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Investigation of cosmic ray modulation effects by the regular sounding of charged particle fluxes in the atmosphere and on the ground

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For the period from 1957 to present time the results of observations of charged particle fluxes in the atmosphere of the northern and southern polar latitudes and the middle nothern one at the altitudes from the ground level up to 30-35 km are presented. The questions of the long-term modulation effecrts and its relationships with solar activity are discussed.
Cosmic rays are the main ionization source in the Earth's atmosphere. The role of charged particles in the atmospheric electrical phenomena is considered such as cloud and thundercloud formation, ligthning production and the role of charged particles in climate change. Some results of the international experiment CLOUD in CERN are given.

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