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Effect of Climate Characteristics in the Scientific Levels of Students: An Applied Study on the City of Najaf

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Abstract. The research includes study of a group of climatic elements in Najaf governorate and their effects on the scientific levels of students. This was done by adopting many statistical measures (Regression factor analysis, standard deviation regression, standard deviation) to show that effect and through the adoption of grades for students in materials (Mathematics, English, and general average), with a mixed sample and both (males and females). During the field study, we encountered many difficulties, most importantly, the lack of cooperation of the relevant authorities to obtain student data, which forced us to study directly in the field. The research results showed a difference in the calculated statistical values, but they often came in a significant and logical manner. The study included the following aspects; The characteristics of scientific levels of students in the city of Najaf, the characteristics of elements of the atmosphere on the city of Najaf and the elements influence of atmosphere of the city of Najaf on scientific levels of students.

1. Introduction

Man affected physically, psychologically, mentally and behaviorally by the surrounding climatic conditions & elements & phenomena. The effect varies both spatially and timely. The intensity of the effect varies according to the climate and its extremities, as well as the physical and mental abilities of the human as well as the human condition (sitting, standing, walking etc.) also by age, gender, type of food, degree of acceptance or adaptation to the external environment and duration of exposure to this climate or other. The relationship between man and his environment was interested the thoughts and opinions of many philosophers, ecologists, geographers, thinkers, historians, and also those interested in sociology and others, each presenting his views, some of which came in harmony with others establishing theories and schools, Others presented a traditional view follow the style of their ancestors or contemporaries .Environment plays with its various elements, a clear role in man's life, activities and areas of currency, and on all living things. The natural elements of the surface, climate, soil, water, natural plants, etc. play their role in different forms in human life and organisms, whether directly or indirectly. It is worth to be mentioned that these elements and phenomena may share a certain picture of life for man or one of which may dominate other factors or elements in changing that natural environment. But natural changes such as large climatic disasters, for example, have led him to live in different environments from which lived, and that man may adapt sometimes and strive at other times to create safe living conditions for himself. The research problem focuses upon a number of questions that are the main axes of the research. Briefly (how do the climatic elements of the study area affect the scientific levels of students, and what kind of influence and what its extent)?. The researchers assume



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that there is an effect on a number of climate elements especially (sun brightness, maximum and minimum temperatures and relative humidity) in the study area upon the scientific situation of students in the city of Najaf.

1.1. Study Area

1.1.1. Spatial boundaries:

The city of Najaf is administratively located in the governorate of Najaf, which is located between two latitudes (29-50 - 32 32) north and longitudes (42-50-44 44) east. It is located within the subtropical zone, the governorate is located in the southwestern part of Iraq, and its shape takes a northeastern, southwestern, and near-elongated stretch. Its short rib forms the southern border with Saudi Arabia. It is bordered to the north by the governorates of Babylon and Karbala, to the east by Qadisiyah and Muthanna governorates and to the west by Anbar governorate. The total area of Najaf Governorate is 28824 km², which constitutes 6.6% of the country's total area of 435244 km². The governorate is administratively composed of Three districts and seven areas [1]. Our study (Najaf city) is administratively located in the center of the Najaf governorate. The city has an astronomical position at the longitude (44 19) east and on latitude (31-59) north. It is surrounded by a group of urban centers from the north to Al-Haidariyah, from the east to the Kufa district, from the southeast to Al-Manathira district and from the south-west of Najaf Sea (Figure (1)).

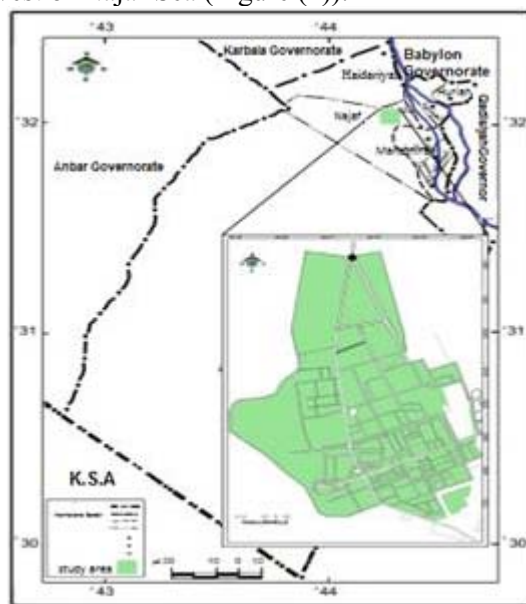


Figure (1) Location of the study area of Najaf Governorate [2]

1.1.2. Time limits:

The time limits included in the study of research variables included data for students and students in the academic year (2014/2015), while data on climate components (1983-2015) and then to determine the data rates of climate elements by seasons for the same period. The winter season included March 14-17, spring (March 18 - May 15), summer (May 16 - September 23) and autumn (September 24-13).

1.1.3. Subjective boundaries:

Including the boundaries of the subject of the research, which includes the study of a random sample of the intended students of a number of primary schools and students in the secondary for both sexes in the city of Najaf, and based on the rates of materials (mathematics, English, general average) The

climatic season in which the student was born, to determine the type and extent of its influence on the elements of the climate (solar brightness, maximum temperature, minimum temperature, relative humidity), by analyzing statistical relationships using XL and Minitab 16 , By defining a simple linear regression analysis (R) for different Relationships and simple deviation standard (Sd) and then analyzing the degree of impact analysis through the coefficient of determination (R-sq), as well as identifying the type of relationship and its degrees.

2. Materials and Methods

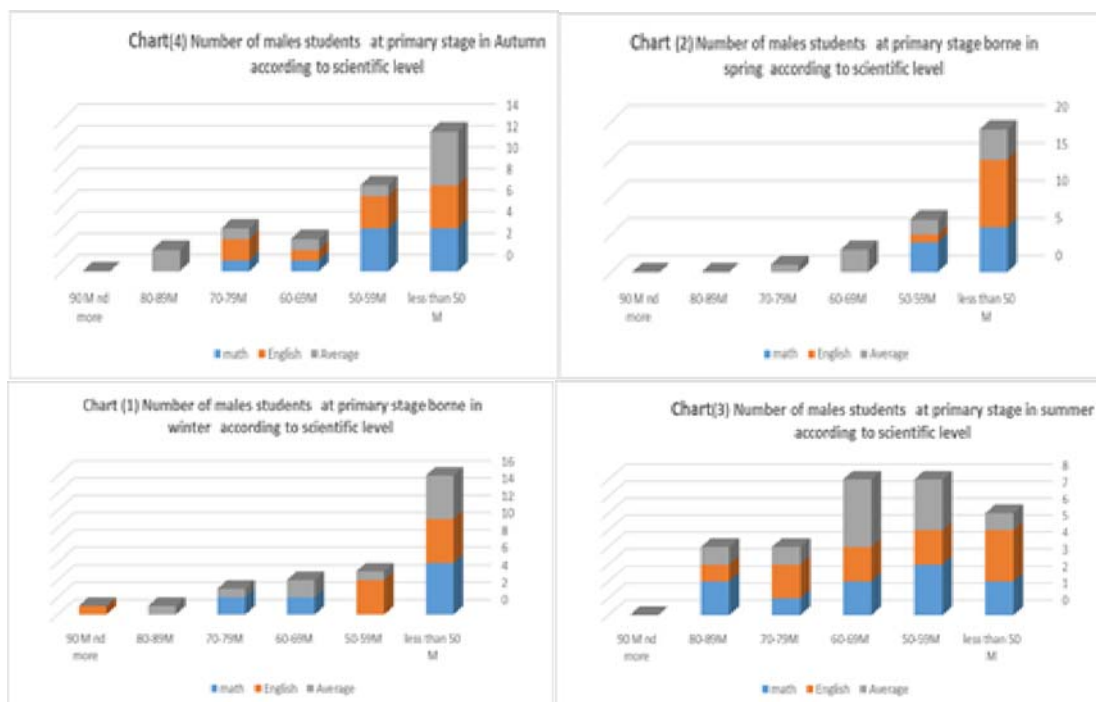
A sample of 40 male students and 40 female students, 80 students, were adopted at the sixth grade stage. The same number of students at the secondary level (80) students to be the total (160) students, and from different schools. The scientific levels were divided into (6 categories) as follows: (less than 50), (50 - 59), (60 - 69), (70-69), (80 - 89), (90 and more).

