandrian canon. The Hebrew canon, accepted by most Protestant churches, structured the Old Testament into 39 books; the Alexandrian, accepted by the Roman Catholic Church, was included in 46 books (BEITZEL, 2009).

The New Testament consists of 27 books, canonically organized as Gospels, Acts of the Apostles, Pauline Letters, Catholic Letters and Revelation. The first three Gospels (Matthew, Mark and Luke) are called synoptic because they have many similarities. The fourth gospel (John) differs from the synoptics in that it contains a metaphysical narrative about the life of Jesus. The Act of the Apostles narrates the life of the first communities. The Pauline letters comprise a total of 14 letters written by Paul and addressed to Christian communities. The Catholic letters were written by Tiago, Pedro, João and Judas and addressed problems common to the first communities. The book of Revelation is a prophetic book and contains the revelation of Jesus Christ addressed to the threatened churches in Asia Minor (GABEL; WHEELER, 1993).

Junqueira (2012) reports that in biblical texts images, symbols and metaphors were used to

convey messages, often emphasizing human interactions with natural systems. For these interactions, the term Geosymbols can be used. Geosymbols (a geosymbol can be defined as a place, an itinerary, an extension that, for religious, political or cultural reasons, in the eyes of certain people and ethnic groups, takes on a symbolic dimension that strengthens their identity) are perceptively assimilated and interpreted based on the symbols captured by the subjects, which justifies their actions and provides an explanation of reality (BONNEMAISON, 2002). There are many and varied elements of geodiversity that represent these characteristics, including hydrographic, geomorphological and mineralogical elements as well as physical features of the landscape that are mentioned and have a symbolic value in several passages, such as: when the prophet Isaiah spoke of the desert as a place of manifestation of the wonderfully creative powers of God, for under the command of the Lord the desert can become a fruitful place (Isaiah 32; 35; 41); when a valley means a dangerous and narrow situation, which requires caution and vigilance from us in order to cross it safely (Salm 23); or when Jesus in Matthew 17:20, reports in his parable that if a man has faith the size of the mustard seed, he will give order to a mountain and it will move.

Symbolism in the Sacred

The Sacred is an element of culture essential to understanding the construction of the identity of a community and the formation of a religious language. His presence marked a speech that influenced history and society. Eliade (1992) describes that human history and especially the history of religions - from the most primitive to the most elaborate - is constituted by a considerable number of hierophanies (revelation or manifestation of the sacred), by the manifestations of sacred realities. Since the manifestation of the sacred in any object, a stone or a tree as a supreme hierophany, which for a Christian would be the incarnation of God in Jesus, the sacred always manifests as a reality entirely different from natural realities. In general terms, we can say that the sacred designates the scope or dimension in which the elements belonging to the religious sphere are inserted, such as God, man, human acts and objects used in this context (CINER et al., 2008).

The sacred is often materialized through the symbolic value of something or an object, which

represents some kind of connection through its evocation. A whole symbolic universe is necessary to support the representation that becomes more important than reality. Symbolism is present in all civilizations and religions, as well as being intrinsic to the human being, who always has the capacity to interpret and give meaning to things. (ELIADE, 1991). Conceptually, symbolism is expressed by symbols, which, by analogy, can replace or represent something else. A symbol can also be understood as a material object that has an immaterial representation (practices, representations, expressions, knowledge and techniques – with the instruments, objects, artifacts and cultural places associated with them – that the groups recognize as an integral part of their cultural heritage) (RIBEIRO, 2010). Thus, symbols are representations that serve to translate everything that man does not know how to express in words. They materialize feelings and ideals and have always been present in humanity. They are used by all religions and are important, as they help to identify them, representing images, customs, rituals or even stories, making it possible for their adherents to approach the doctrines linked to each element.

Symbols are more than something visual, they have their fundamentals and always have an explanation, which are known by their leaders and followers of each religion, material or spiritual (MATOS, 2009). The symbols that are present in the Christian religion are inserted in their tradition through the Bible, and in it, there is an equivalent symbol and sign. The Bible presents itself as an extremely rich book of symbols. In fact, the historical events narrated by her are, from beginning to end, “impregnated with symbolic elements” (DIEL, 1994, p. 52). This is absolutely natural, as biblical thinking is inserted within a cultural continuum that values the symbolic element in its daily life (VAILATTI, 2016).

METHODOLOGY

This article presents a survey of the elements of geodiversity and their symbolic representation in the Christian Holy Bible. To carry out this survey, the texts of the King James Version (KJV) Bible (IBERO-AMERICANA, 2013) were used as the basis, which is considered the most famous and influential English version of Sacred Scripture. Its translation is known worldwide, for having a clear

language and a proximity to the original sacred texts of the scriptures.

After surveying the elements of geodiversity, they were divided by typologies to facilitate interpretation. In this article, the following elements of geodiversity were considered: relief; caves; rivers and lakes; rocks; sedimentation processes; soils; minerals. In addition to elements that mark the interface between man and the elements of geodiversity: mining and archaeological sites.

The symbolism of the elements of geodiversity in the Bible is observed in metaphors, analogies, parables and other passages. To describe such symbology, in addition to the physical description of the elements, 2 theological dictionaries with terms from the old and new testaments were used, namely: Wycliffe Dictionary (PFEIFFER; VOS; REA, 2007); Vine Dictionary (VINE; UNGER; WHITE, 2002). These dictionaries are based on the terms used in the King Jones Bible, the basic Bible for data collection.

After the survey and data analysis, tables were made which include the name of the elements, their geological/geographical description, their use in the Bible and, when applicable, their symbolism.

RESULTS

To understand the Geodiversity present in the Bible, it was necessary to generate a descriptive basis for the natural elements present in it. For this work, geodiversity was characterized according to its interest, according to recommendations of the works by Brilha (2005), Carcavilla; Durán; Martínez (2007) and Arana-Castillo (2007). The following interests were considered: geomorphological, hydrological, sedimentological, speleological, pedological and mining. In some cases, elements may take on more than one type of interest.

Geomorphological interest

In the Christian Bible, geomorphology is represented by several elements that can be divided into elements of fluvial geomorphological interest, coastal geomorphological interest,

among others. Much of these elements are used to name places (São Mount, Jerico Valley, Plains of Ono). However, several are used as sacred places and often places full of symbolism, represented in parables and biblical passages (Table 02 – appendix).

Hydrological Interest

Over the years, the range of elements of nature inserted and described as of hydrological interest has expanded, paying attention to the forms (waterfalls, rapids, lakes), the medicinal value of water (thermal and sulphurous waters) to the ecological value (springs and particular locations of the hydrographic basins), their economic value (ground and surface water) and their scientific value (PEREIRA et al., 2016).

