Contribution ID: **129** Type: **Oral Presentations**

Solar Contribution To Earth's Global Warming?

Wednesday 9 July 2025 18:30 (20 minutes)

Global warming is a phenomenon threatening humanity. Can we fight it? It appears that humanity has accepted as true the notion that the phenomenon is caused by the release of greenhouse gases as a consequence of human activity, and that if we stop emitting them, global warming will cease. For this purpose, the world allocates approximately $ 3 trillion annually. Are these funds being directed correctly? The answer in this article is negative –the phenomenon has a natural cosmic origin, and its consequences can be mitigated through measures different from those applied so far.

Continuous series of air temperature data with a length of tens of years are available as a result of the work of ground-based meteorological stations, mainly in Europe but also in other parts of the world. The study used data from over 800 stations worldwide. The cyclicity in the solar magnetic field with a basic 11-year cycle has been monitored regularly for at least 250 years by counting the sunspot number (SSN), which increases at the beginning of the cycle ("rise"phase), then decreases until the beginning of the next cycle. The joint analysis of the two series of data –ground temperature and SSN in the "rise" phase of the solar cycle shows that there is a high inverse correlation between them, i.e., the surface air temperature decreases during the day during the "rise"phase of the solar cycle. Such a relationship is not observed during the "fall" phase of the solar cycle. Satellite data show that this relationship is probably due to some synchronous increase in the Earth's cloud cover during the day during the "rise" phase. Increased cloud cover by 1 - 2% during the day and during the "rise" phase leads to a decrease in the electromagnetic radiation reaching and absorbed by the Earth's surface. As a result, the air temperature at the Earth's surface decreases. During the rest of the cycle, the cloud cover decreases, and the temperature returns to its normal value. This process would be stationary if the cyclicity of solar activity were constant over time. In the last 70 years, a decrease in the intensity of solar activity has been observed, in particular during the "rise" phase. SSN for the last 6 –8 solar cycles has decreased. This decrease is associated with a decrease in cloud cover; as a result, the temperature of the ground air increases, indicating the phenomenon of global warming. The study contains observational arguments and analysis showing that if greenhouse gases in the atmosphere, released as a result of human activity, contribute to global warming, then their contribution is insignificant and the phenomenon is due to causes of cosmic origin. Arguments are presented in favor of the hypothesis that the reason for the increased cloudiness during the "rise" phase of solar activity is the increased number of condensation nuclei in the atmosphere. They owe their origin to the increased flows of energetic solar positively charged particles during this phase, reaching the Earth's atmosphere and penetrating it to the depth of cloud formation.

Primary author: Dr TAKUCHEV, Nikolay (Trakia University)

Presenter: Dr TAKUCHEV, Nikolay (Trakia University)

Session Classification: Environmental and Solar Physics, Meteorology and Geophysics

Track Classification: S04 –Environmental and Solar Physics, Meteorology and Geophysics