


## CONSIDERATIONS ON THE PHYSIOGRAPHY AND PHYTOPHYSIOGNOMIES OF THE MUNICIPALITY OF VITÓRIA DA CONQUISTA – BA

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### ABSTRACT

The present work makes some considerations about the physiography, climate and phytophysionomies of the municipality of Vitória da Conquista – BA. A bibliographic research was carried out on the theme of the region and fieldwork was carried out to take photographs of the phytophysionomies of the municipality in question. The climatic typology varies from humid to semi-arid from east to west, having a lot of topographic influence on air masses. The soils are usually deep and acidic, except for those in the Caatinga zone. The municipality is diverse in geological, geomorphological, climatic terms, resulting in several phytophysionomies. The caatinga predominates in the west of the municipality and in the north, the deciduous and semideciduous forest is found mainly in the Planalto da Conquista, and the dense ombrophilous forest in the east of the municipality. Few areas have preserved vegetation, most of which are degraded, without vegetation, with pastures or agriculture, and urbanized or suburbanized areas.

**Keywords:** Physiography. Climate. Phytophysionomy. Vitória da Conquista - BA.

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## 1 INTRODUCTION

The purpose of this work was to search the landscape for the relationship between phytophysionomies, topographic factors such as altitude and climatic typology in the Planalto da Conquista (Planalto dos Geraizinhos) and surrounding areas. Phytogeographically, it is a transition region between the Atlantic Forest and Caatinga biomes. This municipality was chosen due to its different natural landscapes and topographic unevenness considered high for the Brazilian relief.

More than half of the surface of the Brazilian Northeast is inserted in the so-called Drought Polygon, where a xerophilous vegetation of varied physiognomy called caatinga predominates. Rainfall is relatively low in this environment, varying around 700 mm per year, being considered climatically semi-arid.

The southwest of Bahia, composed of 39 municipalities, predominates a subhumid climate, ranging from mild to strong megathermal. Originally, the municipality had areas with lush forests, which were cut down for agricultural and livestock exploitation. The forests located to the east of the municipality are considered to be in the Atlantic Forest biome, and to the west Mata de Cipó, with Mata de Cipó being considered a transition zone between the Atlantic Forest and the Caatinga. The Vine Forest, or deciduous seasonal forest, is predominant on the plateau. It is generally associated with the executioner in some places in the study area. The Mata de Cipó is a tall vegetation, closed with many lianas, or lianas, epiphytes (orchids and bromeliads) and mosses (old man's beard). There are many hardwoods, such as pau-de-leite, rosewood, angico, etc. Dry flour and ipê are also frequent. As secondary vegetation it is abundant: *corona*, *cipó-de-anta*, *pitiá*, *caiçara*, *velame*, as well as *current grass or barra-do-choça*, in addition to *amargoso and tricoline*. Carrasco, in the region, is also known as "general fields" or cerrado. It is a low, dense vegetation, typical of poor soils and semi-arid climate. It is generally found on the dividing spur of continental sea slopes at altitudes of the order of 1,000 m or more, in sandy soils. This range is considered unsuitable for coffee growing.

A large part of the municipality of Vitória da Conquista, located in the semi-arid region of Bahia, borders the municipalities of Anagé (N and NW), Cândido Sales (SO), Encruzilhada (S), Belo Campo (W), Barra do Choça (NE), Planalto (N and NE), Itambé (E) and Ribeirão do Largo (SE). It has a population of approximately 380,000 inhabitants (IBGE, 2022) whose income is derived from an economic base generated mainly by the rural area, from which

part of the wealth produced comes from, such as coffee, cocoa, cassava, corn, beans, dairy and beef cattle farming, poultry farming, goat farming, sheep farming, etc.

The climate of the western region of the municipality, according to Köppen's classification, is Bsw, semi-arid, with spring-summer rains. The municipality is inserted in two important hydrographic basins of the State of Bahia: the Pardo River and the Contas River. The rivers that originate in the municipality are considered small since the region is an area of river spring. The city of Vitória da Conquista is exactly on the watershed between the Pardo River basin and the Contas River basin.

The Pardo River rises in Minas Gerais in the border area of the municipalities of Rio Pardo and Monte Azul, flowing into the Atlantic Ocean in the Municipality of Canavieiras. The Contas River, on the other hand, rises in Serra da Tromba, in Chapada Diamantina, then cuts through part of the Caatinga biome, to later enter the dry and humid forests of the Atlantic coast, and flows into Itacaré.

Geologically, the municipality has three classes of lithologies: the most comprehensive sector, corresponding to the Vitória da Conquista Plateau. In this area, the rocks are considered recent in geological history, that is, they are detrital sedimentary covers dating from the Tertiary. The eastern sector is the oldest rocks from the Archeozoic era. Granites and gneisses occur frequently in this area. In the western sector there are also very old lithologies from the Archeozoic era. In this place, gneisses and schists predominate. The relief of the region is flat with undulations, mainly to the east and flat to the west of the municipality. Its valleys are wide, disproportionate to the fine watercourses that flow there, with a flat bottom and with amphitheater-shaped headwaters. Elevations usually of gentle slopes (although there are those with steep slopes) occur on the plateau, which can reach 1,000m or more. The Serra do Periperi, for example, located to the north/northwest of the urban center of Vitória da Conquista, has a maximum level of about 1100 m and a minimum of 1,000 m, while its immediate surroundings have altitudes ranging from 920 to 950 meters.

Other examples of altitudes above 1,000 meters are verifiable in "Duas Vendas" (Municipality of Planalto) ahead of the "Fazenda Salitre" (in Poções), in steep terrain, and the "Serra da Ouricana" (one of the mountains locally known as "Serra Geral"), in Poções and Planalto. "As altitudes drop and you approach the slopes, the relief becomes strongly undulating." (MEDEIROS, 1996)

According to VIEIRA & AMORIN (1996), the soils of the region of the Plateau of Vitória da Conquista are classified as Yellow Latosol and Red-Yellow Latosol dystrophic and alic.

The basic differences between these two soil classes are related to the color associated with the type of iron oxide. The percentage of organic matter varies from 2 to 7%. The prominent "A" horizon is richer in organic matter and/or thicker than the moderate "B" horizon. They are very deep mineral soils (thickness greater than two hundred centimeters), strong to moderately drained, with low water and nutrient retention capacity. They have a good structure in sub-angular blocks, weak to moderate or strong and very small to small angular.