In the Bible, hydrological interest has two aspects that seem contradictory: one is life, blessing, a sign of the presence of God, an image of the person who allows himself to be led by God and by his grace. The other is chaos, death, destruction and the absence of God. In addition to several nomenclatures that denote only the physical characteristics of the elements (Table 03 – appendix).

Sedimentological Interest

In the Bible there are several references to sedimentological elements (Table 04), highlighting the elements sand and dust, frequently used due to the pilgrimage of the patriarchs and the people of Israel, as well as their use in parables. The sand has a very large symbolism, especially when it demonstrates the idea of an incalculable number (Gn 22.7; Gn 41.49; 1 Re 4.29) and when it is used in the parable about the house built on sand (Mt 7.26), among other passages. The powder, in addition to representing its physical characteristics, is used with the symbol of creative force and ash. In Genesis, man is not only created from dust, but his posterity is also compared to dust, a reference both to Adam's origins and his destiny. Conversely, dust is a sign of death, when the Hebrews put the dust on their heads as a sign of mourning (Joshua 7.6, lamentations 2. 10 and Ezekiel 17.30) and the psalmist alludes to the dust of death (Ps 22.16). Other physical and symbolic characteristics can be seen in the table below.

Table 04 - Sedimentological interest represented in the Holy Bible.

Term	Physical characteristics of the elements represented in the Bible	Christian Symbolism
Sand		Almost always associated with a large number to be contacted, innumerable and immensity. (Rom 9.27; Heb 11.12; Rev 20.8); (Gen. 22.17; Josh 11.4; Jr 15.8; Heb 1 1.12; Rev. 20.8)
		Symbol of instability, lack of foundation “Insecure Foundation” used by Jesus on the house built on sand (Mt 7.26)
		Symbolically the position assumed by the dragon, due to the appearance of the sea beast (Ap 13.1).
Dust	Small particles of earth or occasionally used as a synonym for earth (Jn 14.19; 38.38; Is 25.12).	The human body was originally made by God of this material (Gen. 2.7), as well as the bodies of other creatures (Ec 3.20).
	Describe a large number or a large quantity (Gen. 13.16; Psalms 78.27; Zec 9.3).	Position below which someone emerges (1 Rs: 16.2) or from a degrading position to which someone is taken (Ps: 44.25)
	To describe what is very small (Dt 9.21; Ps 18.42; Is 40.15)	Making it like dust means complete destruction (2 Rs: 13.7)
		To speak of a man as dust is to call attention to his fragility by referring to his origin (Gen 18.27; Ps 103.14).
		Dust can mean anything useless (Sf: 1.17) The dust is related to the order that Jesus gave the apostles to shake the dust off their feet when they left a city in which the message of Christ was rejected (Mt 10.14)

Source: The authors (2002)

Speleological Interest

The Bible has several passages highlighting speleological elements (Table 05), associated with

the idea of refuge, despair, pleading, shortcut, revenge, incestuous generation of wild peoples or place of the dead (SCHAMA, 1996).

Table 05 - Speleological interest represented in the Holy Bible.

Term	Physical characteristics of the elements represented in the Bible	Christian Symbolism
Pit	Place where Joseph was played by his brothers (Gen. 37.20).	
	Thieves' hiding place (Jr 7.11).	
	Place where Daniel survived the Lions (Dan 6.7,12,16-24)	
	Place where animals and people often made their homes (Jz 6.2),	
Cave	They were used as a shelter for humans. Lot and his daughters occupied a cave (Gen. 19.30), as did David (1 Sam 22.1) and Elias (1 Kings 19.9).	Symbolically it appears in the Lord's rebuke concerning the contamination of the Temple, where the house of prayer was transformed into a lair for robbers (Mt 21.13; Mk 11.17; Lk 19.46).
	There are many references in the Bible to caves as a shelter (Josh 10.16; Josh 6.2; 1 Sam 13.6; 22.1; 2 Sam 23.13; Heb 11.38).	Caves were used to perform pagan practices and rituals (Is 65.4)
	The caves were natural burial places Abraham bought Macpela's cave to use it as a grave for Sarah (Gen. 23.19) and later this cave became the grave of Abraham, Isaac, Rebekah, Leia and Jacob (Gen. 25.9; 49.30, 31; 50.13). the Lazaro tomb was a cave (Jn 11.38).	
	Caves were also used as prisons (Jr 37.16.17; 38.6)	
Tomb Grave	Among the Hebrews, it was a cave, closed by a door or stone, often decorated (Mt 23.29)	Its meaning often refers to natural physical death (Ps 86.13), in other situations it seems to express the idea of death as a spiritual departure from God (Os 13.14).
	Burial place, tomb (Mt 23.27.29: 27.61, 64.66: 28.1)	

Source: The authors (2022).

Speleological elements can gain archaeological characteristics when they present traces and ways of everyday life from the past. In the Bible, this element is often characterized as a grave/sepulcher that can characterize a way in which lifeless bodies are deposited and in some cases as a symbolic figure for death (Ps 16.10; Is 28.15).

Pedological Interest

In the Bible, pedological interest has great symbolism, being referred to in miracles and parables described by Jesus (Table 06).

Table 06 - Pedological interest represented in the Holy Bible.

Term	Physical characteristics of the elements represented in the Bible	Christian Symbolism
Clay	To make bricks or pottery, clay was mixed with water in a pit where it could be stepped on (Psalm 40:2; Isaiah 41:25; Na 3:14)	When Jesus spit on the ground, he formed a clay plaster that He used to heal the man born blind (Jn 9.6,11,14,15)
	The use of clay as the potter's material to be used in his work (Is 29.16; Jr 18.4,6)	Often figuratively, compares the Creator to the potter and the people to the clay (Jn 10.9; 33.6; Is 45.9; 64.8)
Substrate of constructions	Used to refer to the ground of a building (Nm 5.17; 1 Rs 6.15,16,30)	
Mud		Symbolically used to characterize dirt, regarding the Lama in the dungeon that Jeremiah was thrown into (2 Pet. 2.22)
Ground	Often denotes ground (Mt 10.29; Mc 4.16; Mc 8.6)	About "inherited" property, land, country (Lc: 12.16)
		Place to lay the foundation (Eph: 3.17,), concerns the permanence of believers in the faith (Cl: 1.23)
		Support, bastion, stable, steadfastness regarding a local church (1 Tim: 3.15)
		About the mob that fell "to the ground" when going to arrest Jesus in the Garden of Getsemani (Jo: 18.6)
Earth	Place of opposition to the sea or other portion of water Mc 4.1; 6.47; Luke 5.3; Jo 6.21)	Red earth or ground, from which the body of man was made, and from which the name given to the first man originated (Gen. 2.7; 3.19);
		The solid matter of the globe in contrast to water and air (Gn 1.10).
		Inherited property (Lk 12.16)
		Place subject to cultivation: 14.35
		The world that lies in the evil one; and so "the things ... that are on earth" are sins, and the opposite of that which is heavenly and spiritual (Col 3.2.5; Phil 3.19).
		Location that describes a country or region Mt 2.20.21; 4.15; Lc 4.25; Lk 23.44; To 7.29; Heb 11.9; Jd 5

Source: The authors (2022).

