WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979, Volume 3, Issue 3, Mar., 2022

STATISTICAL AND COMPARATIVE ANALYSIS OF TEMPERATURE AND OIL IN FERGANA

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Abstract
The article provides a comparative analysis of the calculated results of air temperature and precipitation values and amounts for different climatic periods for 1934-2020, according to the Fergana meteorological station. The linear trends of perennial average air temperature are positive for selected periods, the highest average annual air temperature was observed in the last 5 years, corresponding to winter months, + 0.7 ° C in the main climatic period, annual temperature +1 in the following period , Increased by 9 ° C and in summer by + 0.7 ° C and + 1.4 ° C, respectively, winter temperature rose more than summer temperature, linear trend of winter, spring and summer precipitation was positive, linear trend of autumn precipitation while it was found to be negative in appearance.

Keywords: Fergana Valley, temperature, precipitation, statistical analysis, base climate, current climate.

Introduction

As you know, Global climate warming is taking place faster than expected. According to a study by the international climatologist group, in the last 20 years, the scale of thermal anomalies in Central Asia has been strained. January of this year was the hottest month in the last 140 years. In January, the chariot rose by +1,14 degrees from the average chariot in the XX century. 4 January, when the Haror was the hottest, was observed in the last five years. At the beginning of February, the first marotaba was recorded in Antarctica at +20 degrees Celsius. 17 of the hottest 18 years that have passed since the beginning of the observations coincide with the present, that is, our new century [1,2]. Especially the degree of warming of the air is completely different from the previous years in the last three years. In such conditions, the occurrence of climatic anomalies can lead to unfavorable agroclimatic conditions.

According to the Butunjahon Meteorological Organization, as a result of the increase in the average annual temperature on Earth to some extent in terms of Syelsium, at least one billion people were forced to adapt to the climatic conditions that occurred in order to work in agriculture, livestock and field, or to move to another location [1,4]. It should be noted that the modern climatic period is quite different from the previous ones. The current trend of the climate ILSI is of particular importance due to the fact that the temperature rises very quickly. Over the past decades, the development of industry, the intensification of agricultural production and the increase in the number of population in the countries of Central Asia have led to many regional environmental problems [7]. Accordingly, the study of individual regions iqlimini and the assessment of changes in it are becoming a pressing problem.

Purpose and Objectives of the Work

The purpose of studying this work is to determine the trend of changes in air temperature and precipitation over time.

To achieve the purpose of the study, the following objectives were set:

- calculation of the statistical characteristics of air temperature and precipitation;
- analysis and comparison of data and graphs on average monthly weather, average annual, average summer and winter weather, annual, October-March, April-September and winter precipitation**.**

The Main Part

The Fergana Valley, in particular the Fergana region, has long been convenient to live not only in our republic, but also in terms of natural and climatic conditions within the countries of Central Asia. The northern part of Fergana region was occupied by the Karakalpak and Yazyuvan steppes, in the South by the Adirs, as well as the mountains of the Alai and Turkestan ridges, among which were the sprawls of rivers flowing through the Alai ridges. Fergana region is a high seismic zone. The climate is continental. Winter is a little soft, sometimes the air cools down very much. Average January temperature -3,2 °C, July +28 °C. Lowest temperature-27,9 °C. The highest cure +42 °C. A strong "Cuckoo wind" blowing in the west of the Valley negatively affects the climate. The speed of the wind sometimes reaches 35-40 m per second. In the South-East, garmsel blows in the summer. In the western part of the year from 100 mm (at the periphery of The Cuckoo) to 170 mm in the eastern part, precipitation falls on the slopes of the mountain up to 270 mm; precipitation falls mainly in the spring.