## **2 METHODS**

Initially, a systematization of the available bibliographic information was made, in view of the need to establish parameters for the analysis of the producing agents of the landscape. Information on soils, vegetation and climate was collected at this stage. To this end, public and private bibliographic collections were consulted, especially the RADAMBRASIL Project (1981).

The images illustrated in the work were taken from field observations, through direct data collection, on the distribution of the vegetation cover of the municipality, defining the areas covered by the typologies of the caatinga present, as well as the areas of forest vegetation.

Rainfall and temperature data were provided by the Meteorological Station of the State University of Southwest Bahia – ESMET and INMET. Systematized the data, field observations and bibliographic information, especially RADAMBRASIL, Veloso, Rangel Filho and Lima (1991), Nobrega (2003), and Nobrega and Boas (2020) resulted in the present work.

The maps were taken from various sources such as IBGE (2024), Maia (2005) and the vegetation profiles of Nóbrega (2003), Nóbrega and Boas (2020) and Veloso, Rangel Filho and Lima (1991).

## **3 RESULTS AND DISCUSSIONS**

### **3.1 LOCATION AND PHYSIOGRAPHIC ASPECTS**

The area studied in the present study was the municipality of Vitória da Conquista, commonly known as a municipality in the Southwest of Bahia (Figure 01). The municipality studied is to the southeast on the map of the state of Bahia and not to the southwest as it is usually treated.

Figure 01 - Location map of the municipality of Vitória da Conquista - BA.



Geologically, the study area on the map of the RADAMBRASIL Project (1981) presents two types of lithologies: in the extreme east of the municipality and in the extreme west there are still older rocks dating from the Archaeozoic era. According to geologists, these rocks are part of the Caraíbas-Paramirim complex. In this complex, the lithologies occurring are biotite-gneisses and gneisses, quartz-feldspelts, amphibolites and well-leafed, locally mobilized biotitasxistos and diatexites.

In the central region, more recent lithologies occur, dating from the Tertiary. They are detrital covers, that is, they are alluvial and secondarily colluvial deposits, predominantly sandy, with conglomeratic levels. Incipient laterization processes, related to the planing surfaces of the South American Cycles. With respect to structural geology, there is a fault in the East.

The study area falls into three geomorphological units; the largest of them is called Planalto de Geraízinhas, specifically Planalto da Conquista. These are inhuman plateaus, with tabuliform reliefs developed over areas of continental detrital-sedimentary deposits of the Cenozoic, which overlap and mask structural features typical of other domains. The top plateaus have altimetry greater than 800m. On the eastern side of the studied area, there are Crystalline Plateaus, locally called Eastern Piedmont of the Vitória da Conquista Plateau. They involve plateau and piedmont reliefs worked in rock granitized to the cratonic sector and a strip remobilized with intrusions. They characterize clearly structural mountain range models, with altitudes above 800m, cut perpendicular by the drainage taking advantage of faults and fractures, which carve deep grooves, according to preferential orientations inherited from various tectonic cycles.

On the west side is found another geomorphological unit belonging to the interplanaltic depressions. In the region, it is called Patamares do Médio Rio de Contas. These comprise evolved reliefs generally on highly metamorphosed rocks, areas of crystalline shields are characterized by having been subjected to intense shaking, in which the model accuses the predominance of morphoclimatic influences on the structures.

The study area is part of two hydrographic basins: on the west side the waters belong to the Contas River Basin and in the East sector, to the Pardo River Basin. The rivers have a predominantly dendritic drainage pattern, where the relief is more dissected. In the Planalto de Conquista, the channels have a more rectilinear pattern. These rivers usually have a temporary and intermittent regime. The Verruga River, which is one of the main rivers that crosses the studied area, is perennial, due to an artesian well that occurs at its source. The rivers in the area have their maximum flow in the months of November to March, the rainy season. They are mainly pluvial rivers.

According to Silva, Santos and Corrêa (1981) and Maia (2005), the predominant soil classes in the study area are: dystrophic red-yellow oxisols, occurring mainly in the region of the Vitória da Conquista plateau. They have a moderate "A" horizon and clayey texture. On the east side are found more fertile soils. It is the eutrophic red-yellow podzolic. This soil has moderate A horizon, low activity clay, medium clay texture. They occur in mountainous and strong undulating relief.

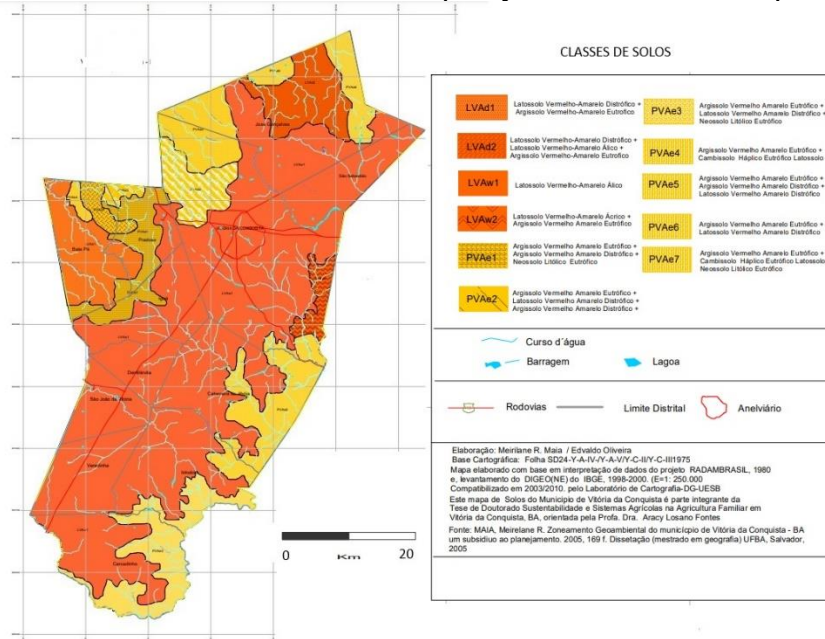
On the west side, eutrophic red-yellow podzolic also occurs. They also have a moderate "A" horizon, clay of low activity and medium clayey texture, occurring in smooth-wavy and undulating relief.

