Iris Online
Journal of Sciences

Iris Publishers

Research Article

Two Questions for Supporters of The Hypothesis Anthropogenic Warming

Nikolay N Zavalishin*

Siberian Regional Scientific Research hydro meteorological Institute, Novosibirsk, Russian Federation, Russia

***Corresponding author:** Nikolay N Zavalishin, Siberian Regional Scientific Research hydro meteorological Institute, Novosibirsk, Russian Federation, Russia.

Received Date: April 29, 2024

Published Date: May 16, 2024

Abstract

The problem of modern warming has two, fundamentally different, explanations: the reason is in human economic activity-an increase in carbon dioxide emissions and, consequently, an increase in the greenhouse effect with an increase in the temperature of the surface atmosphere and an alternative point of view-the reason is in natural factors. The article examines changes in the average monthly surface temperature atmosphere for the period from 1951 to 2020 in synoptic region (SR) number 29, located in the central part of Western and Eastern Siberia. It is shown that the anomalies of the average monthly temperature in this region has a pronounced dynamic: temperature anomalies for the period 1981-2000. concentrated in the cold period and reach 1.5-3.0 degrees, and in the warm period temperature anomalies are in the range of 0.0-1.0 degrees, but temperature anomalies for 2001-2020. shifted to the spring and reached 3 degrees, remaining within 1 degree in the summer. A problem arises: how to explain these facts based on the hypothesis of anthropogenic warming.

Keywords: Siberia; Warming; Cause

Introduction

What is the cause of modern warming? This question has been exciting the scientific community since the end of the last century. Some convince us that it is the activity of mankind, which emits too much carbon dioxide into the atmosphere, that increases the greenhouse effect, which leads to a delay in outgoing long-wave radiation and, accordingly, to an increase in the surface temperature of the lower atmosphere [1]. This opinion was subjected to reasoned criticism in the article [2]. There is another point of view. The increase in the temperature of the lower atmosphere since the end of the twentieth century is due to changes in outgoing short-wave radiation, measured by the Bond albedo, during this period by an amount of about 0.01 [3], which corresponds to an increase in the temperature of the Earth's lower atmosphere by one degree. The article examines the dynamics of the average monthly temperature of the surface atmosphere in 29 SR and formulates two questions to supporters of the hypothesis of anthropogenic warming.

Methods and Materials

The article uses standard methods of statistical analysis: the student's criterion, the dynamics of the standard deviation and others.

We will work with weather stations that are in operational operation of the Hydro meteorological Centers of Western and Eastern Siberia. The list of these weather stations, which are included in the 29 SR, is presented in (Table 1).

Table 1: The list of weather stations included in the 29th SR.

Weather station	Sinop. Index	Latitude	Longitude	Altitude
Kolpashevo	29231	58.18	82.53	76
Tomsk	29430	56.26	85.58	174
Barabinsk	29612	55.32	78.32	120
Novosibirsk	29638	55.02	82.54	177
Kemerovo	29645	55.23	86.04	262
Nizhneudinsk	29698	54.9	99	411
Kupino	29706	54.22	77.17	116
Kiselevsk	29749	54	86.7	297
Upper Gutara	29789	54.2	96.9	894
Chabary	29816	53.6	79.6	138
Barnaul	29838	53.24	83.42	252
Alygger	29894	53.3	98.3	918
Biysk	29939	52.41	84.57	224

Analysis

What is the norm? Taking into account our interest in modern warming, we will take the period before the start of warming, with a standard length of 30 years, which is accepted for calculating norms in the hydro meteorological service. Which interval should I take? The period in which the heat balance is maintained between the upper and deep layers of the World Ocean. Zero balance between the layers of the hydrosphere means the stability of heat flows in the hydrosphere and, as a consequence, in the atmosphere. Therefore, it can be assumed that the series of years in which such average annual values as the surface temperature of the World Ocean or the temperature of the lower atmosphere change minimally will be closest to the desired norm.

Let's take a 31-year moving interval as a series of years, and take the standard deviation as a measure of stability. For the atmosphere over the World Ocean and for the near-surface atmosphere in general, the minimum standard deviation is achieved in 1960 (Figure 1).

