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MOUNTAIN TOURISM POTENTIAL OF THE SOUTHERN SLOPE OF THE GREATER CAUCASUS (A CASE STUDY OF THE OGUZ REGION)

Abstract. Mountain ecosystems with diverse natural features are highly complex. While mountainous areas are often considered unsuitable for industrial, construction, or residential development, they represent one of the most valuable resources for tourism. Their complexity is regarded as a source of richness for tourism, providing a competitive advantage. The relatively undeveloped nature, clean air, rich biodiversity, and cultural diversity of mountain regions continue to attract increasing numbers of visitors. Although mountaineering has developed into a highly profitable sector worldwide, it remains underdeveloped in Azerbaijan. To promote mountaineering in Oguz region, two climbing routes were mapped to the highest peak, Malkamud. Accurate route identification is a critical prerequisite for mountaineering development. Therefore, the study examined the physical and geographical conditions of the area relevant for climbing, gathered information from various mountaineering clubs, and applied digital tools such as Google Earth Pro and ArcGIS 10.8.

Keywords: mountaineering, climbing route, Malkamud peak, Google Earth Pro, ArcGİS 10.8.

Introduction. After 2002 was declared the "International Year of Mountains" by the UN, the volume of research conducted in mountains began to increase. The goal is to attract people to the economy with many features – untouched areas, clean air, climate, vegetation, land cover changes over short distances, and the presence of a diverse culture.

Currently, mountain tourism accounts for 15-20% of global tourism revenues. The Alps, the birthplace of mountain tourism, are visited by 100 million people each year, generating an estimated US$70-90 billion in revenue for the region (Panos 2022:4) [6]. A tourist group of 1-7 people pays 25-70 thousand dollars to the Kingdom of Nepal to climb Everest, the highest peak in the world [9].

In Azerbaijan Alpinism Federation was established in 1963 and officially registered in 1997. FAIREX (Azerbaijan Weather and Extreme Sports Federation), which currently represents Azerbaijan in 3 international organizations, has been organizing rock climbing, sport climbing, ice climbing every year since 2008, dry-running competitions, sky-racing competitions since 2012, speed climbing sports climbing since 2013. in 2014, the World Cups for Speed and Bouldering were held. "Mountain school" operates under the federation [4].

At present, mountaineering has changed from being an individual activity to a club activity all over the world, as well as in Azerbaijan. There are currently Gartal Mountaineering Sports Club, Shaman Mountaineering Sports Club, Baku Alpine Club, Republican Alpinist-Tourist Club, Mountaineering Sports Club, etc. clubs operate.

Materials and research methods. Documentation method. Literature materials and exploration work conducted by the Mountain Sports Club established on August 11, 2001 were examined to determine the climbing season for the Malkamud peak [9].

Expert interview. An interview was conducted with specialists from the Baku Alpine Club agency, which organizes tours to various peaks on the southern slope of the Greater Caucasus, regarding the organization of the tour, the selection of the season, the selection of camping sites, and the forecasting of the duration of the tour.

Measurement method. Using the Google Earth Pro program, the climbing route was drawn, camp sites were determined, the route line was profiled, and the route was analyzed.

Study area. Malkamud peak is a highest point (3879 m) of the Oguz district which is situated on a south slope of Greater Caucasus (figure 1). District has a rich tourism potencial as a forest landscape, river, historical monuments, mineral waters and etc. Climate is one of the main factors affecting mountain climbing. Mountain climbing can be successful only if it is organized according to the climatic characteristics of the mountain region, i.e. "climbing season" [7].

Figure 1 – Study area

Air circulation in the region is closely related to the relief and is formed by its influence. Since the high mountain ranges prevent the cold air masses coming from the north, the cold air masses come to the region from the east and west, having lost their previous cooling quality [9]. The coldest place is the top of Mount Malkamud. In January, the absolute minimum temperature here can drop to -52°.

The most rainy season here is April-May, partly September and October. At that time, about 50% of the 1022 mm of rain falls in Oguz. The least precipitation falls in December-February (41-51 mm) and July-August (61-71 mm) in winter. Annual precipitation in Filfili is 130 mm more than in Oguz [3].

However, the amount of precipitation changes with height, reaches a maximum at an altitude of 800-1700 m, and then decreases again [1].