The work carried out by the RADAMBRASIL project (1981, op. cit.) on the pedology of the region, shows that the municipality has two classes of soils, the predominant class is dystrophic red-yellow latosols and eutrophic red-yellow podzolic. These soils tend to accumulate a large amount of water in the rainy season and do not dry up in the dry season.

The soils with the best fertility are in the Sertaneja depression and in the Eastern Piedmont of the Vitória da Conquista Plateau. These are eutrophic red-yellow podzolic soils. As for the chemical and physical characteristics of these soils, they are variable, depending on the locality, as an example, there is the podzolic found in a region located in the west of the municipality. They have clay of low activity, moderate A horizon and medium clayey texture, often occurs in strong, undulating and mountainous relief.



Figure 02 – Soil classes in the municipality of Vitória da Conquista – BA.



Source – Maia (2005).

According to Brazão and Araújo (RADAMBRASIL, 1981) the vegetation in the studied area is quite diverse. On the slopes of the Serra do Marçal are found fragments of dense ombrophilous forest in secondary stage. Near the descent of the mountain is the seasonal semideciduous forest, which also occurs in a fragmented way due to coffee and livestock crops. Going towards the city of Vitória da Conquista, the deciduous seasonal forest, or vine forest, occurs. This type of vegetation dominates the study area. The fragments found in this forest are greatly altered by human action and in various phases of ecological succession.

On the west side of the municipality of Vitória da Conquista, up to the vicinity of the western slope of the plateau, there is a transition area between the vine forest and the caatinga. Some call this type of vegetation an executioner. In the extreme west is found the open arboreal caatinga, without palm trees.

The flora of the area belongs to the biomes of humid tropical forests, such as the Atlantic Forest biome. However, many species of the Cipó forest and the Caatinga biome, floristically, belong to a biome called by American botanists Matagais Espinheiros.

Studies carried out by the Ministry of the Environment on the conservation and sustainable use of Brazilian biological diversity (FUNBIU-PROBIO, 2023) show that the municipality of Vitória da Conquista has 02 priority areas for biodiversity conservation. The first of them has a very high priority and is located in the Serra do Periperi due to endemic species existing in the place, such as a species of the genus *Melocactus*. In the project, this area is included in the caatinga biome and is called Vitória da Conquista.

Another priority area for biodiversity conservation is located in the southeast of the municipality, in areas of liana forest and dense ombrophilous forest, on the slopes of the Serra do Marçal. In these places, PROBIO researchers described that there is little knowledge about the species in the region, so they should be preserved and researched.

### 3.2 CLIMATIC TYPOLOGY

In the climatic characterization of the area under study, rainfall is of great importance, especially due to its aspects of spatial and temporal distribution.

Of the climatic elements used to characterize semi-arid areas, rainfall plays an important role, as its rhythm, quantity and intensity depend on all forms of life, both animal and plant.

The climatic characterization through cartograms of seasonal and annual variation and precipitation aims to better adapt human activities in the area, especially agriculture, as it offers subsidies for better use of the land as a function of the rainfall variable.

Regarding the circulation of air masses, the study area is dominated, throughout the year, by the South Atlantic Semifixed Anticyclone, which penetrates the continent with a predominance of E and SE trade winds. These semi-permanent systems of subtropical high pressures give rise to the Atlantic Equatorial Air Mass (Ea) and the Atlantic Tropical Air Mass (Ta). These masses are characterized by high temperatures and strong specific humidity, formed by intense marine evaporation.

The distribution of precipitation over time is mainly conditioned by the action of circulation currents, the amount of rainfall is closely linked to factors such as:

a) Exposure to the ocean in the latitudinal sense

When the effects of sea currents occur that lead to their penetration on the continent.

b) Orientation of the coastline in relation to the trade current

The trade current in the E-W and NE-SW directions penetrates the continent forming 45° angles from the coast to the Equator, offering conditions for the penetration of potentially unstable flows by convection, especially in areas of southern Bahia.

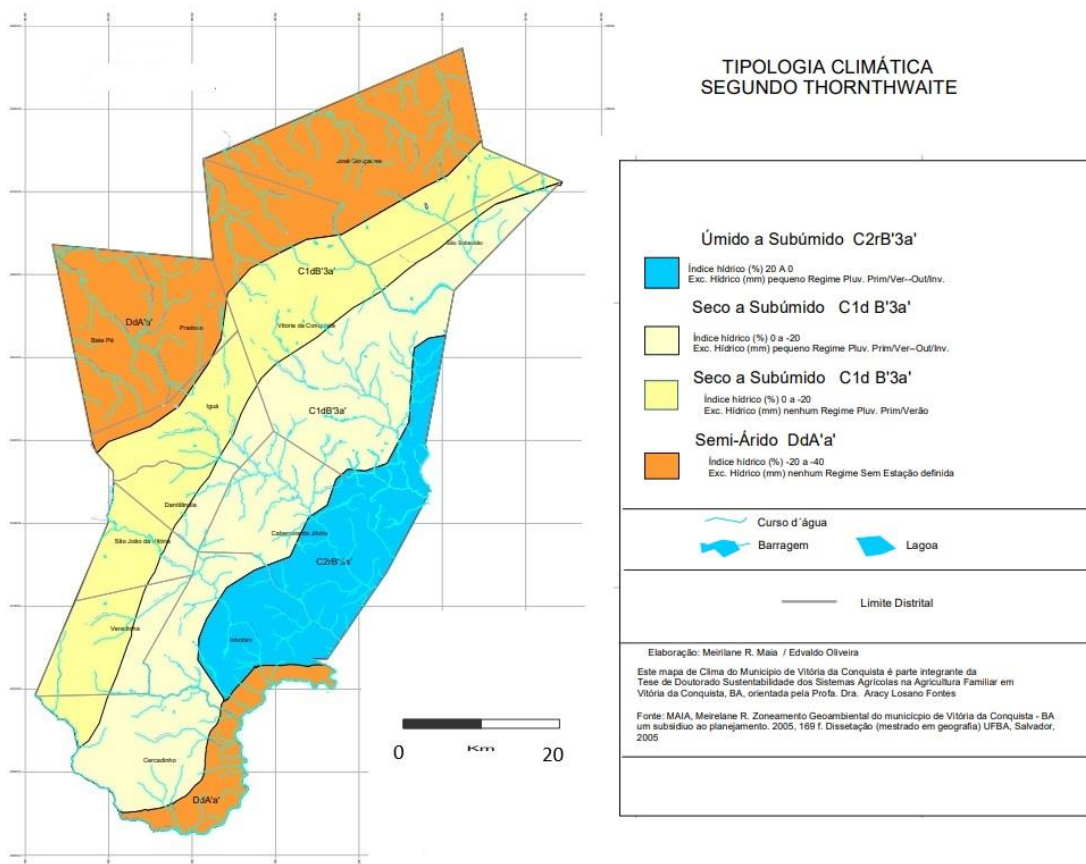
According to RADAMBRASIL (1981, op. cit.) Vitória da Conquista is part of the subhumid climate range, with 68.6% of the months with rainfall below 60 mm; 24.8% of the months with rainfall between 60 and 180 mm; and 6.6% of the months with precipitation between 180 and 420 mm.

