



Report of field work as a tool for knowledge, experience and conservationist practice in the semiarid region

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ABSTRACT

The work aims to share the experience in the discipline Geoenvironmental dynamics of arid and semi-arid environments: knowledge, experiences and practices of environmental preservation and conservation, exposed through theoretical classes on the Sertão Nordestino and field activities in the Sertão Alagoano. This is a descriptive study carried out in the theoretical format of lectures and practical classes in two cities in the Sertão de Alagoas and one in Sergipe, where it was possible to analyze the territory, its dynamics and cultures, approaching the theme through comparisons of regions. explored and the Northeastern Sertão. Through the explanations in class and the practice in the field activity, it was possible to compare what changed in the droughts of past centuries to the current droughts and to understand the importance of the legal framework to enable emergency actions, so that a phenomenon previously seen only as a natural cause would also become a matter for the Public Power.

RESUMO

O trabalho objetiva compartilhar a experiência na disciplina Dinâmica geoambiental de ambientes áridos e semiáridos: conhecimentos, vivências e práticas de preservação e conservação ambiental, exposta através de aulas teóricas sobre o Sertão Nordestino e de atividade de campo no Sertão Alagoano. Trata-se de um estudo descritivo realizado no formato teórico de aulas expositivas e de aula prática em duas cidades do Sertão de Alagoas e uma em Sergipe, onde foi possível fazer análises sobre o território, suas dinâmicas e culturas abordando a temática pelas comparações das regiões exploradas e o Sertão Nordestino. Através das explanações em aula e da prática na atividade de campo foi possível comparar o que mudou nas secas de séculos passados para as secas atuais e entender a importância do marco legal para viabilizar ações emergenciais, a fim de que um fenômeno antes visto apenas como uma causa natural passasse a ser, também, uma questão do Poder Público.

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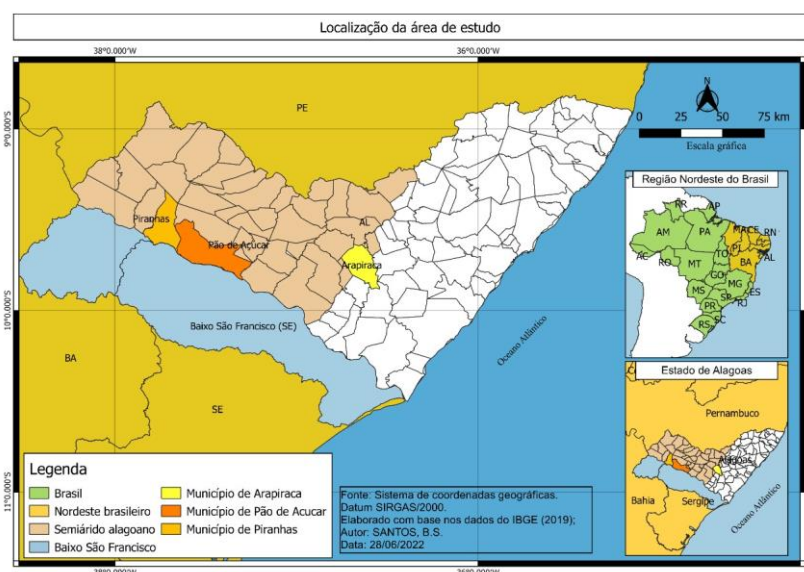
Introduction

This article refers to an experience report of the discipline “Geoenvironmental dynamics of arid and semi-arid environments: knowledge, experiences and practices of environmental preservation and conservation”. Theoretical classes were held in a hybrid format (in-person and tele-in-person) between June 13, 14 and 15, 2022, from 2pm to 4pm, taught by professors José Lidemberg de Sousa Lopes - Universidade Estadual de Alagoas – UNEAL: *Campus I*, Arapiraca, in the Postgraduate Program in Territorial Dynamics and Culture – ProDiC; Marcelo de Oliveira Moura - Department of Geosciences - CCEN-UFPB, *Campus I*, João Pessoa and Rebecca Luna Lucena - Centro de Ensino Superior do Seridó – CERES of Universidade Federal do Rio Grande do Norte - UFRN, respectively.