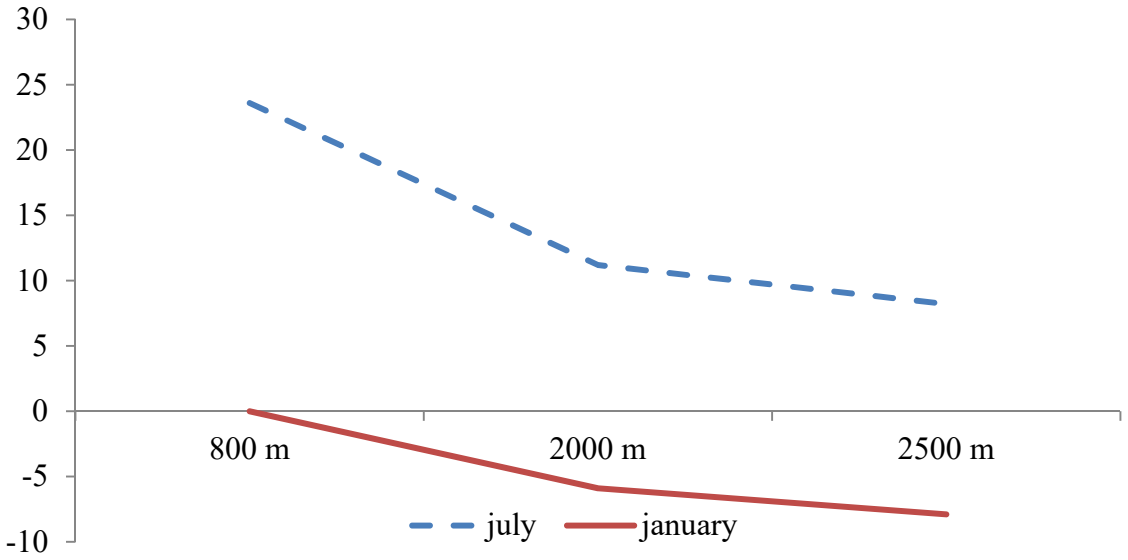

Figure 2 – Average multi-year temperature indicators (degree) by height in Oguz region

Result. The exposition of the slopes. Mountaineers pay attention to how the sun and wind hit the slope in relation to avalanche danger. The direction of the slope determines how much sun it gets and says a lot about its avalanche potential. South-facing slopes receive more sun and therefore the snow settles and stabilizes faster than north-facing slopes. South-facing slopes are safer in winter. On hot spring and summer days, southern slopes are more prone to wet and snow avalanches, while north-facing slopes are safer.

North-facing slopes receive little or no sun in the winter. Cold temperatures cause depth breaks within the snowpack and create weak layers. Therefore, the probability of landslides in the middle of winter is higher on the northern slopes. During spring and summer, when the southern slopes soften dangerously, the north side should be used for firmer, safer snow [10].

Windward slopes are safer. They hold less snow, the wind blows some of it away, and the rest is compacted. Windward slopes rapidly accumulate snow from windward slopes on windy days, resulting in deeper, less consolidated snow and avalanche-ready slabs.

The inclination of the slopes. Hazards on slopes come in different shapes, angles, and sizes. Angles between 30-45° are the main causes of avalanches. Angles above 55° are too steep for snow accumulation. Angles below 25° are usually safe except for the danger of very wet and usually slow avalanches.

Slope shapes affect the hazard. Snow poses the most obvious danger on a flat, open, and moderately steep slope. Snow on a convex slope is more prone to avalanches under stress because it lies tightly over the curve of the hill.

The flood valleys seem to be an easier route because they are a direct route up the mountainside. However, these valleys and canyons are obvious collection areas for avalanche debris.

Ridges, especially wooded ridges, are usually the safest route [10].

Safety. The wettest period of the rivers is the period of flooding due to snow waters in March-June. At this time, frequent rains (lasting no more than 4-5 days) cause up to 10 floods a year. During this period, rivers discharge 40-45% of their annual flow. Minimum water consumption is observed in winter months. Floods occur mainly as a result of floods observed in the summer season. At this time, torrential rains, and sometimes melting snows, create floods that last no more than 5 days on average. Although autumn floods are short-lived, they are sometimes 5-10 times more than spring floods due to maximum water consumption [3].

Climbing routes. The Malkamud peak, located on the border of Dagestan and Azerbaijan, is the highest peak of the Oghuz region and its height is 3879 m. The road to the summit passes through the village of Filfili. Despite the fact that the peak was climbed from the territory of Russia, on August 11, 2001, the Mountain Sports Club climbed a different route from the territory of Azerbaijan for the purpose of exploration. As can be seen from figure, 3 climbing routes have been drawn to the peak using Google Earth Pro software (figure 3).