The Vitória da Conquista Plateau is part of the subhumid climate range, with 68.6% of



the months with rainfall below 60 mm; 24.8% of the months with rainfall between 60 and 180 mm; and 6.6 of the months with precipitation between 180 and 420 mm. On the east side of the municipality, the humid to subhumid climate predominates, and in the west, the semi-arid climate. (Figure 3)

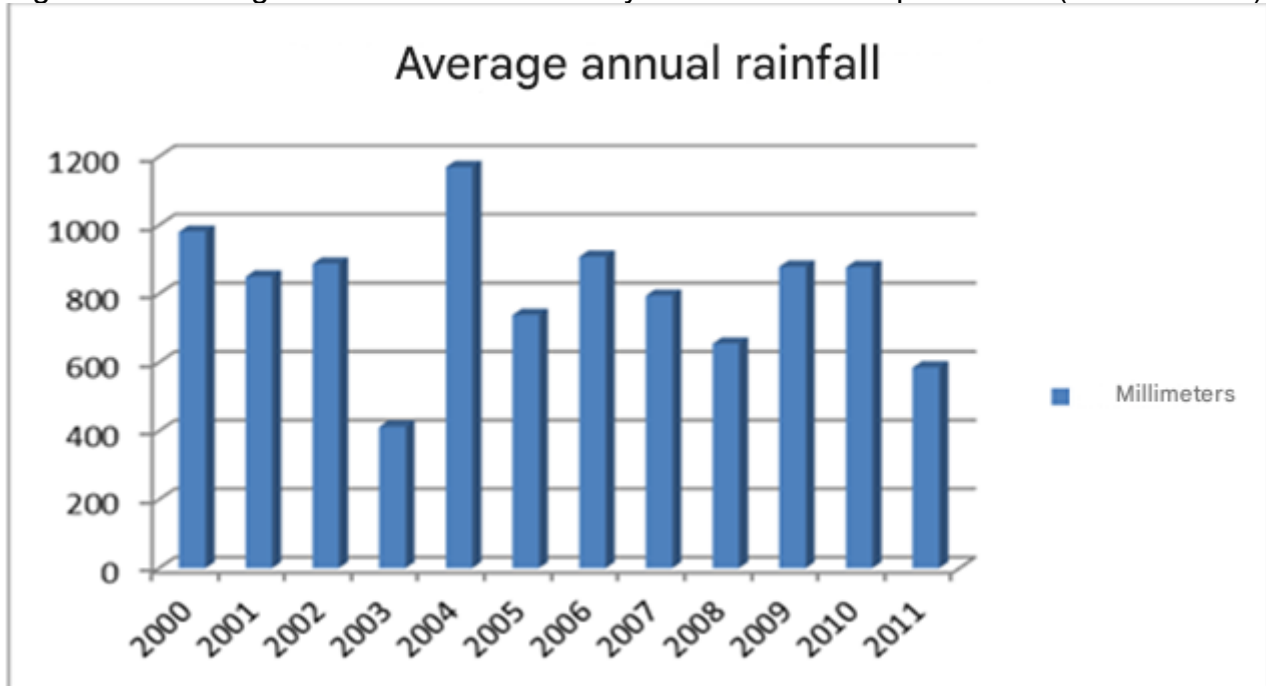
Figure 03 – climatic typology of the municipality of Vitória da Conquista - BA



Source – Maia (2005)

The period of greatest rainfall is the months of November, December, January, February, March and April and the following months, May, June, July, August, September and October, appear as the ones with the lowest rainfall, all with precipitation of less than 60 mm. A certain homogeneity is observed in relation to dry and rainy years.

Figure 04 - Average annual rainfall in the city of Vitória da Conquista – BA (2000 to 2011).

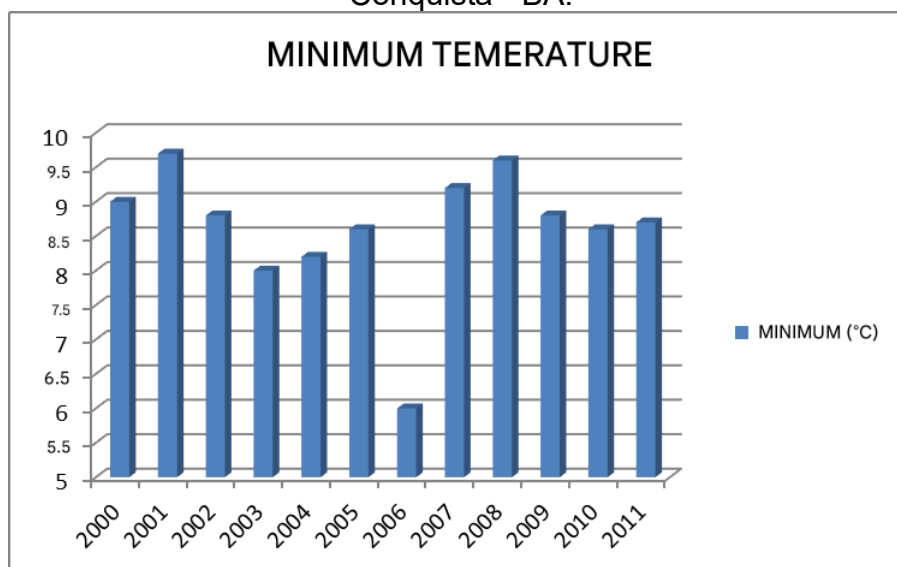


Source: National Institute of Meteorology – INMET.