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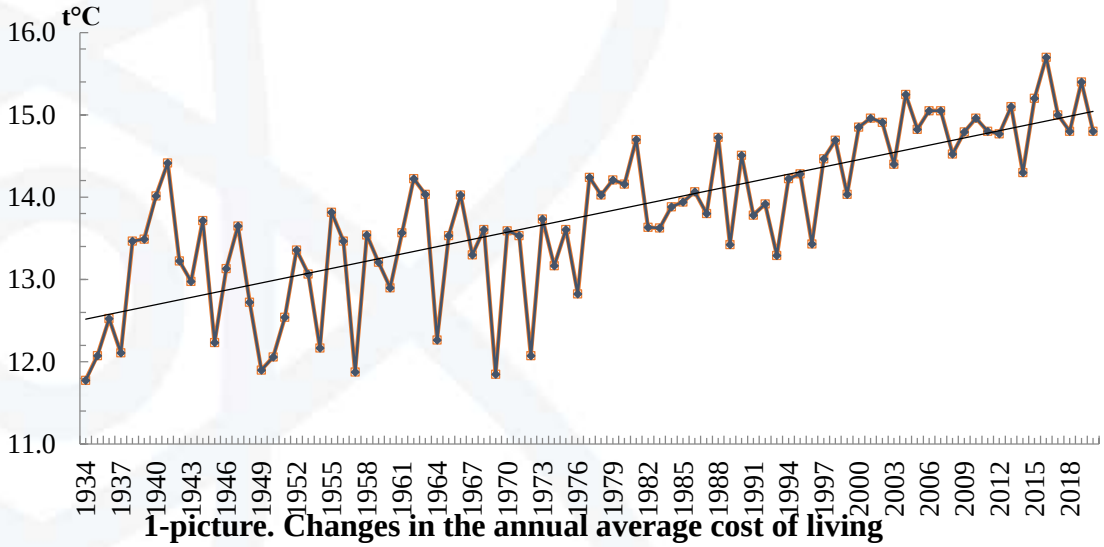
It is known that in the conditions of a subsequent global change in climate, various levels of geoecological problems arise. Such problems are due to the study of the natural and climatic possibilities of the regions, the elimination of unfavorable meteorological processes and their negative consequences, the preservation of a favorable natural environment for the regions. Rich scientific and practical experience has been accumulated in the study of such problems in the Fergana region, in particular, in the provision of sufficient recommendations for the public economy. Including, Either.N.In the sources described on the basis of agrometeorological studies under the leadership of Babushkin, A.A.Zire " Lost In Test MatchA.Kamolov, V. Ye. Chub, D.A.Ivanova, N.S.Kopovalova, O.N.Reyzvix, F.A.Mo ' minov, F.H.In the gidrometeorological studies of Hikmatov, and others, the gidroclimatic properties of the Fergana Valley were studied directly [8].

However, today, it is very important to determine what consequences the rise of air turbidity will cause and to draw more relevant practical conclusions, which at the same time will require serious gidrometeorological research.

In this article, data from the Fergana meteorological station 1934-2020 years were used for comparative analysis of weather conditions and vibrations in the Fergana city and adjacent regions for many years. Bunda average monthly weather forecast and long-term data on precipitation were obtained based on the materials of the meteorological tables TM-1 and TM-8.

Based on the considered meteorological station data, the average perennial, average monthly, average summer and winter Harath was analyzed. According to him, perennial (1934-2020 yy.) linear trends of average air travel are mostly positive for Selected periods (Figure 1).



