

Geosphere Profile of Tritis Cave in Gunung Kidul Yogyakarta as a Tourism Object

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Abstract: The purpose of this study is to describe how the geosphere profile of Tritis cave. This study is very interesting to provide scientific input to the government in developing tourism in Gunung Kidul, Yogyakarta. The study method used is descriptive qualitative method and tends to use analysis. The theoretical basis is used as a basic reference in preparing the study report to match the conditions in the field. In addition, the theoretical basis can also provide an overview of the background of the study as material for discussion. The ability to collect data is an important factor in determining the validation of the study conducted. Data collection in this case is obtained secondarily, namely through documents or literature studies. The results of the study of geospheric phenomena that occur in the Maria Tritis cave are in the form of the main land formation is Karst with specific karst caves formed during the Pleiocene to Pleistocene. The dominant vegetation is teak trees. And the type of soil found around the maria tritis cave is a mediterranean soil type.

Keywords: Geosphere Profile; Gunung Kidul; Tourism Object; Tritis Cave

Introduction

The nature-based tourism industry must be supported by a comprehensive feasibility study (Gu et al., 2022; Kok et al., 2021; Pérez, 2023), so that the possibility of disaster can be reduced properly. Caves as one of the nature-based tourist destinations must go through geosphere analysis so that the possibility of deformation due to various factors can be avoided. In the context of this research, Tritis cave is the object of study because its status as a cave for Christian worship will certainly always get visits from tourists, especially Christians. Moreover, the location of Tritis cave is Gunung Kidul regency, Yogyakarta, which has certain rock characteristics.

Gunung Kidul Regency is one of the regencies in the Special Region of Yogyakarta Province. This district is famous for its karst-dominated landscapes, and is still part of the Sewu Mountains. The many formations that exist there are mostly used as tourist attractions to introduce the potential in Gunung Kidul Regency which

is spread in each sub-district, such as beaches with steep cliffs, limestone hills, limestone caves and so on.

As a landscape, recognizing it for the purpose of good utilization is a human obligation (Whitmeyer & Dordevic, 2021). In this study, it will be discussed how to see Tritis cave in the context of 5 fields of observation, each of which has a role in constructing a whole cave that is worth taking advantage of geospheric phenomena in the atmosphere are natural phenomena related to humans that occur in the atmosphere (Hermon, 2022). An example of this natural phenomenon is the occurrence of a long drought that causes drought and crop failure. Another example of geospheric phenomena in the atmosphere is different climates (Ouzounov et al., 2021; Tóth, 2023; Tramutoli et al., 2019). People who live in areas with cold climates will wear thicker clothes than those who live in hot climates.

Geospheric phenomena in the lithosphere are earthquakes that occur due to shifting tectonic plates (Ranaweera et al., 2023). The impact of earthquakes in inhabited environments can be felt by humans.

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Geospheric Phenomena in the Hydrosphere. Geospheric phenomena in the hydrosphere can be seen in the volume of runoff water. The volume of runoff water is the volume of water flowing on the surface of the land caused by the intensity of rainfall and human land use. This is because water infiltration into the soil will be very small. The geospheric phenomenon in the biosphere is the variety of flora and fauna spread throughout the hemisphere. Naturally, the spread of flora and fauna is caused by adjustments to the needs and supporting habitats. The geospheric phenomenon in the anthroposphere is the diversity of human cultures and customs in various parts of the world, because daily human life will certainly be influenced by the surrounding environment, both in the way they interact and their skills.

In addition, the environment where humans live also has different potential natural resources. Therefore, every human in different regions will have their own ways to process and utilize these natural resources.

Method

This research is research using a qualitative approach. This study uses a qualitative approach with qualitative descriptive methods to describe, describe and describe the learning needs of tourism-aware groups in the tourist cave of Tritis. Qualitative research in the field of education that was conducted by the researchers looked at the respondents as the subject, asked about something ordinary, collected data that mostly consisted of sentences emerging from the respondents, explained and analyzed the theme of the sentence, and conducted investigations in a more subjective manner (Creswell & Clark, 2017)

The data collection techniques used included interviews with the experts of cave. Observations were also made to determine the truth of the answers provided by respondents. The data collected in this study is qualitative data in the form of words or phrases that were obtained during the study. Qualitative data analysis was performed through data reduction procedures, data display, and conclusion drawing (Miles Matthew & Huberman, 2007). As for the validity of data triangulation techniques, sources and methods will be used in this study.