Mineralogical and Petrological Interest

Although rocks and minerals have many uses and symbolism in biblical passages, two terms stand out for their great representativeness: Rock and Stone.

The rock or reef is commonly used as proper names (Jz 15.11; 21.13; 1 Sm 14.1). In some passages, God is mentioned as a rock or rock of refuge (2 Sam 22.2), a fortress (Ps 18.2; 71.3; Ps 61.2; 62.2; 95.1) and as "the rock of my salvation" (Ps 89.26). In Moses' song, God is named the Rock of Israel (Deuteronomy 32:4, 15, 18 and 31). In Isaiah 26.4 God is characterized as an eternal rock. For the unbeliever, Christ the Rock is just a rock of judgment (Mt 21.44) and Daniel reports that the Messianic kingdom that will be established at

Christ's second coming as a rock that fills the whole earth (Dan 2.34, 35).

The term stone has several uses in the Bible. In its natural state, a stone could serve as pillows (Gn 28.18), with a seat (Ex 17.12), to close a well (Gn 29.2), to close the entrance to a grave or grave (Js. 10.18; Jn 11.38; Mt 27.60.66). It was used as weapons (1 Sam 17.40, 49; Josh 5.2) and often to stone a criminal (Josh 7.25). In civil construction, it was applied to masonry, pillars, foundations, among others. Symbolically, Christians are portrayed as living stones, erected in union with Christ, to form a spiritual "house" or Temple, so that they themselves can offer spiritual sacrifices to God (1 Pet. 2.4-6; Eph 2.19-22; 1 Co 3.9). The Stone is also used by Moisés to record the 10 Commandments (ex: 1-17; 20-26; 31-1 / 27), in addition to being used when the tempter

approached Jesus and said: “If you are the son of God, order these stones to become bread” (Matthew 4-2).

Another great symbolism of minerals/rocks is in the elements used in making the breastplate of the high priest (Ex 25.7). God ordered that twelve

precious stones be placed (Ex. 28:15-30), divided into 4 rows, set on a material woven from the breastplate and on each stone to write the name of one of the twelve tribes (Table 07). As long as the High Priest used the sign, at no time could he forget the Jewish people.

Table 07 - Distribution of Minerals / Rocks and representativeness of that of tribes in the breastplate of the high priest.

	Stone	Tribe of Israel
Row 1	Ruby	Reuben
	Topaz	Levi
	Carbuncle	Judah
Row 2	Emerald	Simeon
	Sapphire	Issachar
	Diamond	Zebulom
Row 3	Hyacinth	Dan
	Agate	Naphtali
	Amethyst	Gad
Row 4	Beryl	Aser
	Onyx	Joseph
	Jasper	Benjamin

Source: The authors (2022).

Several minerals and rocks were reported in the Bible, being raw materials for manufactured products, as well as jewelry that was used in ceremonies and in everyday life. A mineral worth mentioning is gold, which in addition to having a high economic value, has great symbolism. Gold represents that which is pure, precious and incorruptible (Rev. 3.18; 14.14); it symbolizes God Himself, as a pure, precious, enriching and eternal Being (John 22:25; Ps 19:10; Zech 4:12; 1 Corinthians 3:12; Rev 21:15); The cups of God's wrath appear as golden cups, because they are divine, pure, unmixed and therefore powerful in their effects (Rev. 15:7), one of the gifts received by Jesus given by the Three Kings (Matthew 2-11), in addition to symbolizing material wealth,

together with what is pompous and full of ostentation (Gen. 13.2; Judges 8.26; Rev. 17.4).

Mining Interest

The mineral extraction activity was and still is, without a doubt, essential to the development of societies throughout history. However, in addition to providing raw materials for numerous recurrent activities, mineral extraction is also responsible for generating what can be called Mining Heritage (LICCARDO et al., 2012). In the Bible, mining interests often represent mining objects and actions, portrayed in the book of Job as a difficult and costly process of obtaining material. As a symbolic form, these elements are rarely used (Table 08).

Table 08 - Miner Interest represented in the Holy Bible.

Term	Physical characteristics of the elements represented in the Bible	Christian Symbolism
Alabaster	Container to condition ointment or perfume; its name was derived from the alabaster stone from which it was normally made (Mt 26.7; Mk 14.3; Lk 7.37)	Fragrance symbol of Christ's brokenness and sacrifice. Mc 14.3; Mat 26.7; Luc 7.37.
Crucible	A vessel for refining metals such as silver (Pr 17:3; 27:21).	
Goldsmith	Profession working with gold and silver (Ac 19.24 Jz: 17.4	
Mining	When the Israelites were about to enter the Promised Land, Moses told them that from the mountains of that land they would “extract copper” (Deut 8.7-14; 8.19; 29.21-23.)	Mining is used as a symbolism when "If you look for silver and look for hidden treasures to look for, then you will understand the fear of the Lord and you will find the knowledge of God". (Pv 2.4)
	In the book of Job, there is a description of the type of mining. (Job 28:2-11)	
	At Mount Sinai, God instructed the Israelites to use this shiny metal, extracted from local mines, in building the tabernacle. (Ex. 27)	
	Job clearly describes ancient mining practices (Job 28: 1-11), citing various types of minerals.	
Brief references to the excavation of valuable metals, iron and copper (Dt 8.9)		
Manufacturing Metallurgy	They were also able to make objects used in the tabernacle - such as a large bowl, bowls, pans, shovels and forks. - Ex 32: 4.	
	the Bible mentions weapons, fetters, doors and musical instruments made of copper. (1 Sam 17: 5, 6; 2 Kings 25: 7; 1 Ch 15:19; Ps 107: 16)	
	Jesus talked about “copper” money (Mt 10.9)	
	Paul mentioned “Alexander the tinsmith”, that is, a craftsman who worked with copper (2 Tim 4.14)	

Source: The authors (2022).

Archaeological Interest

The archaeological interest represented in the Bible boils down to heaps and ruins ([Table 10 - appendix](#)), with heaps having some symbolic meaning.

Table 09 - Archaeological Interest represented in the Holy Bible.