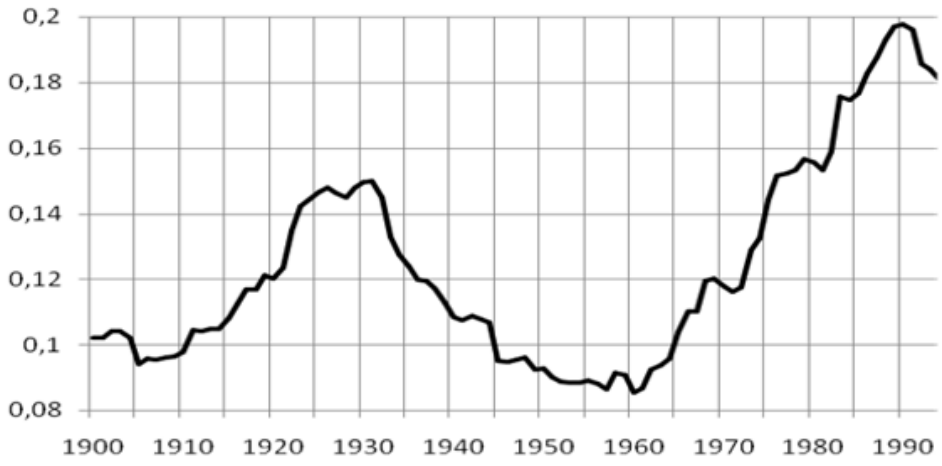

Figure 1: Standard deviation of global surface air temperature over a 31-year interval.

Taking into account the statistical error of the standard deviation, it is more accurate to talk about the early 60s.

The initial data for the calculation is taken from.

$$\sigma_k = \sqrt{\frac{1}{31}\sum_{j=-15}^{j=15}\left(x_{k+j} - \bar{x}_k\right)^2} \qquad \bar{x}_k = \frac{1}{31}\sum_{j=-15}^{j=15} x_{k+j} \tag{1}$$

The standard 30-year interval closest to the minimum standard deviation is the interval 1951-1980, which we will take to calculate the norm of meteorological elements. The closest options are the periods 1941-1970. and 1961-1990 are obviously not suitable due to the large values of the standard deviation. Note that colleagues from NASA [4] also rely on the base period 1951-1980.

Having decided on the norms, let's move on to the anomalies. (Figure 2) shows a graph of the average annual temperature anomaly of the surface atmosphere at 29 SR.

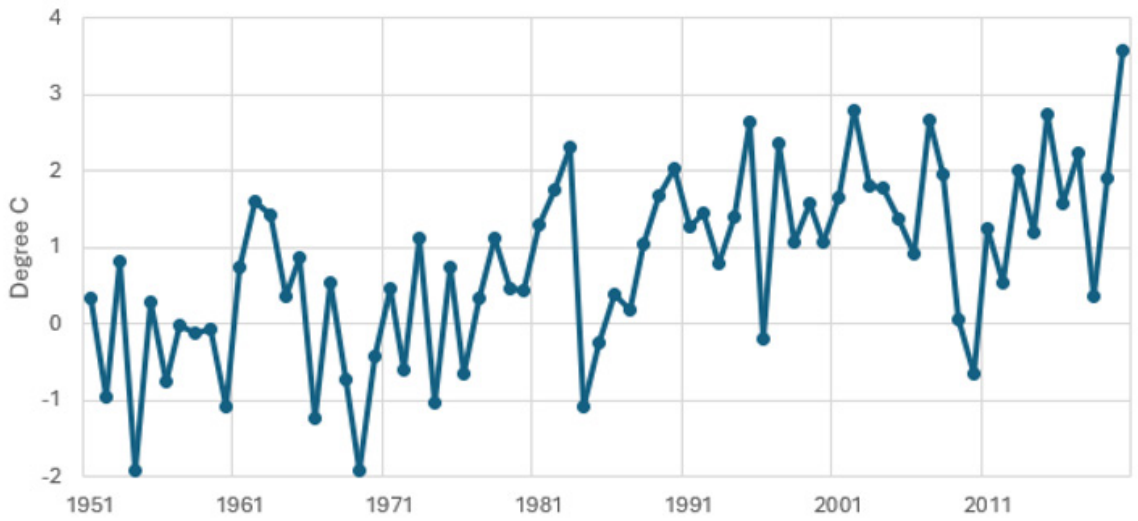

Figure 2: Average annual temperature anomalies of the surface atmosphere in the 29th synoptic region.

