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ANALYSIS OF THE SEISMIC CONDITION AND CLIMATE CHARACTERISTICS OF THE PARKENT DISTRICT

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Abstract: In the article, the seismic condition of the geographical area where Parkent district is located, the power of earthquakes is analyzed. Also, the climatic features of the park district are thoroughly studied and described. During the article, the results obtained from the research are highlighted with the help of tables.

Keywords: Natural-Geographic Location, Seismic Zone, Richter Scale, Earthquake, Climate Zone, Continental, Climatic Cyclone.

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Annotation

According to its geographical location, Parkent district is located 48 km east of Tashkent, at the western foothills of the “Middle Tianshan”, “Chotkal mountain” range. Parkent district is located in the following geographical coordinates: 41°2' north latitude and 69°6' east longitude. The district borders Bostonliq-Ohangaron in the north, east and south, “Yuqori Chirchiq” in the west and “Quy Chirchiq” in the south-west. The fact that this place is surrounded by mountains gives its nature a special charm [1].

If we pay attention to the natural-geographic location of the Parkent district, the fact that the district is surrounded by young, growing mountains, as well as being located in a seismically active region, causes a number of inconveniences. According to the current seismic zoning maps, the Parkent district falls into the 8-point region on the Richter scale.

Results and Discussion

According to historical and seismometric data, an earthquake with an independent source did not occur in the region. However, strong earthquakes with epicenters located in the territory of Central Asia and Afghanistan cause significant earthquakes in the region. Table 1.4 shows the list of earthquakes that occurred in the 20th century in Parkent with a strength of more than 4-5 points. The epicenter of frequent earthquakes is located in the Hindikush Mountains near the Tajikistan-Afghanistan border. Earthquakes with a deep focus, that is, the foci are located at a depth of 70-250 km under the earth's crust, occur here. The strongest of them are felt around 3-4 points in Parkent district. In Huddling and other seismically active regions, the epicenter of earthquakes is located at a depth of 8-40 km in the earth's crust. The epicenter was nearby: earthquakes of Chotkal (1946), Tashkent (1966), Piskent (1970, 1971), Tovoqsoy (1977), Nazarbek (1980) were felt in Parkent with a magnitude of more than 4-5. For example, as a result of the Chatkal earthquake of 1946, it was observed that some trees were uprooted and summer sheds were destroyed. So, the strength of this earthquake was around 8 points in Parkent district.

Table 1.4

Cases of earthquakes that occurred in the 20th century in the territory of Central Asia and were felt in the Parkent district with a force of more than four points ¹

№	Year	Date	Earthquake epicenter	Earthquake strength at the epicenter, points	Distance to Parkent district, km	Earthquake strength at Parkent, points
1	1902	16.12	Andijon	9	235	5
2	1903	28.03	Oim	8	240	4
3	1907	21.10	Qoratogʻ	9	325	4-5
4	1911	18.02	Badaxshon	9	530	4
5	1912	23.01	Namangan	7	180	3-4
6	1922	06.12	Pomir togʻi	8	450	4
7	1927	12.08	Namangan	8	180	4-5
8	1937	18.12	Piskom	7-8	95	4-5
9	1946	02.11	Chotqol	9-10	150	7-8
10	1959	24.10	Burchmulla	7-8	50	5
11	1965	14.03	Hindikush	9	500	4-5
12	1966	26.04	Toshkent	7-8	315	5-6
13	1974	11.08	Oloy togʻi	7	315	3
14	1976	04.04	Gazli	7-8	500	3-4
15	1977	06.12	Tovoqsoy	7	35	5-6
16	1978	01.11	Oloy togʻi	7	340	2-3
17	1980	11.12	Nazarbek	8	45	5-6
18	1982	06.05	Chimyon	7-8	210	3-4
19	1984	17.02	Pop	8	155	4-5
20	1984	19.03	Gazli	9-10	500	4-5
21	1985	13.10	Qayroqqum	8	116	5
22	1987	26.03	Chotqol togʻi	6-7	50	4-5
23	1988	25.02	Chotqol togʻi	6-7	70	4
24	1992	19.08	Susamir	9-10	375	4-5

Climatic features of the region.