Term	Physical characteristics of the elements represented in the Bible	Christian Symbolism
Heap	A pile of stones was sometimes placed on a dead person as a reminder of his infamy (Josh 7.26; 8.29; 2 Sm 18.17);	A heap of stones was used as a witness to the covenant between Jacob and Laban (Gen. 31,44,46-52). It denotes a mountain or a wall of water, as if it were contained by an invisible dyke (Ex 15.8; Josh 3.13,16; Ps 33.7; 78.13).
	A city that became a heap of ruins was a reminder of God's judgment (2 Kings 19.25; Is 25.2; Jr 9.11; 51.37).	
	Rubbish or rubble (Ne 4.2).	
	the mound above the level of the crowded ruins of a city (Deut 13.16; Josh 8.28; Jr 30.18; 49.2).	
	Ruins of cities (Jr 50.26)	
Ruin	What is broken "ruin" (Lk 6.49).	

Source: The authors (2022).

Geomorphological-Hydrological Interest

They are abiotic elements that have geomorphological and hydrological characteristics at the same time. Some terms represent only the physical characteristics of the place or environment and others, for example: rivers, seas, lakes and islands are used as nouns, but these elements have symbolic characteristics (Table 10 – appendix).

In the Bible, there are several rivers narrated in their passages, but 4 gain great importance: (i) the Nile River, also called “the river” and “River of Egypt” (Ex 2.3; Josh 15.47), is linked to the history of the Exodus; (ii) the Tigris River, which was the place where Daniel had the vision of the Great Controversy; (iii) the Euphrates River that served as a limit to the domains of David and Solomon (1 Cr. 18.; 3), and; (iv) the Jordan River where Jesus was baptized and started his ministry (Lk. 3.21-22). As symbolic forms, it can be highlighted that the river of God brings life to that which was dead (Ezekiel 49.2), that those who believe in it, rivers of living water flowed from within, and these waters would go on to eternal life, among others.

In the Bible, the sea is a widely used symbol. It is a sign of mysteries, a place of hidden forces, a place of God's enemy presence. On the other hand,

God also dominates this environment, when in Job 26.12 it is said in relation to the divine force against the sea, when Moses divides the red sea in two and the sea was where Jesus walked on the waters (Matheus 14.22-36). The sea is also used to name some seas described in the Bible, such as: the Mediterranean Sea, Caspian Sea, Dead Sea, Sea of Galilee, among others. Many of these seas have no connection with the oceans, being saltwater lakes - named in ancient times.

Geomorphological-Sedimentological Interest

They are abiotic elements that have geomorphological and sedimentological characteristics at the same time. In this context, the desert stands out for being one of the most symbolic elements of the bible (Table 11). Initially, it is used as a noun, referring properly to the desert, giving its name to the Sinai Desert, where for 40 years the Hebrews walked after their departure from Egypt, the Judean Desert, the Jerico Desert, among others. In symbolic use, the desert can mean for man the world away from God, the devil's lair (Mt 13.43; Lk 8.19), Israel's place of punishment (Dt 29.5), Jesus' place of temptation (Mk 1.12) among other symbolisms presented in the table below.

Table 11 - Geomorphological-Sedimentological interest represented in the Holy Bible.

Element	Physical characteristics of the elements represented in the Bible	Christian Symbolism
Desert	Grazing land, an uninhabited land, unsuitable for agriculture, but sufficient for grazing animals (1 Cr 5.9; Jo 38.26)	Symbolically it means a ruined city or area (Ps 102.6; Is 48.21; Ezek 13:4) It symbolizes “loneliness”, a deprived place, in contrast to a city or village (Mt 15.33; Mk 8.4; 2 Co 11.26; Heb 11.38)
	Irregular terrain that surrounded the Dead Sea (Is 35.1.6; 40.3; Jr 2.6; 17.6)	The desert symbolizes the creative powers of God, flourishing, as it does when it is flooded by rain (Is 35.1).
		It represents a desolate place (Deuteronomy 32.10; SI 68.7)
		Represents “abandoned” people, displaced persons, deprived of friends and relatives, such as the woman abandoned by her husband (Gal 4.27)
		Used to refer to a city, such as Jerusalem (Mt 23.38) or depopulated, abandoned places (Mt 14.13-15; Mc 1.35; Ac 8.26)
		Place where the people of Israel discovered that their livelihood comes from God. He provided manna and water where there was nothing (Deut 8.2-4)
		Place where Jesus was taken and tempted by the devil, where he used the word of God to overcome the devil (Lk 4.1-4)

Source: The authors (2022).

FINAL CONSIDERATIONS

Despite the relationship between science and religion, they are generally perceived through a dichotomized perspective, the set of religious manifestations that are subject to external analysis is still scientific interest.

Although this dichotomy between science and religion, the Bible has become an object of study in hermeneutics (it is the art and science of interpreting the Bible), where the clarification and deepening of biblical reports is evident in the growing concern with the improvement of the information obtained and the increase in publications produced. In this article, we found that an important element to be considered in the study of the Bible and consequently sacred books is Geodiversity, because the abiotic nature, besides being by natural elements, can be the object of revelation of the mystery of God. In several passages of the Bible allusions to valleys, plains, caves, sea, among other elements full of symbolisms and meanings are found.

The use and definition of the term Geoteology and consequently the analysis of the elements of geodiversity present in the sacred books and their

symbology leads to the reflection that this approach can assist in a better understanding and interpretation of biblical facts considering another perspective, giving more consistency and authenticity, whether it deals with the abiotic scenario present in divine revelations.

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REFERENCES

ARANA-CASTILLO, R. **El patrimonio geológico de la región de Murcia**. Murcia: Ed. Academia de Ciencias de La Región de Murcia, 2007.

ARAÚJO, A. C. D. Identidade e Fronteiras do espiritismo na obra de Allan Kardec. **Horizonte**, v. 8, n. 16, p. 117-135, 2010. <https://doi.org/10.5752/P.2175-5841.2010v8n16p117>

AZEVEDO, U. R. **Patrimônio Geológico e Geoconservação no Quadrilátero Ferrífero, Minas Gerais**: Potencial para criação de um Geoparque da Unesco. 2007. 211 f. Tese (Doutorado

