
Investigating the Vegetation Cover of Yasuj and Shahrekord Using GIS Patterns

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Abstract

Yasuj is one of the southern cities of Iran and the capital of Kohgiluyeh and Boyer-Ahmad Provinces. The city is also the center of Boyer-Ahmad County, which is located in the northeast of the province. Yasuj city ends from the north to Dena city (Kohgiluyeh and Boyer-Ahmad), from the south to Noorabad Mamasani (Fars), from the east to Semrom (Isfahan) and Eghlid (Fars) and from the west to Kohgiluyeh city. Yasuj city is located at an altitude of 1870 meters above sea level. Yasuj has important geographical and human characteristics that have an important place in its surrounding area. In terms of natural characteristics of components such as rainfall, temperature, wind, water and topography and in terms of human characteristics of population, age groups, unemployment rate, employment rate, active population, the issue of migration is significant. In this research, by studying study and research sources as well as various statistics, human and geographical features of Yasuj city are analyzed.

Keywords: Yasuj, Kohgiluyeh and Boyerahamad, Geography

1. Introduction

In fact, the zoomorphic and topographic features of a geographical location are not only effective in the dispersion or accumulation of human activities, but also ultimately one of the factors affecting the physical shape and appearance of spatial structures. In addition, the city's infrastructure planning has not been and is not far from the effects of geographical conditions, because the geographical conditions of the place and the orientation of unevenness in issues such as urban construction or in the organization of population movement, etc. have an undeniable role. In general, geographical environments affect a city as follows. According to them, it is possible to plan for existing cities or future cities. Role-playing in the pattern of spatial distribution of cities, spheres of influence and communication of urban areas. Influence on morphology and map (urban construction and texture affecting structures, facilities and urban service conditions. Influence on economic activities of the city. Application in identifying leisure and recreation centers of areas around cities. According to the above in studies related to City and urban planning It is necessary to know the geographical conditions: Kohgiluyeh and Boyer-Ahmad provinces

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with a population of 6.52 living in urban areas (Statistics Center of Iran, 2011), and being in the range of dangerous faults and active watersheds and floods are no exception. In the meantime, Yasuj city as the center of the province and also the most populous city of the province, due to its location in the heights of the Zagros Mountains and the location of the city along numerous canals, basins and waterways, especially the Bashar River and the city is located in Next to three important faults called Dena fault in a radius of less than 20 km, Zagros fault in a radius of 70 to 80 km and Qatar-Kazerun fault in a radius of 20 km in Yasuj city (Hatef and Baziar, 2008: 2), exposed to severe natural disasters And there are many, and every year there are many dangers, especially earthquakes in the corners of this city.

1.1. Geographical Location of Kohgiluyeh and Boyer-Ahmad Provinces

Kohgiluyeh and Boyer-Ahmad Province, with an area of 1929 square kilometers (about one percent of the total area) is located in southwestern Iran (Khalili, 2004). This province is limited to Chaharmahal and Bakhtiari province from the north, Fars and Isfahan provinces from the east, Fars and Bushehr provinces from the south and Khuzestan province from the west. The geographical position of this province is between 30 degrees and 9 minutes to 31 degrees and 32 minutes north latitude and 49 degrees and 57 minutes to 51 degrees and 62 minutes east longitude (Center for Informatics and Development Studies, 1994).

1.2. Historical Geography of Kohgiluyeh and Boyer-Ahmad Provinces

The city is a historical and at the same time geographical phenomenon, that is, it is a city built and paid for in the past and present. Therefore, in recognizing the city and researching the building and its growth, all the constructive factors of the city, from the natural environment to the direct impact of economic and social systems and even political factors and the role of historical figures who have somehow established a connection with the city, must be considered. However, since it is not possible to study the situation of any city without considering its historical past and to study the urban geography of each region, its past history should be studied, so in this part of the study, the history of Kohgiluyeh and Boyer-Ahmad provinces and then Yasuj city Has been reviewed. In Moin culture, Kohgiluyeh means hawthorn (Moin, 1984). In general, in the mountains of northwestern Persia, which today are called Kohgiluyeh and Boyer-Ahmad Provinces, there were five Kurdish tribes in the past (meaning Illyrians), which were called Rom or Zam Kurds (Zeinalzadeh, 2008). Kohgiluyeh is the residence of different tribes of Lor, Boyer-Ahmadi, Bavi, Chaharbanicheh, etc., which are called Kohgiluyeh tribes. This province is of great economic and military importance because it is located between large tribes such as Qashqai, Boyer-Ahmadi, Lor Bakhtiari, etc. The most important tribes living in Kohgiluyeh and Boyer-Ahmad provinces are the six tribes of Boyer-Ahmad, Bahmaei, Taybi, Charam, Basht and Babavi and the enemy of Ziari (Khalili et al, 2004). The Boyer-Ahmad tribe is larger than other tribes; After the seventh century, the Qashqai Turks chose the south of Gachsaran as their wintering place, which today is about half of the population of the city (especially the city of Dogonbadan) of the Qashqai tribe. Ahmad Eghtedari, in short, quotes a group of writers and researchers of historical sciences about the people of this region and believes that: The Achaemenids were originally from the people of Kohgiluyeh and Boyer-Ahmad. Alexander the Great faced the courage of the people of the region in the present-day Tang-e-Takab, which is located in the north of Behbahan, or in the heights of Baba Ahmad and in Tonak Biruza (near Dehdasht), and Ario Barzan died in one of these valleys According to Arivirzen). Although the Sassanids were not of the origin and descent of the people of this area, but they had housing and urban development in this area and perhaps there was a safe place for a specific time (Zeinalzadeh, 2008).

1.3. Political Division of the Province

According to the latest divisions of the country in 2012, Kohgiluyeh and Boyer-Ahmad provinces

have eight cities: Boyer-Ahmad, Gachsaran, Kohgiluyeh, Dena, Bahmaei, Basht, Charam and Lande), 17 cities, 18 districts, 45 villages and over 1676 villages. The number of cities in the province reached 4 cities in 1355, and in 1385, 9 urban points were added to it.

The urbanization rate of the region this year is equal to 47.6 percent, which is equal to 1345. And in 2012, the number of cities in the province reaches 17, with Yasuj being the most populous city in the province.