In general, the correct design and selection of the climbing route is directly related to life safety and the success or failure of the climb. A properly chosen climbing route and a properly chosen time taking into account the climate of the area is the main achievement of mountain climbing. Because an established climbing route can guarantee safety for subsequent climbers and give them a reference to create new climbing routes. During each mountain climbing, the Ministry of Emergency Situations is informed, and in the case of a cross-border area, permission is also obtained from the Dovler Sarhad service.

Discussion**.** Both routes started from Filfili village of Oguz region. The distance from the region to the first camp, which is the beginning of both routes, is 7.10 km, continuing along the Galachay valley. The distance traveled on the route is calculated based on the difficulty of the route and the load each participant will carry. On the 1st day of the trek, a distance of 15-18 km can be covered during the mountain trek with a heavy bag. A distance of 18-20 km can be covered during the return trip with a lightened bag.

Taking into account sunrise and sunset, the main physical load is given in the first half of the day. After starting the march, 15-20 minutes rest is given every 50-60 minutes, and in the middle of the day there is as much main rest as necessary. It starts at 15:00 and lasts until dark. The tour should be planned so that the group reaches the pre-planned campsite before dark.

The height amplitude of route A with a total length of 8.5 km is 2141 m. The 1,829 km distance of the initially northerly route from 1,761 m to 2,270 m is covered by forest. Then the route is inclined to the north-west. After a height of 3012 m, there is a shallow area with a depth of -7.3%, which is designed as a