- em Geologia) – Instituto de Geociências, Universidade Federal de Minas Gerais, Belo Horizonte, 2007.
- BEITZEL, B. **Bíblica**: o atlas da Bíblia. Barueri: Ed. Girassol, 2009.
- BRAGA, L. R. O.; MACHADO, M. M. M.; RUCHKYS, U. A. Modelagem de recursos da geodiversidade como suporte às práticas ritualísticas de comunidades de matriz africana. **Caderno de Geografia**, v. 24, n. 42, p. 233-248, 2014. <https://doi.org/10.5752/P.2318-2962.2014v24n42p233>
- BRILHA, J. **Patrimônio Geológico e Geoconservação**: a conservação da natureza na sua vertente geológica. São Paulo: Ed. Pelimage, 2005.
- BONNEMAISON, J. Viagem em Torno do Território. In: CORRÊA, R. L.; ROSENDAHL, Z. (Orgs.) **Geografia Cultural**: um século. Rio de Janeiro: EdUERJ, 2002. p. 83-131.
- BORBA, A. W. Geodiversidade e geopatrimônio como base para estratégias de geoconservação: conceitos, abordagens, métodos de avaliação e aplicabilidade no contexto do Estado do Rio Grande do Sul. **Pesquisas em Geociências**, v. 38, n. 1, p. 3-13, 2011. <https://doi.org/10.22456/1807-9806.23832>
- CARCAVILLA, L.; DURÁN, J.J.; LÓPEZ-MARTÍNEZ, J. Geodiversidade: concepto y relación con el patrimonio geológico. **Geo-Temas**, v. 10, p. 1299-1303, 2007.
- CINER, P. et al. **Lo Sagrado**: miradas contemporaneas. San Juan: Ed. Effha, 2008.
- CPRM - COMPANHIA DE PESQUISA DE RECURSOS MINERAIS. **Mapa Geodiversidade do Brasil**. Escala 1:2.500.000, 2006.
- DIEL, P. **Los Simbolos de la Biblia**: La uniersalidad del language simbolico y su significación psicologica. México: Ed. FCE, 1994.
- ELIADE, M. **Imagens e Símbolos**: ensaios sobre o simbolismo mágico-religioso. São Paulo: Ed. Martins Fontes, 1991.
- ELIADE, M. **o Sagrado e o Profano**. São Paulo: Ed. Martins Fontes, 1992.
- GABEL, J.; WHEELER, C. **A Bíblia como Literatura**. São Paulo: Ed. Loyola, 1993.
- GRAY, M. **Geodiversity**: valuing and conserving abiotic nature. Chichester: Ed. Wiley-Blackwell, 2004.
- GRAY, M. Geodiversity and Geoconservation: what, why and how? **Geodiversity & Geoconservation**, p. 4-14, 2005.
- GRAY, M. Geodiversity: developing the paradigm. **Proceedings of the Geologists' Association**, v. 119, p. 287-298, 2008. [https://doi.org/10.1016/S0016-7878\(08\)80307-0](https://doi.org/10.1016/S0016-7878(08)80307-0)
- GRAY, M. **Geodiversity**: valuing and conserving abiotic nature. Londres: Ed. Wiley-Blackwell, 2013.
- GUIMARÃES, G. B.; LICCARDO, A.; PIEKARZ, G. F. A valorização cultural do patrimônio geológico-mineiro do Paraná. **Boletim Paranaense de Geociências**, v. 70, p. 41-52, 2013. <https://doi.org/10.5380/geo.v70i0.32439>
- HOSE, T. A. Selling the story of Britain's stone. **Environmental Interpretation**, v. 2, p. 16-17, 1995.
- IBERO-AMERICANA, S. B. **Bíblia King James**. São Luís: Ed. Abba Press, 2013.
- SILVA, M. C. O.; GUERRA, A. J. T. Geodiversidade, Geoturismo e Geoconservação: Conceitos, Teorias e Métodos. **Espaço Aberto**, v. 6, n. 1, p. 151-174, 2016. <https://doi.org/10.36403/espacoaberto.2016.5241>
- JUNQUEIRA, S. **o Sagrado**: fundamentos e conteúdo do ensino. Curitiba: Ed. Intersaberes, 2012.
- LICCARDO, A.; BARBOSA, T. A.; HORNES, K. L. Diamante de Tobalgi no Paraná: Patrimônio Geológico-Mineiro e Cultural. **Anuário do Instituto de Geociências – UFRJ**, v. 35, n. 1, p. 142-151, 2012. https://doi.org/10.11137/2012_1_142_151
- MACHADO, M. M. M.; AZEVEDO, U. R. Essa Tal Geodiversidade. **Revista da Universidade Federal de Minas Gerais**, v. 22, n. 1. 2, p. 182-193, 2015. <https://doi.org/10.35699/2316-770X.2015.2745>
- MATOS, A. P. Os Símbolos e a Simbologia Religiosa: o papel da igreja católica. **Revista Brasileira de História das Religiões**, v. 1, p. 1-11, 2009.
- MEDEIROS, W. D. A.; OLIVEIRA, F. F. G. Geodiversidade, Geopatrimônio e Geoturismo em Currais Novos, NE do Brasil. **Mercator**, v. 10, n. 23, p. 59-69, 2011. <https://doi.org/10.4215/RM2011.1023.0005>
- MOCHIUTTI, N. F.; GUIMARÃES, G. B.; MELO, M. S. Os valores da geodiversidade da região de Pirai da Serra, Paraná. **Geociências**, v. 4, n. 30, p. 651-668, 2011.
- MOURA-FÉ, M. M. A Análise Ambiental Integrada e sua Construção Teórica na Geografia Física. **OKARA: Geografia em Debate**. v. 8, p. 294-307, 2014.
- MUSA, C. I.; OLIVEIRA, L. B.; VIEIRA, R. Educação Ambiental e Religião: percepção e perspectivas a partir das denominações religiosas cristãs da sub-bacia do Ribeirão Araranguá em Blumenau/SC. **Revista Eletrônica Mestr. Educ. Ambient.** V. 16, p. 71-84, 2006.
- NASCIMENTO, M. A. L.; ROCHA, A. J. D.; NOLASCO, M. C. Patrimônio geológico e mineiro no nordeste do Brasil. **Boletim Paranaense de Geociências**, v. 70, p. 103-119, 2013. <http://dx.doi.org/10.5380/geo.v70i0.31446>
- NASCIMENTO, M. A. L.; RUCHKYS, U. A.; MANTESSO-NETO, V. **Geodiversidade, Geoconservação e Geoturismo**: trinômio importante para a proteção do patrimônio geológico. São Paulo: Ed. SBG, 2008. <https://doi.org/10.1590/S1982-45132009000200015>
- NAVES, J. G. P.; BERNARDES, M. B. J. A relação histórica homem/natureza e sua importância no enfrentamento da questão ambiental. **Geosul**, v. 29, n. 57, p. 7-26, 2014. <https://doi.org/10.5007/2177-5230.2014v29n57p7>
- PÁDUA, J. A. As bases teóricas da história ambiental. **Estudos Avançados**, v. 24, n. 68, p. 81-101, 2010. <http://dx.doi.org/10.1590/s0103-40142010000100009>
- PEREIRA, L.; CUNHA, L.; THEODORO, J. Um Olhar sobre o Patrimônio Hidrológico do Município de João Pessoa, Paraíba, Nordeste do Brasil. In: NUNES, A.