Demographic changes of Kohgiluyeh and Boyer-Ahmad provinces during the last 40 years with average annual growth rate 53.4% from 161 thousand people in 1345 to 658 thousand people in 2011, during the mentioned period, the highest average annual growth rate of 1365-1355 (equivalent to 36.5%) has created a significant acceleration in the population of the province. Which is equivalent to 1.4 times the average annual growth of the country. In the field of cities with a population of more than 100,000 people, the province did not have an urban point during the last 40 years until 2006 and the population of Yasuj city as the center of the province and the center of Boyer-Ahmad city according to the population and housing census in 2011 reached 108505 thousand people. With the share of urban population, 33% of the total urban population of the province is located in the middle cities of the country (author's calculations using detailed city results).

1.4. Location and Demographic Development of Yasuj City

According to the statistics of 1990, Boyer-Ahmad city has a population of 26,371 people, of which 12,2980 people live in the city and 12,1239 people live in rural areas. It is located in the north and east of the province and consists of 3 districts and 9 villages, the center of which is Yasuj city and according to the 2011 census, its population is estimated at 11760 (population and housing census, 2011). It has had an upward trend, so that the population of this city has reached from 24477 in 1355 to 243771 in 2011 and the growth rate of this city in 2011 has been 2.2 percent.

1.5. Natural Features of Yasuj City

The city of Yasuj is located at 30 degrees and 28 minutes north latitude and 51 degrees and 36 minutes east longitude of the Greenwich meridian and occupies an area of 40,000 hectares (Yasuj Municipality website, 2015). Yasuj city from the north and east to Zagros heights, from the south to Bashar river and Akbarabad and Najafabad villages, from the southwest to industrial town and Bloko village, from the west and northwest to Mehrrian river and Mehraban villages, Sharaf Upper Abad, lower Sharaf Abad and middle Sharaf Abad are limited (Hamso Consulting Engineers, 2001). According to the political divisions of the country, the center of Kohgiluyeh and Boyer-Ahmad Provinces and the center of Boyer-Ahmad County, in the central part, Sarrud North district and naturally between Bashar rivers in the south and Mehrrian in the west and Dena mountains in the north and east (Hamso Consulting Engineers, 2001). The geographical location of Yasuj city, in addition to benefiting from natural data, also has historical and political data, and for this reason, it has chosen its geographical location under the protection of sparse and semi-dense forests on the slopes of Dena Mountain. Therefore, the geographical location of Yasuj city has been political and military before anything else. The city is a complex set of human relations with the environment, in which not only human relations with the environment have a special place, but also the internal relations of human beings, their intellectual and philosophical thoughts, cultural and social characteristics, etc. It is of special interest from the point of view of urban planning and is always examined. The city of Yasuj is no exception to this and its emergence, formation, growth and development is the result of economic, social, political, etc. interactions that have taken place in this region.

1.6. Geological Features of Yasuj City

The lands of the city and its surroundings are considered as geological features of this mountainous

area due to their location in a part of the foothills of the Zagros Mountains. The lands of this region are composed of anticlines and parallel synclines that are located in the northwest to southeast directions. The region consists of deep and narrow valleys, only a limited part of which is composed of small, sedimentary and arable plains, and the geological formations of this region are hard limestones of the Jurassic, Cretaceous, Eocene, Oligon and Asmari periods. (Housing and Urban Development Organization of the province, 2013).

1.7. Topography

Kohgiluyeh and Boyer-Ahmad Provinces is a rugged region and consists of highlands and hills. Has formed (Moradi, 1995). The Zagros Mountains continue in several directions parallel to the northwest-southeast direction in this province and its highest mountain is Dena with a height of about 4442 meters. Due to the existence of glaciers, this mountain is the source of some important and water-rich rivers of the province. Also, other important mountains have been stretched in different parts of the province, which are: Basht-Gachsaran, mountainous in the south of Dehdasht, Nile and Hajjaj mountains in the northeast of Yasuj, Del Afrooz mountain in the north of Dishmuk, etc. The border of this high mountain range is small and large plains whose soil is often It is sedimentary and turns into deposit soils at the foot of the mountains. These plains exist in both cold and tropical regions, the most important of these plains can be Basht, Leishter, Imamzadeh Jafar, Dashtrom, Charam plain and ... pointed out. However, it should be noted that Kohgiluyeh and Boyer-Ahmad provinces are mountainous lands and the total area of plains and plains does not reach more than 65,000 hectares (Khalili et al., 2004). The city of Yasuj is located at the foot of Dena Mountain and its development includes a part of Sarrud plain. This plain is located on the southern slopes of the Zagros folds and is separated from each other by the heights of two ridges in the sun. The main slope of the city is from northeast to southwest. The average altitude of the city is about 1919 meters above sea level, which is variable at the highest altitude of the city 2000 meters above sea level and at the lowest altitude about 1830 meters above sea level. The average slope of the city in the northern and eastern heights is between 15 and 25%. The southwestern part of the city has a slope of about 4%, the eastern part of the city has an average slope of about 5% and the lands of the southwest have an average slope of about 1.5% and the lands of the sugar factory have a slope of about 0.5% (Daheh Consulting Engineers, 1995).

1.8. Climatic Features of Yasuj City

The study of the atmospheric situation of Yasuj city during the twenty-four-year statistical period from 1984 to 2008 shows that the average annual temperature of Yasuj during a 23-year statistical period was 15 degrees Celsius. During this period, the warmest year, 1998-99 crop year with an average temperature of 4.16°C and the coldest year of 1991-92 crop year with an average annual temperature of 13.5°C has occurred. The average annual maximum temperature is 1.22 degrees Celsius and the average minimum is 7.7 degrees Celsius. The coldest month during this period in Yasuj was January with an average temperature of 38 degrees Celsius and the warmest month was in August with an average temperature of 26.7 degrees Celsius. In general, the average air temperature in the warm months of June, July, August and September were 3.22, 1.26, 26.26 and 3.23 degrees Celsius, respectively. The average temperature in the cold months of the year (December, January, February and March) was 1.4, 7, 3.8 and 716 degrees Celsius, respectively. The highest temperature reported during this statistical period was 4.40 degrees Celsius related to the 21st of July of the year - and the coldest day of the year during this statistical period was related to December 1997 with (-19) degrees Celsius. Of course, in the same month, temperatures of 18 and 13 degrees Celsius below zero have also been observed. Also in February, temperatures of 13, 15 and 11 degrees Celsius have been observed below zero. The long-term average is the number of days of the year when the average temperature is below zero, i.e. 61 days with frost, the most of which occurred in January with 22 days and in February with 17 days (Ahmadi, 2009).

