



The multi-component nature of the solar- climatic relationships

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In this study evidences that the Sun forcing over climate is caused no only by total solar irradiance (TSI) variations , but at least also by two other physical mechanisms are given.

The first additional source is related to the well known “Forbush-effect”, i.e. a modulation of falling in the Earth atmosphere galactic cosmic rays (GCR) flux, caused by solar wind variations from sunspot minima to maximum. As a result an increasing of tropospheric gas ionization, aerosol density , cloudness and climate cooling occur near to sunspot minimum epochs in addition to the climate cooling effect caused by TSI decreasing during the same time.

An other second source could be related directly to the Sun (the most powerful coronal events such as the coronal mass ejections (CME) or other sources of high energetic solar protons). The physical effects over Earth atmosphere are very similar to the GCR –flux influence. In this course an evidience that the very well observed ~60-65 year climatic cycle in Northern hemisphere during last ~400 years is caused by solar eruptive events is given.

As a third possible mechanism the relationship “solar activity –tectonics (voulcanism) – climate” has been briefly reviewed.

The main scenarios of solar activity behaviour during the 21st century and the possible climatival effects are discussed too.