Due to its natural location, the territory of the Parkent district of Tashkent-Mirzachol belongs to the sharply continental (dry) climate zone. The fact that the area is surrounded by mountains, the abundance of streams and clear springs in its bosom creates a unique moderate microclimate. There are caves on the slopes of the mountain. There are many streams and springs. The vegetation period is 180-200 days. Solar radiation is one of the main factors determining climate. The time the sun shines on the earth depends on the cloudiness of the air and whether the horizon is open or closed. The sun shines on the ground for an average of 3,000 hours a year in the park area. But this time is not evenly distributed over the seasons. Depending on the change in the angle of the earth's deviation

¹ S. Xusomiddinov, M. Shermatov. "Parkent tumani" "O'qituvchi" Toshkent- 2006. 5-6 b

from the sun, the duration of the illumination of the earth's surface also changes. This time is on average 140 hours in January and 390 hours in July. In January, the average daily surface illumination time is 5.1 hours, and in July it is 12.5 hours. The maximum solar radiation is observed on June 22, and the minimum on December 22. In the winter months, the air is covered with clouds and the sun is not visible for 8-9 days, while in the summer there are almost no cloudy days.²

Table 1.5

The average monthly duration (hours) of the sun's daily illumination of the earth's surface and the number of sunless (full cloudy) days in these months ³

Months	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Sunny time per day, hours	5,1	5,7	6,4	8	10,1	12	12,5	11,9	10,1	7,7	6,2	4,9
Sunless days in the month	8	6	5	2	0,5	0,1	0,1	0,1	0,1	5	7	9

The climate of the Parkent district is continental, characterized by sharp changes in air temperature and low atmospheric precipitation. Average annual air temperature is +12.8°C, annual precipitation is 250 mm per year in the plains, and 350-400 mm in the mountainous and mountainous regions. Winter is somewhat cold and very short-lived, and summer is hot and dry. The average temperature in January is from -1.5°C to -2°C, the lowest temperature is -20°C. July is between +25 and +28°C, the highest temperature is +41°C, up to +42°C. The weather starts to warm up from February. From August, the temperature decreases. [3]

Solar radiation is one of the main factors affecting the climate of the district. The time the sun shines (illuminates) on the earth depends on the cloudiness of the air and whether the horizon is open or closed. The duration of illumination of the earth's surface changes depending on the change of the angle of deviation of the earth in relation to the sun. This time is on average 140 hours in January and 390 hours in June (Table 1.6). In January, the average day of illumination of the earth's surface is 5 hours and 6 minutes, and in July it is 12 hours and 30 minutes. The maximum solar radiation is observed on June 22, and the minimum on December 22. Because, on June 22, the sun illuminates the northern hemisphere of the Earth for the longest time during the day. On this day, the event of the longest day will take place. On December 22, on the contrary, the sun illuminates the southern hemisphere of the Earth for the longest time. Therefore, the longest day occurs in the southern hemisphere, and the longest night occurs in the northern hemisphere. In the winter months, the air is

³ Kh. E. Yoldosheva. *Climate of parkent district. Journal of geography and natural resources* sjif 2022: 6.037.

covered with clouds and the sun is not visible for 8-9 days. There are almost no cloudy days in summer.

The dryness of the climate in the district is especially noticeable in lowland areas, high air temperature and low humidity lead to a large amount of evaporation of underground water. Because of this, underground water becomes highly saline. Air temperature and humidity are one of the main factors in the formation of groundwater. Air temperature is one of the main factors that cause evaporation of not only surface water, but also groundwater. Average annual evaporation in the region is 1200-1500 mm per year. At the same time, it is unevenly distributed by seasons. A sharp change is especially noticeable at the end of April and beginning of May. Evaporation is very large in the hottest season of the year, i.e. June-July. Air temperature is also uneven, high relative humidity of air is observed especially during winter and spring, and its maximum value is observed near water bodies. [8]

During the summer, the relative humidity of the air decreases. In the mid-climate stem, the continuous development of the climatic activity of the continental mass dominates in cold times. The climate is changeable, with frequent rains and snows. In the summer season, the climatic cyclone movement of the air mass decreases. The air mass in the upper layers of the atmosphere becomes dry air due to strong heating. The main part of the precipitation is brought by the western, northern and northeastern air currents. Kurama mountain ranges block these winds so that they are less affected by winds blowing from the south and south-east. [11]

Table 1.6

Meteorological data

Months											
I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Precipitation, in mm											
46	39	62	54	32	13	4	1	4	26	40	46
Temperature, °C											
-1.1	1.5	7.8	14.7	20.3	25.3	27.3	25.5	19.7	12.7	6.7	1.8
Relative air humidity, %											
73	70	63	61	54	44	41	43	45	55	40	73

Conclusion

In conclusion, the analysis of seismic conditions and climate characteristics in the Parkent district is essential for understanding the region's environmental dynamics and potential risks. By examining seismic activity and climate patterns, it becomes evident that the district is subject to specific geological and meteorological phenomena that are pivotal for infrastructure planning, disaster preparedness, and sustainable development. Recognizing the seismic and climatic features provides valuable insights into mitigating natural disaster risks, implementing resilient infrastructure solutions, and fostering environmental stewardship. Furthermore, the analysis serves as a foundation for informed decision-making and policy development that prioritizes the safety, well-being, and sustainable growth of the Parkent district and its inhabitants.

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