The concept of regional climate intrinsically includes the notion of synthesis, seeking the greatest possible homogeneity of the spaces considered. Illustration 09 shows the average rainfall for the year 1914 to 1975. This research observed that it remains the same compared to the last 10 years, as shown in figure 04. This information shows that in the region the precipitation is typical of tropical subhumid climates, with an annual average of 873 millimeters, considering the period from 2000 to 2011, however, in a longer period of the 50s, 60s, 70s and 80s the average rainfall is 730mm.

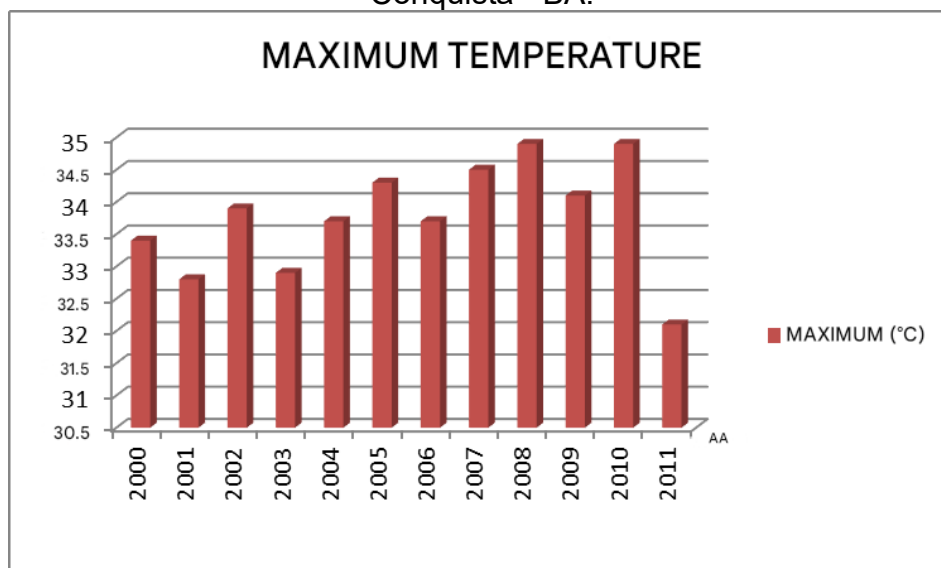
The semi-arid strip, the area of the study region, represents a mesoclimate with a negative moisture index (-20 and -40); total annual rainfall between 500 and 800 mm, absence of water surplus and high water deficit in the soil, 350 to 650 mm per year, for a period of 9 to 12 months per year; These characteristics justify the dominance of the xerophilous vegetation found, represented by the wooded steppe savannah on eutrophic soils.

Figure 05 - Annual average minimum temperatures in the municipality of Vitória da Conquista - BA.



Source: National Institute of Meteorology – INMET

Figure 06 - Annual average of maximum temperatures in the municipality of Vitória da Conquista - BA.



Source: National Institute of Meteorology – INMET

It can be seen in figures 05 and 06 that the maximum average temperature peaked in 2010, reaching approximately 34.5°C, and the minimum average occurred in 2006, reaching approximately 6°C. This information is based on the years 2000 to 2011 (INMET, 2023).

The period of greatest rainfall in the area studied is the months of October, November, December, January, February, March and April, and the following months, May, June, July, August and September, appear as the ones with the lowest rainfall, all generally with precipitation less than 30 mm.

The relative humidity of the air is influenced by factors such as the amount of insolation received, the nature of the surface, the distance from water bodies, the relief, the nature of the prevailing winds and the ocean currents.

According to data from ESMET, it can be seen that the relative humidity of the air in the municipality of Vitória da Conquista had its high point in the years 1978 and 2002, reaching almost 80%. The least humid years occurred in the years 86, 87 and 88, with values around 72%.

In the same way that precipitation varies greatly from year to year, the temperature also varies greatly, however, this variation occurs throughout the year and especially during the day. At night, temperatures usually drop. The oscillations from day to night are greater than 5°C. This fact is typical of tropical regions of plateaus around 800m altitude.

The relief is a preponderant factor in the climatic picture, as it acts by barring or allowing the cold and humid masses that cause rainfall to penetrate. The Vitória da Conquista Plateau is an orographic barrier that can retain the penetration of humid flows, causing a good amount of rain. Taking into account the location of the study area in the drought polygon, it is concluded that the average rainfall is above average.