3. Results and Discussion

First Topic- Characteristics of the scientific levels of students in the city of Najaf

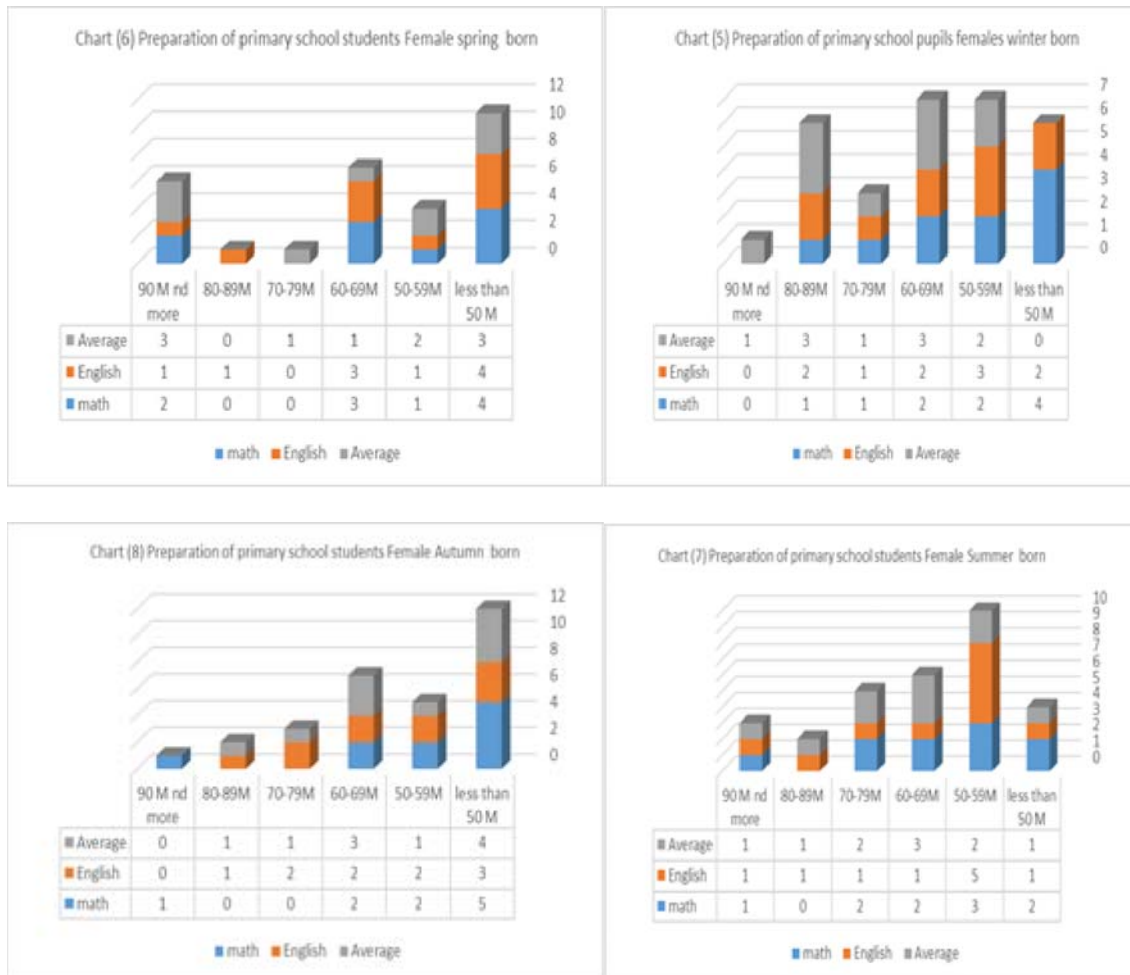
First: Classification of male students according to scientific level and according to the seasons of the year:

Figures 2-5 shows that there is a clear variation in the levels of students according to the approved year. The highest levels were recorded in the spring for the level of the class (less than 50), which is weak and for all subjects under study (English, mathematics, general average) for 19 students. Followed by the same category in the winter season (16 students), while there were no repetitions of students in the spring for the categories (89 and more) and summer (90 and above) and autumn (90 and over), indicating the low level of scientific students [3].



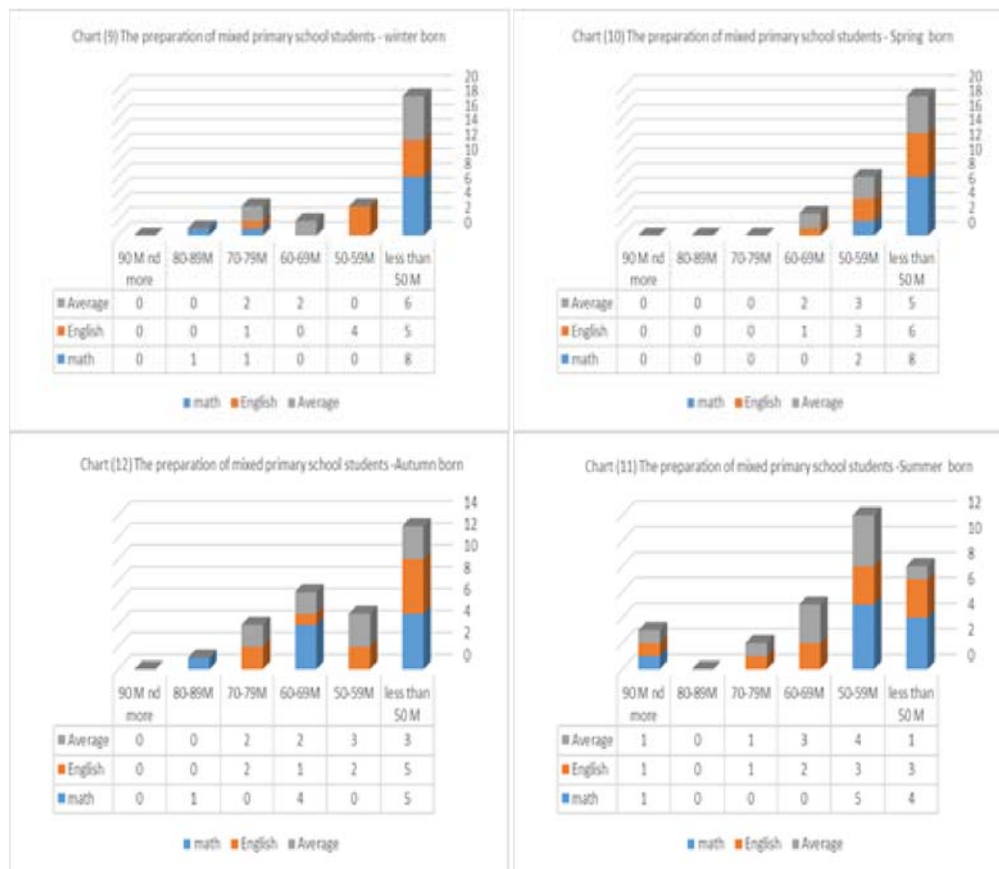
Figures (2-5) Classification of female students according to scientific level and according to the seasons of the year

