

The decrease of the total solar irradiance leads to the little ice age

Habibullo I. Abdussamatov

Pulkovo Observatory, Russia

Cyclic bicentennial variations of the solar radiation energy absorbed by the Earth remains uncompensated by the energy emission to space as a result of the thermal inertia. The Earth's average annual energy budget at during long time period will reliably determine the course and value of an energy excess accumulated by the Earth or the energy deficit in the thermal budget which can define and predict well in advance both the direction and amplitude of the forthcoming climate changes. Since the early 90's observed a decrease in both the TSI and the portion of its energy absorbed by the Earth, the Earth will have a negative balance in the energy budget also in the future what leads to a drop in temperature and to the beginning of the epoch of the Little Ice Age since around the year 2014. The increase of the Bond albedo and decrease of the greenhouse gases concentration in the atmosphere will result to the additional decrease absorbed portion of the solar energy and to reduced greenhouse effect. The influence of the consecutive chain of feedback effects will lead to additional drop of temperature which can surpass the direct influence of the effect of the TSI decrease. Start of Grand Minimum of the TSI the bicentennial cycle is to be anticipated around in the year 2043 ± 11 and the beginning of the phase of deep cooling of the 19th Little Ice Age in the past 7,500 years around in the year 2060 ± 11 .

Biography

Habibullo I. Abdussamatov graduated from Samarkand State University and took a course graduate in Leningrad State University and postgraduate course in Pulkovo Observatory. He is the head of the Space Research of the Sun Sector at the Pulkovo Observatory and the head of the Selenometria project on the Russian Segment of the ISS, Dr. Sci. He is an expert in the area of solar physics and the solar terrestrial physics-the Earth's climate. He is the author of more than 150 scientific publications, 2 scientific inventions and 2 scientific monographs including "*The Sun Dictates the Climate of the Earth*". St. Petersburg. 2009.

abduss@gao.spb.ru