1-picture. Changes in the annual average cost of living

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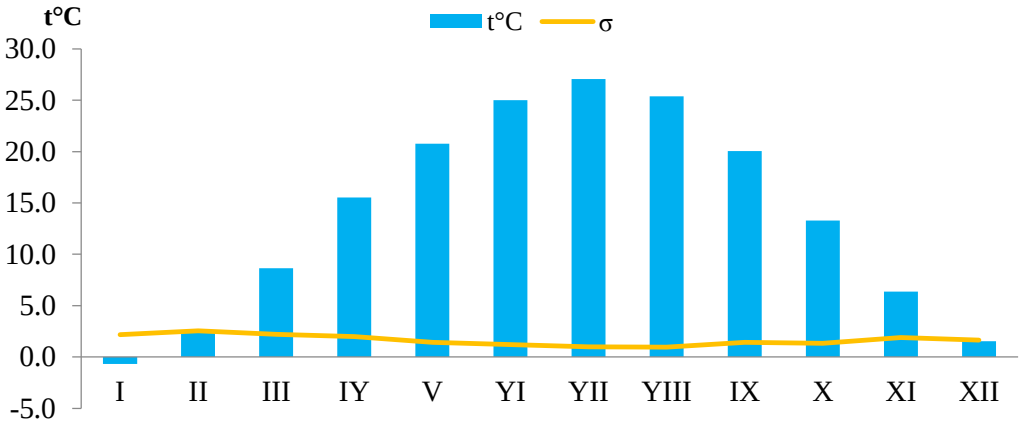
Lowest average air travel 1934, 1937, 1945, 1949, 1954, 1969 and it was recorded in 1974 year. The lowest average annual air temperature was equal to 11,8 oC. And the highest figures for the average annual weather forecast are 2001, 2007, 2010, 2013, 2015, 2016, and it was recorded in 2019 year. The highest average annual air temperature was equal to 15,7 oC, which was observed in the last 5 years.

All elements of the norms of the average monthly charisma, that is, the average (figure 2), the smallest and highest indicators, without exception, fall on July for all considered observation years (1-javdal).



2-picture. Internal distribution of average monthly turnover

1- graph Statistical features of air charting
(Fergana meteorological station data, 1934-2020 yy.)

Months	The smallest	Average	Highest	σ
January	-7,4	-0,7	7,1	2,2
February	-8,9	2,4	15,6	2,5
March	1,8	8,6	21,1	2,2
April	-0,9	15,5	26,6	1,98
May	15,6	20,8	25,3	1,43
June	19,9	25,0	28,3	1,21
July	24,9	27,1	29,7	0,99
August	22,3	25,4	28,6	0,95
September	13,4	20,1	25,8	1,42
October	9,0	13,3	21,5	1,35
November	-1,6	6,4	13,1	1,90
December	-5,4	1,5	7,3	1,65
Year (average)	11,8	13,8	15,7	0,77
Summer	23,7	25,8	28,0	0,76
Winter	-3,8	1,1	4,9	1,41

Comment: σ - average quaternary deviation

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As is known, 1961-1990 years is the period of the base climate established by the JMT [4,5]. Therefore, the indicators of Charat in the period of the base climate were compared with the indicators of the period from the beginning of the observation period to 1960 year and from 1991 year to the end of the observation period (now the climate period). The results of the calculation were given in Table 2. As can be seen from the table, the average perennial Harar in the period of the base climate increased from the period of 1960 year to +0,8°C, while the Harar in 1990-2020 year increased to +1,8°C. The average annual air temperature rose by 1°C in comparison with the current climatic period, the base climatic period.

2- graph The main indicators of average perennial air temperature for different climatic periods

Epoch	year	Winter	Summer
1934-1960	12,9	0,2	25,1
1961-1990	13,7	0,9	25,8
1990-2020	14,7	2,1	26,5

For the winter months, respectively, during the main climatic period +0,7°C, for the subsequent period, the annual air temperature increased to +1,9°C,and in the summer to +0,7°C and + 1,4°C. It should be noted that the winter Harath rose more than the summer harathead. This Is B.K. Sarev was also recognized in his studies [1,5]. It is noted in them that winter harorats rise 3 times faster than summer harorats.
The results of observation of Fergana myeteorological station on precipitation were also analyzed by 1934-2020 years. A chronological graph of the average annual amount of precipitation was drawn (Figure 1). The indicator of the trend line on the chart is 0,16 mm/year, which indicates an increase to 100 mm in 16 years. The highest annual precipitation values in the observed period were recorded in 1949, 1950, 1969, 1987, 1993 and 2003 years. The maximum average annual precipitation is 405,0 mm (1969 y.) are equal to.