Figures (6-9) show that there is also a variation in the frequency of all levels and for all students. The highest repetition rate for all subjects was recorded in Autumn (for the class less than 50) with 12 students followed by the same class in the spring (11), The repeats for the upper classes (89 and above) were not repeated for students in mathematics and English in the category (90 and above) in the winter, mathematics in categories (79-70), (89-80), and the average for the same category in the spring, as well as in mathematics for the class (89-80) in the summer.



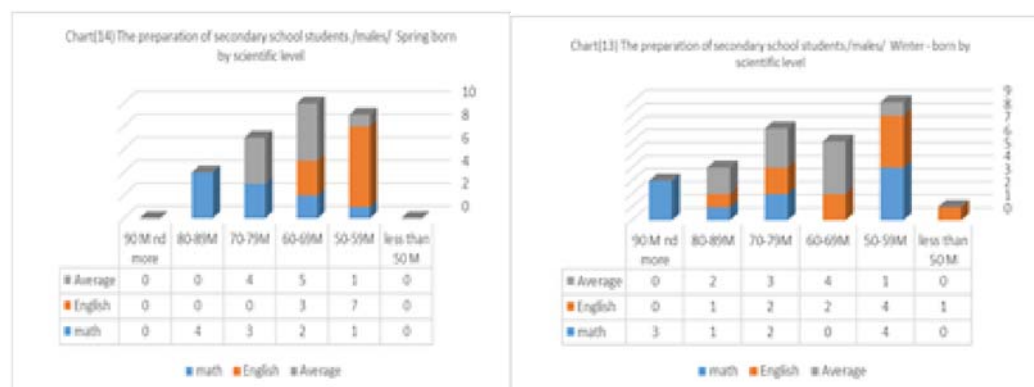
Figures (6-9). Classification of Students (Mixed) according to scientific level and according to the seasons of the year [4]

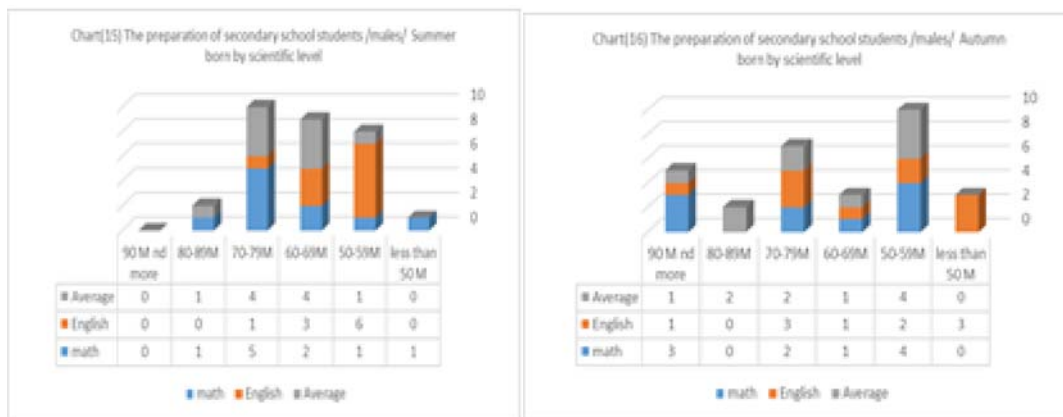
Figures (10-13) show that the highest concentration of students was recorded in spring (30 students) and the class (less than 50) followed by the same category in autumn with (25) students, while recording only one repetition and all materials in Fall level (90 and above) and spring level (80-89) indicate that the intensity of the variance often appears in spring.



Figures (10-13) Classification of male students according to scientific level and according to the seasons of the year

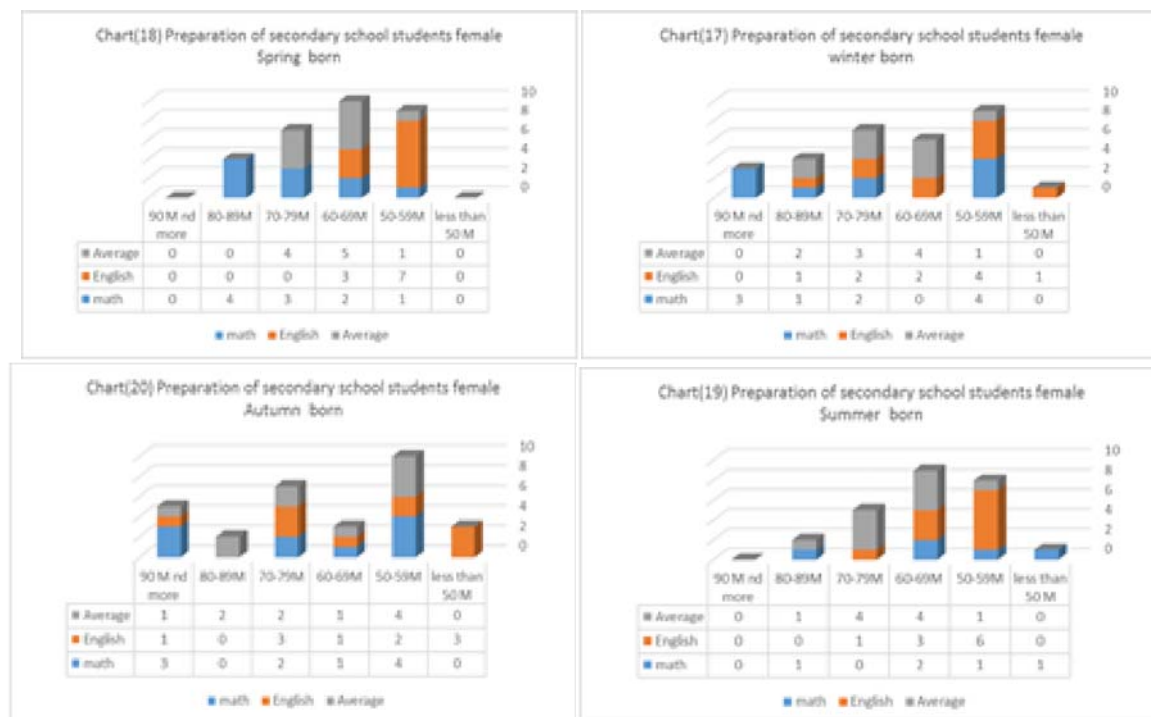
Figures (14-17) indicate the difference in the number of repetitions of secondary students according to birth of males, with the highest repetition of materials in winter and spring and the first class (less than 50) and 19 students each, (90 and above). It is also noted in Figure (14) that most of the repetitions for spring are concentrated in the first three categories, while no recurrence was recorded for all studying subjects in the other three categories.