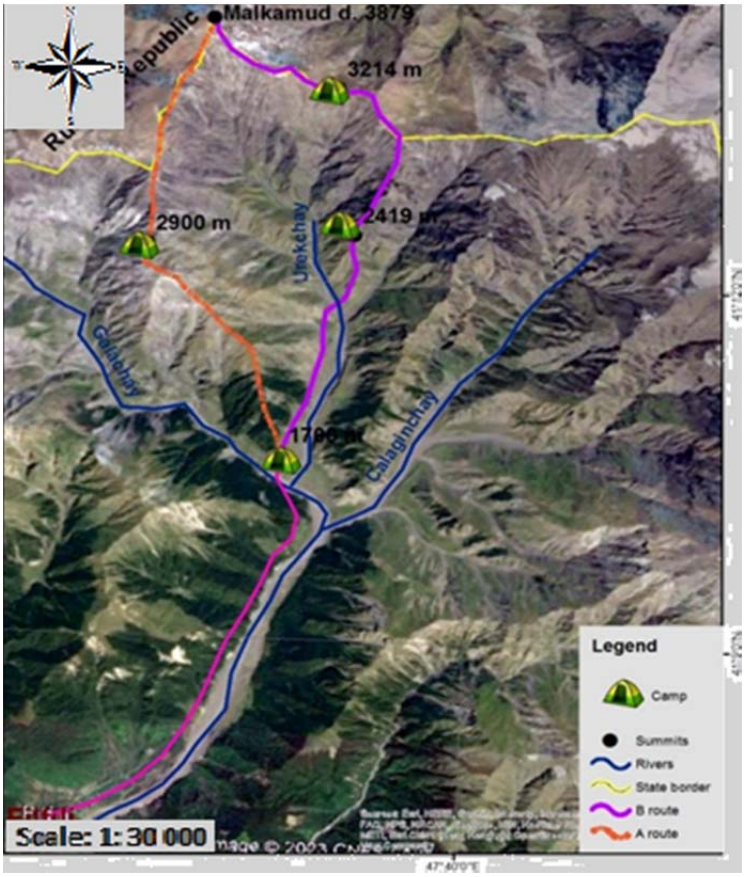

Figure 3 – Climbing routes to the peak of Malkamud

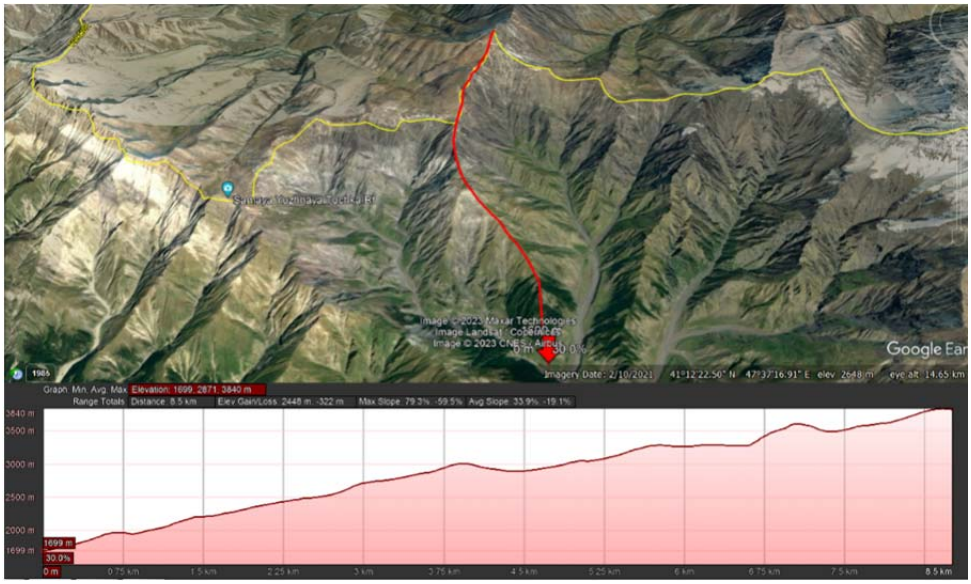

Figure 4 – Route A profile

camping site with a height of 2900 m. In general, for the organization of the camp, a pile of stones, a flat, dry area should be selected, away from the parts where floods may occur, protected from the wind, close to a water source, a fire. The distance from the starting point to the camp is 4.40 km, which is almost half of the way. After the camp, the route passes along the Russian-Azerbaijani border at a distance of 1.27 km. From a distance of 5.74 km (3287 m) to a distance of 6.6 km (3283 m) of the general road, the terrain is almost flat, with very little gradient. After another 100 m, the most inclined area observed along the general route (79.3%) is observed at 3382 m (figure 4).

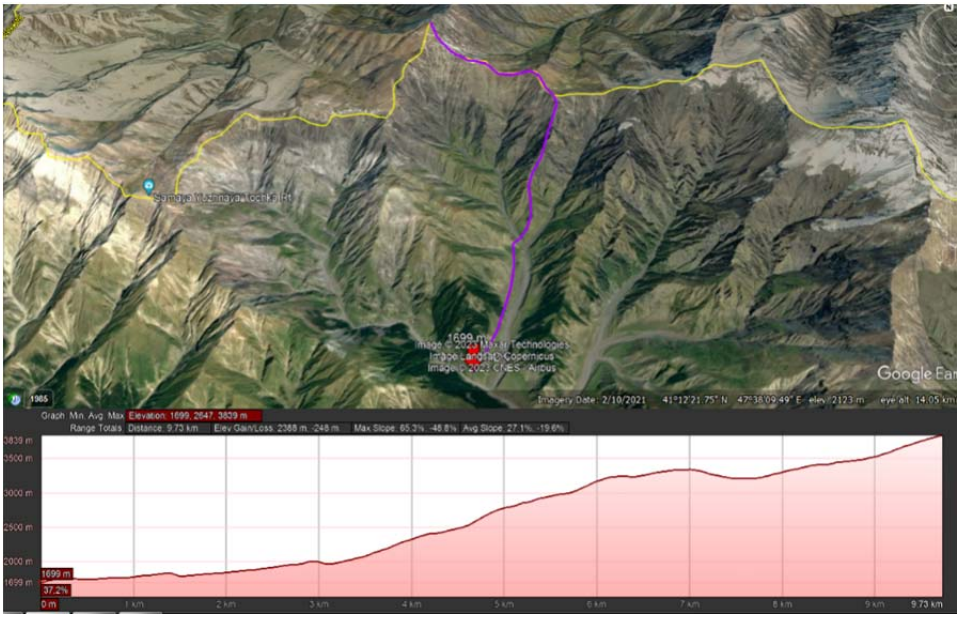

Figure 5 – Route B profile

Route B starts at an altitude of 1,699 m and runs for 2.94 km along the right bank gorge of the Heart River through a low slope area. Then the route crosses the river to the other bank along the ridge extending in the north, northeast direction. As can be seen from the profile, this route, which is 14.05 km long, runs along less inclined slopes. Here, the maximum inclination is 65.3% and is observed at 4.72 km of the road, at an altitude of 2616 m. Taking into account that the route line is relatively long, 2 campsites have been designated here. The first camp was set at 4.25 km of the route, at an altitude of 2419 m, with an inclination of 4.3%, and the other one at a distance of 7.6 km, at an altitude of 3214 m, with an inclination of 0.9% (figure 5).