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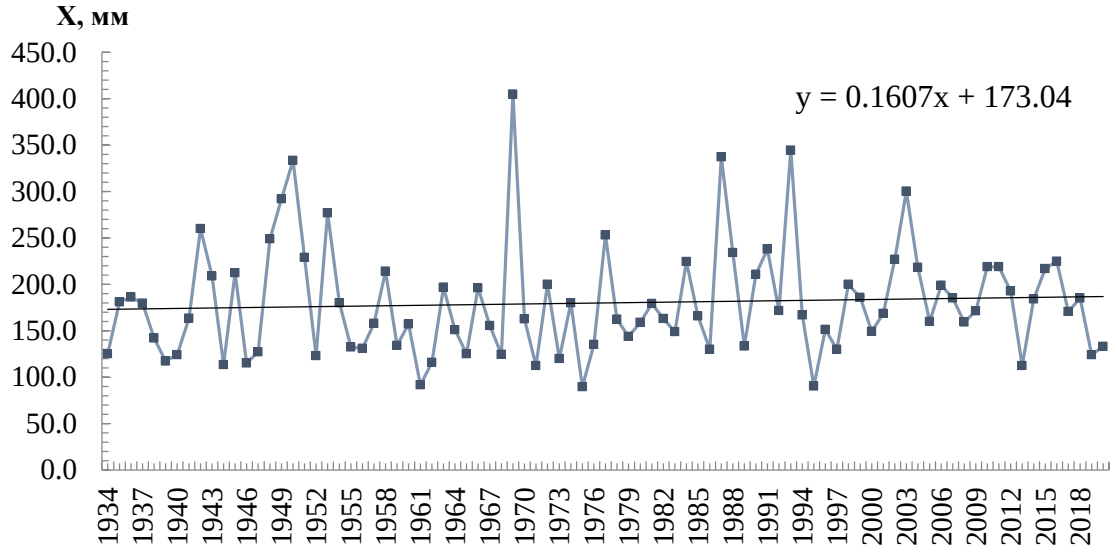

3-picture. Chronological chart of annual precipitation quantities

According to research, the most important climatic features include the amount of precipitation in the Cold Period (October-March) [3]. For the analysis, statistical indicators of atmospheric precipitation were calculated for all months, seasons and cold and hot periods (graph 3).

3- graph Statistical indicators of fat content
(Fergana meteorological station data, 1934-2020 yy.)

Months	Minimum	Average	The most	σ
January	1	17,6	71,7	10,7
February	0,2	21	72,4	12,2
March	0,1	25,7	76	13,5
April	0,2	21,3	85,6	12,8
May	0	20,4	86,7	14,2
June	0	10	46	7,76
July	0	5,4	53	5,32
August	0	3,9	52	5,16
September	0	3,7	28,1	4,41
October	0	15,1	136	13,6
November	0	17,5	108	13,8
December	0	18,4	77	13,6
Year	89,5	180,1	405	120,1
October-March	52,7	115,3	249,8	34,41
April-September	16,1	64,8	216	29,72
Winter	6,6	38,6	111	17,7
Spring	18	67,5	208	27,3
Summer	0	19,3	79,3	13,35
Autumn	0	36,3	158,1	21,5