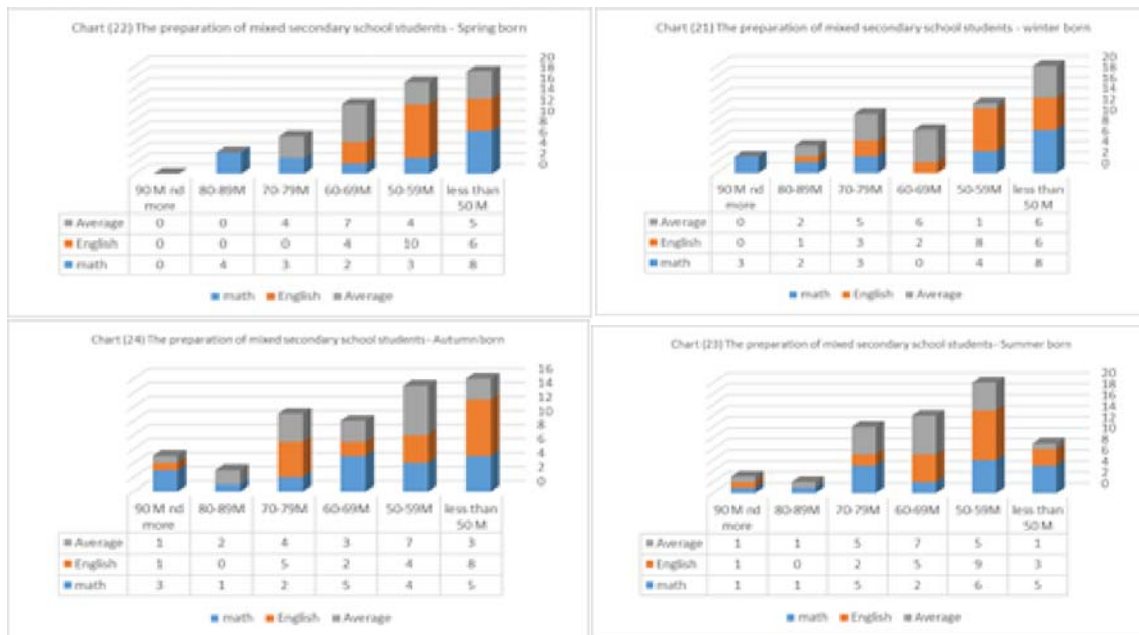
Figures (14-17) Classification of female students according to the scientific level & according to the seasons of the year

Recurrence indicates of levels of female students according study subjects a clearer variation than the rest of the students. The highest repetitions (15 students) were recorded in categories 60-69 in spring, summer, and 50-59 in autumn. In spring, there were no recurrences for the class (less than 50) and for all study subjects and categories (90 and above). In addition, no recurrences were recorded in the last category in the summer, indicating a sharp variation in the levels of the students in Figures (17-20) [5].



Figures (18-21) Classification of students (mixed) according to level and according to the seasons of the year:

Figures (22-25) show that the highest concentration of repetitions occurred in the winter, the first class (less than 50), the number of students (20) followed by the same class and the spring season (19) students while there was no repeat of the same season (spring) Upper (90 and above) also indicates the highest variance of frequencies obtained in the spring



Figures (22-25) Characteristics of elements of the atmosphere of Najaf city

3.1 Actual Brightness Characteristics

The actual solar brightness represents the actual hours of sunrise without the effects of dust, fog and clouds, which actually reaches the surface of the earth from the sun's brightness. The atmosphere of the city of Najaf has high rates of solar brightness and seasonal variation. The highest rates in the summer (10: 7 hours) for lack of cloudiness or what impedes the arrival of radiation to the earth, while the lowest recorded in the winter (7.1 hours) for cloudiness and what obscures the arrival of solar radiation, which means the greatest effect, whether negative or positive, during the warm season of the year, Figure (25) (6).

3.2 Characteristics of low temperature rates:

The lowest temperature recorded during the day, and recorded the variance of this element in the study area to reach the highest rates during the hot dry summer at rate (20.6 C) because it is the season that has the highest rates of solar brightness while recording the lowest rates in the winter is relatively cold (9 C) for the lack of radiation and the resulting solar brightness, Figure (26).

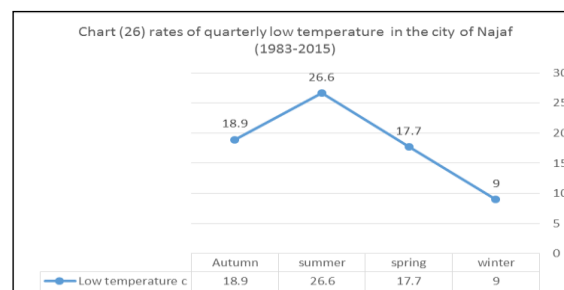


Figure 26. solar brightness

3.3 Characteristics of High Temperature Rates:

The highest temperature recorded in the day, and notes from the Figure (27) that the highest rates were also recorded in the hot dry summer to orthogonal the sun radiation and increase the rates of solar brightness to reach (42 C), while reaching the lowest rates in the cold winter (20.8 C) For high cloudiness and low solar brightness in the study area.

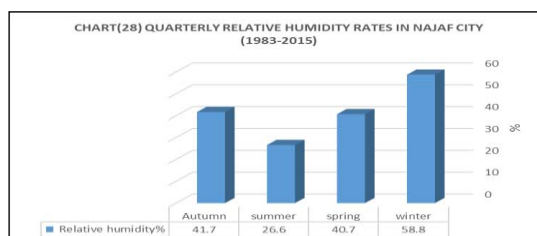


Figure (27) highest rates were also recorded in the hot dry summer to orthogonal

3.4 Characteristics of relative humidity:

The percentage of water vapor in the atmosphere is about to reach saturation. The Figure (28) shows an increasing while temperature decreasing as in the winter season to (58.8%), while in the summer it significantly decreasing to (26.6%) because of high temperature.

In order to demonstrate the optimal thermal status of the student in the study area, the researchers relied on the application of the optimum effective heat technique in which the human lives, as in chart 29, which indicates that (6 months) in the governorate is uncomfortable, and most in July and August, either to be very cold or very hot, while the region see only two comfortable moderate months they are April and October. So it is best that the duration of study for students in our region in the comfortable and transitional months [7].

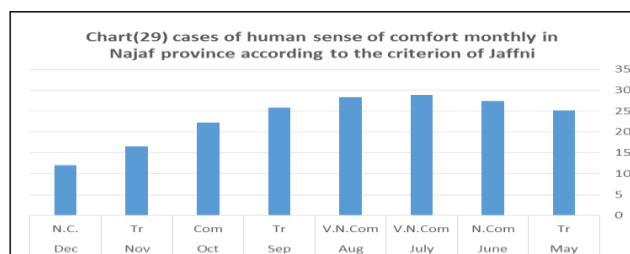


Figure (28) an increasing while temperature decreasing as in the winter season

Third topic - The Influence of the elements of atmosphere on scientific levels of students in Najaf city

The climatic conditions affect people physically and psychologically. They effect of the processes of (breathing, sweating, movement, thinking, etc.). They also effect of the balance of energy within the human body and then the amount of food consumed. Extreme climatic conditions also cause many diseases. A number of these diseases have been associated with a particular climatic season, such as respiratory disease, flu and Osteomalacia in colder environments, where exposure to solar radiation, typhoid, cholera, and the feeling of weakness, lethargy and laziness in the warm atmosphere, while allergic diseases and asthma in the transitional spring often . Extreme climatic conditions provide an environment conducive to the emergence of viruses, germs or diseases and spread it. The degree of human comfort depends on the elements of climate and ventilation, as well as the psychological and mental factors. Experience has shown that the best thermal range for human comfort lies between (17-25 C) (8). While the study area is characterized by a large high thermal that often exceeds the mentioned

range above, so that the temperature in summer reached to (50 C). The climate is one of the most prominent natural elements affecting human activity and its development, because it is the main controlling factor in life as well as other environmental factors. The study of climate and atmosphere is very important for humans because of the close relationship between climate and many aspects of life and environment. The impact of climatic elements on the human body and its activities can be summarized as follows:

A- There are two types of effects of solar radiation they are the effect that depends on the photochemical reactions of the skin and the eye and the contribution of solar radiation in the process of heat balance of the human body, the other effects are direct and represent the production and synchronization of biological systems and the generation of skin rash caused by the interaction of light with photoreceptors circulating in the blood [9].

