

# **CONTRIBUTION OF NATURAL SOURCES INTO SURFACE TEMPERATURE CHANGES OF NORTH HEMISPHERE FOR THE LAST 1000 YEARS**

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This study is an attempt to find answers to problem of climate change formulated by Akasofu (2007, <http://www.iarc.uaf.edu/>) concerning importance of relative contribution of natural sources and sources of manmade gas CO<sub>2</sub>. Rotation is fundamental characteristics of the Earth, and the other geophysical processes are subordinated to rotation (but non vice versa). We study temporal changes of power oscillations from the spectrum of the north hemisphere temperature (T<sub>nh</sub>) and from the spectrum of the Earth's rotation velocity (w) with the same period to estimate rate of the T<sub>nh</sub> change connected with natural component in the past, present and close future. We use proxy data of T<sub>nh</sub> for the last 1000 yrs and of w from 1665. To solve the tasks, we use our own spectral method of global minimum (MGM). Trend from the T<sub>nh</sub> spectrum has the highest power and described by non-stationary sinusoid at period T=1270 yr. We show that the T<sub>nh</sub> increase of amplitude with rate 0.5deg.C/100 yr from the Maunder minimum to present was caused by natural processes connected with anomaly of the Earth's rotation. Note that this value is comparable with what IPCC presents as the greenhouse effect. We analyse temporal change of the most power sinusoid from the spectrum of w at period T=72 yr. that gives the temperature increase with rate 0.75deg.C/100 yr for 1903-1940 and the same rate for the temperature decrease for 1940-1975; increasing of T<sub>nh</sub> with rate of 1.15deg. C/100yr for period 1975 – present. Both 72-yr cycles (in T<sub>nh</sub> and w) vary in phase during discussed time interval and for present. Additional argument to our result is that the observed temperature decreased from 1940 to 1975, in spite of the fact that the release of CO<sub>2</sub> increased rapidly. Besides, value of T<sub>nh</sub> is approaching to the next maximum of the 72-yr cycle near 2012. We show that there is no reason to explain the discussed temperature change caused by the 72 yr variation in rotation by manmade greenhouse effect disregarding this natural component. The latter doesn't mean that effect of manmade gas is absent. However, based on our result we conclude that the natural sources are main causes of climate change.

forcing of terrestrial climate, rate of global warming

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