



An Investigation into the Impact of Sabalan's Natural Features on Surrounding Human Settlements

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Abstract

Background and Objective: Mount Sabalan, the second highest peak in Iran (with an elevation of 4,811 meters) and one of the most significant natural features of Ardabil Province, has played a decisive role in the formation of ancient civilizations in the region. Not only is it the tallest peak in northwestern Iran, but it is also considered one of the key centers for the emergence of early civilizations in this area. This study investigates the impact of Sabalan's unique characteristics—including its water resources (hot springs and the Qarasoo River), fertile volcanic soils, and strategic location—on the spatial distribution patterns of archaeological settlements in Ardabil Province.

Methodology: Data analysis was carried out using Geographic Information Systems (GIS) and comparative methods. The present study employed field surveys, spatial analyses, and archival research to examine 20 significant archaeological sites in Ardabil Province, including Yeri City (Meshginshahr), the archaeological areas of Sarein, and the historical Qahqaha Castle complex.

Findings and Conclusion: The results show that more than 80% of the archaeological settlements in Ardabil Province are located within a 40-kilometer radius of Mount Sabalan. The fertile soils on the eastern slopes of the mountain played a crucial role in the development of ancient agriculture in the region. The research demonstrates that Sabalan's natural features—especially access to water resources (the Qarasoo River and hot springs), fertile lands, and natural defensive positioning were key factors in the site selection of ancient settlements. Additionally, evidence suggests that the mountain's ritual significance also influenced settlement patterns. This study highlights that Sabalan's environmental conditions significantly contributed not only to the initial attraction of human communities but also to the continuity and advancement of civilizations in the region.

Keywords: Sabalan Mountain, Archaeological Settlements, Natural Geography, Archaeology, Northwestern Iran, Ardabil.

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Extended Abstract

Introduction:

The natural features of Mount Sabalan have long been a significant factor in shaping human settlement patterns in Ardabil Province. This mountain, with its volcanic geological structure, has created a combination of natural conditions such as fertile volcanic soils, abundant water resources, hot springs, vast pastures, and a diverse climate, all of which have played a role in either facilitating or restricting human activities in ancient times. The presence of perennial rivers such as the Qarasoo and Balharud, mineral hot springs on various slopes, and the suitable vegetation for livestock farming and agriculture are among the key features that have made the area around Sabalan attractive for ancient communities. Additionally, the rugged topography and natural heights of this region have provided opportunities for selecting defensive locations and establishing secure settlements (Moqaddam, 2013).

Mount Sabalan, with an elevation of 4,811 meters above sea level, is located in the northwest of Iran in Ardabil Province. This semi-active volcanic mountain is not only one of the most prominent geographical features of the region but also holds a special place in Iran's cultural and archaeological history. Sabalan's natural and geographical features, including abundant water resources, fertile soils, wide slopes, and its strategic location, have made it one of the main centers for ancient human settlements. Over different historical periods, people have made use of the environmental characteristics of this region, establishing numerous and varied settlements on the slopes of Mount Sabalan and its surroundings. These settlements have remained persistent throughout history, not only due to water resources and fertile soils for agriculture but also because of the natural defensive position that Sabalan provided. Key archaeological sites in the region include Yeri City, Qahqaha Castle, and the ancient mounds of Niar and Sarein, each representing different stages of human development in the area.

Methodology:

This research was conducted through field methods, library studies, and data analysis using Geographic Information Systems (GIS). The analyses indicate that, in addition to natural conditions, the cultural and social characteristics of human communities have also played a role in the selection of settlement locations in this region.

This study also explores how the natural geography and strategic location of Sabalan not only played a role in attracting human communities but also influenced the continuity and development of civilizations in the region. In other words, the natural features of Mount Sabalan, particularly access to water resources and its natural defensive position, provided the foundation for the formation of sustainable communities around the mountain. These communities have played a significant role in the cultural and social evolution of the region throughout history.

Results and Discussion:

This study was conducted with the aim of examining the impact of the natural features of Mount Sabalan on the settlement patterns of ancient communities in Ardabil Province. The research revealed that Sabalan's unique environmental conditions, including the presence of fresh water resources, fertile soils resulting from volcanic activities, natural defensive positions, and spiritual beliefs, have played an undeniable role in guiding human communities towards this region.

The investigation of archaeological sites such as Yeri City, Qahqaha Castle, and the ancient mounds of Niar and Sarein showed that the selection of settlement locations in the past was not accidental; rather, it was based on the ancient people's deep understanding of their

surrounding environment. The analysis of library sources, field data, and geographical studies further confirmed that, in most cases, human settlements were established in areas that were not only close to vital natural resources but also offered greater potential for defense and long-term survival.

Conclusion:

The results of this research revealed that Mount Sabalan, with its unique natural features, has provided an ideal environment for the formation and continuity of human communities in Ardabil Province. Abundant water resources, fertile soils, a strategic geographic location, and spiritual beliefs related to the mountain have been four key factors in attracting and stabilizing human populations in this region.

It can also be concluded that ancient communities in Ardabil Province, alongside their intelligent use of natural resources, established a deep and spiritual connection with their environment, which is reflected in their choice of settlement locations and ways of life. The case study of Sabalan shows that the natural environment, beyond being a passive backdrop, played an active and influential role in the cultural and social transformations of human societies. This finding could provide a useful framework for future research in the fields of environmental archaeology and historical geography.

Based on the evidence and analyses presented, the significance of Sabalan as an important settlement hub in the Iranian plateau is becoming increasingly evident. Therefore, the protection, documentation, and expansion of research in this region are undeniably essential, and they could contribute to the enrichment of our country's cultural heritage.

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