- et al. (Eds.) **Territórios de Água**. Coimbra: Ed. Cegot, 2016. p. 294-305.
- PEREIRA, R. G. F. A. **Geoconservação e desenvolvimento sustentável na Chapada Diamantina (Bahia-Brasil)**. 2010. 318 f. Tese (Doutorado em Ciências) – Universidade do Minho, Minho, 2010.
- PFEIFFER, C.; VOS, H.; REA, J. **Dicionário Bíblico Wycliffe**. Rio de Janeiro: Ed. Cpad, 2007.
- RIBEIRO, E. S. Um estudo sobre o símbolo, com base na semiótica de Peirce. **Estudos Semióticos**, v. 6, n. 1, p. 46-53, 2010. <https://doi.org/10.11606/issn.1980-4016.esse.2010.49258>
- RODRIGUES, S. C.; BENTO, L. C. M. Cartografia da Geodiversidade: Teorias e Métodos. In: GUERRA, A. T.; JORGE, M. C. O. (Org.) **Geoturismo, Geodiversidade e Geoconservação**: abordagens geográficas e geológicas. São Paulo: Ed. Oficina de Textos, 2018. p. 137-162.
- RUCHKYS, U. A.; AMORIM, P. T.; MIRANDA, M. P. S. Mineração em Geossistemas Ferruginosos e Questões de Geoética: o Caso do Rompimento da Barragem do Córrego do Feijão, Minas Gerais. Brasil. **Confins**, v. 40, p. 1, 2019. <https://doi.org/10.4000/confins.19973>
- RUCHKYS, U. A.; ARAGÃO, F.; VELÁSQUEZ, L. N. M.; GALVÃO, P.; TAYER, T. C.; LUCON, T. N. Natural background levels and validation of the assessment of intrinsic vulnerability to the contamination in the Carst Lagoa Santa Protection Unit, Minas Gerais, Brasil. **Environmental Earth Sciences**, v. 79, n. 31, p. 1-14, 2020. <https://doi.org/10.1007/s12665-019-8771-5>
- SANTOS, C. O. **Kosi omi, kosi orixá**. Sem água, sem orixá: Modelagem etnoecológica sobre uso da água no Ilê Axé Iyá Nassô Oká/Terreiro da Casa Branca. 2009. 184 f. Dissertação (Mestrado) – Universidade Estadual de Feira de Santana, Feira de Santana, 2009.
- SCHAMA, S. **Paisagem e memória**. São Paulo: Ed. Companhia das Letras, 1996.
- SERRANO, N.; RUIZ-FLAÑA, P. Geodiversity. A theoretical and Applied concept. **Geographica Helvetica**, v. 62, n. 3, p. 140-147, 2007. <https://doi.org/10.5194/gh-62-140-2007>
- SHARPLES, C. A. **Methodology for the identification of significant landforms and geological sites for geoconservation purposes**. Tasmania: Ed. Hobart, 1993.
- SILVA, J. M. O Cristianismo e o Pluralismo: possibilidades dialogais com a pós-modernidade. **Horizonte – Revista de Estudos de Teologia e Ciências da Religião**, v. 3, n. 5, p. 189-190, 2004.
- SILVA, M. L. N.; NASCIMENTO, M. A. L. O sistema de valoração da geodiversidade com enfoque nos serviços ecossistêmicos sensu Murray Gray. **Boletim do Museu Paraense Emílio Goeldi**, v. 12, p. 79-90, 2019. <https://doi.org/10.46357/bcnaturais.v14i1.142>
- SILVA, V. Santidade, Religiões e Literatura Sagrada. **Caminhos**, v. 9, n. 1, p. 195-201, 2011. <https://doi.org/10.18224/cam.v9i1.1527>
- TRAVASSOS, L. E. P. et al. A Gruta de São Cosme e Damião e a Umbanda, Cordisburgo, Minas Gerais. **Pesquisa em Turismo e Paisagens Cársticas**, v. 1, n. 2, p. 165-172, 2008.
- TRAVASSOS, L. E. P. **A importância cultural do carste e das cavernas**. 2010. 372 f. Tese (Doutorado em Geografia) – Pontifícia Universidade Católica de Minas Gerais, Belo Horizonte, 2010.
- TRAVASSOS, L. E. P. **Cultural Importance of Karst and Caves**. 2011. 316 f. Tese (Doutorado em Carstologia) – Universty of Nova Gorica, Eslovenia, 2011.
- VAILATTI, C. A. **Um Olhar Sobre o Simbolismo Mágico-Religioso no Livro de Êxodo**. 2016. 289 f. Tese (Doutorado em Estudos Judaicos e Árabes) – Universidade de São Paulo, São Paulo, 2016.
- VELHO, G. Patrimônio, Negociação e Conflito. **Mana**, v. 12, n. 1, p. 237-248, 2006. <https://doi.org/10.1590/S0104-93132006000100009>
- VINE, W.; UNGER, M.; WHITE, W. **Dicionário Vine: o significado exegético e expositivo das palavras do antigo e novo testamento**. Rio de Janeiro: Ed. Cpad, 2002.

AUTHORS' CONTRIBUTION

As each author has Geodiversity as one of their specialties, all contributed and participated in the study, collection, analysis and writing of the article.



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APPENDIX

Table 02 - Geomorphological interest represented in the Holy Bible.