The discipline continued from the 16th to the 18th of June of the same year, through field activities, in person, taught by Prof. PhD José Lidemberg de Sousa Lopes and his destination was the Sertão de Alagoas. Along the way, there was a lot of information about the environments of the backlands of Alagoas and the Northeast. The first destination for analyzing observations in relation to the territory, its dynamics and culture was the Ilha do Ferro Village, in the municipality of Pão de Açúcar, Alagoas. Afterwards, we headed to Piranhas/AL, and as a last stop, we visited the Xingó Archeology Museum, which belongs to the Universidade Federal de Sergipe – MAX/UFS, in its Museological Unit, in Canindé do São Francisco/SE. (*vide figure 1*).

Figure 1.

Location map of the study area, indicating Arapiraca/AL (wilderness region from where the group departed), passing through the village of Ilha do Ferro and the destination in the city of Piranhas



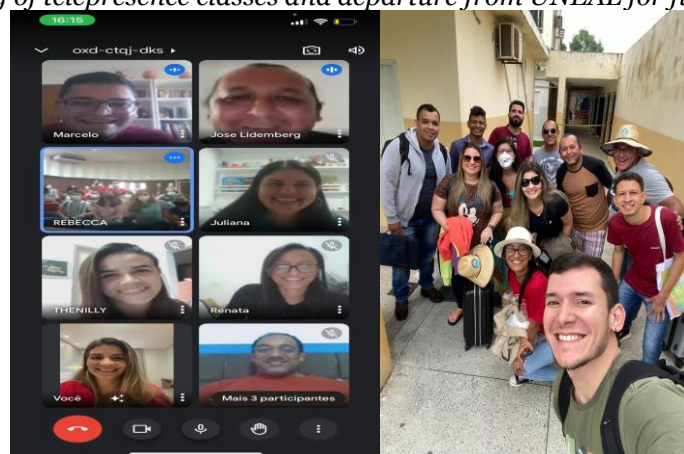
Note: Geographic coordinate system, map prepared based on data from the Brazilian Institute of Geography and Statistics (2019) by Sávio Barbosa dos Santos and made available on June 27, 2022.

Theoretical classes were expository in a remote model, while the field practice was in person and demonstrated in a descriptive way the socio-environmental, economic and cultural impacts that the São Francisco River brought and still brings to the territory of the semi-arid northeastern hinterland region.

We cannot dissociate theory from practice, especially the activity called field classes. Therefore, Carbonell (2002) highlights that spaces outside the classroom awaken the mind and the ability to learn, as they are characterized as stimulating spaces that, if well used, are classified as a relevant setting for learning. For Viveiro and Diniz (2009), the field class also spreads as an increase in affection and trust between students and teachers.

Figure 2.

Closing of telepresence classes and departure from UNEAL for fieldwork



Note: authors' archive, 2022.

In many research and scientific works, the use of techniques can be divided into two moments: in the laboratory or office and in the field. In the discipline, listed here, two moments were also divided: theory and practice, the latter being fieldwork.

Morais, Souza and Costa (2017) emphasize that the integration of theoretical and practical knowledge is an inseparable proposition for academic and professional training. These authors report that it is the teacher's role to seek ways to converge theoretical and practical aspects, overcoming a problem that arises throughout the training process.

The objective of this article is to share that fieldwork is an important teaching tool for researchers, as it is there that they have immediate contact with reality, even though they can use an instrument, it is the time to get to know it better through observation and interpretation techniques, whether instrumental or not.

This contact, directly with reality in the field, does not mean that you have the same control over processes that you can have in the office. In the field, researchers are subjected to the dynamics of reality that do not occur exactly as expected. This means that poor planning for the field activity can be a detriment to the study or research they are trying to carry out.

Methodological Steps

The purpose of the work is to demonstrate how carrying out studies in practice classes in the Sertão Alagoano can attract the participation of students in the Postgraduate Program, in order to encourage research practices through the concrete design of the environments covered in theoretical classes, as well as demonstrating through practice the importance of efficient public policies in the development and conservation of the analyzed environments.

This is a qualitative study, with an explanatory, exploratory and descriptive approach, involving arid and semi-arid environments, based on activities developed by students of the Postgraduate Program in Territorial Dynamics and Culture – ProDiC, at the Universidade Estadual de Alagoas – UNEAL: *Campus I, Arapiraca*, under the guidance of Prof. PhD. José Lidemberg de Sousa Lopes.