B-There is a physiological fact that man can perform muscular work better than mental work in thermal conditions more than ideal or normal one , but in cold , refreshing climates man can bearing it without trouble, these conditions are conducive to mental activity[10].

S. Sourth Huntington has reached significant results through his studies of students and workers in the eastern U.S.A. and Canada that [11]:

A- A person reaches maximum physical activity if the temperature ranges between 15-18 C and reaches the maximum mental activity if the temperature outside the house (3.3 C) and with the occurrence of frost at night.

B- One-run climate reduces physical activity as well as sudden changes in climate.

C- High humidity increases human activity if the climate is cold, but if the climate is hot, it leads to laziness and skin degeneration.

D- Hurricanes weather increases the desire to work and ability but the weather changes should not be sudden.

Recent scientific studies have shown the danger of stress and anxiety that may be experienced by the mother during pregnancy and the serious consequences that result from the following:

1- Tension affects the heart of the fetus and harms it significantly.

2- Stress during pregnancy makes the child nervous.

3- Also affects the child's motor development.

4-Affects the child's ability of writing.

The doctors explained the effects that occur to the child when mother tension and being under pressure and nervous, resulting in the fetus being affected by the cerebellum, as it is responsible for the movement and development of the child motor later. Pregnancy lasts for 280 days or 40 weeks. and for that period Its effect on the body of the pregnant woman and her psychological effects and a correlative and physiological relationship arises between the pregnant and the fetus has an effect on the development of the fetus and its psychological and physical development. In that period, the fetus is one part of the pregnant body, which affects both each other [12]. Studies also indicate that the climatic conditions that cause diseases to humans and the pregnant mother, for example, the infection of pregnant women with flu accompanied by high temperature in the second half of their pregnancy. Their babies may have developmental problems later, as a US study at the University of New Jersey has shown (6,000 women)

that the high temperature associated with the flu virus that causes these health problems for the fetus. The second half of pregnancy is the period in which the fetus's brain is formed. The problems that can be experienced when child reaches to school age or even before school are difficulty in understanding, comprehension, concentrating difficulty, and overall weakness in performance compared to those of the same age. Recent studies show that both temperature, relative humidity and wind speed, as well as interaction between these factors are determines how a person feels comfortable, and thus his ability to understand, awareness, and engage if he is a student with the requirements of the learning process [13].

First: Climate Effects of All seasons of Student Levels:

Statistical data indicate that there is a clear variance in the coefficients of regression, identification and deviation between the values of each component between the levels of students and for all stages and for each of the elements under study (actual solar brightness, minimum temperature, maximum temperature, relative humidity), and generally the following results can be included, seen tables (1-4).

1 -The intensity of high light resulting from solar radiation to strain the eyes, causing poor vision and the incidence of cataracts and blue-eye disease, which occurs in the desert and polar environments where the sun is reflected strongly on the surface of the earth during the summer, which varies the length of the day depending on the astronomical location [14]. The effect of solar radiation on human health varies according to the color, composition and thickness of the skin, as well as the difference in their wavelengths, as it is correlated with the human body's reflections of radiation and that the highest proportion of the skin is reflected in the field of visible and near-infrared radiation (0.4-2.5) And outside these wavelength limits, the non-reflected ratio is less than 10 % [15]. The highest linear regression coefficient for all levels and seasons was recorded for the relationship between the actual solar brightness and the levels of students with (-32.7) for the first category (50 and less). In other words, the increase in brightness has a negative effect when it increases the levels of achievement of students become low. Relationships have varied, often-positive ones, except for the relationship between the first and fifth levels, which is counterproductive. The positive relationship indicates that the increase in the level of students for each stage increases with increasing brightness and the opposite is true when relations are negative.

All relations with the rest of the elements were recorded in the first category (level 1) Inverse relationship, except that the relative humidity component recorded a positive one. The highest coefficient of R-sq.% was recorded for the relationship between the levels of students and the solar brightness at (13.9%) for the first category followed by the second category, while the sixth category (90 and more) less coefficient of determination (0.3), indicating the weak impact of this level Increase solar brightness and subject to other influences. Figure (2). Table (1).

2. The effect of the lower temperature was also varied effect on the levels of students, with the highest regression coefficient in the second category (5.6) and the coefficient of determination (12.1%) and with a very large standard deviation (4.2) compared with the other levels. The relationship was positive when temperature dropped the level of students decreased at this stage, which is a logical relationship, while the highest coefficient of (11.3%) for the level of the first category (50 and less), but the relationship was positive the lower temperature leads to decreasing of student's level, Table (1) Figure (3).

3.The low of minimal temperature degree causes a great damage in the human body. The physiological functions are unable to compensate the body with the lost heat, and people suffer from a range of diseases that accompany the drop in temperature (Colds, frostbites, heart diseases, etc.) Heart disease, heart attack, cardiovascular disease, and other heart disease and problems at low temperature, which result from changes in the blood structure, which occur in the winter, where the speed of blood clotting and the accumulation of platelets in the blood vessels and reduce the loss of heat [16].

4 - There were variable relationships between the maximum temperatures and levels in the province of Najaf, where it was found that the groups (first and fifth) are inverse relationships, the higher the rates of extreme temperatures lead to decreasing of level of students, a logical relationship considering that the maximum temperature has a negative impact In the thinking and study of students in general. And has a higher coefficient of determination (11.2%) in the first category, while the other levels have positive relationships and the highest coefficient of identification (12%) in the second category of students in the study area. However, the highest deviation coefficient in the first category was also recorded (7.8). Table (3) and Figure (4). The rise of temperature has a clear effect on the human body through the secretion of enzymes affecting the voluntary and involuntary activities. Seasonal diseases are closely related to this element. For example, the mosquitoes Mosquito (Malaria-bearing) is born and breed in areas where the monthly temperature rate is higher than (16°C). The disease that is frequent in hot and dry places the respiratory diseases in addition to the exposure of the eye sensitivity and euphoria, which is frequent in the hot dusty atmosphere. The rise in temperature is increasing the incidence of disease, many diseases such as food poisoning, typhoid, fainting and others.

