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THE GREENHOUSE EFFECT

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Problem statement: in recent years, the influence by the atmosphere, in particular, the "Greenhouse Effect" (GE), on the climate is widely discussed by the international community. In accordance with the concept of GE the Earth's atmosphere is a "Greenhouse Glass" (GG). The aim of this study is to analyze the correspondence between the actually occurring physical and chemical processes in the Earth's atmosphere and the concept of GE.

Methodology: the absorption of the solar radiation by the gases existing in the Earth's atmosphere has been examined from UV to far IR region. It has been compared with the theory, including the theory of point groups of symmetry.

Results: it was demonstrated that, despite the absorption of radiation from the Earth's surface in middle and far IR regions, there is strong absorption of overtones and composite frequencies of water vapor in the band of solar radiation (visible and near-IR spectral region) i.e. the bandwidth of the GG.

Conclusions: the Earth's atmosphere cannot be described by the conventional notion of the GE, and so it does not perform such a function. Therefore, the terms GE and "greenhouse gases" lost their original meaning. So, in our opinion, the processes occurring on Earth are, instead of the GE, those of the absorption of the heat flux of solar radiation (mainly by water vapor) and its reemission by the atmosphere. At the same time, the atmosphere absorbs and re-radiate thermal radiation coming from the Earth's surface into interplanetary space. And this process, which is one of the natural pathways by which the incident solar radiation penetrates the surface of the Earth and is re-radiated by it, of course, must be taken into account in the analysis of the atmospheric influence on Earth's climate.

Biography

Valery P Oktyabrskiy specialist in the field of molecular spectroscopy. He has obtained his doctoral degree from the Leningrad state University. Currently he is an assistant Professor at the St. Petersburg Polytechnic University. His areas of interest included physics of the atmosphere including the greenhouse effect.

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