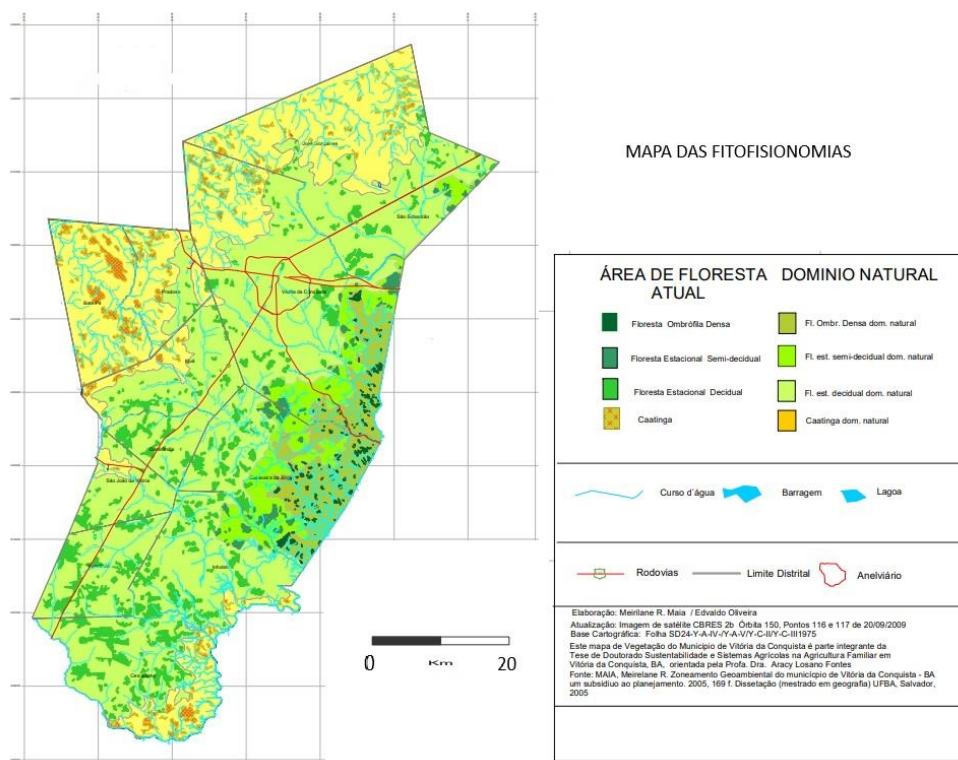
### 3.3 THE CAATINGA AND ATLANTIC FOREST BIOMES AND ASSOCIATED COMMUNITIES

#### 3.3.1 Fitbits

In relation to the vegetation cover, RADAMBRASIL (1981, op. cit.) shows that the municipality of Vitória da Conquista has 03 phytoecological regions: in the eastern part, the dense ombrophilous forest is found, which is fragmented and greatly altered by human action, the existing fragments are in the form of capoeira and capoeirinha, often with pioneer species that occupy several ecosystems, in the South and Center of the Municipality is found the formation with the largest occupied area, it is the deciduous seasonal forest, this forest is also fragmented, but a little less than the dense ombrophilous forest, in the dry season, more than 50% of the trees lose their foliage, (it is also known as vine forest) and most of what remains of the forest, it is in the form of capoeira. In the west of the municipality, there is an open

arboreal caatinga without palm trees, it is also a vegetation greatly altered by human action and grazing; It is a small vegetation, around 4 meters high. (Figure 07)

Figure 07 - Map of the phytophysionomies of the municipality of Vitória da Conquista - BA



Source – Maia (2005).

### 3.3.2 Caatinga (savannah-steppic)

The caatinga region presents a very accentuated dry period due to the absence of regular rainfall, the decrease in relative humidity and the increase in temperature accelerate evapotranspiration, increasing the water deficit to the point of becoming an inhospitable environment for the establishment of species without adaptations necessary to establish themselves in aridity. The climatic factors in the Caatinga are more striking than other ecological factors in the definition of its vegetation cover.

The caatinga or steppic savanna area occupies an extensive area ranging between 700 thousand and 850 thousand km<sup>2</sup> (Ab'Sáber, 1977) in Brazil. According to Rizzini (1978), the caatinga has practically no genera of its own, with the possible exception of *Fraunhoferia*, *Auxemma* and *Xerotecoma*, with most of its flora originating from elements of the Atlantic Forest.

The caatinga is composed of xerophytic species, adapted to the ecological conditions of the semi-arid tropics, so they migrate and become part of other communities, especially

when environmental disturbances break the ecological balance of the system. This behavior of the xerophytes, considered plants with a migratory tradition because they populated the Brazilian Caatinga, coming from the ombrophilous forest, intensified in an inverse way, since, starting from the area of semi-arid concentration, it began to invade other formations, expanding due to the influence of changes in the kinetic energy of the dynamics of the forest environments caused by the interference of the colonizer. The poor use of the land in the forest areas and the annual fire, the implantation of prairies that provided greater insolation on the soil with the consequent variation in temperature and relative humidity and other more subtle changes in the environment provided ecological conditions for some species specific to the caatinga to settle there. Coincidentally with soil degradation, some species, before forest habits, changed their morphology, going from erect to cespitose and stunted.

Figure 02: Schematic Profile of the steppe savannah (caatinga)



Source – Veloso, Rangel Filho and Lima (1991)

These physiognomic changes in the formerly forest environments are related to areas where there have been recent climatic fluctuations, as is the case of the deciduous seasonal forest (Mata-de-Cipó), which was possibly an arboreal caatinga, proven by the number of lifeless termite trees still existing in its interior (Tricart, 1960). It is concluded that the seasonal forest, whether semideciduous or even deciduous, are very close phytoecological regions, with similar environmental characteristics, which have suffered recent climatic fluctuations and suffer, by the action of man, profound changes that are modifying again the ecological factors that took hundreds of years to define them as forest environment.

The species of this caatinga are made up of xerophytic plants exclusive to the sandy or litholic semi-arid environment, profuse illuminated and diurnal hot and dry, better adapted to this ecosystem, but which participate in others such as the Seasonal Forest and the Cerrado; and xeromorphic species with hygrophytic physiology adapted to environments with implications of tolerance to opposite climatic intermittences, as happens in coastal pioneer formations and in the Cerrado with prolonged rainy season near the coast or with pronounced



droughts in the interior.

Figure 09 - Dense shrubby caatinga vegetation – Vitória da Conquista -BA.



Source: Authors (2023).

Population density in the Caatinga (Figure 09) is linked to the dominance of xerophytic woody species. Frequently, an ephemeral herbaceous stratum also develops, resulting from the association of therophytes, hemicryptophytes and geophytes.

It is common for varied "biotopes" to appear interspersed in limited areas and defined by an ecological factor, predominantly of edaphic cause, such as the absence of soil or thickening of the fluvial horizons, or increased humidity due to the accumulation of water in the soil. In the sloping areas, the exposure to the different quadrants and, consequently, to the wet or dry winds has a marked influence on the characterization of the Caatinga or on the development of another phytophysognomic model such as that of the Seasonal Forest known as pé-de-serra forests or hillside forests, difficult to map on the scale (1:250,000).

The altitude of 700 m marks the maximum limit observed for the Caatinga formations, emerging a band of ecological tension that gives way to the Cerrado.