To this, a chronological approach was made to the period of rainfall in the Northeast, with the survey of legislation since the 1930s, including the creation of the Drought Polygon, the origin of SUDENE and the institution of the FNE, the protection of the CF of 1988, the other rules of infraconstitutional scope, up to the most recent resolution: 155/2022, which deals with the Municipalities included in the delimitation of the dry region.

Initially, theoretical-conceptual aspects were used: with the presentation of problems of the Sertão Nordeste, concepts of climatology and chronological approach to the period of rainfall in the Northeast, with the survey of legislation since the 1930s, the establishment of the legal framework and normative structure that governs the matter.

In the second moment, field research was carried out in a group made up of 14 people (the driver, the 12 students and Prof. Lidemberg). In fieldclasses, data was collected through photographic records (with all images authorized to be published), records and field observation, in order to define the object of study.

Finally, in a third moment, there is bibliographical and documentary research and the establishment of teaching through the preparation of a report on theoretical and practical classes on the topic covered to be delivered and used as an evaluation on the subject by Prof. Lidemberg.

From this perspective, it is important to recognize that “Methodology is the application of procedures and techniques that must be observed to build knowledge, with the purpose of proving its validity and usefulness in different areas of society” (Prodanov and Freitas, 2013, p. 14).

Theory and practice complement each other

Whether in the theoretical class or in the practical class, in this case, *in locu* (field), the theme involved arid and dry environments, associating the problem of drought with the political, economic and social aspects that the northeastern hinterland has faced for centuries and refuting the aspects natural people as the only ones responsible for the events. Throughout teachings of theoretical classes, drought was exposed as an environmental phenomenon and worked on in different areas of knowledge, including the climatological part and physical geography, with an emphasis on the meteorological point.

In the explanation, to better characterize the experience of the first droughts (of which there is official news), a literary exhibition of three important works was carried out: *O Quinze* - Novel by Rachel de Queiroz, *Vidas Secas* - Documentary novel by Graciliano Ramos and *Morte e Vida Severina* - Dramatic poem by João Cabral de Melo Neto, correlating them to current times, since when drought is an environmental disaster, just like an earthquake, it will always cause damage (material and immaterial), especially for the most vulnerable persons.

Thus, in words of journalist and geography professor Mauro Mota (1961, p. 95), literary works can constitute “[...] reference bibliography in the study of many geographic facts”. In this same thought, Bertrand Lévy (1997), that it is important to consider literature as it is: not a crutch with the purpose of supporting science, but the profound expression of an individual thought in contact with the world of a time, which reflects some structuring characteristics.

Through works exposed above, it was possible to compare what changed in the droughts of those times to the current droughts and all results pointed to the implementation of public policies aimed at mitigating human damage, making their effects increasingly milder and causing less impact on the population, like Bolsa-Família; My home, my life; Light for All and Water for All Program; the internalization by REUNI of state and federal universities and technical courses; the transposition of the São Francisco River (despite the controversies surrounding the topic), investments in infrastructure such as the Transnordestina railway works etc., which made all the difference in guaranteeing the dignity of the people involved.

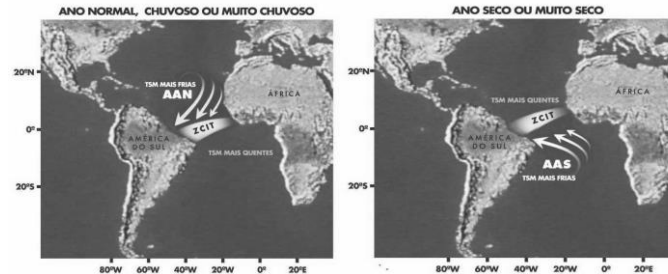
Furthermore, a legal framework and a normative structure were established that govern the matter and with this it was possible to enable emergency actions interconnecting the three spheres: federal, state and municipal, so that specific funds could be transferred to combat droughts, so that a phenomenon previously seen only as a natural cause now also becomes a matter of Public Power.

Another aspect addressed in the climatological issue was the phenomenon of drought, which is conceptualized as the reduction in rainfall and which, when repeated, or prolonged, is called drought. It turns out that, as seen in class, for a long time, rain gauges were used to measure rainfall by looking only at the Pacific Ocean, but it was discovered that the

Atlantic or Tropical Ocean will respond much more to the influence of the climate in the northeastern territory.

