

Influence of atmospheric fronts on cosmic ray muon flux

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A new approach to the analysis of muon flux during atmospheric fronts passage is discussed. It is possible to select muons in specific planes providing different counting rate series that can reveal atmospheric waves that may accompany phenomena like the passage of atmospheric fronts. The plane includes muons from all zenith angles and some azimuth angles. This selection is made possible by the URAGAN muon hodoscope, which detects muons from all directions and records them in matrices of zenith and azimuth angles. The value in the matrix cell corresponds to the number of muons in a specific range of angles. The experimental setup consists of three supermodules that operate separately and independently from each other. It is possible to compare data from individual supermodules with each other and thus extract a useful signal. Data corresponding to the movement of atmospheric fronts above Moscow are examined. In the study, warm, cold, and occluded fronts are considered. The new approach to processing of experimental data allows us to see waves from approximately 60% of atmospheric fronts.

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