In the two climatic seasons in which rainfall is the preponderant factor, the Caatinga presents different physiognomy from the rainy to the dry season. In the rainy season it is rich in portulacáceous, amarantaceae, legumes, marrow and representatives of many other families, especially dicots. The phanerophyte vegetation is encrusted and blooms abundantly. The fruit season also occurs in this climatic season. At the end of the rainy season, the therophytes wither and leave their seeds in the soil. The phanerophytes and camephytes progressively come to rest and the Caatinga begins to lose its foliage.

In the dry season, the exacerbation of aridity due to the absence of rainfall, the

decrease in relative humidity and the increase in temperature accelerate evapotranspiration, increasing the water deficit to the point of making the environment inhospitable for the establishment of species without necessary adaptations to the unfavorable season. The climatic factors in the Caatinga are more striking than other ecological factors in the definition of its vegetation cover. In general, soils are shallow and subject to erosion when torrential rains occur. Fertility is medium to good, pH is usually neutral, but can become basic in calcareous areas.

### 3.3.3 Seasonal forests

The area of Seasonal Deciduous Forest covers in the study area the Planalto da Conquista with altitudes higher than 880 m RADAMBRASIL (1981, op. cit.), It has as a limiting factor the climate, which presents an accentuated dry period in the months of May to September, contributing to a forest vegetation with dominant individuals losing their leaves above 50% of the forest set in the unfavorable season. As a result of the elevation

Quite degraded, it is currently replaced by pastures. Its remaining residual groupings have similar floristic structure and composition, regardless of the geographical positions they occupy. It is characterized by the dominance of the deciduous phanerophyte biological form with protected leaf buds, with its individuals having a very branchy crown and small leaves. It is also known as "Mata de Cipó" (Figure 10).

Figure 10 - Cipó Forest, near Barra do Choça.



Sources – Authors (2023).

Due to the anthropic action that subjected it to successive cuts, this formation is completely altered, presenting as dominant physiognomies secondary vegetation and pastures. The evolutionary process of occupation of the areas of deciduous seasonal forest by secondary vegetation is quite slow and presents a marked difference in relation to the primitive floristics.

The pedological changes resulting from intense human intervention and also the proximity of these plateaus to drier areas have created ecological conditions conducive to the establishment of species from the caatinga, which in some areas presents quite typical physiognomies without dominance.

This formation, which occurs predominantly in the secondary form, has a thin and low stratum, composed of herbs, interspersed with profusely branched and thorny shrubs. The remnants of this formation are found in the most conserved parts of the relief, with dense vegetation composed of tall and thin trees, about 18 m long and with reduced foliage.

It is distributed on the eastern slope of the Conquista plateau, covering mostly Precambrian surfaces, forming small strips located along the areas of climatic transition between the dense ombrophilous forest and the deciduous seasonal forest. This formation, which has leaf seasonality, is composed of individuals who have means of protection against the lack of water; Therefore, in the unfavorable season, there are losses of 20% of their foliage and bud dormancy.

These areas are altered by anthropic action, and their delimitation is only possible due to the use of a bioclimatic model combined with the floristic survey of the current remnants.

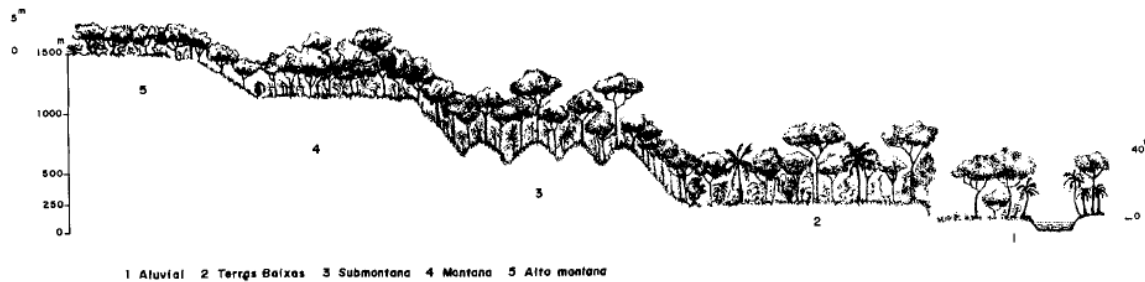
The areas devoid of the original vegetation are immediately occupied by the fern (*Pteridium aquilinum*), which has adaptability to an environment with an acidic pH, and does not find competing species, forms gregarious communities.

### **3.3.4 Dense Ombrophilous Forest**

This type of vegetation is characterized by phanerophytes, precisely because of the forms and subforms of macro and mesophanerophyte life, woody lianas and epiphytes in abundance, which differentiate it from other classes of formations. Thus, the ombrothermal characteristic of the Dense Ombrophilous Forest is attached to tropical climatic factors of high temperatures (averages of 25° C), and high precipitation, well distributed during the year

(above 1500mm per year). Dystrophic and exceptionally eutrophic oxisols dominate in the environments of this forest, originating from various types of rocks.

Figure 11- Schematic Profile of the Dense Ombrophilous Forest.



Source – Veloso, Rangel Filho and Lima (1991)

This type of vegetation covers the dissected surfaces of Precambrian, Cretaceous, and Tertiary-Quaternary sedimentary terrains. It covers the entire coastal strip that presents, from the coast to the interior, steep slopes that constitute orographic barriers to the trade winds. When observing the distribution of rainfall in the region, it is noted that the altimetric levels rise as one moves away from the coast to the west to the interior plateau and any lowering of these levels causes changes inducing profound ecological changes.

In the area under study, it occurs in the east of the municipality of Vitória da Conquista, in an area with mountainous relief and strong undulation.

Figure 12 - Degraded dense ombrophilous forest – Vitória da Conquista-BA



Source – Authors (2023)

The Atlantic Forests, according to Ab'Sáber (1977), reach the vicinity of the coastline in almost all the coastal "terra firmes", whether one considers the undulating tablelands of the eastern Northeast, the Recôncavo Baiano, the south of Bahia, Espírito Santo-Norte Fluminense, with all the spurs of the Serra do Mar, from the coasts and coasts of the sectors most directly subject to the dynamics of abrasion, Rocks and rocky pontoons, inserted in the coastline, offer local cases of supestrebiomes, in the form of mini-strongholds or refuges for cacti and bromeliads.

The total space occupied by the Atlantic Forests in the tropical and part of the subtropical façade of the Brazilian territory in its primary structuring covers an extension of approximately one million kilometers, ending inland by very varied contact and transition strips.