Figure 3.

Scheme showing, in a simplified way, the oceanic and atmospheric patterns that contribute to the occurrence of very dry, dry, normal rainy and very rainy years, in the northern part of the Northeast region of Brazil



Note: Revista Brasileira de Climatologia, Vol. 1, n^o 1, p. 26, 2005.

It was taught that, when waters of the Pacific Ocean warm up, the circulation cells (Walker cells) change, under the influence of El Niño (above normal warming of the waters of the Equatorial Pacific Ocean); different from the La Niña process (anomalous cooling of the waters of the Pacific Ocean).

Therefore, the El Niño phenomenon, depending on the intensity and period of the year in which it occurs, is one of those responsible for years considered dry or very dry, especially when it occurs together with the positive Atlantic dipole, which is unfavorable to rain. While the La Niña phenomenon, associated with the negative Atlantic dipole (favorable to rain), is normally responsible for rainy or very rainy years in the region.

In the class it was also shown that the influence of the Pacific Ocean is remote, since these phenomena, El Niño and La Niña, are not the only ones that cause impacts on the amounts of rainfall in the Northeast, but also oceanic and atmospheric phenomena, which can be computed by floating meteorological stations (floating buoys distributed across the ocean - by *Projeto Pirata* with 18 buoys), to measure temperature, pressure and wind conditions.

In class, the typical dry vegetation was also explored: the caatinga – clear (tinga) forest (caa), representing the often thorny forest, with a broad demonstration of the caatinga biome, where Prof. Rebecca Luna Lucena exposed the transition bands between caatinga and cerrado, caatinga and Atlantic forest, fields, dune vegetation etc., and the four territorial sub-regions of the northeast, due to their distinct physical, social and economic characteristics: *i*) the forest zone; *ii*) the wild; *iii*) the backlands and *iv*) the mid-north.

Finally, the caatinga ecoregions were presented, with the special notion of their soils, the adverse development conditions, the conservation and preservation areas and the natural and human potential as a solution to minimize the difficulties for local sustainable development.

Therefore, if there was any doubt before, with the completion of what was exposed in theoretical classes, there is no longer any doubt. It was demonstrated in a crystal clear and brilliant way, in the last theoretical class, that the country people have full knowledge of the productive potential of each space or subspace of dry hinterlands.

After theoretical classes, the group left for the field class leaving the ProDic headquarters, on *Campus I – Arapiraca*, in the UNEAL minibus, on June 16th, a Friday, around 10:30 am, a group of 14 people, including students, the driver and the teacher, heading to Ilha do Ferro, in the Municipality of Pão de Açúcar.

On the way from the wild to the Sertão, the landscape, as expected, was changing, but a term unknown to almost everyone appears: “the outcrop of rocks” and seeing the ground with those “stones on top” next to the vegetation, it was something that caught our attention.

When we arrived at the riverside town of Ilha do Ferro, we were able to contemplate not only the beauty of the São Francisco River, but also its importance for local culture, which gained even more popularity with the media's publicity, in *Caldeirão do Huck* National Program, which brought due recognition to the late artisan Fernando Rodrigues for his rustic works made from trunks and roots, who was responsible for passing on the craft to current artisans, who can be identified on the fronts of their houses by their names, by some sculpture or even a bench to invite visitors to take their photos.

In his memory, Fernando Rodrigues dos Santos Artisan Memory Space was created, a Museum of Popular Art with various artifacts such as: wooden sculptures, cloth dolls and embroidery.

Figure 4.

Photos taken by the ProDic group on Ilha do Ferro, in Pão de Açúcar/AL (Fernando Rodrigues dos Santos artisan memory space, the contrast of the village's mud alleys and the streets paved with cobblestones, the São Francisco River bordering the Island and the local artisan with his sculptures)



Note: authors' archive, 2022.

Buildings in the town drew attention due to their singularity in simplicity, but modern facades can already be seen in the few streets that spread out into other dirt alleys until reaching the cobblestone roads, which clashes with the architecture of that cultural oasis in the middle of the hinterland.

Farewell to the Island was with the feeling that that quick visit added to culture, geography, knowledge of our history and how we were privileged by the experience that many would like to have had, as they only know about that art on TV.