Natural factors play a very sensitive and important role in linking the city to its surroundings.

Existence of many natural attractions near cities such as springs and green space is very effective in attracting urban population for leisure and investment. And it has become one of the main concerns of city managers. The wind factor is very important in reducing the industrial pollution of cities and softening the city's air. The type of land is considered very important in construction and slope in reducing the effects of heavy floods, and in macro-plans, it is considered as a sensitive point without actions and lack of work. The topographic features of each city are attractive and repulsive, and for large-scale investment, sufficient attention should be paid to this factor. And people need identifiable space units in which to feel belonging. Shahrekord is between 50 degrees and 49 minutes and 22 seconds to 50 degrees and 53 minutes and 44 seconds long and 32 degrees and 18 minutes and 22 seconds to 23 degrees and 21 minutes and 50 seconds latitude and is located 97 km southwest of Isfahan. Topographically, it is located in the northern part of the Zagros Mountains. With an altitude of between 2050 and 2310 meters above sea level, this city is the highest city in Iran and that is why it is known as the "Roof of Iran". Shahrekord has a temperate semi-humid climate with mild summers and very cold winters. The average annual temperature in Kurdish city is 11.5 degrees Celsius.

1.9. Air Pollution

Air pollution refers to the presence of any substance in the air that is harmful to human health or the environment. The city of Yasuj, the capital of Kohgiluyeh and Boyer Ahmad province, which is known as the natural capital of Iran due to its beautiful nature, has a beautiful and pleasant nature that welcomes many tourists from different parts of Iran and the world every year. According to the report of the World Health Organization WHO in 2011 1122 This city was classified as one of the ten most polluted cities in the world, along with Ahvaz, Sanandaj and Kermanshah, in terms of particulate matter up to M10. In this study, the reason for this and the accuracy of this report, as well as the air pollution status of Yasuj city in terms of particulate matter, were investigated. For these surveys, the statistical archives of pollution stations of the Provincial Environment Department, the statistics of the Meteorological Department, as well as the statistical archives of the Cultural Heritage, Handicrafts and Tourism Organization of the province were used, and Excel and GIS software were used to compare and check the available statistics. This research shows that the statistics reported by the World Health Organization about the amount of particulate matter in the air of Yasuj for 2009, which is almost the same as in 2008, is close to reality. However, these cities of Iran, including Yasuj, are among the most polluted cities in the world. need to It has a more general comparison and using this term that was used in domestic media is not close to reality and has no scientific aspect.

Particulates are small dust particles and are among the main air pollutants. This phenomenon is very harmful for respiratory patients and is known almost in Iran. Chaharmahal and Bakhtiari province, due to its high altitude above sea level, the presence of middle Zagros forests and numerous rivers, has faced less dust and fine dust phenomena in the past decades, but recently, due to droughts and changes in rainfall patterns, these fine dusts have affected this province. has faced problems. In this study, the concentration of PM10 suspended particles in the air of Shahrekord, the center of Chahar Mahal and Bakhtiari provinces was investigated. In this study, it was found that the air quality index in 94.17% of PM10 pollutant cases was below the standard (AQI < 100), of which 32% were in good condition and 62.17% were in average condition. Based on this research, the concentration of suspended particles PM10 is lower than the standard in most cases, and the air quality index (AQI) values for them are in the average and good range in most cases. In about 6% of other cases, this pollutant was higher than the standard limit (AQI > 100), which is for sensitive groups, including people with heart and respiratory diseases, the elderly, and unhygienic children.

In terms of geographical location, Shahrekord city is located 49 degrees and 22 minutes to 50 degrees and 49 minutes east longitude and 32 degrees and 20 minutes to 33 degrees and 31 minutes north latitude, with an area of 2006 square kilometers, 12% of the total area of the province. It has Chaharmahal and Bakhtiari, which is the highest center of the country with a height of 2150 meters and is known as the roof of Iran. Altitude has a great impact on the climate and climate of this city so that the Kurdish city is

significantly different from other regions in terms of climate (for example, in the east with Meybod and in the west with Dezful is the same width and In other words, it can be said that altitude reduces the effect of latitude in this city, which is located on the plain. The city of Kian, Chaleshtar, etc. is also included.

The general orientation of the mountains around the city is mostly northwest-southeast and west-east. The main mountains of the region are Kolah Ghazi mountain with a height of 2600 meters, Sheida mountain with 2600 meters, Shah Nazar Mountain with a height of 2613 meters and Bezler mountain with a height of 2650 meters. The general slope of the region in the northwestern parts is mainly southwest and south and in the northern parts the wax slope is to the south and southeast.

At the end of the last century, Shahrekord was selected from a rural point as the administrative and political center of the region due to the attention of state officials, and it rapidly expanded and became an urban point. In fact, the development of Shahrekord to a point the first international conference on natural hazards and environmental crises in Iran, urban solutions and challenges and its rapid growth is more affected by its natural and economic facilities due to political factors and its selection as an administrative center and has been political in the region. Today, although the above factors have retained their importance, in parallel, the importance of the geographical location and economic role of the city is increasing. In particular, the operation of Khuzestan road and airport has taken the city out of the geographical impasse and strengthened the position of this city.