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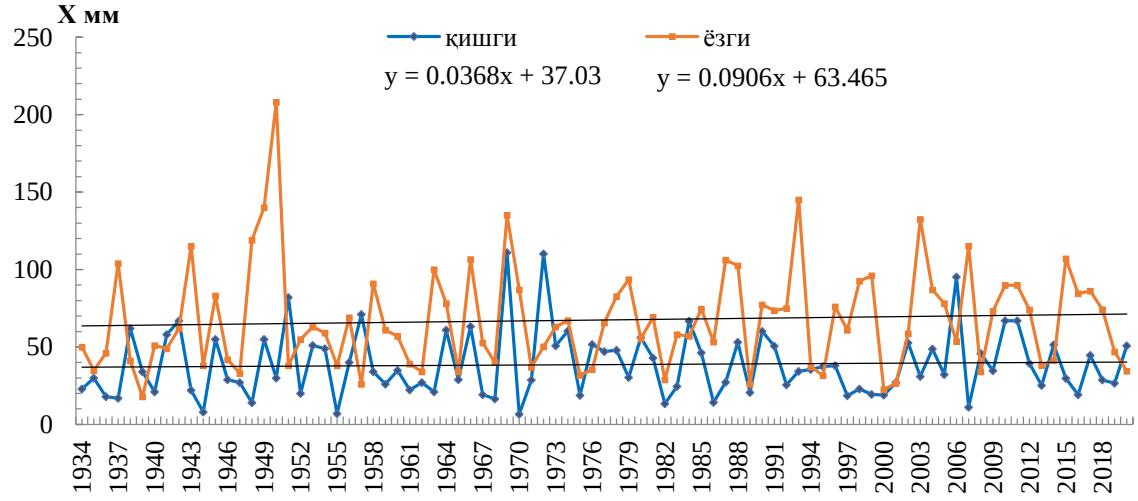
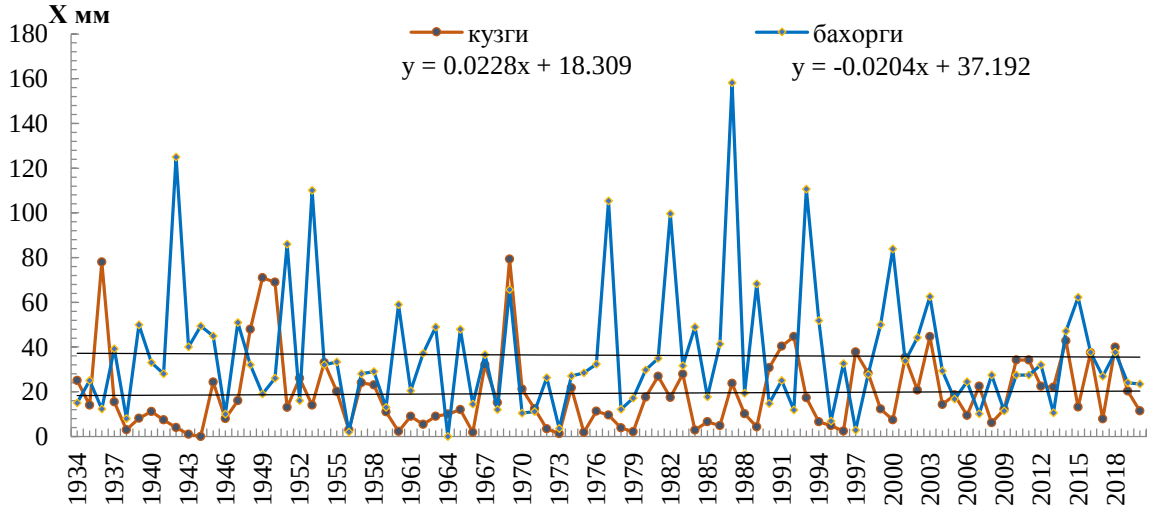
The minimum rainfall according to Table 3 was observed mainly in may - December, the most precipitation was observed in October-November. In the cold period, the average amount of fat was 115,3 mm, a minimum of 52,7 mm, a maximum of 249,8 mm, in the hot period (April-September) the average amount of fat was 64,8 mm, a minimum of 16,1 mm, a maximum of 216,0 mm.

In the study, chronological graphs of the amount of precipitation in cold and warm periods and seasons were drawn and their linear trend was calculated (4, 5 and 6 photos). Analysis of the results showed that the linear trend of winter, spring and summer precipitation amounts is positive, and the linear trend of autumn precipitation amounts looks negative.