5 - The effect of the relative humidity component in the levels of students is different from the rest of the elements as all relations (inversely) recorded levels of students except the first and fifth categories, indicating that the effect of relative humidity has a negative impact on the levels of study or learning or the intelligence of students (11.9%). The levels of students decreased with the increase in relative humidity. The highest change was recorded in the regression coefficient (-15.4) in the second category. (50-59), figure (5). The relative humidity affects human health and its decrease leads to the drying of mucous membranes lining the respiratory system, and its low percentage in cold environments leads to cracks in the skin, and its rise in warm environments leads to a feeling of distress and increased psychological condition if accompanied by high temperature. The relative humidity is one of the factors responsible for the difference in the distribution of diseases from one region to another. High humidity and low temperatures lead to rheumatism, inflammation and joint pain. The wet cold climate is characterized by increased activity of cold and flu viruses. High humidity, which is accompanied by high temperature, also contributes to the growth of germs and bacteria that play a role in disease transmission [17].

Table (1) Statistical relations between the levels of students in Najaf province and the actual solar brightness / hour [18].

3.10 Category	3.9 Levels	3.8 Regression coefficient	3.7 Selection factor R-Sq%	3.6 Standard deviations	3.5 Relationship type and strength
3.16 First	3.15 less than 50 M	3.14 -23.7	3.13 13.9	3.12 7.7	3.11 Inverse strong moral
3.22 second	3.21 50-59M	3.20 0.81	3.19 13.4	3.18 4.2	3.17 A positive moral
3.28 Third	3.27 60-69M	3.26 0.2	3.25 9.1	3.24 3.6	3.23 A positive moral
3.34 Fourth	3.33 70-79M	3.32 0.3	3.31 4.8	3.30 3.6	3.29 A positive moral
3.40 Fifth	3.39 80-89M	3.38 -5.4	3.37 4.1	3.36 2	3.35 Inverse moral
3.46 Sixth	3.45 90 M & more	3.44 0.1	3.43 0.3	3.42 2.1	3.41 A positive moral

Figure (29) coefficient of simple linear regression and the direction of the relationship between the element of actual brightness and the levels of students in the province of Najaf brightness and the levels of students in the province of Najaf.

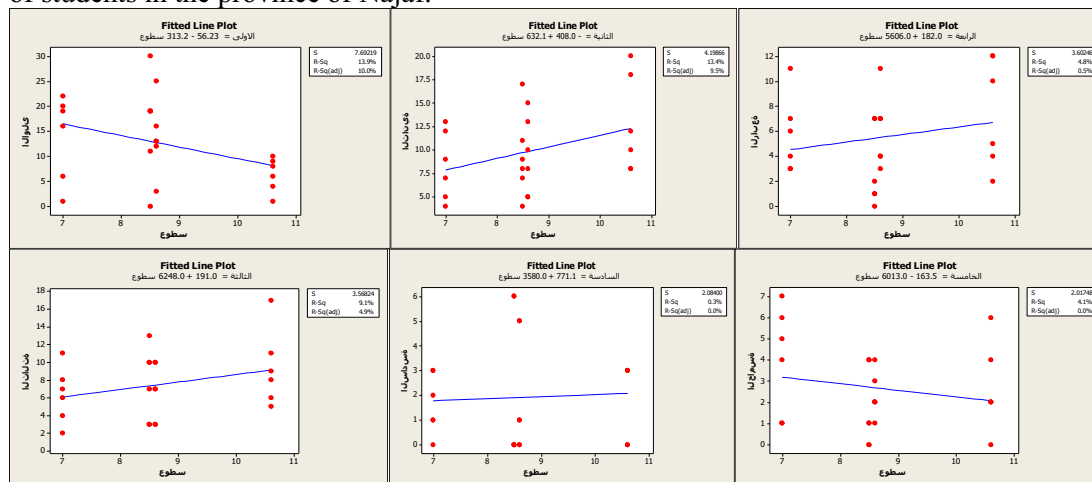


Table (2) Statistical relations between the levels of students in Najaf province and the Low Temperature /C [19].

Category	Levels	Regression coefficient	Selection factor R-Sq%	Standard deviation s	Relationship type and strength
First	less than 50 M	0.4	11.3	7.8	Inverse moral
second	50-59M	0.2	12.1	4.2	A positive moral
Third	60-69M	0.2	8.1	3.6	A positive moral
Fourth	70-79M	0.1	3.7	3.6	A positive moral
Fifth	80-89M	0.1	5.9	2	Inverse moral
Sixth	90 M & more	0.02	0.4	2.1	A positive moral

Figure (30): The simple linear regression coefficient and the direction of the relationship between the lower temperature and the levels of students in Najaf governorate

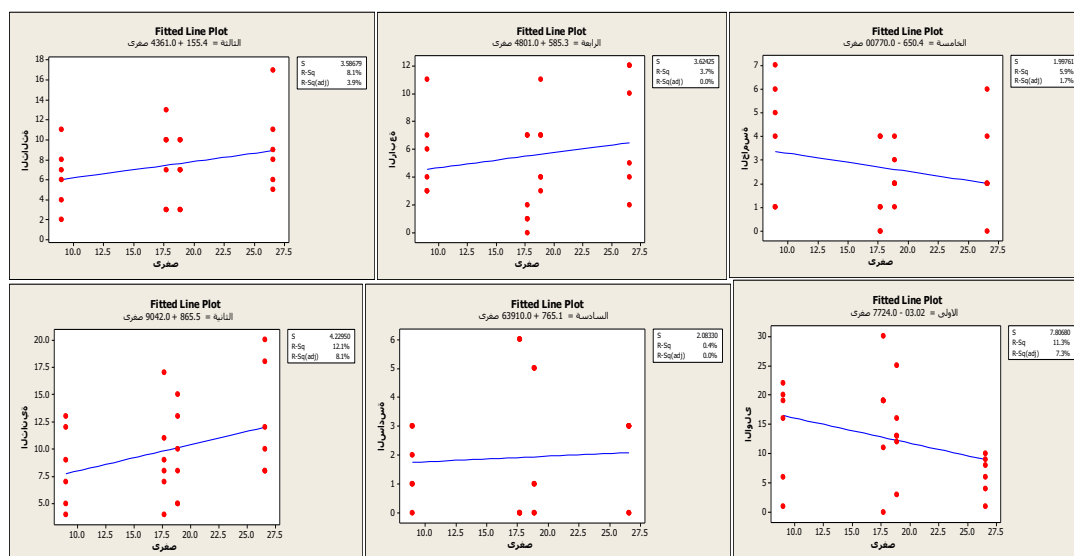


Table (3) Statistical relations between the levels of students in Najaf province and the Maximum Temperature /C [20].

