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Reza Khoshraftar[1]
Jaliladen Soroor[2]
Nima Farid Mojtahedi[3]

An Investigation of Karstic Landforms in Dorfak Mountain of Guilan

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Introduction

Karst or solution landforms are of great importance from different aspects. These landforms are in almost all geographic areas and have a great variety. The development of karst terrain depends on several factors such as: lithology, topography, climate, hydrology, vegetation, structure and time. Alborz mountains is one of the big areas of karst in north of Iran. Karstification in northern and southern slopes of the Alborz are different. Dorfak Mountain, a part of the western Alborz Mountains, situated in coordinates 53° 3' north latitude and 42° 49' east longitude, in the southern part of Guilan province. Dorfak is the most important part of western Alborz Mountain which has not only immense environmental values but is a subject of interest for geomorphologists for its karstic landforms. This paper aims at describing Dorfak's physical geography and geology and to investigate its karstic landforms on the basis of such a description emanated from field-work studies.

1- Assistant Professor, Department of Geography, University of Zanjan, Zanjan, Iran.
2- Retired Assistant Professor, Islamic Azad University, Rasht, Iran.
3- Ph.D.Candidate in Climatology, University of Tehran, Iran.

Material and Methods

In order to identify karstic landforms of Dorfak mountain, preliminary studies and field works, topographic maps with a scales of 1:25,000, 1: 50,000 and geological maps with a scale of 1:100000 were used. In early reviews and inventories of karstic landforms, four times the northern and southern slopes of Dorfak, field visit of different routes using the global positioning system were done. Then, coordinate of identified karstic sites overlay on digital topographic and geological maps and spatial relationships between geology, topography, and karstic sites, were analyzed. According to the importance of climate data in formation of karst landforms, rainfall data was examined. Finally, the field works data was combined with geology and topography maps and geomorphological map of Dorfak karstic landforms was drawn.

Results and Discussions

Intensity, extent, degree of development of karst landforms according to the thickness and the purity of lime and spatial differences in climatic conditions different.The northern slopes of Dorfak Mountain to about 2000 m, wet and temperate climate with abundant rains, and from there to the summit, cold mountain climate with low rainfall prevails. In each of these areas, specific mechanisms of weathering and erosion take place. Due to these differences, Dorfak karst landforms can be divided into two groups:

Karstic landforms in forest area

In northern slope of Dorfak, green dolines and karren (Lapias) are covered by soil and plants. Above the tree line, karstic landforms include two huge Dolines, many

little dolines, and ponors. Among all these varieties, karrens are noticeable in terms of numbers and extensions. Karren depths are approximately 10-15 cm.

Karstic landforms in non vegetation area

In Dorfak mountain, altitudes more than 2,200 meters are lacking forest vegetations. Great doline(kaseye Dorfak), is the most characteristic karstic landforms in this part of Dorfak Mountain. Floor of doline is covered by fine sediments, thus, in the spring and summer season, shaped lake in doline. Another karstic landforms in this area is Dorfak small karstic cave. Dorfak mountain slopes to the summit, especially after the forest limit, are covered by karrens with different sizes and shapes. Linear karrens and karren fields can be seen in these slopes.

Conclusion

According to the evidence and degree of development of karstic landforms, Dorfak karstic landforms are one of the most complete in the western Alborz, from Sepidrud valley to Chalus River. Pure limestone formations such as gray limestone of fossiliferous Jurassic, Cretaceous gray limestone of orbitolina and the northern and southern Dorfak trust, have provided infiltration in rocky limes. At elevations less than 2,200 meters, limits in the development of karst forms are due to changes in gross limestone or other formations. In southern slopes and higher parts of Dorfak mountain, several small canyons, Rashe karstic cave around the Seedasht village and a great canyon were formed respectively.

Due to the importance of karst landforms such as the pursuit of water resources, all identified landforms, geomorphological map of Dorfak mountain was provided.