In their original conformation, from colonization, tropical forests began in a long south-north corridor with a width of approximately 40 and 50 kilometers inland. It extended through the tablelands of the Eastern Northeast, Pernambuco, Alagoas and Sergipe, reaching the inner edges of the Recôncavo Baiano, up to Feira de Santana. To the south-southwest of the Recôncavo they strangle themselves sensibly, giving way to a west-east semi-aridity responsible for thorny caatingas and dots near the region of Milagres.

At the height of the lowland corridor of southern Bahia, interposed between the coastline and the edge of the Southern Bahian Plateau (Vitória da Conquista / Poções-Geraizinhos highlands), the Atlantic forests were transformed into coastal and orographic forests.



It is currently completely modified by human intervention, with only a small number of remaining natural groupings that have been little altered. Its degradation began with the colonization of the country, because the forest was attractive for the exploitation of wood. This process of exploitation initially reached the areas where the timber potential was greatest or where the scarce resources sought existed.

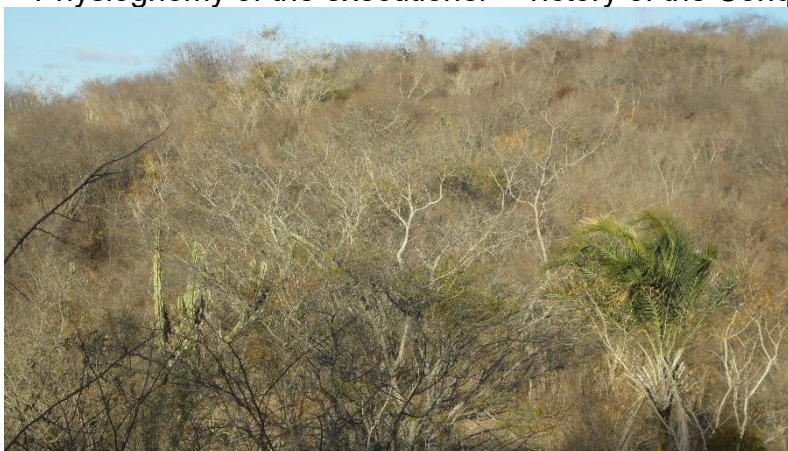
It continued through the other areas until the almost total replacement of the forest by various crops and secondary vegetation. This has caused the exodus of traditionally logging groups to other more promising areas. The result was that even the existing remnants are not representative as samples for studies. If studied together with existing bibliography, it can give an approximate idea of the structure and composition of the once existing floristics.

### 3.3.5 Contact Seasonal Forest-Cerrado-Caatinga

This vegetation occurs covering Precambrian areas and metasedimentary terrains that constitute the highest parts of the Geraizinhos plateau (Periperi mountain range). It is characterized by having in its composition individuals whose size varies from 3 to 5 m that give the vegetation an open tree physiognomy, which densifies in places where the soil is deeper.

In the upper part of the slope there is a dominance of species from the Cerrado, characterized by the presence of jatobá and sucupira. This type of vegetation is popularly known as "Carrasco", best represented in figure 13.

Figure 13 – Physiognomy of the executioner – victory of the Conquest – BA.



Source – Altores (2023).

Figure 14 - Carrasco, mixture of caatinga, cerrado and dry forest, Vitória da Conquista - BA.





Source – Nóbrega (2003).

### 3.3.6 Steppe-Forest-Seasonal Contact

This type of contact vegetation occurs covering Cretaceous surfaces that predominate red-yellow podzolic soils and quartz sands, both alic. These areas were previously covered by seasonal forest, after successive felling made it possible to establish a secondary forest physiognomy, mixed with Cerrado species, forming contact.

Near Vitória da Conquista this contact appears in the form of a mixture, covering part of the Periperi mountain range, small areas close to it and in the northwest of the topographic profile studied. Its physiognomy is dense and the individuals that compose it have heights of around 4m. Its floristic composition is quite heterogeneous, with the dominance of barbatimão, angico and sucupira.

## 4 FINAL CONSIDERATIONS

According to the data analyzed in this research, it is concluded that from east to west there are different landscapes, from the caatinga studied in the Serra dos Pombos to the dense ombrophilous forest in the Serra do Marçal. There are great variations in vegetation, soils and microclimates. There are still transition areas between the biomes, such as Mata de Cipó and Carrasco.

Vitória da Conquista is located in the polygon of droughts and has a rainfall index in the average of the surrounding cities. On the eastern slope, in Marçal, rainfall is higher (average 1,200 mm), when part of the plateau is lower, about 750 mm. The studied area has a humid winter with drizzle and drizzle, due to the orographic barrier of the plateau where part of the area is located. The air masses coming from the coast located in the Southeast are forced to rise to enter the continent, when rising, these masses condense and precipitate. This phenomenon, also known as orographic rainfall, is frequent in the study area.

Normally, low-latitude areas have high temperatures, but the municipality of Vitória da Conquista, although it is between 14 and 15° latitude, has its winter characterized by low temperatures that can reach less than 8°C, differing from other cities of the same latitude. In addition, intermittent drizzles compete, known for fogs that in winter, last for days and days, the explanation lies in its location on the Conquista Plateau, with altitudes above 900 m,

reaching more than 1000 meters at the top of the Periperi mountain range, greatly conditioning the thermal indexes.

It is important to note that the biomes of the study area – Caatinga and Atlantic Forest – are in a very poor state of conservation, according to the photographs shown in this research, great degradation and secondary vegetation are observed. In the area of Mata de Cipó, near the State University of Southwest Bahia, which extends to Barra do Choça, the city is advancing beyond agricultural exploitation, especially luxury and medium condominiums. Near the Serra do Marçal there are only a few fragments of the dense ombrophilous forest, mostly replaced by pasture areas.

This work will serve as a source of research on the municipality of Vitória da Conquista, in its climatic, pedological and phytogeographic aspects. Future research may emerge and deepen some of the environmental aspects addressed here, for example, chemical analysis of soils in degraded areas, study of the level of aquifers on the plateau, study of the floristic composition and spatial distribution of phytophysiognomies by means of satellite images and Geographic Information System.



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