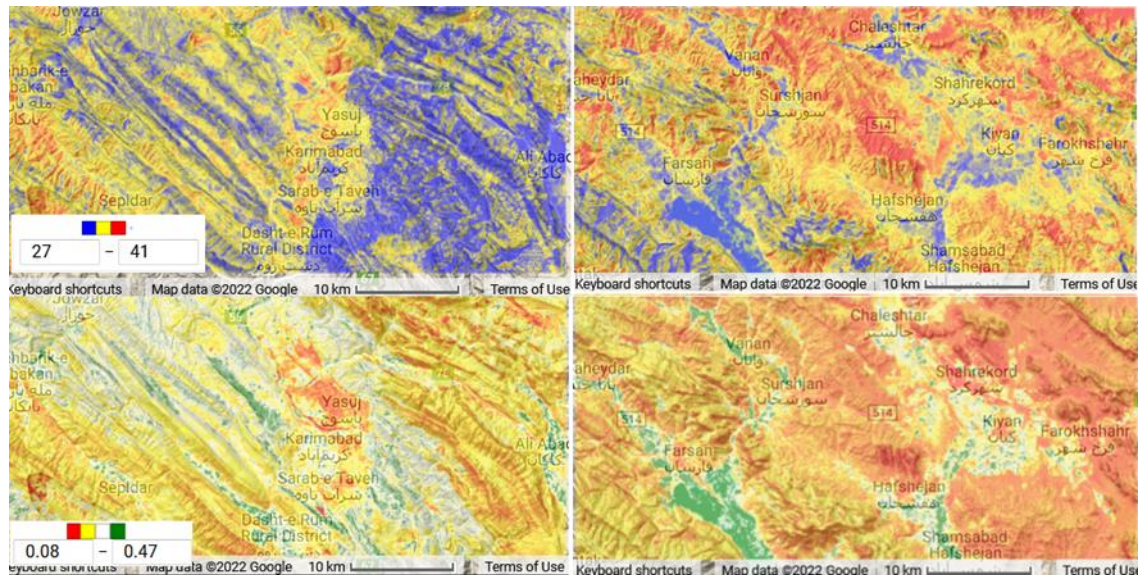


Figure 1. Comparison of the first, NDVI of Shahrekord and Yasuj Landsat images of 2020-01-01 to 2020-12-31

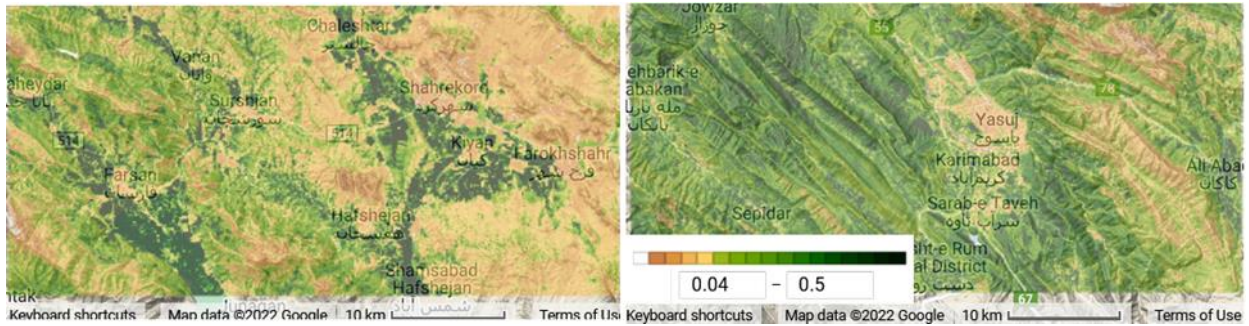


Figure 2. Compare NDVI of Shahrekord and Yasuj in Sentinel 2 images 2020-01-01 to 2020-12-31