The average annual air temperature anomaly for the period 1951-1980 is naturally equal to zero, because this period was chosen to calculate the norm. But the average annual air temperature anomaly for the period 1981-2020. equal to 1.36 degrees Celsius. This is where modern warming is expressed.

We will be interested in how warming will be realized within the year month by month. The calculation of average monthly surface atmospheric temperature anomalies for the period 1981-2020 is presented in the graph.

The figure shows that in the cold period of the year, from October to April, the anomalies of average monthly temperatures are in the range of 1.5-3.0 degrees, and in the warm period of the year, from May to September, they are in the range of 0.0-1.0 degrees. Is this difference significant from the point of view of mathematical statistics? (Table 2) summarizes the necessary data.

Table 2: Average values of monthly temperature anomalies and mean standard deviation for the interval 1981-2020.

Month	1	2	3	4	5	6	7	8	9	10	11	12
X, Y	1,55	2,71	2,82	1,90	1,09	0,45	0,24	1,0	0,10	1,38	1,46	1,64
Sx, Sy	0,64	0,57	0,48	0,39	0,30	0,29	0,19	0,15	0,19	0,27	0,53	0,63

The difference between the means X, Y at the 5% significance level is given by the following formula:

$$\frac{X-Y}{\sqrt[2]{Sx*Sx+Sy}*Sy} > t_{\alpha} \qquad (2)$$

where t_{α} =1.96 - Student's test at a 5% significance level with 78 degrees of freedom.

Sx, Sy – standard deviation of the average.

X, Y – averages for the period 1981-2020.

As follows from the table and formula (2), the difference between February, March and the group of months from June to September is statistically significant at the 5% level of significance.

The first question is why? Can this be explained based on the anthropogenic warming hypothesis?

Let's see how the anomalies of average monthly temperature changed over two periods: 1981-2000. and 2001-2020 The results are presented in Figure 3. The figure shows a shift in temperature anomalies from the winter months to the spring months. The second question is why?

