

Characteristics of thunderstorm activity at LHAASO observatory

Friday 16 July 2021 19:18 (12 minutes)

Thunderstorms are common weather phenomena at high altitudes, accompanying with lightning, strong winds, floods and other disasters. During thunderstorms, the strength of atmospheric electric fields could be up to 1000 V/cm or even higher. The intensity fluctuates violently and the polarity could change multiple times. So, direct measurement of the thunderstorm electric field is a quite challenging work. The High Altitude Cosmic Ray Observatory (LHAASO), under the construction of a project at Daocheng (4410 m a.s.l, Sichuan, China), is featured with frequent thunderstorms, especially in summer. The distribution of thunderstorm parameters is presented by analyzing the near-earth atmospheric electric field of the LHAASO station in this work. The polarity and intensity variation characteristics of the electric field in the early, mature and dissipating stages of thunderstorm are also discussed. The results show that the thunderstorms mainly occur in the period of a time from early afternoon to evening. They are more frequent and stronger in summer. During the mature stage, the field changes more dramatically. Our results could be helpful in understanding the variations of cosmic rays at LHAASO during thunderstorms, and provide valuable information for studying global thunderstorm activity.

Subcategory

Experimental Results

other Collaboration

Collaboration

Lhaaso

Keywords

Thunderstorm activity; Atmospheric electric fields; Variations; Cosmic rays; LHAASO observatory

Primary authors: WANG, Peihan (Southwest Jiaotong University); HUANG, Daihui; ZHOU, Xunxiu; HUANG, Zhicheng (Southwest Jiaotong University); Mr FENG, Hucheng (Southwest Jiaotong University); Ms HUANG, Ruolin (Southwest Jiaotong University); Mr CHEN, Gerui (Southwest Jiaotong University); Mr WU, Kai (Southwest Jiaotong University); Mr YAN, Tao (Southwest Jiaotong University); Mr AXI, Kegui (Southwest Jiaotong University); Ms CHEN, Lin (Southwest Jiaotong University)

Presenter: HUANG, Daihui

Session Classification: Discussion

Track Classification: Scientific Field: CRI | Cosmic Ray Indirect