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A model on the effect of petroleum production on Earth's temperature

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The following adiabatic model is used to relate the atmospheric temperature to the atmospheric pressure. The temperature distribution in planet's troposphere (including the Earth's troposphere) at pressure more than 0.2 atmospheres under greenhouse effect theory can be determined using the following equation:

$$T = b^{\alpha}\left[\frac{S(1-A)}{\sigma\left(\frac{\pi/2-\psi}{\pi/2}\times 4+\frac{\psi}{\pi/2}\times 2\times\frac{2}{1+\cos\psi}\right)}\right]^{1/4}\left(\frac{P}{P_0}\right)^{\alpha}$$

Where S is the solar constant; σ is the Stefan-Boltzmann constant; A is the planet's reflectivity; b is a scaling factor; α is the adiabatic exponent; and ψ is the precession angle of the revolving planet. Model allows one to analyze the temperature changes due to variation in mass and chemical composition of the atmosphere. The proposed model considers the global temperature changes due to variations in mass and chemical composition of the atmosphere. Based on our model, releasing of anthropogenic carbon dioxide and methane into the atmosphere does not have any appreciable effect on the average parameters of the Earth's heat regime. Furthermore, they have no essential effect on the Earth's climate. By considering different factors in the model, authors believe that all petroleum production and other anthropogenic activities resulting in accumulation of additional amounts of methane and carbon dioxide in the atmosphere does not increase the Earth's temperature but instead decreases the temperature. The authors also have shown that in many cases, peaks in the sun radiation precede peaks in the CO_2 concentration in the atmosphere. The authors predict slow temperature decline by 2016-2020, with stronger cooling by around 2040. The earth is about 20 years away from "little ice age".

Biography

George Chilingar is an American-Armenian Professor of Civil and Petroleum Engineering at the University of Southern California (USC). He received his Bachelor's and Master's degrees in Petroleum Engineering and a PhD in Geology, all at USC. He has published 72 books and over 500 of articles on geology, petroleum engineering and environmental engineering.

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