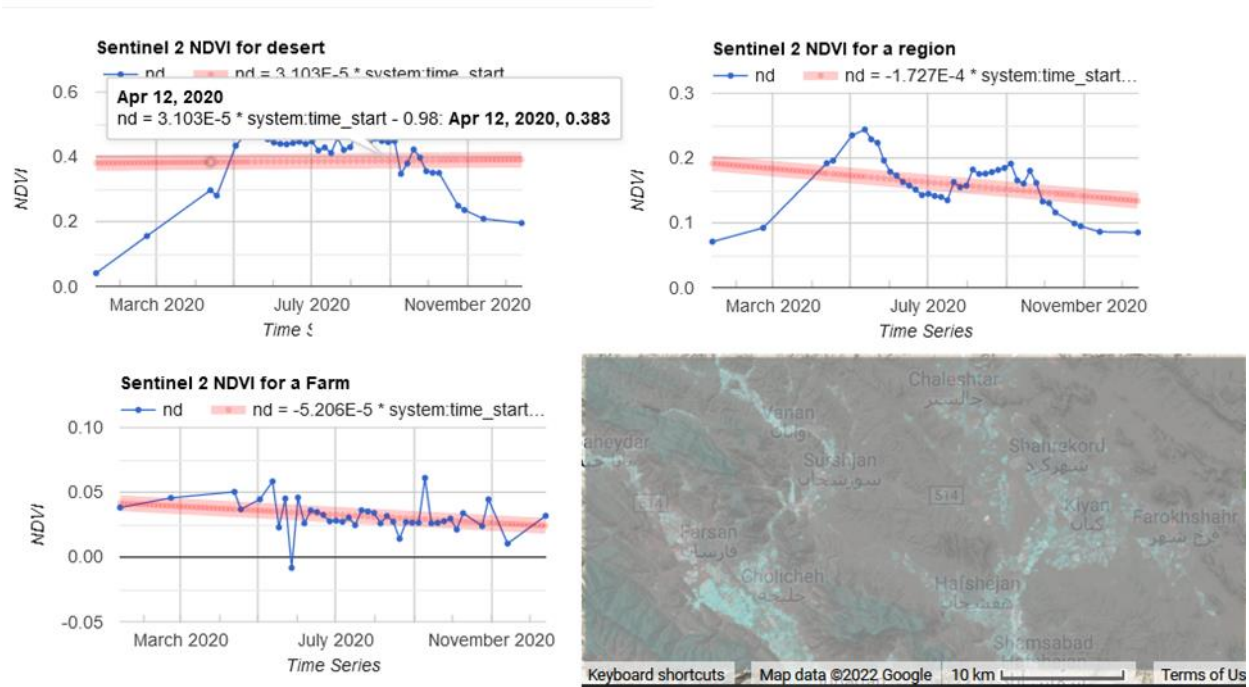


Figure 3. Shahrekord NDVI chart in Sentinel 2 images 2020-01-01 to 2020-12-31

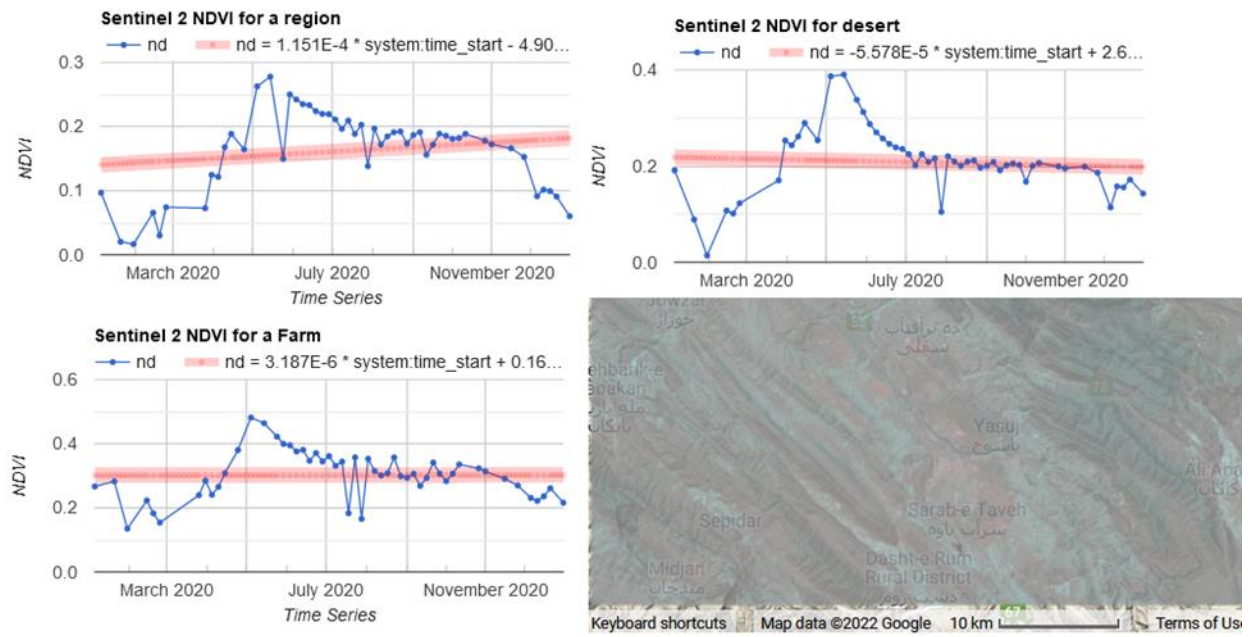


Figure 4. NDVI chart of Yasuj city in Sentinel 2 images 2020-01-01 to 2020-12-31

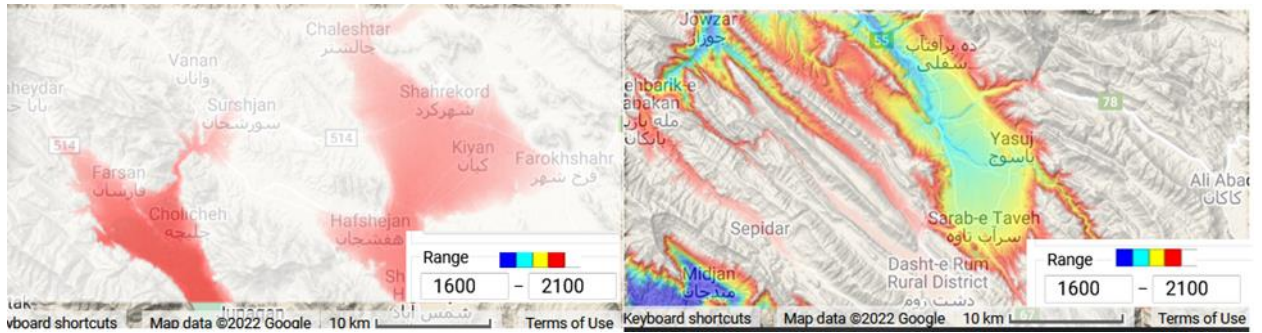


Figure 5. Comparison of Shahrekord and Yasuj DEM in Era-5 images from 2020-01-01 to 2020-12-31

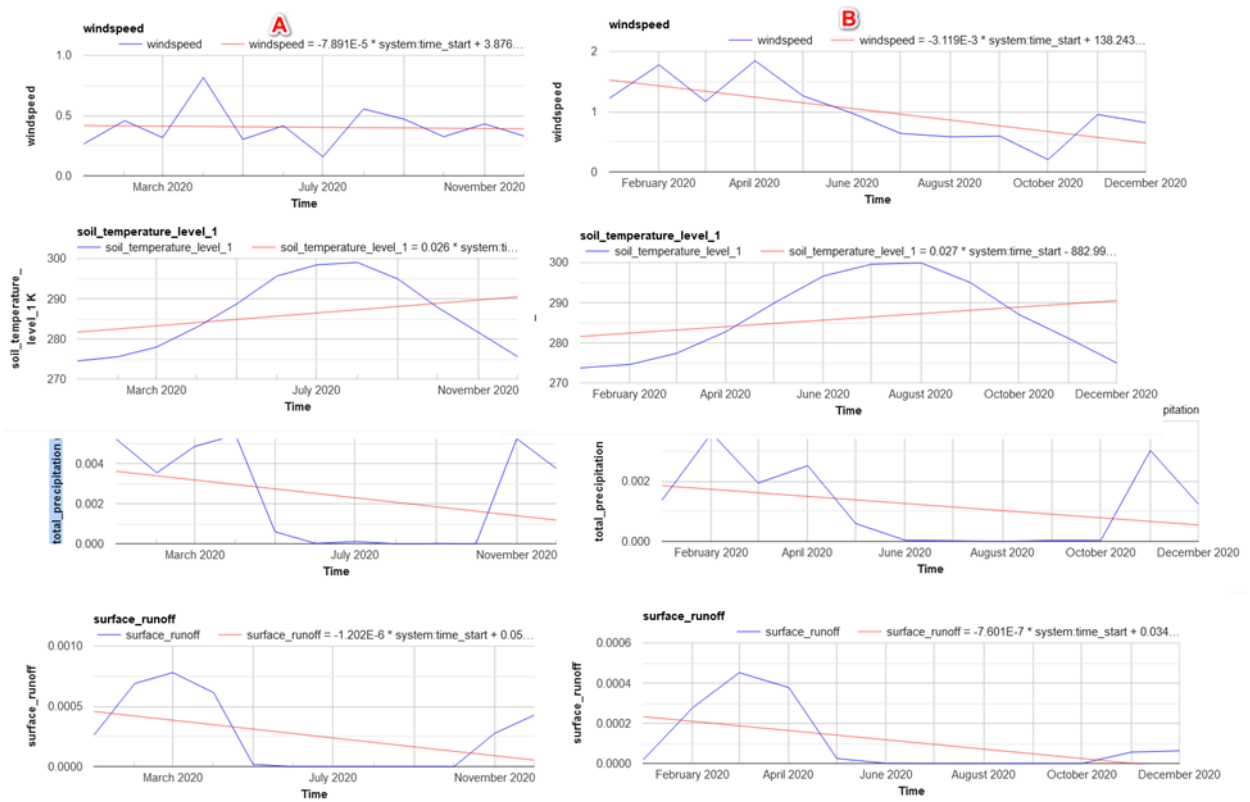


Figure 6. Total precipitation diagram - wind speed - surface runoff - soil temperature of Shahrekord A and Yasuj B in Era-5 images 2020-01-01 to 2020-12-31