Term	Physical characteristics of the elements represented in the bible	Christian Symbolism
Abyss	Depth of Oceans (Gn 1.2; Sl 77.16)	A deep slit that separates two places. Jesus claims that a vast chasm was fixed by an irrevocable decree between paradise and hades, so that people, in the next life, cannot cross it (Lk 16.26; 1 En 18.11)
		A place with immeasurable depth, hells, used to name the residence of evil spirits (Ap 11.7; Ap 17.8; Lk 8.31; Rm 10.6,7)
Summit Hill Mount	Symbolizes the name of several elevations: Mount of Transfiguration (Lk 9.28.37; Mt 17.1.9; Mk: 9.2; Pe 1.18) Moab Plateau (Num 23.3) Mount Sinai (At 7.30.38; Gal 4.24.25; Heb 8.5; Heb 12.20) Mount Zion (Heb 12.22; Rev. 14.1) Mount of Olives (Mt 21.1; Mt 24.3; Mc 11.1; Mc 13.3 Lc 22.39 19.29,37; Jo 8.1; Ac 1.12) Mount Carmel (1 Rs 18.19; 2 Rs 4.25) More's Hill (Jz: 7.1) Haquila Hill (1 Sm 23.19; 1 Sm 26.1.3) Elevated land in Efraim (Gen. 49.26; Deut 33.15; Josh: 17.15) Mountainous and steep region (Lk 1.39.65)	Proverbially "overcome difficulties" or "accomplish great things" (1 Co: 13.2; Mt 17.20; Mt 21.21; Mk 11.23)
		Symbolically "a series of imperial potentates from the Roman domain, past and present (Rev 17.9)
		Mount Sinai: Place where Moses received the Ten Commandments
		Monte Carmelo: Where Elias proposes a public competition, the test for God and Baal (I Rs: 18-1). Jesusalem will become a heap and rubble, and the temple hill, a thicket. (Micah 3-12).
		On Mount Abarim Moses observes the lands that God gave to his children in Israel.
		Golgota Hill: Place where Jesus was crucified
		Location of Jesus' sermons
Geological Faults	A space or opening, usually narrow, made by a crack, like the "Tents of the Rocks" (Ex 33.22; Is 2.21)	
High Places		Symbolic location for funerary rituals and fertility ritual setting (Os 4.11-14; Jr 3.6; Jr 19.5; Jr 48.35)
		Symbolic site for pagan shrine (Pt 12.3; Os 10.1; Ex 34.13; Jd 17.5; 1 Rs 12.31)
		Place of offering sacrifices (1 Sm 9.13; 1 Rs 3.3.4; 1 Rs 12.32)
		Symbolically a place where men went to consult God to hear the priestly oracle or prophetic word, where the human is closer to the Divine (1 Sam 9.7-12)
Mountain	Influence rainfall and productivity (Ps 29.3-9; Deut 33.15; Jl 3.18) Permanence symbol (Hc 3.6)	God calls all the land of Israel as my mountains (Is 14.25; Is 65.9)
		Places of worship or divine revelation (Ex 19.18.20; Gn 22.2; Sl 2.6; Sl 48.1.2; 1 Rs 18.19.39)

		<p>The high pagans were erected on mountain tops (Deut 12.2)</p> <p>Places that extend our vision (Deut 3.27; Lk 4.5)</p> <p>Permanence symbol (Hc 3.6)</p> <p>Symbol of stability (Sl 30.7; Sl 125.1,2; Is 54.10)</p> <p>Personification of human emotions, trembling because of God's terrible judgment (Ps 18.7; Ps 97.5)</p> <p>Rejoicing in Israel's redemption (Ps 98.8; Is 44.23; 49.13; 55.12)</p> <p>Jump in fear to escape the wrath of God (Ps 29.6; Ps 114.4.6)</p> <p>Witnessing God's strife with his people (Mk 6.2)</p> <p>Symbols of calamities in the journey of life (John 13.16)</p> <p>Humanly insurmountable obstacles (Zc 4.7; Mt 21.21)</p> <p>Moved by faith, however small, provided it is deposited in God (Mt 17.20)</p>
Flat land	<p>Symbolizes the name of several low-lying areas, such as:</p> <p>Sinar Plain (Gen. 10.10; Gen. 11.2)</p> <p>Jerico Plain (Deut 34.3)</p> <p>Plain that comprised Sodom and Gomorrah (Gen. 13.12)</p> <p>Wide plain near Babylon (Gen 11.2)</p> <p>Ono Plain (Ne 6.2)</p> <p>Megiddo Plain (2 Cr 35.22)</p> <p>Flat place in Galilee, where Jesus preached (Mt 5.1)</p> <p>Western slopes of Moab (Num 22.1)</p>	
Valley	<p>Applied several times as large areas with small elevations (Gn 11.2; Ez 3.22.23; Ez 8.4; Ez 37.1.2)</p> <p>Often used as proper names:</p> <p>Jerico Valley (Deut 34.3)</p> <p>Jordan Valley (Josh 11.17)</p> <p>Hinom Valley (Js 15.8; Js 18.16; Ne 11.30; Jr 7.31; Jr 19.2)</p> <p>Escol Valley (Nm 29.9; Deut: 1.24)</p> <p>Valley of Gerar (Gn 26.17)</p> <p>Setim Valley (Jl 3.18)</p> <p>Zerede Valley (Num 21.12)</p> <p>Soreque Valley (Jg 16.4)</p> <p>Fertile area around Samaria (Is 28.1.4; Mq 1.6)</p> <p>Refers to a restricted and fertile area between mountains (Deut 3.29; Deut 4.46; Deut 34.6; 2 Rs 2.16)</p> <p>Area that separated the Philistines from the Israelites as a prelude to the David and Goliath incident (1 Sam 17.3)</p>	<p>"The holy land is described as the land of mountains and valleys" (Deut 11.11)</p> <p>Valley of the shadow of death (Ps 23.4)</p> <p>Place where idolatrous services were held together with the sacrifice of children (Is 57: 5,6)</p> <p>Place where the elders of a city could kill a heifer or calf to assert their innocence in relation to the murdered man (Deut 21.4)</p> <p>According to the Syrians, the God of Israel did not inhabit (1 Kings 20.28)</p> <p>Location of loneliness and danger condition (Lc 3.5; Is 40.4)</p>

Beach	The term used refers to both freshwater and saltwater beaches (Mt 13.3.48; Jo 21.4; Ac 21.5)	
	Place where Paul ran aground and on a shipwreck (At 27.39.40)	

Source: The authors (2022).

Table 03 - Hydrological Interest Represented in the Holy Bible.

Term	Physical characteristics of the elements represented in Biblical	Christian Symbolism
Water	Water was essential for the daily needs as well as for the agricultural activity of the people (Ex 15.22; Deut 8.6-5; 11.10-11)	God's presence and harmony and order in Creation. Before God was manifested, "everything, loneliness, darkness and chaos, and the waters covered the abyss. God, through his creation, organized chaos, separating the waters from above from the waters below, giving rise to the Earth, a safe place for men. (Gn 1.2; Gn 1.7; Ex 20.4)
	Describes semi-melted snow or snow water (Jo 9.30)	It portrays that the flood returned to mixing the "upper waters" with the "lower waters" as before, where people no longer had security on the land to live (Gen. 6.1-7.24)
		Moses is placed in the waters of the Nile, the river of the pagans who oppressed the people of Israel (Ex 2.1-10)
		Suffering in a person's life, with the image of raging waters (Ps 42)
		Raging waters that closed over Pharaoh in the Red Sea and made him sink forever (Ex 13.17; 14.3)
		Isaias predicts the future world when "The knowledge of the Lord will fill the earth as the waters fill the sea". (Is 11.9)
		Water of bitterness or distress is designated by what it drinks in prison (1 Kings 22.27), and is also used in rituals in Israel (Num 5.18; Num 5.24)
		Water was spilled or sprinkled, symbolizing purification (Ex 29.4)
		Parts of the sacrificial animal should be ritually washed with water during sacrifice (Lv 1.9)
	Liquid that represents Jesus' commitment to his people, because "whoever takes the water that I give him, will never be thirsty".	
Aqueduct	Water networks in Jerusalem at the time of Isaias (2 Kings 18.17; 20.20; Is 7.3; 36.2)	
Drinking Fountain	A large rock with a hole, or a box of water in the shape of a box used to give water to animals. (Gen. 24.20; 30.38; Ex 2.16)	
	Gutter or small streams (Gn 30, 38, 41)	
Channel	Place where water descends from steep surfaces (Ps 42.7)	
	Water channel or tunnel (2 Sm 5.8)	
Cistern	Artificial tanks for water supply (Jr 2.13)	
	Some cisterns were used as prisons (Gn 37.22-24; Jr 38.6-13)	
Springs	Springs, spring, sources of running water (Tg 3.11,12; Ap 8.10; 14.7; 16.4)	A source of something other than water: Source of life (Ps 36.9); Eternal fountain and the future blessings that come from it (Rev. 7.17; 21.6)