Result and Discussion

Tritis Cave Location

Maria Tritis Cave is located in Giring village, which is part of the Paliyan sub-district of Gunung Kidul Regency, Yogyakarta Special Region. Astronomically, the cave is located at the coordinates of 80 4.959' N and 1100 33.402' East. It is 53.8 km from the center of Yogyakarta and can be reached in 90 minutes using a

four-wheeled vehicle. Goa Maria Tritis is at an altitude of 0-300 meters with a slope of 15-25%. Where it has a tropical climate type that has little rainfall, which is 1000-1500 mm / year with an average temperature of 27.70C. Paliyan sub-district is part of the wonosari Ledok (basin) which is shaped like a bowl where its position is in carbonate rocks (Damayanti, 2015).

Table 1. Cave Location

Dimension	Fact
Astronomically	80 4.959' N and 1100 33.402' East
Altitude and slope	0-300 meters and 15-25%
Temperature	27.70 °C
Rainfall	1000-1500 mm / year
Distance From Yogya	53.8 km

Ledok wonosari is part of the southern plateau (plato) of Java Island, which is in the form of a penneplain. This penneplain then experienced uplift and folding in the middle Plestocene time. As a result of the folding, causing the formation of several depressions around Wonosari ledok. Based on previous research, the Wonosari ledok area is found major and minor karst landforms, such as karst hills, doline karst caves, uvala, polje, cockpit scattered in the north and south. The number of karts landforms encountered indicates that Wonosari ledok has undergone a cartification process, so it can be concluded that Wonosari ledok is a karst area.



Figure 1. Infront of view of Tritis Cave

A tourist village is a rural area that offers an overall atmosphere that reflects the authenticity of the village, both in terms of socio-cultural life, customs, daily activities, building architecture, and village spatial structures, as well as the potential that can be developed as a tourist attraction (Kabu & Lau, 2022), for example: attractions, food and beverages, souvenirs, lodging, and other tourist needs (Fandeli, 2001). The development of tourist villages cannot be separated from religious values, culture that lives in the community as well as environmental sustainability and quality in order to lead a sustainable tourism village (Astara et al., 2020; Clifton & Benson, 2006; Permatasari et al., 2019).

Geosphere Fact

Lithodphyrically, the relief of the Tritis Dripstone cave area is the process of forming ornaments through water droplets containing calcite material. Examples of ornaments: Stalactites, Stalagmites, Draperies, Helectites, etc. Flowstone the formation of cave ornaments through a process that occurs due to water flow. Examples of ornaments: Gourdam, Canopies, Calcite floor, Cave pearls, etc. The main process of Karst landscape formation is dissolution. Where water will dissolve the existing calcium carbonate, so that later it will form the formation of stalactites, stalagmites etc. Is part of the physiographic zone of the southern mountains of eastern Java, and is a wedge of the geocline wing with characteristic rocks tilted to the south. Based on data from Bappeda Gunung Kidul, Paliyan sub-district is part of the Wonosari formation, where this formation was formed in the Pliocene to Pleistocene time.