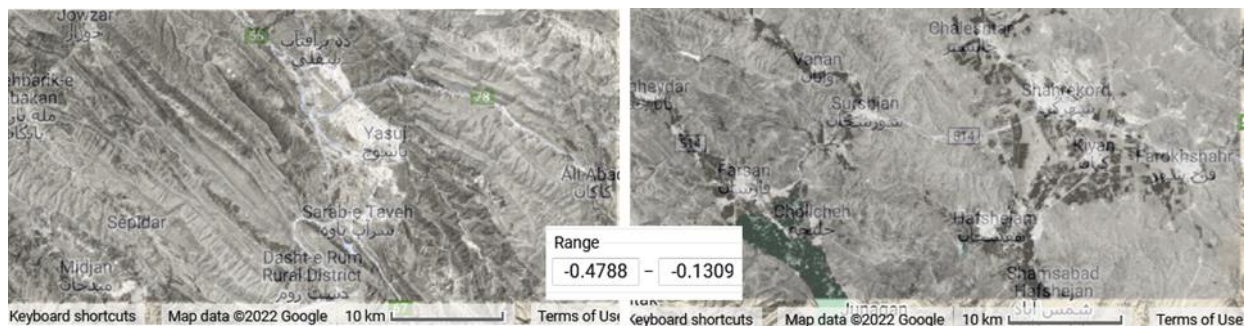


Figure 7. Comparison of Shahrekord and Yasuj NDVI in Sentinel 2 images from 2020-01-01 to 2020-12-31

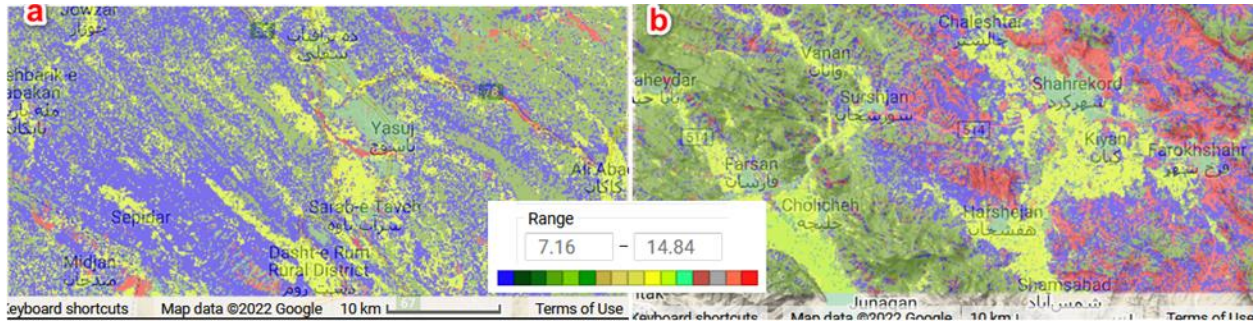


Figure 8. Random classification of Shahrekord b and Yasuj a in Landsat 8 images 2020-01-01 to 2020-12-31

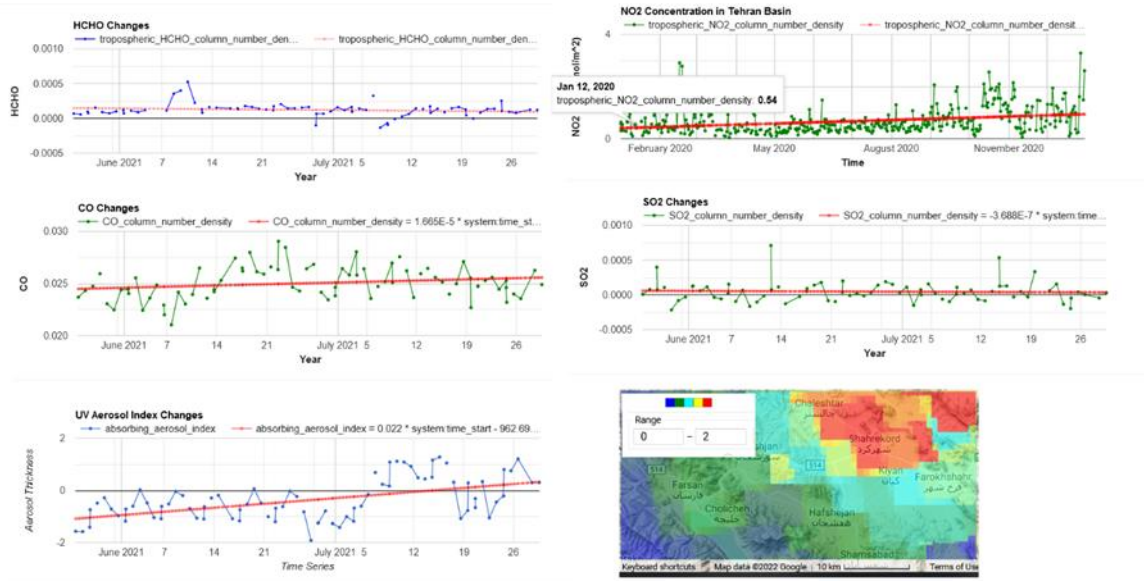


Figure 9. Diagram and photo of Shahrekord industrial pollution in Sentinel 5 images from 2020-01-01 to 2020-12-31

