

Global warming as reviewed from cosmic ray research: An aspect connected with the long-term trend found in the solar activity

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Currently, the solar activity, as expressed with relative sunspot numbers, is in the state of the highest one for the last 100 years since 1900. In association with this trend, the sun's rotation speed has reached nearly at minimum for the solar cycle 22 on an average. This means that this speed has been varying slowly in a way inversely proportional, though rough it is indeed, to the maximal relative sunspot numbers for respective activity cycles. Furthermore, geomagnetic aa-indices have been observed as being very high for the last 30 years or more. Since these indices vary causally with the solar activity so as to be usually inversely proportional, though being rough, to the degree of the long-term decrease of cosmic ray flux in the neighborhood of the Earth. The decrease is resulted from the enhancement of the magnetic field extended from the sun's photosphere, being transported with the solar wind outward and then into the interplanetary space. In fact, this enhancement is largely dependent on the solar activity and so this field has been becoming higher with the long-term increase of the solar activity from the last 100 years since about 1900. Since this enhancement as seen qualitatively by means of the increase of aa-indices seems responsible for the decrease of the cosmic ray flux over the Earth's surface and the interplanetary space, the long-term increase of the solar activity for the last 100 years since 1900 must have led to the decrease of cosmic ray influx to the Earth for these years. So, this decrease of the influx just mentioned should be responsible for the reduction of efficient production of ionization of Earth's atmospheric species, which is causally related to cloud formation all over the Earth's surface. Taking the current trend as observed for both of the solar activity and rotation speed for the last 100 years, various results obtained thus far are reviewed by proposing a possible causal relation between the global warming and the long-term change in the cosmic ray influx.