THE INFLUENCE OF GALACTIC COSMIC RAYS FLUX ON THE CLOUD COVERAGE AND POSSIBLE CLIMATE CHANGE

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Climate change is one of the most important problems of modern society, which have natural and anthropogenic causes. The cosmic factor is natural one (like the Sun, Solar wind and etc.) Galactic Cosmic rays (GCRs) possible indirect influence on the Earth's climate has been under increased interest since the end of last century. The galactic cosmic rays, which are modulated by the solar wind, interact with atmosphere molecules and create cloud condensation nucleus and have effect on cloud covering process. In general, cloud covering influences on radiative balance on the earth surface.[1]
In my presentation will be shown, the long-term trends of GCRs flux seasonal changes for whole seasons and cloudless days and cloudless nights and for Solar Radio Flux $F._{10.7}$ index seasonal changes too. It is known that different levels of clouds have dissimilar sensitivity on GCRs.[1] Therefore using cloudless days and cloudless nights are suggested to the current investigation, is important for revealing influence of cosmic factors on cloud coverage. Solar Radio Flux $F._{10.7}$ index is chosen, because it correlates well with the solar activity.[2] Solar Radio Flux $F._{10.7}$ trends are monotonous, but on the other hand, the behaviors of the GCRs trends are not the same. The opposite GCR flux trends for the different season support that GCRs have an influence on climate change.
The results are got according to the GCR flux data of Rome "SVIRCO NM' and the data of cloudless days and nights of Abastumani Astrophysical Observatory (41.75N ;42.82E). The GCRs data of Rome is considered because the cut-off rigidity of Rome is close to the region near from Abastumani. (Approximately 6-7Gev)

[1] Didebulidze G.G. Todua M. "The inter-annual distribution of cloudless days and nights in Abastumani: Coupling with cosmic factors and climate change. " "Journal of Atmospheric and Solar-Terrestrial physics'', 2015
[2] https://www.swpc.noaa.gov/phenomena/f107-cm-radio-emissions