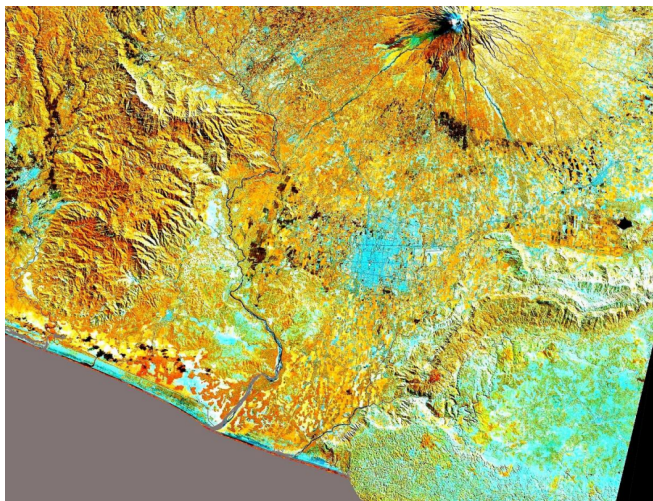


Figure 2. Satellite View: Karst Landscape

According to the Geological Map (Figure 2), the Giring village area has Mediterranean and Rendzina soil types, thin-soled red to grayish in color formed from limestone igneous rocks so that they contain a lot of carbonates. Has tropical climate type, where only two seasons occur, namely the rainy and dry seasons (Dorcas Mobolade & Pourvahidi, 2020; Tran et al., 2021). Rainfall in the area ranges from 1000-1500 mm/year. This signifies little rainfall, making it prone to drought. Because it is a karst landform, the water that falls on the surface will enter through underground pores, then collect so that it becomes an underground river. This happens because karst is soluble and has high porosity. Groundwater in this area can be found at a depth of > 15 meters (very deep) (Dauchy et al., 2019; Gowing et al., 2020; Islam et al., 2019; Karunanidhi et al., 2021). Goa Maria is a karst cave, where an underground river system is formed, causing the surface water resources above it to decrease, making it vulnerable to drought.

Vegetation around Goa Maria Tritis is dominated by teak vegetation, where this type of tree (Teak) is able to survive in karst areas that lack water.

Table 1. Geosphere Fact

Dimension	Fact
Relief Made By Ornament	Water droplet, water flow Stalactites, Stalagmites, Draperies, Helectites, Gourdam, Canopies, Calcite floor
Soil Type	Mediterranean and Rendzina
Climate and season	Tropycal climate, dry and rainy season
Vegetation	Teak tree

Vegetation Fact

Vegetation is the set of various plant species in a certain area Barwise & Kumar (2020), where the composition and structure show the relationship between these plants. This set of various plants is part of the ecosystem together with the fauna that exists in that particular area. In general, the types of plants found in an ecosystem are shrubs, epiphytes (epiphytes), shrubs (shrubs), and epiphytes (epiphytes). Vegetation that lives in an area besides being influenced by climate is also influenced by environmental conditions such as sedimentation rate, erosion rate, and soil conditions (Widoretno 2008).

Table 2. Vegetation in core zone

Dimension	Fact
Upergrowth	Teak (<i>Tectona grandis</i>), Sengon (<i>Albizia chinensis</i>), Waru (<i>Hibiscus tiliaceus</i>), Sonokling (<i>Dalbergia latifolia</i>) Trembesi (<i>Samane saman</i>), Kluwih (<i>Artocarpus communis</i>), Acacia (<i>Acacia auriculiformis</i>), Mahogany (<i>Swietaniamahagoni</i>), Randu (<i>Ceiba petandra</i>),
Undergrowth	Alang-alang (<i>Imperata cylindrica</i>), Sikejut (<i>Mimosa pudica</i>), Meniran (<i>Phyllantus debilis</i>), Lulangan grass (<i>Eleusin indica</i>), Pelikan (<i>Euphorbiahirta</i>).

Vegetation in the core zone of the site is grouped into three groups, namely tree vegetation, lower plants, and crustal moss (Table 2). Vegetation that lives in an area besides being influenced by climate is also influenced by environmental conditions such as sedimentation rate, erosion rate, and soil conditions. The environmental conditions show that this area has a low level of erosion and precipitation, in addition to the soil conditions of the site environment is a soil derived from solid rock with a thin layer of soil surface with low water absorption. With these environmental conditions, the vegetation that lives in this area has been selected naturally (Hidayatullah et al., 2018).

This study provides an illustration that the area is safe to be used as a tourist attraction based on the nature of this universe. In the context of regional development, the things that need to be considered are access and other infrastructure, because naturally it has been supported by the existence of caves which are indeed very feasible to develop.

Conclusion

The results of the study of geospheric phenomena that occur in the Maria Tritis cave are in the form of the main land formation is Karst with specific karst caves formed during the Pleiocene to Pleistocene. The dominant vegetation is teak trees. And the type of soil found around the maria tritis cave is a mediterranean soil type. The potential of tourism village includes Tritis Cave, Tritis Lake, Human Resources (HR), infrastructure, transportation, socio-cultural environment, and community support. The learning needs of tourism awareness groups are: a) Human Resource Management in the management of tourist villages, b) skills training for Pokdarwis members and the local community, c) Ability to provide services in tourist villages.

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Author Contributions

The research team in this research project is a reliable team, with each contributing labor and thought equally to each other. It was the logic of participatory and collaborative justice that was used, so that the research was carried out as planned.

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Conflicts of Interest

Yogyakarta State University did not interfere in the determination of all processes of this research, because all became the scientific field of researchers so that there was independence and academic sovereignty.

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