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## Study of Clear-Sky Atmospheric Electric Field Variations in Daocheng Region

Based on the near-surface atmospheric electric field data recorded at the high-altitude cosmic ray observation station in Daocheng, Sichuan, from January 2020 to December 2021, this study analyzes the long-term variations of the near-surface clear-sky atmospheric electric field and its relationship with meteorological factors. The analysis of meteorological effects shows that the near-surface clear-sky atmospheric electric field in this region exhibits long-term variation trends associated with three meteorological parameters: atmospheric pressure, temperature, and absolute humidity. The overall level of the atmospheric electric field varies by season: approximately 0.13 kV/m in spring, around 0.17 kV/m in summer, about 0.14 kV/m in autumn, and roughly 0.11 kV/m in winter. The intensity of the atmospheric electric field is relatively high in summer and relatively low in winter. The daily variation pattern of the clear-sky atmospheric electric field shows a single peak and a single trough, with the peak occurring at 18:00 Beijing time and the trough at 7:00. The timing of the peak and trough varies slightly by month, and the distribution characteristics of daily variations in the clear-sky atmospheric electric field also differ by month. The changes in the atmospheric electric field are primarily related to temperature. As a secondary factor, it is found that from November to February, the atmospheric electric field varies with wind speed, whereas from March to October, the distribution characteristics of the atmospheric electric field become more complex, correlating with other meteorological factors such as humidity.

### Collaboration(s)

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