Well	Source of water that was obtained by digging the ground (Gn 21.30; Nm 21.18) Denotes places: Beersheba Well (Gen. 21.14) Beer-Laai-Roi Well (Gen. 16.14) Beer-Elim Well (Is 15.8).	Place that has become a fearsome reservoir of apocalyptic judgments (Lk 14.5; Rev 9.1,2)
	Places for the capture of animals (Sl 7.15; Pv 28.10; Ez 19.4.8), Dungeons (Jr 38.6) or graves (2 Sm 18.17)	One of the places where the dead lived (Num. 16.30; Jo. 17.16)
	The wells posed a threat to animals (Mt 12.11) and to the blind (Mt 15.14; Lk 6.39).	
Reservoir	Places that received supplementary water through aqueducts (2 Sm 2.13; 2 Rs 20.20; 2 Cr 32.30; Is 22.11)	
Tank	Muddy places or stagnant pools formed by the overflow of a river (Ex 7.19; 8.5; Is 14.23; 42.15)	
	Place where the animals drank water (2 Sm 2.13; 4.12)	
	Reservoirs built in narrow valleys. The tanks that present with their respective names are: Samaria Tank (1 Rs 22.38) Hebron Tank (2 Sm 4.12) Gibeao Tank (2 Sm 2.13) Sela weir or nursery (Ne 3.15) Hesbom nurseries or pools (Ct 7.4) Siloe Tank (Jo 9,7)	

Source: The authors (2022).

Table 10 - Geomorphological-Hydrological Interest represented in the Holy Bible.

Term	Physical characteristics of the elements represented in the Bible	Christian Symbolism
Bay / Cove	The bay or creek at the northwest end of the Dead Sea (Js 15,5; 18,19)	
	The shallow part of the bay at the southern end of the Dead Sea (Jos 15.2)	
Coast	Boundary, boundary, boundary (Mt 4.13)	
Channel Bed	Refers to a watercourse (Is 8.7; Jl 3.18)	
	Deep ravines at the bottom of the ocean (2 Sm 22.16; Ps 18.15; Ez 35.8; 36.4.6)	
	Refers to the Euphrates River current (Is 27.12)	
	Refers to the current of the Jordan River (Jz 12.6)	
	In the account of the plagues (Ex 7:19) these names were used descriptively to designate the different waters of Egypt	
Island	There are passages where the meaning is clearly that of an island (Is 40.15)	John was exiled to the island of Patmos, where he received the “Revelation of Jesus” (Ap 1.1,9)
	Land on the coast or on the beach (Is 20.6).	Where giants dwelt (2 Sm 21.15-22)
	Places far from the earth, for example, the foreign coast (Is 41.5; 66:19)	

	Designation of islands visited by Paulo for the rise and spread of Christianity: Chios Island (At 20.15); Crete Island (At 27.7-21); Cyprus Island (At. 13.4); Malta Island (At 28.1); Rhodes Island (At 21.1); Island of Samos (At 20.15)	
Lake	Water poured from a river to form a sea of fresh water (Lc 5.1,2; 8.22,23,33)	“Lake of fire”, a place prepared for the devil and his angels, and the destiny of all the unsaved (Ap 19.20; 20.10,14,15; 21.8)
Sea	Name used to name: Mediterranean Sea (Nm 13.29), also called: Big Sea (Ez 47.10), Sea of the Philistines (Ex 23.31)	The large size of the basin in the Temple of Solomon led the priests to call it “sea of bronze” or “sea of foundry” (1 Kings 7.23-26)
	Dead Sea (Zc 14,8) also called: Sea of Salt (Gn 14.3) Eastern Sea (J1 2.20) Arabian Sea (2 Rs 14.25)	For the Hebrews, the sea was a dangerous and stormy place and bore a very fitting resemblance to the troubled and tired soul of the sinner (Is 57:20) and also to the rebellious and troubled nations of the world (Dan. 7.2; Mt 13.47; Rev. Rv. 13.1)
	Red Sea (Ex 10.109; At 7.36; 1 Co 10.1; Hb 11.29)	Wild and restless condition of nations (Rev. 13.1)
	Sea of Galilee (Mt 4.18; 15.29; Mc 6.48.49)	In the midst of him arises the beast, symbolic of the final gentle power that dominates the federated nations of the Roman world (Dan. 2. 7; Rev. 17.1.15)
Perennial Watercourse	Watercourse that only runs in winter or when it is heavy with rain (Jo 18.1)	
River	The sub-elevation of the continental earth's crust that ended with the Flood resulted in the formation of new drainage channels (Sl 104.6-9)	Symbolically it can be both a source of calamities and also of blessings, the rivers represent punishment (Hc 3.9,10) or prosperity (Is 66.12)
	It symbolizes the name of several rivers: Euphrates River Jordan river Nilo river Tigre River	Absence of God's provisions, linked to the drought of a river (Is 19: 5-8)
		Used symbolically to describe the eternal outpouring of the Holy Spirit as a powerful river of life. This is typified by the first River of Eden (Gen. 2.10) and by the river of the Temple (Zech. 14:8; Ezek. 47:1-12)
		God is pouring out his spirit on all flesh (Ac 2: 16-21) and this has been consumed in the great river of water from the Lamb's throne (Rev 22.1.2) which has the source in the Lamb himself (Rev 7.17; 21.6)
	Jesus offers a river of water of life free of charge to anyone who approaches it (Rev. 22.17)	
	The river turned to blood and becomes im potable (Ex: 7-20)	

Source: The authors (2022).