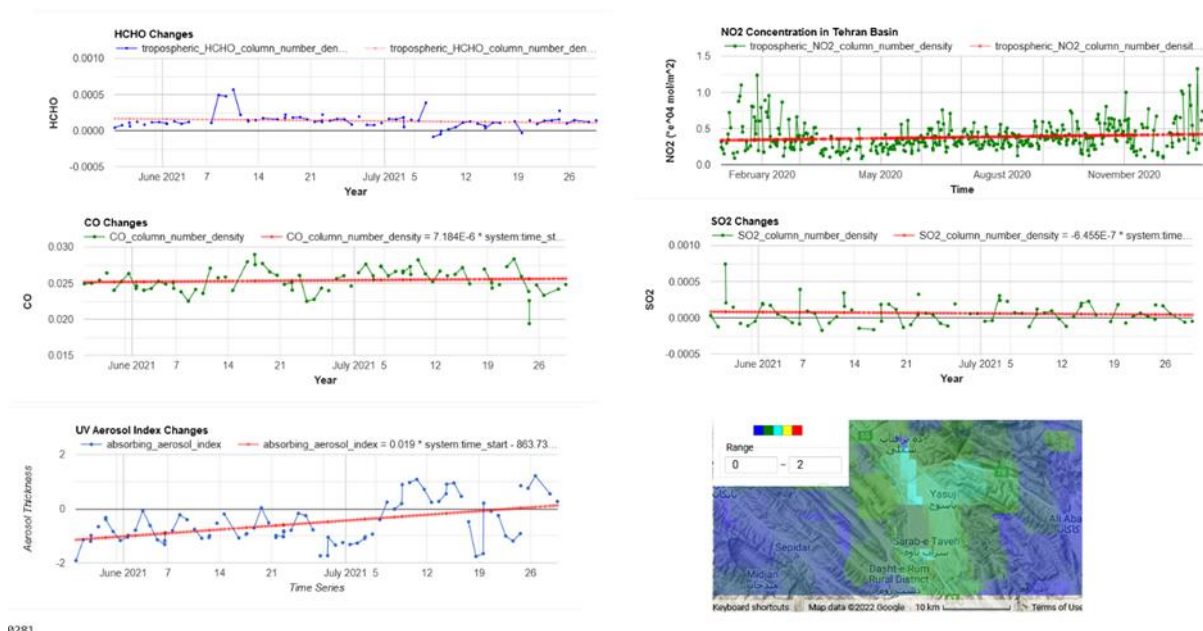


Figure 10. Diagram and photo of Yasuj industrial pollution in Sentinel 5 pictures of 2020-01-01 to 2020-12-31

2. Material and Methods

Parameter Checked

2.1. Geology

Geologically, Shahrekord is located in the Sanandaj-Sirjan zone and on the Zagros fault. Due to the fact that the Zagros fault cloud is the boundary of the high Zagros geological unit and the Sanandaj-Sirjan zone has been determined. Shahrekord is located on the border of these two units so that if we move to the east and outside the heights overlooking the Zayandeh River located in the north of the basin, the geological structure is close to Sanandaj Sirjan and in the west is very similar to the Zagros structure. In fact, it can be said that Shahrekord is located at the foot of the high Zagros, where traces of organization related to the Sanandaj-Sirjan zone can be seen in its eastern areas.

The highest outcrop of the region is related to Mesozoic limestone formations in which Upper and Lower Cretaceous limestones are the most extensive and Precambrian sediments are less widespread. In the Mesozoic sediments, Triassic soils are exposed in a small range and below Jurassic formations with a thickness of about 100 meters and its facies consists of thin-walled and fossilized dolomitic sediments of clayey limestone, sandstone and shale, which is almost similar to the formations of Khaneh Kat in Fars. The Jurassic Formation, which is located steeply on the Kat House Formations, has mostly dolomite and shale in the lower part and alternating calcareous layers in the upper part of the clay, and is present at a limited level at face and toe heights. In this part, it has more shale-lime conglomerate lithology, sandstone and andesitic minerals. Cretaceous formations are present in almost all areas and lithologically include sandstone, shale, thin-walled limestone, reef limestone, marl and orbitolite limestone.

2.2. Soil

In this area, the soils start from the mountain slope in the form of debris, this type of soils are not fully developed and gradually, as more material is transported, circular pebbles and wind-blown alluvium with pebbles are observed. In this part, the soil evolves and comic and classical horizons appear. These two public units are pastures and a small area of it remains under irrigated crops for one year. Deposits around Shahrekord plain, according to land classification, are among the third and fourth degree lands with limited soil type, low and high. In the plains of the slopes, which constitute the main surface of agricultural lands of this plain, the soil has evolved and argelic and calcic horizons (horizons of accumulation of clay and lime) have been formed, and these soils have no gravel, low, high and erosion. In terms of land classification for irrigation, they are considered as first and second grade lands and have no restrictions other than heavy soil texture. In the middle of the plain, low lands, which are generally grassy and swampy and have limited drainage, are considered as fifth grade lands with high drainage restrictions in terms of land classification.

2.3. Groundwater

Shahrekord water resources are mainly located in Shahrekord plain and are the main source of water supply in Shahrekord plain. The type of texture and soil type in Shahrekord plain play a major role in feeding groundwater aquifers and water sources. Depth of alluvial sediments is not the same in all plains. In the Nafch area, the depth of alluvial sediments reaches a maximum of 120 meters and the floor rock in a part of this area is composed of Lower Cretaceous limestones. In the main plain of Shahrekord, the average thickness of alluvium is about 100 meters and in Hafshjan area, the thickness of alluvium is about 50 meters. In general, the water table of Shahrekord plain is of free type and the thickness of its aquatic layer varies between 10 to 150 meters. The water level of the plain varies approximately at least 25.3 and at most 161 meters. The exact direction and flow of groundwater is known, but in the main plain of Shahrekord, the direction of groundwater flow is to the southwest and the western parts are from southeast to northwest, and the slope of groundwater in Shahrekord plain is between 1.6 to 13 / 9 is variable.

The total annual water discharge in Shahrekord plain in 89-90 is equal to 1253.5 million cubic meters and the rate of groundwater level drop in 89-90 is estimated to be 2.4 meters.

2.4. Resources and How to Supply Water to the City

Based on available information? Currently, underground resources located in Shahrekord plain are used to supply water to the city. Shahrekord plain with an altitude of 2150 meters above sea level and an area of 551 square kilometers is very rich in terms of groundwater resources. Extraction of 504/504 million cubic meters of water through 134 deep and semi-deep wells, 171 aqueducts and 93 springs in Shahrekord plain shows the richness of this plain in terms of groundwater resources.

Water consumption (drinking of Kurdish city and adjoining neighborhoods is supplied through 28 wells with an average flow of 400 to 500 liters per second, which is imported in six reservoirs of the city with a capacity of nearly 23,000 cubic meters and distributed through the pipeline network throughout the city. Due to the increasing expansion of the city and increasing the population to meet the water needs of the water transfer project from the large spring Koohrang with a length of 110 km and about 600 liters per second of water to be transferred to Shahrekord (minimum flow) is considered.