Conclusion. Thus, it is concluded from the discussion that the tour to the area should be organized at the end of July and beginning of August, taking into account the climatic features, especially the rainfall, as well as the period of the rivers, depending on the rainfall. During this period, the rivers we have to cross are more easily fordable. Since ridges are the safest route, both routes are drawn along ridges. Although route A is short, it is more inclined, so it is more suitable to move along this route with group members who have relatively good physical fitness. Although route B is longer, it is suitable for any tourist as it runs along the river valley for a long distance and has less incline. When climbing to the top on both routes, the travel time between the camps was determined to be about 6-7 hours, not taking into account the weather, rocks, and micro elements of the terrain. Thus, going from Filfili village to the camp, spending the night in the camp, continuing on the way to the top the next day, returning to the camp (staying at the top for 1 hour) and spending the night again, and reaching Filfili village the next day (Filfili-Melkamud-Filfili) will take 3 days on both routes.

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ПОТЕНЦИАЛ ГОРНОГО ТУРИЗМА ЮЖНОГО СКЛОНА БОЛЬШОГО КАВКАЗА (НА ПРИМЕРЕ ОГУЗСКОГО РАЙОНА)

Аннотация. Экосистемы гор с различными природными особенностями являются более сложными. Горные районы считаются непригодными для размещения промышленных, строительных и жилых зон, но они являются наиболее ценным ресурсом для развития туризма. Их сложность ценится как богатство с точки зрения туризма, что создает большее преимущество. Менее развитая природа, чистый воздух, богатое биоразнообразие и разнообразная культура все больше привлекают людей. Хотя альпинизм в настоящее время развивается как высокодоходный сектор в странах по всему миру, этот сектор недостаточно развит в Азербайджане. С целью развития альпинизма в регионе Огуз были начерчены 2 маршрута к самой высокой вершине – пику Малькамуд, поскольку правильное определение маршрута является важным вопросом. Для этого, в первую очередь, одним из важнейших условий является составление правильного маршрута восхождения. С этой целью были исследованы физические и географические условия местности, которые важны при восхождении, была собрана информация из различных альпинистских клубов, использовались программы Google Earth Pro и Arcgis 10.8.

Ключевые слова: альпинизм, маршрут восхождения, пик Малкамуд, Google Earth Pro, ArcGİS 10.8.

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ҮЛКЕН КАВКАЗДЫҢ ОҢТҮСТІК БЕТКЕЙІНІҢ ТАУ ТУРИСТІК ӘЛЕУЕТІ (ОҒҰЗ АУДАНЫ МЫСАЛЫ)

Аннотация. Әртүрлі табиғи ерекшеліктері бар тау экожүйелері күрделірек. Таулы аймақтар өнеркәсіптік, құрылыстық және тұрғын үй аумақтарын орналастыруға жарамсыз болып саналады, бірақ олар туризмді дамытудың ең құнды ресурсы болып саналады, ал олардың күрделілігі туризм тұрғысынан байлық ретінде бағаланады, бұл үлкен артықшылық тудырады. Аз дамыған табиғат, таза ауа, бай биоәртүрлілік және алуан түрлі мәдениет адамдарды көбірек тартады. Қазіргі уақытта альпинизм әлем елдерінде жоғары табысты сала ретінде дамып келе жатқанымен, Әзірбайжанда бұл сала дамымаған. Мақалада Оғыз өңірінде альпинизмді дамыту мақсатында ең биік шың Малкамуд шыңына екі бағытта маршрут сызылып, бағытты дұрыс белгілеу маңызды мәселе болып табылады. Бұл үшін, ең алдымен, ең маңызды шарттардың бірі дұрыс көтерілу жолын құрастыру болып табылады. Осы мақсатта альпинизм үшін маңызды аймақтың физикалық-географиялық жағдайлары зерттелді, әртүрлі альпинизм клубтарынан ақпарат жиналды, Google Earth Pro және Arcgis 10.8 бағдарламалары пайдаланылды.

Түйін сөздер: альпинизм, көтерілу жолы, Малкамуд шыңы, Google Earth Pro, ArcGİS 10.8.