

Forbush decreases associated with coronal holes, coronal mass ejections from active regions, and filament eruptions: a comparison in solar cycles 23 and 24

Tuesday, 27 June 2023 16:40 (20 minutes)

The paper investigates the similarities and differences between Forbush decreases in solar cycles 23 and 24. The analysis was carried out for groups of events associated with different types of solar sources: coronal mass ejections from active regions accompanied by solar flares (CME1 group); filament eruptions outside active regions (CME2 group); high-speed streams from coronal holes (CH group). The distributions and relationships of various parameters were studied: the amplitude of Forbush decreases; the maximum values of the hourly decrease in the cosmic ray density, the cosmic ray equatorial anisotropy, the solar wind velocity, the magnetic field intensity during an event, as well as the values of the solar wind velocity and the magnetic field intensity one hour before the Forbush decrease onset. The results showed that the number of events, parameter values and their relationships depend on the phase and cycle of solar activity. In the 24th cycle, the number of events in the CME1 group decreased, did not change in CME2, and increased in CH. The values of the parameters and the difference between them in different groups of events are higher in cycle 23. The magnitude of the Forbush decreases in the CME1 group in cycle 23 depends more strongly on the solar wind velocity, and in cycle 24 - on the magnetic field strength, as in the CME2 group in both solar cycles.

Primary authors: ABUNINA, Maria (IZMIRAN); Dr MELKUMYAN, Anaid (IZMIRAN); Dr BELOV, Anatoly (IZMIRAN); SHLYK, Nataly (IZMIRAN); Dr ABUNIN, Artem (IZMIRAN); YANKE, Victor (IZMIRAN); Dr OLENEVA, Viktoriya (IZMIRAN)

Presenter: ABUNINA, Maria (IZMIRAN)

Session Classification: Poster Session

Track Classification: Cosmo- and geophysical aspects of cosmic rays at the ground level