Category	Levels	Regression coefficient	Selection factor R-Sq%	Standard deviation s	Relationship type and strength
First	less than 50 M	-23.8	11.2	7.8	Inverse strong moral
second	50-59M	3.6	12	4.2	A positive moral
Third	60-69M	3.2	8	3.6	A positive moral
Fourth	70-79M	2.7	3.7	3.6	A positive moral
Fifth	80-89M	-4.7	6	2	Inverse moral
Sixth	90 M & more	1.4	0.4	2.1	A positive moral

Figure (31) coefficient of simple linear regression and the direction of the relationship between the maximum Temperature and the levels of students in the governorate of Najaf

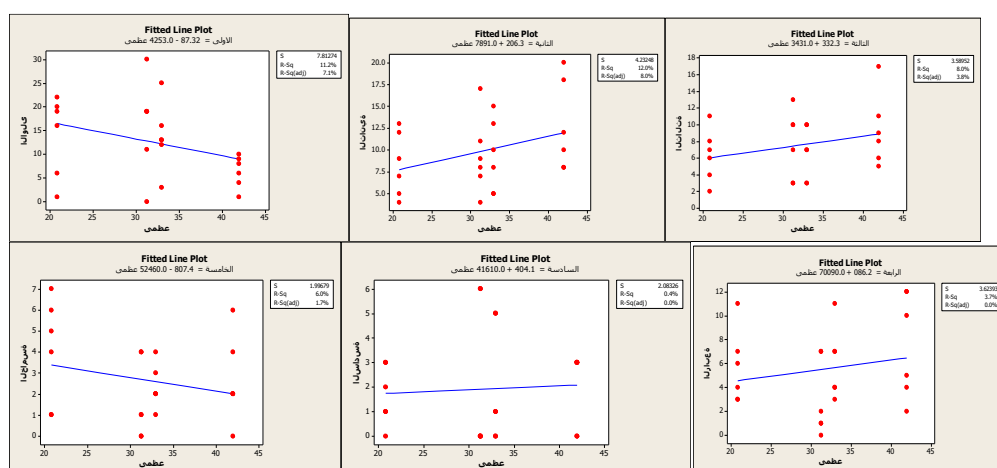
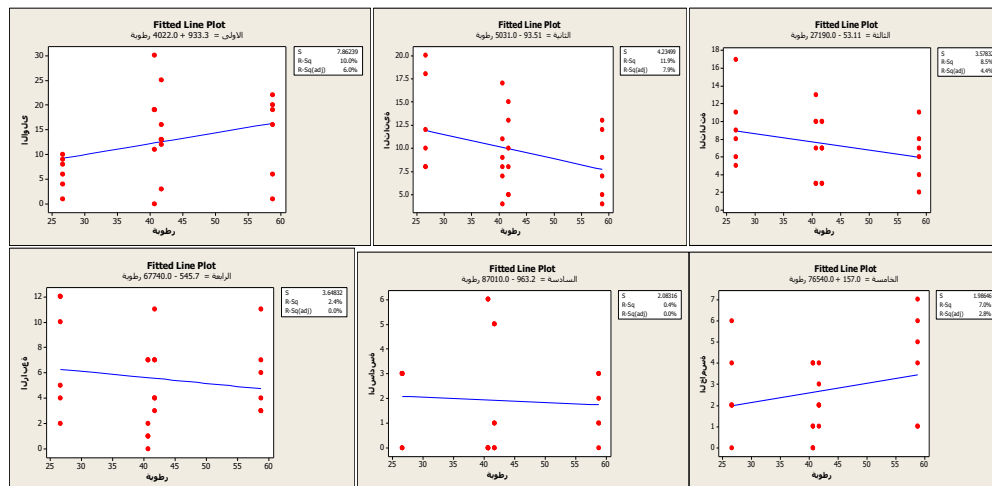


Table (4) Statistical relations between the levels of students in governorate of Najaf and the RH percentage [21].

Category	Levels	Regression coefficient	Selection factor R-Sq%	Standard deviation s	Relationship type and strength
First	less than 50 M	3.3	10	7.9	Inverse strong moral
second	50-59M	-15.4	11.9	4.2	A positive moral
Third	60-69M	-11.2	8.5	3.6	A positive moral
Fourth	70-79M	-7.5	2.4	3.6	A positive moral
Fifth	80-89M	0.75	7	2	Inverse moral
Sixth	90 M & more	-2.4	0.4	2.1	A positive moral

Figure (32) coefficient of simple linear regression and the direction of the relationship between relative humidity rates percentage and levels of students in governorate of Najaf



Second: The statistical relationship between the characteristics of the seasonal climate and the levels of students:

One-The statistical relation between the characteristics of winter climate and the levels of students:

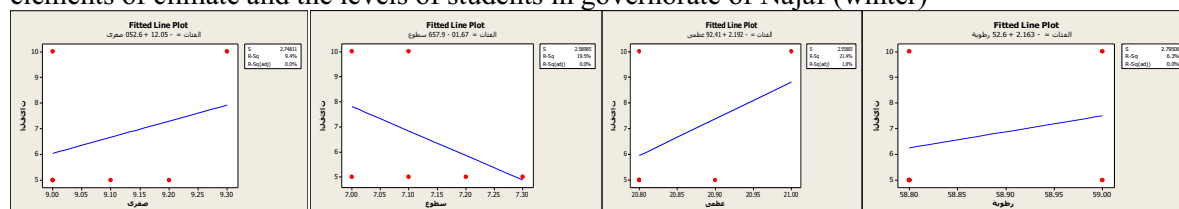
Table (5) shows a clear variation in the strength and degree of the relationship between the characteristics of climate elements in the winter season and the total levels of students in Najaf governorate (according to the studied sample). It was found that the strongest relationship between the impact of solar brightness and the level of students with a coefficient of determination (19.5%) Was the only reverse relationship with regression coefficient (-76.1) and a standard deviation (2.6), which means that the levels of the students weaken with the Increase of intensity of the seasonal solar brightness; it is a logical morale relationship. While the relationship with the element of maximum heat was strong and positive relationship and the coefficient of determination (21.4%) and a regression (291). This means that there is an increasing of the levels of the students with the increasing of the maximum temperature, which is a logical relationship in the winter, as the increasing of this element helps students to practice their activities and to read and study in general. Thus, the rest of the elements that came according to the research problem are hypothesis, figure (6).

Table (5) Statistical relations between the levels of students in governorate of Najaf and elements of the climate in the winter [22].

Climate Element	Standard deviation s	Selection factor R-Sq%	Regression coefficient	Relationship type and strength
1 Actual brightness / hour	2.6	19.5	76.1-	Strong reversal moral

2	Low temperature / c	2.7	9.4	50.2	Strong moral	reversal
3	Maximum temperature / c	2.6	21.4	291	Strong moral	reversal
4	Relative humidity%	2.8	6.3	361.2	Strong moral	reversal

Figure (33) coefficient of simple linear regression and the direction of the relationship between the elements of climate and the levels of students in governorate of Najaf (winter)



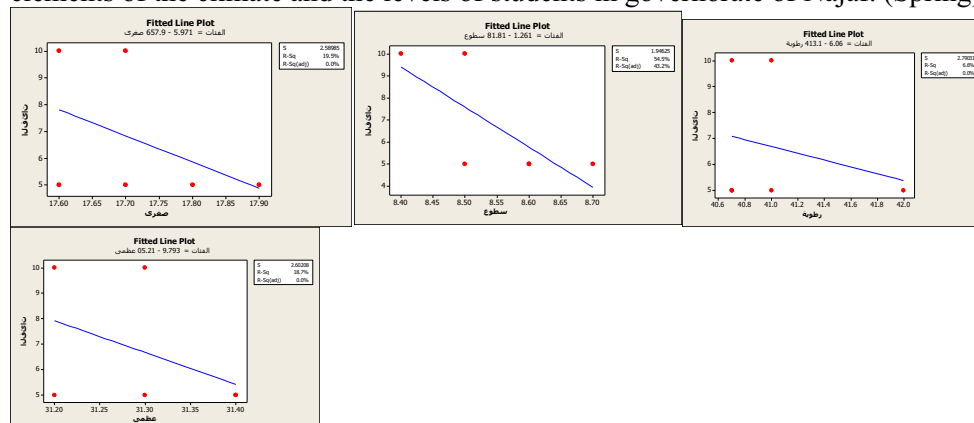
2 - Statistical relationship between the characteristics of the climate in the spring and the levels of students:

All statistical relations were negative between the levels of students and the elements of the climate in the research. The strongest correlation between solar brightness and student levels was recorded with a coefficient of (54.5%) was the strongest overall relationship, followed by the relationship with the lowest temperature with a coefficient of (19.5%) and the highest (18.7%). The increase in the levels of students in the study area increases with the actual lack of solar brightness and the lack of maximum and minimum temperatures and relative humidity, as the increase of these elements has a negative effect in the spring, Figure (35)

Table (6) Statistical relations between the levels of students in governorate of Najaf and elements of the climate in the Spring [23].