We left for Piranhas, in backlands of Alagoas, a city in the semi-arid northeast region listed by the National Historical and Artistic Heritage Institute – IPHAN, due to the notoriety of its historical, artistic and cultural values. The city was the scene of state occupation in the 19th century and stood out for its contribution to the commercial development of the Northeast region through the water potential of the São Francisco River, which, unlike many other rivers in the hinterland, is not intermittent, but perennial and allows social integration uninterruptedly throughout the year, “like the Parnaíba Rivers in PI and Jaguaribe in CE”.

Another point that marks the exploration of the field class is the visit to Grota do Angico, where you can have contact with the history of the *cangaço* movement, “a kind of militia from the 1930s”, which met the governmental interest of the time, and took Piranhas to newspapers across the country, after the apprehension of Lampião (a type of Robin Wood from Sertão) and other members of his group in Grota do Angico, with the legendary photo of their heads being cut off.

Figure 5.

Image of exposed heads made by an unknown author, in the city of Piranhas, in 1938, the Grota do Angico, where Lampião and some of his group died and landscapes of tourist exploitation in the region



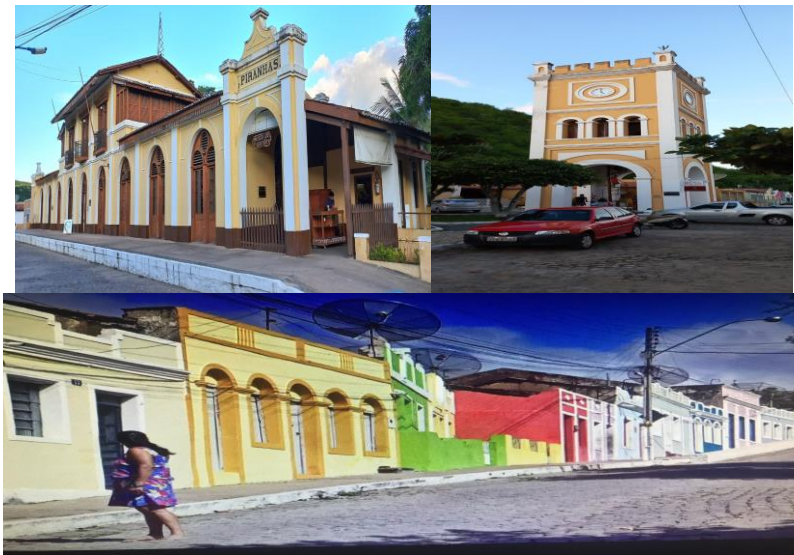
Note: authors' archive, 2022.

Nowadays, Piranhas is also recognized for its gigantic tourist potential, the *cangaço* movement and the entire historical part mapped by the natural beauty of Velho Chico River attracts curious people to this day, which favors local tourism, encourages the generation of jobs and income, with the installation of inns, restaurants, hiring local guides, contributing to handicrafts etc.

The experience of the fieldclass allowed contact with the architecture of Piranhas, which dates back to the colonial period, with all the grandeur of the period, when the Emperor of Brazil, D. Pedro II, visited it, maintaining the conservation of its centuries-old buildings, where colonial-style mansions, neoclassical houses, the old Railway Station and the Clock Tower stand out.

Figure 6.

Railway Station, the Clock Tower and highlighting the high sidewalks and the preservation of colonial period architecture in houses



Note: authors' archive, 2022.

Connected houses in Piranhas caught the group's attention because they maintained high sidewalks, as it was not possible for the population to imagine in the past that development would literally arrive at their doorstep. Public policies aimed at that region meant that people could acquire motorbikes and cars and allowed buses to pass through the very narrow streets.

Despite all wonders described above, Piranhas reaches the podium of its potential due to its natural beauty: the landscapes that border the São Francisco River are worthy images to have in frames. As Prof. Lidemberg said: "Landscapes speak".

Unlike the outcrop of rocks, which we find on Ilha do Ferro, in Piranhas there are sediment/sand rocks, that is, sedimentary rocks. Along the São Francisco River, you can see a relief that was once at higher altitudes, and today more modest, and as old as that of Pão de Açúcar in Rio de Janeiro (known as testimonial hills), but the wear suffered by river erosion has made with the entire modeling being modified by riverine waters.

