

## GEOSCIENCES AND REMOTE SENSING

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GEOCHEMISTRY, ENVIRONMENTAL CHEMISTRY AND  
ATMOSPHERIC CHEMISTRY

October 19-20, 2018 | Ottawa, Canada

***Habibullo I Abdussamatov****Pulkovo Observatory of the RAS, Russia***Cosmic rays and clouds variations effect on the climate is insignificantly**

It is believed that an increase in the area of the cloud cover in the lower atmosphere of the Earth, presumably caused by grows of the galactic cosmic rays flux in the period of the Grand minimum of solar activity, leads to an increase the reflected portion of the TSI back into space, and by that, to a cooling of the climate down to the Little Ice Age. However, without any reason, this hypothesis totally ignores the influence of the quasi-bicentennial variation of TSI of some ~0.4% and all the changes in the physical processes in the atmosphere, which are due to by growth of the cloud cover. Also at all is not taken into account the reverse aspect of the simultaneous increase in the reflection of the thermal radiation of the Earth's surface and the solar radiation reflected from it by due to the increase of the cloud cover area. Now suppose that the area of the cloud cover of the Earth's surface has increased by 2%. An estimate of the grows cloud cover in the lower atmosphere by 2% leads:

- To a decrease of the energy budget of the Earth  $E_o$  on  $-0.02 \cdot 79 \text{ Wm}^{-2} = -1.58 \text{ Wm}^{-2}$ ;
- To an increase of  $E_o$  on  $+0.02 \cdot 40 \text{ Wm}^{-2} = +0.8 \text{ Wm}^{-2}$ ;
- To an increase of  $E_o$  on  $+0.02 \cdot 23.5 \text{ Wm}^{-2} = +0.47 \text{ Wm}^{-2}$ ;
- To an increase of  $E_o$  (the greenhouse effect ) on  $+x.xx \text{ Wm}^{-2}$ ;
- To a decrease of  $E_o$  (emitted by clouds into space) on  $-0.02 \cdot 30 \text{ Wm}^{-2} = -0.6 \text{ Wm}^{-2}$ ;
- To an increase of  $E_o$  (emitted by clouds to surface) on  $+0.02 \cdot 30 \text{ Wm}^{-2} = +0.6 \text{ Wm}^{-2}$ .

New  $E_1 \approx E_o - 1.58 \text{ Wm}^{-2} + 0.8 \text{ Wm}^{-2} + 0.47 \text{ Wm}^{-2} + x.xx \text{ Wm}^{-2} - 0.6 \text{ Wm}^{-2} + 0.6 \text{ Wm}^{-2}$ .

Thus,  $E_1 - E_o \approx 0$  or maybe  $E_1 - E_o > 0$ , what can lead to warming. An inverse aspect of simultaneously an increase in the reflection of the thermal radiation of the Earth surface and of the solar radiation reflected from it, as well as the significant amplification of the greenhouse effect practically compensates of this cooling by means of accumulation of energy. The impact of an increase in the area of the cloud cover, presumably caused by the growth of the cosmic rays flux, on climate is practically absent.

**Biography**

Habibullo I Abdussamatov is the Head of the Space Research Laboratory at the Pulkovo Observatory and head of the Russian-Ukrainian project Astrometria on the Russian Segment of the International Space Station. He holds two patents for scientific inventions and is the author of more than 160 scientific publications.

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