4-picture. Chronological chart of winter and summer precipitation amounts



5-picture. Chronological chart of autumn and spring lean quantities (Fergana MC. information)

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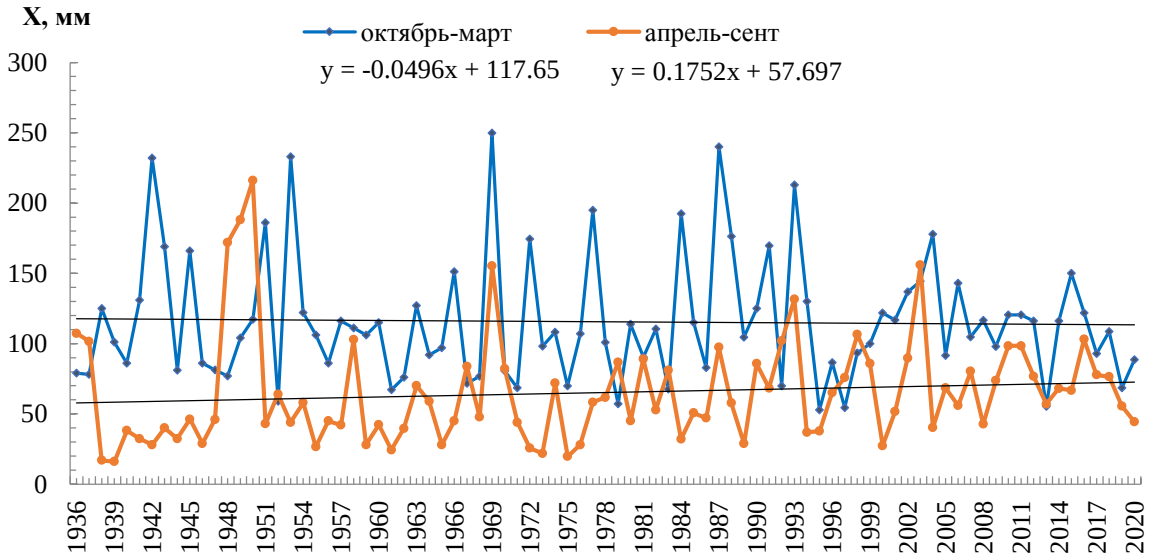

6-picture. Chronological graph of precipitation amounts in cold and warm periods

They are for winter (XII-II)-y = 0,0368 x + 37,03, in spring (III – V)-y = -020204 x + 37,192, in summer (VI – VIII)-y = 0,0906 x + 63,465, in autumn (IX – XI) - y = 0,0228 x + 18,309, in the Year-y = 0,0134 x + 14,42. The trend in the amount of precipitation is greater in winter and summer, in autumn it has smaller values, and in spring it has a negative value. That is, in winter and summer 0,03-0,09 mm/y, in autumn 0,023 mm/y, in spring _ - 0,0204 mm/y, closer to 0,0134 mm / Y per year. This situation is happening with the fact that the current air temperature is rising.

The linear trend of the amount of precipitation in the Cold Period (October-March) is negative (y = -040496 x + 117,65), while in the warm period (y = 0,1752 x + 57,69) it looks positive (figure 6). The trend all year round has a positive value.

In addition to the above analysis, changes in atmospheric precipitation over different climatic periods were also considered. The results of the calculation are shown in Table 4.

4- graph The main indicators of average perennial precipitation for different climatic periods

Epoch	Annual	Winter	Summer
1934-1960	180,2	55,0	21,2
1961-1990	173,5	59,5	15,3
1990-2020	186,6	57,8	21,1

As can be seen from Table 4, the average perennial precipitation in the base climatic period (1961-1990) decreased by 6,7 mm compared to the previous period, while in the current climatic period it increased by 13,1 mm. In the winter season, the amount of precipitation increased by 4,5 mm compared to the previous period in the base climate, in the current climatic period decreased by 1,71 mm, in the summer season the average amount of precipitation decreased by 5,9 mm compared to the previous period in the base climate, in the current climatic period increased by 5,8 mm.

As a result of the study, the following main conclusions were drawn:

- Linear trends of average perennial, average monthly, average summer and winter Hara have a positive outlook for Selected periods;
- The average, smallest and highest indicators of the average monthly standards of charisma coincided with July for the years of observation under consideration;
- Average annual air temperature in the current climatic period, rising to 1°C compared to the base climatic period;
- The minimum precipitation was observed mainly in may-December, the most precipitation is observed in October-November;
- The trend in the amount of precipitation is greater in winter and summer, in autumn it has smaller values, and in spring it has a negative value.

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