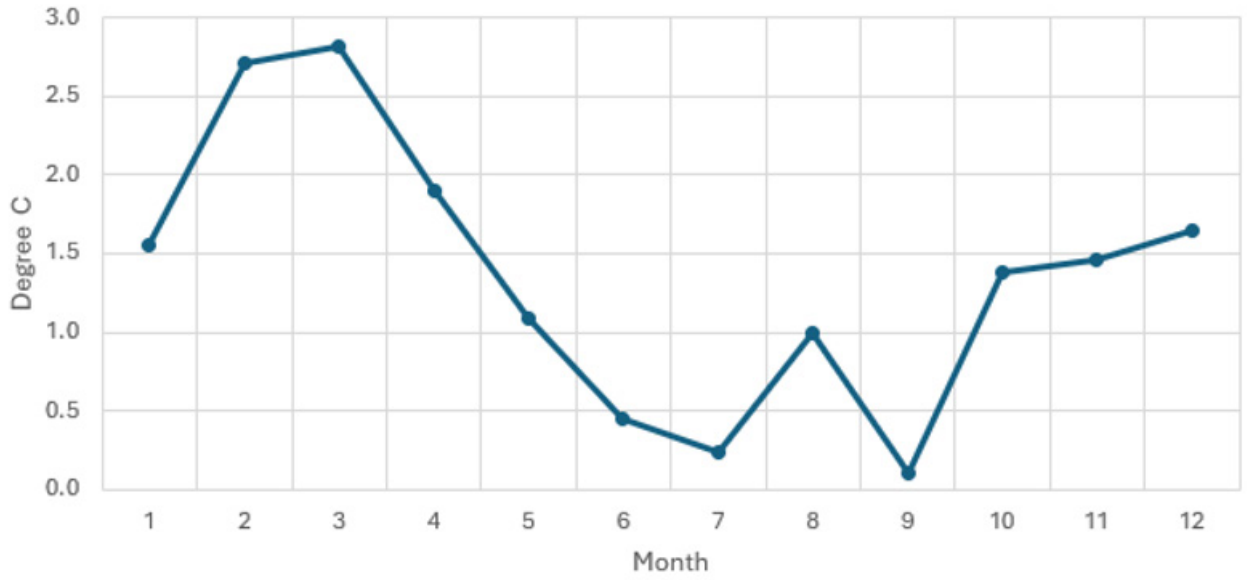

Figure 3: Average monthly temperature anomalies of the surface atmosphere at 29 synoptic regions for the period 1981-2020.

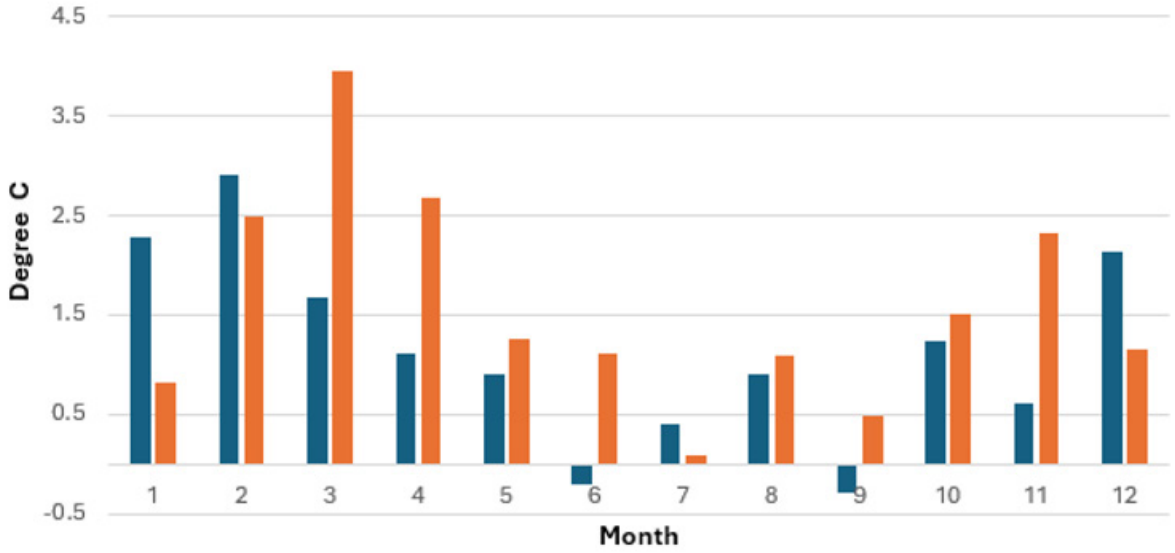

Figure 4: Anomalies of monthly temperatures of the surface atmosphere, averaged over 13 weather stations 29 SR. Blue color-averaging for the period 1981-2000, red-for the period 2001-2020.

Conclusion

Questions arise for supporters of the anthropogenic warming hypothesis.

1. Why are the average monthly temperature anomalies for the period 1981-2020 concentrated mainly in winter and exceeding 2.5 degrees, and in summer at 1 degree or less?
2. Why did these anomalies shift from the winter period in 1981-2000 for the spring period 2001-2020 and exceeded 3.5 degrees, remaining at 1 degree in the summer?

Acknowledgement

None.

Conflict of Interest

None.

References

1. IPCC (2007) Climate Change: The Physical Science Basis. Summary for Policymakers. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge, UK, and New York: Cambridge University Press P: 996.
2. Jawarowski Z (2007) CO_2: The Greatest Scientific Scandal of Our Time. 21st Century Science&Technology. Spring/Summer P: 14-28.
3. Goode PR, Palle E, Yurchyshyn VB, Qiu J, Hickey JP, et al. (2002) Sunshine, earthshine and climate change: II. Solar origins of variations in the Earth`s albedo J Korean Astron Soc P: 1-7.
4. Hansen J, Mki Sato, R Ruedy, K Lo, DW Lea, et al. (2006) Global temperature change. Proc Natl Acad Set PP: 14288-14293.