Climate Element	Standard deviation s	Selection factor R-Sq%	Regression coefficient	Relationship type and strength
1 Actual brightness / hour	1.9	54.5	-162.1	Strong moral reversal
2 Low temperature / c	2.6	19.5	179.5-	Strong moral reversal
3 Maximum temperature / c	2.6	18.7	162.1-	Strong moral reversal
4 Relative humidity%	2.8	6.6	397.9-	Strong moral reversal

Figure (34) coefficient of simple linear regression and the direction of the relationship between the elements of the climate and the levels of students in governorate of Najaf. (Spring) [24].



3 - Statistical relation between the characteristics of summer climate and the levels of students:

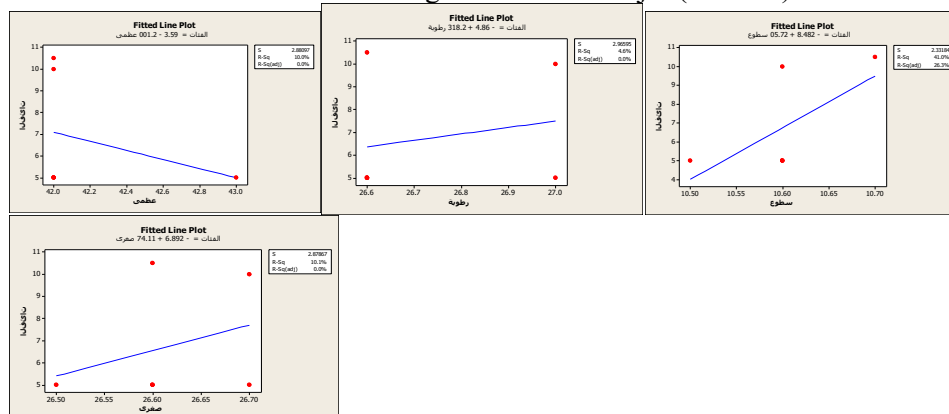
Most students' levels were positively affected of climate characteristics. The highest was recorded in the effect of actual solar brightness with a coefficient of (41%) and with regression (284.8). This is

significant but not logical. Thus the rest of the effect of the elements in summer except the Great Heat. Any increase in summer will have a negative effect on thinking and intelligence so (stop) most of the scientific activities, study and teaching in summer in most regions of the world in the hot climate, especially in Iraq during the summer. The maximum heat element is logically acceptable, with regression (-95.3) and with a coefficient of (10%). This means that the increase in the maximum temperature leads to a decrease in the seasonal levels by this percentage, which is logically acceptable. Figure (36)

Table (7) Statistical relations between the levels of students in the province of Najaf and elements of the climate in the Summer [25].

Climate Element	Standard deviation s	Selection factor R-Sq%	Regression coefficient	Relationship type and strength
1 Actual brightness / hour	2.3	41	284.8	A strong positive moral
2 Low temperature / c	2.9	10.1	298.6	A strong positive moral
3 Maximum temperature / c	2.7	10	-95.3	A strong positive moral
4 Relative humidity%	2.9	4.6	68.4	A strong positive moral

Figure (35) coefficient of simple linear regression and the direction of the relationship between elements of climate and levels of students in governorate of Najaf (summer)



4- The statistical relation between the characteristics of the climate in autumn and the levels of students:

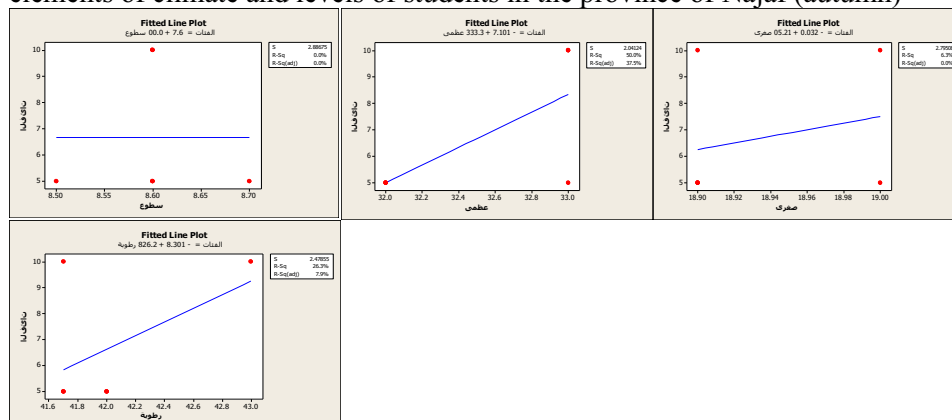
The statistical results show that all relations between the climate of this chapter and the levels of students are (positive) and have very significant significance, as it appeared to be the weakest relationship with the actual solar brightness (5.5%), indicating the weakness of the relationship while the relationship with the maximum temperature in the strongest relations (50%), indicating that the increase in the maximum temperature in this chapter leads to a different increase in the levels of the students, as well as the relative humidity component, which is relatively acceptable as this chapter the beginning of the cold winter, form (9).

Able (8) Statistical relations between the levels of students in Najaf province and elements of the climate in the autumn [26].

Climate Element	Standard deviation s	Selection factor R-Sq%	Regression coefficient	Relationship type and strength
1 Actual brightness / hour	2.9	0.0	6.7	A strong positive moral
2 Low temperature / c	2.8	6.3	23	A strong positive moral
3 Maximum temperature / c	2.1	50.0	101.7	A strong positive moral

4	Relative humidity%	2.5	26.3	103.8	A strong positive moral
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Figure (36) coefficient of simple linear regression and the direction of the relationship between the elements of climate and levels of students in the province of Najaf (autumn)



Conclusions

There is a very different relationship and effect between the levels of students' achievement and the characteristics of the climate elements of the study area. There was also a variation in the levels and degrees of the influence of climate elements on the levels of students and varying in their effects between males and females. The first category (less than 50 ° C) had the highest levels of exposure to the actual solar brightness from the rest of the other influences, and the determination factor (13.9%) and the strongest inverse relationships, while the second category (50-59 °) witnessed the strongest direct relations and a determining factor (13.4%). While the upper class (90 and above) had the lowest effects (0.6%), which means that the impact is low because of the low levels of students already in this category. The results showed that the strongest effect of the solar element in the spring and the coefficient of determination (54.5%). The relationship was inverse to the levels of students, followed by the effect of the great temperature in the autumn and by 50%. The results were often positive and logical. Six months in the governorate of Najaf is uncomfortable, and the most in the months of July and August, which is very hot, while the region did not see only two comfortable months are April and October. So it is best that the duration of study for students in our region in the comfortable and transitional months.

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