At night, in the historic center, there are bars with live music, lots of crafts on display, the city is lit up and the temperature drops, making the atmosphere even more attractive for tourists. However, what stood out among the students was that unlike at night, during the day the temperature varies from 27°C to 42°C and the São Francisco River does not alleviate the heat.

Figure 7.

Bars, Restaurants, Lighting and Music in Live move up the night in the city of Piranhas/AL



Note: authors' archive, 2022.

It is worth noting, as explained by Prof. Dr. Lidemberg, that due to the distance to Maceió, capital of the state of Alagoas, it is easier for the population of Piranhas to move to Delmiro Gouveia/AL or Sergipe.

And the last stop of the fieldclass study group was in the state of Sergipe, on 19.06.2022, with the visit to the Xingó Archeology Museum of the Universidade Federal de Sergipe – MAX/UFS, in its Museological Unit, in Canindé do São Francisco-SE.

With the creation of the Xingó Hydroelectric Plant, navigable canyons were formed on the São Francisco River, which favored tourism and exploration in the region of Piranhas/AL and Canindé de São Francisco/SE, to the point of hosting the Archeology Museum of Xingó of the Universidade Federal de Sergipe, which was inaugurated in April 2000 and emerged as a strategy to allow the maintenance of research and the preservation of the archaeological heritage of Baixo São Francisco, resulting from the archaeological rescue carried out by the UFS from 1988 to 1997.

Figure 8.

Archeology Museum of the Universidade Federal de Sergipe – MAX/UFS and Xingó Hydroelectric Plant



Note: authors' archive, 2022.

Figure Mosaic 9.

Images that show the importance of preserving history of the local population – MAX/UFS



Note: authors' archive, 2022.

The group ended its activities convinced that popular culture, built over the years, has been preserved in the form of memories reconstructed through MAX.

Conclusion

It was in this geoenvironmental context that theoretical and field classes were taught, exploring the economic, historical and cultural potential of the arid and semi-arid environments of the Northeast, with an emphasis on the city of Piranhas, in Sertão of Alagoas.

We were able to see that drought is a natural, historical phenomenon that will continue to exist, because: “DROUGHT is a prolonged drought, characterized by causing a reduction in existing water reserves.” (CEPED, 2015).

The main characteristic of the semi-arid region is the high interannual variation in rainfall, as the year can be very rainy and extremely dry. It is not just a consequence of global warming or human influences, which is why it is important to know and study the phenomenon so that the damage caused by meteorological events can be prevented and publicized so that the population can prepare to combat climate effects.

Such phenomena result in serious problems associated with rain. In years with very low rainfall totals, droughts are recorded in the region, with serious socioeconomic repercussions, while in very rainy years floods are observed that cause a lot of damage, especially in urban areas.

Added to this is the fact that where there is environmental risk and people living, there is socio-environmental vulnerability. It was reported in a telepresence class by prof. Marcelo that: “60% of disasters occur in the Northeast.” The territorial area where the risks of

a disaster coexist and the socially vulnerable population configures the environmental risk, as it refers to a threatening situation.

It remains for those involved to monitor and monitor procedures that are being adopted and the next programs to be established, in order to minimize the process of socio-environmental vulnerability, as Prof. Marcelo: “We have to have the culture of thinking about disasters before they happen.”

Society, however, must mobilize to defend environmental balance, within its sphere of action. It is necessary to continue efforts to build a common policy to protect the environment, as this is nothing more than a survival strategy.

From the presentation of classes, it can be seen that we have advanced a lot from 1930 to today and that, even facing a period of political regression from 2018 to 2022, with budget cuts aimed at implementing a Minimum State, with all the adverse conditions for combat of socio-environmental vulnerabilities, there are still public policies that were made possible by past governments and that continue to be maintained and, even, because they were successful, implemented by state and municipal governments.

This report aims to serve as a tool for other researchers to become interested in the observation techniques that fieldwork provides, as it allows contact with reality outside of offices.

This report also seeks to contribute to the formation of a database capable of describing the potential of the *caatinga* biome, in the northeastern dry region, highlighting its tourist potential and, thus, subsidizing the elaboration of public policies, the taking effective decision-making to minimize negative impacts on populations affected, during periods of drought and encourage academic research so that the topic is further explored and assumes the prominence it deserves, due to socio-environmental impacts that disasters bring to the population and the researched area.

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