Of the 734 wells in the Shahrekord plain, 429 are deep wells with an average depth of 73 meters and an average instantaneous discharge of 33 meters, for a total of nearly 200 million cubic meters of annual water discharge.

- Statistics and information related to the year 2013 of the Water and Sewerage Organization of Chaharmahal and Bakhtiari Province. - Statistics and information related to 2013 Chaharmahal and Bakhtiari Province Water and Sewerage Organization.

By examining the climatic elements, it can be concluded that this city is according to the coupon classification in temperate cold climate with hot and dry summers (DCas) and finally the altitudes of

more than 3000 meters in Koohrang region have a climate (H) which is covered with permanent snow.

The first international conference on natural hazards and environmental crises in Iran, solutions and challenges).

Available related to the climatic elements of the city from the synoptic station of Shahrekord and has been obtained during 20 statistical periods (1991-2011). Shahrekord station is located at an altitude of 2109 meters and a width of 20 minutes and 32 degrees north and a length of 51 minutes and 50 degrees east and is synoptic.

2.5. Climatically diverse topography

And there are different climates in it. Precipitation in the region is mostly influenced by the Mediterranean air currents and mainly low pressure Sudan, which enters the region from the west and southwest and affects the region for 8 months (October to May). The presence of the Zagros mountain range, which is perpendicular to the path of these currents, intensifies their cyclonic properties and causes heavy and heavy rains in the region. Rainfall in the province starts in October and decreases to the maximum in December and then until May. In January, an average of 19% of precipitation falls. Percentage of monthly rainfall between November and April is more than 90% of annual rainfall between June and October is less than 10% of annual rainfall.

3. Discussion

This region has one percent of the total area of Iran, which is located in the bed of the Zagros Mountains. which, despite its small area, has ten percent of the country's water resources. Due to the high mountainous nature, which is in the path of the humid winds of ditran systems and causes the ascent and unloading of these systems, this province has a relatively suitable rainfall. Often, in the highlands, the type of precipitation is in the form of snow, and the presence of snow-covered highlands is one of the climatic features of this province. Due to the young age of the orogenic period, the presence of many natural disasters and hazards such as floods, earthquakes, and landslides can be observed in most parts of this region. Also, frost, drought and lightning are among its other natural disasters.

Atmospheric precipitation, snow and rain originate from the branches of the Karun and Zayandeh rivers, and the watersheds of these two rivers include 85,155 and 2,925 square kilometers, respectively. The highlands of Zagros form the watershed of the rivers Zayandeh Rood, Karun, Karkheh and Dez, and due to the amount of precipitation and the low level of evaporation and the relatively suitable location of the geological formations, most of the surface and underground waters of the country amount to 90 to 05 It supplies a hundred. Chahar Mahal and Bakhtiari region, with its beautiful and pristine nature, welcomes domestic and foreign travelers and tourists in spring, winter and summer, and ecotourism of this province is considered one of its main attractions.

Chaharmahal and Bakhtiari province is diverse in terms of climate due to its geographical and topographic features and there are different climates in it. The rainfall in the region is often influenced by the Mediterranean atmospheric currents and mainly the low pressure of Sudan, which enters the region from the west and southwest and affects the region for 1 month (October to May). The presence of the Zagros mountain range, which is perpendicular to the movement path These currents intensify their cyclonic properties and cause heavy and heavy rains in the region. Rainfall in the province starts from October and reaches its maximum in January and then decreases until May. On average, 84% of rain falls in January. The percentage of monthly rainfall between November and April is more than 45% of the annual rainfall and between June and October it is less than 85% of the annual rainfall.

4. Conclusion

According to the United Nations report, a very important issue for residents and 2011, half of the world's population lives in urban areas, the urban residential environment has become the main habitat

of people around the world; The urban network is one of the most important factors that can create balance in the region and is one of the best ways to achieve the desired goals.

Removing inequalities is effective. In the last few decades, due to rural migrations to cities and the transformation of some of them into big cities, these cities have undergone changes and transformations. Since the urban system, organized from the cities of a region, in terms of distribution and size of population and functions, which have a hierarchical structure and interrelationships with each other, their recognition and balanced leveling, in addition to influencing costs, efficiency and Operation will optimize the urban system in the future.

The optimal living model in urban communities raises the need for land use planning in order to organize land use policies and changes in cities in this direction. Peripheral areas of urban areas are influenced by many factors. Among them are environmental changes, natural disturbances and human activities. The number of environmental changes is a function of the demographic, structural and work characteristics of the host community. In such a situation, planning to expand the green space plays a very important role in improving the environmental quality and the standard of living of its residents. Considering the ever-increasing development of the population along with the widespread migration of villagers to urban areas and the emergence of environmental problems, including the destruction of high-quality agricultural and pasture lands, the need to study the consequences and side effects of such actions is considered imperative, considering the transformations Widely used in land use and vegetation, the use of remote sensing technology has become an important tool in the investigation and monitoring of changes. The extraction of vegetation use maps using satellite data is one of the fastest and least related to the city of Yasuj. It can be said that the main factor of the emergence, development and growth of this city was the result of the direct influence of political decisions and the will of the central government. The rapid increase in the population of Yasuj, especially from the 50s onwards, is due to the existence of employment opportunities, the creation and concentration of infrastructure facilities and services, such as the construction of main roads and access at the city and province levels, the construction of a 96-bed hospital, the construction of an airport, The establishment of the university, the natural attractions and the suitable climate of this city have undoubtedly been the effects of population growth in the future in the emergence of changes in the physical transformations of the city and its expansion. , the continuation of the process of population increase and migration and as a result the expansion of the size of the city causes the destruction and quantitative and qualitative reduction of vegetation in the region. The study of population statistics of Yasuj city during the years 1986 to 2011 shows that in these years the population of Yasuj city has been associated with high growth. So that the population of 29,991 people in 1986, in 1991, the population of Yasuj reached 48,958 people with an average annual growth rate of 3.3% compared to 1986, and after that the population of this city grew with a growth rate of 3.7%. In 1996, it reached 69,133 people, and in 2006, the population of this city reached 100,544 people with a growth rate of 2.78. Finally, in 2011, the population of the city reached 108,505 people. According to the mentioned materials, it can be concluded that the city of Yasuj has gone through a peak period of population growth and is moving towards population stability and balance.

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