



Atmospheric Effects of Cosmic Rays

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An important factor affecting the terrestrial environment is the flux of cosmic rays permanently impinging on Earth. Energetic cosmic rays initiate a nucleonic-muon-electromagnetic cascade in the atmosphere, affecting its physical-chemical properties. In particular, cosmic rays form the dominant source of ionization in the atmosphere, especially in the troposphere. Therefore, a detailed knowledge of processes leading to the cosmic ray induced ionization makes a solid basis for a quantitative study of the outer space influence upon Earth. We present here a review of atmospheric effects of cosmic rays, including both physical modeling and phenomenological relations to the climate changes, on different time scales.